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❖ SPORT AND PERFORMANCE

THE EFFECTS OF ANKLE PLANTAR FLEXOR AND KNEE EXTENSOR MUSCLES FATIGUE ON DYNAMIC BALANCE OF THE FEMALE ELDERLY

AMIR GHIAMI RAD[1], ZAHRA ABDOLVAHHABI[1], NASRIN GOLMAGNI ZADEH1
Academic board Member of Iran Islamic Azad University – Tabriz Branch, **IRAN**
amirgh@yahoo.com 21.04.2010/03.05.2010

Abstract

Objective: The purpose of this study is to investigate the effects of ankle plantar flexor and knee extensor muscles fatigue on dynamic balance of Tehran female elderly people. The subjects of this study consist of 30 active elderly women with mean age 68±3/4 years.

Method: Star Excursion Balance Test (SEBT) applied, for dynamic balance evaluation. Ankle plantar flexor machine and knee extensor muscles machine were used for implementation of fatigue protocol on these muscles respectively; we also used Kin-Com machine for muscles strength evaluation. Sample t test as well as independent t test were applied for statistical analysis (p=0/05).

Discussions and Conclusion: Comparison of the mean distance of the eight vectors Star Excursion Balance Test (SEBT) before and after implementation of the fatigue protocol, showed a meaningful decrease in each of the eight vectors. We concluded that, despite participation in general fitness programs, the female elderly people experience balance- disturbances.

Key words: Fatigue, Dynamic Balance, Elderly

INTRODUCTION

As one of the challenging concepts in sensory-motor system (BL, Riemann, JB, Myerse, SM., Lephart, 2002), postural control studies the mutual and complicated relation between the sensory inputs and motor reactions needed for maintenance or alteration of posture (PE,, Sullivan, PC., Marcos, 1995). From a practical point of view, balance is divided into three fields of dynamic, semi-dynamic and static (K, Guskiewicz, D., Perrin, 1996), for assessment of which, different methods like Star Excursion Balance Tests (SEBT) (DT,,Ochsendorf, CG, Mattacola, BL.,Arnold, 2000), Berg Balance Scale (LD, Thorbhr, RD., Newton, 1995), and Tineh t Scale (SL,, Whinteney, JLC, People, SP., Cass, 1998) as well as Biodex Machine (S, Colby, R, Hintermeister, M, Torry, R. Steadman, 1999) and Power Plate (J, Yaggie, S. McGregor, 2002) applied. Fatigue is a common phenomenon which appears after exercising and daily activities, and results in disturbances of people's motor performance (J., David, R., Joan, H., Arnold, 2004). Former studies (A. McComas, 1996, K., Miura, Y, Ishibashi, E, Tsuda, Y, Okamura, H, Otsuka, S. Toh, 2004) have divided the causes for muscle fatigue into marginal and central sets; which among the first group we can refer to disturbance in control of muscular webs impels and contraction process itself (A. McComas, 1996), and non-activation of motor neurons by the brain and break of information chain sent from the brain to motor neurons and the muscle as the main central cause of fatigue (K., Miura, Y, Ishibashi, E, Tsuda, Y, Okamura, H, Otsuka, S. Toh, 2004). Aging and decrease of physical activities may result in disturbance of many physiological performances, namely sensory-motor performance, and may consequently lead to decrease of elderly people's postural control and increase of probability for injuries (M, Beers, R. Borkow, 2000). As a result of postural control decrease, elderly people's safety, decreases while performing daily activities and exercising; this problem might be a reason for later disturbances in elderly societies. Decrease of physical activities along with aging, is followed by worrying alterations in the capacity of some systems of the body, say cardiac system, respiratory system, neural system and muscular-skeletal system, which face most changes (W.R, Frontera, C.N, Meredith, K.P., Reilly, H.G, Knuttgen, W.J. Evans, 1998, MA, Rogers, JM., Hagberg, WH, Martin, AA, Ehsani, JO. Holloszy, 1990). Alterations in neural and muscular-skeletal systems consist of reduction of bone density, muscular atrophy, power decrease and disturbance in neuromuscular control of physical activities. Among cardiac and respiratory system changes, we can refer to the decrease of performance capacity of these systems, which altogether can result in premature fatigue of elderly people in performing daily activities and exercising (W.R, Frontera, C.N, Meredith, K.P., Reilly, H.G, Knuttgen, W.J. Evans, 1998, MA, Rogers, JM., Hagberg, WH, Martin, AA, Ehsani, JO. Holloszy, 1990). Due to the decrease of the time for fatigue attributed to the decrease of physiological systems capacity, and decrease of postural control ability-

resulting from disturbances in neural control of muscle movements- prevalence of the injuries among the elderly people caused by lack of proper postural control, and exhaustion at the end of daily activities and sport competitions- a time when occurrence of fatigue is much more probable- have been reported repeatedly (JA, Balogun, KA, Akindele, J. Nahinlola, 1994). Therefore, researchers have focused on studying and diagnosis of the factors affecting postural control, namely fatigue, among elderly people (P, Gribble, J, Hertel, C, Denegar, W. Buckley 2004, N, Vuillerom, S. Dmetz, 2006). For instance, Gribble et al. (2004) in their study The effects of fatigue and chronic ankle instability on dynamic postural control have, found a meaningful correlation between fatigue and decrease of postural control (P, Gribble, J, Hertel, C, Denegar, W. Buckley 2004). The findings of another research on the effects of calf muscles fatigue on dynamic balance in the elderly people conducted by Vuillerem et al. (2006) confirmed decrease of postural control after the implementation of fatigue protocol (N, Vuillerom, S. Dmetz, 2006). In most of the researches on the effects of fatigue on dynamic balance, researchers have studied the effects of fatigue among athletic and non-athletic subjects (DT, Ochsendorf, CG, Mattacola, BL.Arnold, 2000, J, Yaggie, S. McGregor, 2002), and few studies with female elderly subjects have employed isokinetic and isometric fatigue protocols (DT, Ochsendorf, CG, Mattacola, BL.Arnold, 2000, J, Yaggie, S. McGregor, 2002) which are quite obviously different from daily physical activities. Moreover, in the studies so far conducted, the relative contribution of fatigue in various lower parts of the body in decrease of postural control has not been considered. According to this issue and considering the importance of maintenance of elderly people's health, this study aims to investigate the effects of ankle plantar flexor and knee extensor muscles fatigue on dynamic balance of Tehran female elderly people.

RESEARCH METHODOLOGY

The statistical society of this study is composed of active elderly women1 in Tehran, among whom 30 people with mean age of 68±3.4 years, mean height of 168±10.4 cm and mean weight of 65±5.4 kg, without any injuries in lower parts of body for the last 5 years, were selected for this investigation voluntarily. In this study we used an ankle plantar flexor machine, a knee extensor muscles machine, Star Excursion Balance Test (SEBT), a 5 centimeter adhesive tape, a textile meter, a standard height measuring set, and a digital scale made by Germany. For evaluation of dynamic balance of the subjects we used Star Test, in which eight vectors drawn on the ground with 45º angles in a star form. To implement this test and normalize the data, leg height (length) -that is from anterior upper pelvic to internal ankle- was measured (P, Gribble, J. Hertel, 2003). After receiving essential instructions from the tester, each subject performs this test three times to learn how to do it. Besides, subjects' superior leg is defined prior to the test; so that if it is their right leg, the test be done counterclockwise, and in case of left leg superiority, the test be done clockwise (K, Guskiewicz, D. Perrin, 1996, **P. Gribble, 2003**). The subject stands on her superior leg at the center of the star and performs the access action without error (errors: leg movement from the center of the star, resting of the other leg at the contact point of the star line, and falling down) in the eight vectors of the star; the tester tells which vector to go. The distance between contact point of the free leg and center of the star recorded as access distance. Each subject does the test on each of the vectors three times. Finally their mean is divided by the leg height (in centimeter), and then multiplied in 100 to obtain the access distance as a percent of the leg height (P, Gribble, J. Hertel, 2003, F, Karl, J. Ian, 2006). For measurement of thigh extensor muscle power we used Kin-Com dynamometer which is an accurate method for evaluation of muscular power (U. Svantesson, B., Ernstoff, P., Bergh and G., Grimby, 1991). Kin-Com dynamometer helped us to perform various exercises of isometric, constant and slow passive movements, isokinetic and plyometric types. Machine's contraction speed varies between 1 and 250º per second, and its utmost force is 450 pounds (2000n). It is also capable of measurement and evaluation of any muscular parameters (such as: power, strength, entropy, torgue, maximum force, correlation of maximum entropy to the body weight, the whole work etc.) in any angle from movement range of the joint precisely together with a diagrams. In the present research we set the machine on 0 to 90º angle and maximum input force of 100 N with the speed of 120 m/s. sitting on the machine seat, every subject performed concentric contraction by bending and stretching her knee for 0 to 90º with 120 m/s speed and 100 N force. Three contractions performed in three phases. After any phase the subjects rested for 90 seconds till the completion of the three phases. Then the machine showed the power amount of thigh extensor muscles (concentric contraction) via a diagram appeared on its monitor. To measure the power of knee plantar flexion muscles the knee was posited in a 90º angle (the reason for choosing the 90º angle was that according to various studies the maximum power of these muscles is produced in this position), and after contraction of these muscles by the subjects their power was recorded (U. Svantesson, B., Ernstoff, P., Bergh and G., Grimby, 1991). To implement fatigue protocol on knee extensor and ankle plantar muscles, the subject were asked to perform 2 sets of knee extension and ankle plantar flexion respectively on knee extensor machine and ankle plantar flexor machine, each set consisted of 50 movements, with 50% of a repetition maximum (repetition maximum is calculated via the formula: 1RM= 0.1 of the lifted weight- 0.02 of repetitions, and there was a 4 minute rest between the two sets). Either it was supposed that whenever the subject becomes

incapable of continuing the repetitions, fatigue has happened (4), or after performing the repetitions muscle power was measured by the Kin-Com machine, if the power mount in knee extensor and ankle plantar muscles was less than 20% of the amount obtained prior to the test, it is also considered as sign of fatigue (U. Svantesson, B., Ernstoff, P., Bergh and G., Grimby, 1991). For implementation of fatigue protocol in to different areas (knee extensor and ankle plantar muscles) the second trial of test was performed 72 hours after the first one, with as much parallel conditions as possible.

THE PROCEDURE

For sample selection, the research plan was explained for the elderly female available in Tehran who had sportive activities, then the volunteers' background studied for injuries in lower parts of body. Those people with sever injuries of lower parts in recent 5 years as well as those who had not optimal conditions for balance test and fatigue protocol were excluded. Afterwards, during a coordination session the test and its performance steps were explained for the subjects. To facilitate performance of the test and implementation of fatigue protocol on two different areas in parallel conditions, the subjects were divided into three groups (of 10 people), and the test conducted during a period of 3 weeks. Subjects' weight and their leg height (that is from interior upper pelvic to internal ankle) were measured, and again after a brief explanation of the procedure the subjects conducted Star Excursion Test. While performing Star test, the value of a Repetition Maximum for knee extension and ankle plantar flexion of the subjects was calculated. Afterwards, the subjects performed a warm up step (5-10 minutes of extension and slow running). The subjects selected by the researcher, stood on the center of the star on their superior leg, and upon his/her call performed access action in the vectors (randomly chosen by the researcher). After the subjects' foot touching the chosen vector, the researcher marked the contact point on the Star, and measured the distance in centimeters. The mean for three performance of the test calculated and divided by the leg height of the subjects, and finally multiplied in 100. After that, the subjects stood on knee extensor muscle machine and performed extension action for 50 times, with 50% repletion maximum, which was already calculated and added to the machine resistance. If at the first set the subject was unable to continue the action at any of repetitions, the fatigue protocol would be stopped and the Star test be conducted, but in case of finishing the first set of 50 repetitions without incapability, after a 4 minute rest implementation of the protocol would be started again (all the subjects reached to partial inability while doing the first set of repetitions, and there was no need for performance of the second set). After 72 hours needed for recovery of knee extensor muscles fatigue, and 30 minutes delay (because this time, procedure explanation, 6 times of instructing practices, and also pretest step for Star test, were not needed), again the first 10 people of the sample group attended the test. Like implementation of fatigue protocol on extensor muscles at the first test, this time the subjects performed ankle plantar flexion and after stopping the repetitions, Star test was conducted. During the next weeks, all steps of the test were done on the other two groups in similar conditions. In this study we used sample t test and independent t test for data analysis with p= 0.05.

RESULTS

In table 1 the general characteristics of the subjects are shown.

Table 1. General characteristics of the subjects

Variables	The Measured Values
Age(Year)	3.4±70
Height(centimeter)	10.4±168
Length of legs(Centimeter)	6.5±82
Weigh(kg)	5.4±65
Maximal power of knee extension: (kg)	6±43
Maximal power of ankle plantar flexion: (kg)	7±30
Repetition of the movement before inability in knee extension	3±19
Repetition of the movement before inability in ankle plantar flexion	2±21

Table2. Mean (standard deviation) for subjects' access distance in Star test divided by leg height ×100

SEBT Vectors	Test		
	Pretest	After knee extensors fatigue	After ankle plantar flexors fatigue
Anterior	¶1.78 74.42☼	¶42.31 1.60☼	¶1.92 62.55☼
Anterior-	¶2.06	¶52.42	¶1.76

Interior	83.40☼	1.63☼	71.81☼
Anterior-Lateral	¶1.63 71.64☼	¶42.05 1.54☼	¶5.73 60.85☼
Lateral	¶1.65 66.24☼	¶50.45 1.52☼	¶3.38 58.1☼
Posterior-Lateral	¶2.80 83.80☼	¶61.21 1.65☼	¶1.69 64.69☼
Posterior	¶1.08 84.67☼	¶64.72 1.83☼	¶1.88 66.1☼
Posterior-Interior	¶1.76 83.60☼	¶63.30 1.973☼	¶1.60 64.59☼
Interior	¶1.84 88.46☼	¶67.31 2.03☼	¶1.88 76.27☼

☼: Stands for meaningfulness of the difference between access distance before and after implementation of fatigue protocol on knee extensors muscle group.
¶: Stands for meaningfulness of the difference between access distance before and after implementation of fatigue protocol on ankle plantar flexors muscle group.

According to the table 2 and comparison of the obtained distances for the eight vectors of Star test before and after implementation of fatigue protocol on knee extensors and ankle plantar flexors, it can be said that implementation of fatigue protocol on the aforementioned muscle groups results in meaningful decrease of access distance in all eight Star vectors.

DISCUSSION AND CONCLUSION

The main purpose of this study is a comparative study of the effects of knee extensor and ankle plantar flexor muscles fatigue on dynamic balance of the active elderly female in Tehran. The findings of the study confirmed a meaningful effect of knee extensor and ankle plantar flexor muscles fatigue on dynamic balance of the elderly people, and the difference between the effects of knee extensors on the dynamic balance of the elderly people and that of the ankle plantar flexors. Regarding the decrease of ability for balance control after implementation of fatigue protocol is in accord with the findings of Treleaven et al (2008), Vaillant et al (2008), and Vuillerme et al (2007), who have reported an almost similar decrease of balance control and increase of body fluctuations after the implementation of fatigue protocol (J, Treleaven N, lowchoy R, Darnell B, Panizza D., Brown-Roth well 2008, J, Vaillant N, Barthalais N, Vuillerme, 2008, N, Vuillerme, R., Cuisinier 2008). As the diagram 1 shows, within the subjects' access distance fatigue in knee extensors face more decrease than in ankle plantar flexors in all eight star vectors. Via calculation of the percentage of decrease for the subjects' access distance after the implementation of fatigue protocol, we found out that execution of the program on knee area brings the highest decreases respectively in following vectors: anterior, anterior-lateral, anterior-interior, posterior-lateral, posterior-interior, interior, posterior and lateral, while implementation of fatigue protocol on ankle area brings the heist decreases respectively in following vectors: posterior-lateral, posterior, posterior-interior, interior, anterior, anterior-lateral, anterior-interior and lateral. In spite of lowness of access distance in lateral vector for each of the tests, in comparison with distance decrease in other vectors, decrease of access distance in this vector after implementation of fatigue protocol on both muscle groups is much less. It is also observed that, the three anterior vectors have the highest decreases after knee fatigue, while for ankle fatigue the highest decreases take place in posterior vectors of access distance. Moreover, the less difference between the percentage access distance decreases after implementation of fatigue protocol on both muscle groups is observed in posterior vector. Comparison of the access distance for the subjects of this study with those of former researches on young subjects, with mean values of 100, 105, 95, 94, 103, 105, 105 and 107 respectively for anterior, anterior-interior, anterior-lateral, lateral, posterior-lateral, posterior, posterior-interior and interior vectors (A., Sarshin, H., Sadeghi, A., Abasi, 2008), verified that ageing results in a meaningful decrease in access distance in all eight vectors of star test, which shows that aging is accompanied by decrease of dynamic balance. This part of the present study findings is in accord with those of Gribble's (2004) research which had reported increase of body fluctuations among the elderly people. It was also observed that, the decrease of access distance for both young and elderly subjects, in three vectors of anterior (25%), anterior-lateral (33%) and

lateral (36%), known as difficult vectors of the star, face more differences than other vectors, and elderly people have much less access distances than the young subjects (A., Phillip Gribble; J., Hertel, C. R. Denegar; W. E. Buckley. 2004). Decrease of dynamic balance by ageing can be attributed to sensory-motor changes developed by ageing, because according to the findings of some researchers, ageing leads to reduction of skin sensitivity, vibratory sensitivity and sensitivity towards pain and heat (K. Guskiewicz, D. Perrin, 1996). Therefore, since balance is dependent not only to the messages received from deep sensory receivers but also to the information prepared by skin receivers, decrease in balance to some extent is related with reduction of sensory-motor abilities of the elderly people (LD, Thorbhr, RD, Newton, 1995). The decrease of elderly people's balance can also be attributed to reduction of the performance of visual and internal ear labyrinth sensory receivers, low flexibility, and power and speed decrease as well as reduction of neural transmission (J, Treleaven, N, lowchoy, R, Darnell, B, Panizza, D. Brown-Roth well, 2008). Regarding the effects of power decrease in the elderly people, in this study we can refer to decrease of knee extensor and ankle plantar flexor muscles power observed in this study compared with the findings of former researches. The decrease of the maximal muscular power in the active elderly people can be attributed to decrease of physical activity accompanied by ageing, or we can claim that at least part of this power decrease is associated with decrease of intensity and volume of elderly people's exercises (DT, Ochsendorf, CG, Mattacola, BL., Arnold, 2000, LS, Aaronsonal, CS, Teel, V, Cassmeyer, GB, Neuberger, L, Palliccathayil, J. Pierce, 1999, J., David, R., Joan, H., Arnold, 2004). After comparing the number of performed repetitions for knee extension and ankle plantar flexion, it was also observed that despite 40% lowness of maximal power of ankle plantar flexor muscles to that of knee extensor muscles, repetitions performed before inability in ankle plantar flexion movements averagely was 22% higher than the number of performed repetitions for knee extension movements, a fact which be related to the type of muscular webs of each of the muscular groups (P., Gribble, 2003, P, Gribble, J. Hertel, 2003). One must note that according to the findings of former researches, motor units of knee extensor muscles are mostly of fast-contraction type, which generate more power than slow-contraction muscles but are not as resistant against fatigue as the slow-contraction muscles (P, Gribble, J, Hertel, C, Denegar, W. Buckley, 2004). The obtained findings in this study, in accordance with the findings of former studies by Vuillerem et al (2008) and Vaillant et al (2008), are indicative of decrease of balance and access distance after implementation of fatigue protocol (J, Vaillant, N, Barthalais, N., Vuillerme, 2008, N, Vuillerme, R., Cuisinier, 2008). The probable reason for the observed decreases can be associated with lack of proper function of muscles and the sensory effects of fatigue. The implementation of fatigue protocol in one area of the body and on the muscles functioning in one joint, leads to transmission of some messages from sensory receivers to the central neural system, which in turn probably reacts for safety of the aimed muscles, via sending a massage for reduction of their contractive activity (P, Gribble, J, Hertel, C, Denegar, W., Buckley, 2004). Therefore, implementation of fatigue protocol on one muscle group results in reduction of neural transmission speed in afferent and efferent paths leading to the aimed muscle group, which may also contribute to decrease of dynamic balance and access distance of the elderly subjects after implementation of fatigue protocol. So, in short, noting that changes in afferent sensory inputs from a peripheral receptor change muscular-neural control of the lower parts of the body, and also that lower parts muscles fatigue also change the afferent input from muscular receivers, we can consider a combination of these factors as the probable reason explaining the decrease of the body's inability in controlling the lower parts after implementation of fatigue protocol (BL, Riemann, JB, Myerse, SM. Lephart, 2002, DT, Ochsendorf, CG, Mattacola, BL. Arnold, 2000, SL, Whinteney, JLC, People, SP. Cass, 1998). The decrease of access distance after implementation of fatigue protocol on both muscle groups mentioned so far had a meaningful difference so that the decrease in knee extensors was more than that of ankle area (diagram 1). The reason for this issue can probably be attributed to the different roles each of the lower part members of the body play in performing the Star test, because trying to reach the longest access distance in anterior, anterior-interior and anterior-lateral vectors, the body leans backward, and performing this movement needs extensive extrovert activity of knee extensors. Similarly, performing the test in posterior-lateral, posterior-interior and posterior vectors, the subjects need ankle plantar flexion action to reach the longest access distance, and this necessitates intense activity of posterior muscle group of the leg while trying to perform the test in these vectors (**L., Jorunn Helbostad, S., Leirfall, R., Moe-Nilssen and O., Sletvold, 2007, P. A. Gribble, J., Hertel, C.R., Denegar, W. E., Buckley, 2004**, **N., Pinsault and N., Villerme, 2008**). Based on the findings of the present study, it can be said that decrease in access distance on various vectors of Star test after implementation of fatigue protocol on various muscles of lower parts of the body depends on the function of theses muscles while performing access action before implementation of fatigue protocol, and unlike the findings of Vuillerem and his colleagues (2006), compensatory mechanisms, thought to interfere after implementation of fatigue protocol for maintaining balance, do not interfere in limiting the role of certain muscle group in reaching the longest access distance on various vectors of Star test (N, Vuillerom, S., Dmetz, 2006). As the diagram 1 show, implementation of fatigue protocol on proximal area of lower parts (knee extensors) has had more influence on decrease of the subjects' access distance in Star test, which may probably be explained

as: knee area fatigue just brings change and fall of the function of muscles and afferent nerves of this area. Conversely, implementation of fatigue protocol on distal area of lower parts (ankle plantar flexors) only results in change and fall of the muscles and afferent nerves of ankle. Hence, the decrease of access distance in Star test after fatigue protocol on knee area can be attributed to the high correlation between performance of Star test, almost in all vectors, and proper function of knee extensor muscles (N. F., Horgan, F., Crehan, E., Bartlett, A. M., Grandy, A. R., Moore, C. F., Donegan, M., Curran, 2008, N., Pinsault and N., Villerme, 2008, J,, Treleaven N, lowchoy R, Darnell B, Panizza D., Brown-Roth well 2008). Another explanation for this issue may be the precedence of the role of neural afferent of proximal area to the role of neural afferent of distal area in balance control. The results of this study confirm a theory which considers partial fatigue in lower parts muscles (knee extensors and ankle plantar flexors) as the reason for decrease of dynamic balance and increase of probability for injuries among the elderly people caused by falling down.

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RELIABILTY AND VALIDITY OF A DISCONTINOUS GRADED EXERCISE TEST ON DANSPRINT® ERGOMETER

Carrasco Páez Luís[1], Martínez Díaz C. Inmaculada[1], De Hoyo Moisés Lora[1], Sañudo Corrales Borja[1], Ochiana Nicolae [2]
[1]University of Seville, SPAIN
[2]University of Bacau, ROMANIA
Email: sochiana@yahoo.com / **02.03.2010 / 19.03.2010**

Abstract

The aim of this study was to determine the validity and reliability of a graded exercise test on a specific kayak ergometer (Dansprint®) in which certain physiological and technical parameters that can to define kayaking performance were assessed. Fourteen male top-level kayak paddlers (all members of Spanish Kayaking National Team) participated in this investigation. All subjects carried out two ergometric tests (Ergo1 and Ergo2) and one flat water test (FWT) in random order. At anaerobic threshold (AnT) intensity, the results showed acceptable levels of reliability (comparison between data of Ergo1 and Ergo2 tests) in the assessment of velocity ($r=0.784$; $p=0.004$), stroke frequency ($r=0.976$; $p<0.001$), heart rate ($r=0.964$; $p<0.001$), and blood lactic acid concentration ($r=0.899$; $p<0.001$). Validity coefficients showed a strong relationships between Ergo2 and FWT tests in all physiological and technical parameters with the exception of velocity ($r=0.498$; $p=0.121$). It can be concluded that specific ergometry can be used to evaluate and to prescribe training AnT intensities of top-level kayakers attending to parameters such us heart rate, whole blood lactic acid concentration, and stroke frequency. Nevertheless, the training prescription through specific ergometry must be taken cautiously when velocity is the parameter of reference.

Key words: kayaking, testing, ergometry.

Introduction

Flat-water kayaking is an olympic sport that combines different types of boats (canoe and kayak) and distances (500 m for female and 500 m and 1000 m for male competition). The contribution of aerobic metabolism at individual races has been established between 60 and 80% for 500 m and 1000 m, respectively. In this sense, an accurate assessment of optimal kayaking training intensities to develop aerobic and anaerobic metabolisms is needed. This assessment can be achieved through field tests (flat water environment) or under simulated conditions in laboratory environment using specific kayak ergometers. Since 1973, when F.S. Pyke et al. (1973) designed and developed a specific kayak ergometer, a great number of engineers and researchers have tried to simulate the real conditions of paddling using both air-braked and mechanical resistance systems (A. Dal Monte, L.M. Leonardi, 1976; P.D. Campagna, D. Brien, L.E. Holt, A.B. Alexander, and H. Greenberger, 1982; G.E. Cooper, 1982; R.D. Telford, 1982; B. Larsson, J. Larsen, R. Modest, B. Serup, N.H. Secher, 1988; M. Witkowski, M. Wychowanski, M. Buczek, 1989; T.W. Pelham, L.E. Holt, 1995; J. Kruger, H. Schulz, R. Berger, H. Heck, 1997). Analysis of technical actions on these ergometers has shown a high level of coincidence between ergometer and flat water paddling when wrist, elbow and shoulder motions were compared (A. Dal Monte, L.M. Leonardi, 1976; P.D. Campagna, D. Brien, L.E. Holt, A.B. Alexander, and H. Greenberger, 1982). Moreover, a comparative analysis taken into account physiological variables were also performed (B. Larsson, J. Larsen, R. Modest, B. Serup, N.H. Secher, 1988), showing that air-braked kayak ergometers lead to reach the same ventilation, VO2 peak, and heart rate (HR) values that those observed on flat water kayaking. In this line, J. Bourgois et al. (1998) reported similar blood lactate concentration and HR values after comparing kayak ergometry and flat water paddling. Also, muscular power expressed on mechanical braked ergometer and on flat water channel was very similar (M. Witkowski, M. Wychowanski, M. Buczek, 1989).

Despite of all above mentioned, it is very difficult that ergometry can reproduce exactly the metabolic demands of simulated sport activity. In this sense, several investigations have questioned the use of specific ergometers as an alternative to field test. K.A. Van Someren and G.M.J. Dunbar (1996) reported a lack of correspondence between kayak ergometry and flat water paddling when muscular power and blood lactate concentration were compared, not advising the use of this kind of devices for monitoring kayakers' training adaptations. J. Kruger et al. (1997) observed how HR response to an effort on air-braked kayak ergometer was lower than that registered on flat water paddling at the same exercise intensity.

So, the aim of this study was to determine the validity and reliability of a graded exercise test on a specific kayak ergometer taken into account physiological and technical parameters that can to define kayaking performance.

Methods

Subjects. Fourteen male top-level kayak paddlers (all members of Spanish Kayaking National Team) participated voluntary in this investigation. Participant characteristics were as follows (mean ± SD): age 25.2 ± 2.3 yr; height 1.81 ± 0.05 m; body mass 84.7 ± 5.3 kg; training experience: 11.1 ± 2.1 yr, VO2max: 67.7 ± 2.5 mL·kg·min^{-1}.

Procedures. All subjects carried out two graded exercise tests on a specific ergometer (Ergo1 and Ergo2) and one flat water test (FWT) in random order and separated by 48 h. Ergo1 and Ergo2 were performed on a Dansprint® ergometer (Dansprint ApS, Denmark) using a drag resistance coefficient of 35. After a 5 min warm-up at a speed of 9 km·h^{-1}, the first stage was set at 11.5 km·h^{-1} and the speed increments were 0.5 km·h^{-1} every 3 min including pauses of 30 s between work intervals. Each kayaker was allowed to freely adjust his stroke rate (SR) as needed, being continuously recorded by a stroke counter (Interval 2000, Nielsen-Kellerman, USA). Heart rate (HR) was monitored using standard HR telemetry (S610i; Polar Electro Oy, Finland) and recorded every 5 s. Also, capillary whole blood samples were taken from each kayaker's earlobe during test pauses, just at the end of the effort, and during recovery period (min 1, 3, 5 and 7). In any case, paddlers were encouraged to give maximal effort and to complete as many stages as possible. The test concluded when the subjects voluntarily stopped paddling or they were unable to maintain the imposed speed.

FWT was performed on a flat water channel and its structure was similar to Ergo1 and Ergo2 test. Environmental conditions were also similar in all testing sessions and velocity was monitored thorough FWT using a GPS (Garmin mod.305).

Anaerobic threshold (AnT) was calculated from blood lactate concentrations (miniphotometer LP20; Dr. Lange, France) according to D-max method (B. Cheng, et al, 1992) . At this key point HR, SR, paddling velocity (PV), and blood lactate concentration were assessed.

Statistical analysis.

Standard statistical methods were used for the calculation of means and standard deviations (SD). Kolmogorov-Smirnov test was performed to evaluate conformity to a normal distribution and one-way ANOVA was applied to compare testing sessions for physiological and kayaking performance variables. After that, and Pearson's correlation coefficient was calculated to check both reliability (Ergo1 vs. Ergo2) and validity (Ergo2 vs. FWT). Significance was accepted at $p<0.05$ level.

Results

At AnT intensity level, no statistical differences were observed between testing sessions for any physiological or kayaking performance variables registered. Moreover, the results showed acceptable levels of reliability (comparison between data of Ergo1

and Ergo2 tests) in the assessment of PV (r=0.784; p=0.004), SR (r=0.976; p<0.001), HR (r=0.964; p<0.001), and blood lactic acid concentration (r=0.899; p<0.001). Validity coefficients showed a strong relationships between Ergo2 and OWT tests in all physiological and technical parameters with the exception of velocity (r=0.498; p=0.121) (table 1).

Discussion

Several investigations have attempted to test the validity of kayak ergometers, comparing flat water kayaking and kayak ergometry. The results of some of these studies showed a lack of correspondence of physiological responses to open water and ergometric tests. However, there have been advancements in the development of air-braked kayak ergometers that can to offer new possibilities in the application of laboratory test for prescription and evaluation of kayak paddlers. This is the case of Dansprint® kayak ergometer, a new air-braked device that gives new possibilities to improve kayak testing.

In the present investigation we proposed a discontinuous graded exercise test on Dansprint® ergometer (Ego1 and Ergo2) that was applied on flat water channel too (FWT). The main aim of this test was to calculate the AnT point, a valid criteria to determine kayaking performance. After comparing physiological and kayaking performance variables from Ergo1 and Ergo2 testing sessions, we observed high levels of reliability in the assessment of PV, SR, prescription through specific ergometry must be taken cautiously when velocity is the parameter of reference. HR, and blood lactic acid concentration at AnT paddling intensity. On the other hand and when validity indexes were calculated (Ergo 2 vs. FWT) we observed high values of Pearson correlation coefficients for SR, HR, and blood lactic acid concentration at AnT intensity. Although validity level for PV was acceptable, and a significant relationship was established, this data suggest certain differences in paddling velocity calculation. Probably, different devices used for PV calculation (on-board computer and GPS terminal in ergometric and FWT, respectively) induced a lower value for this kayaking performance variable.

Anyway, our results are opposed to those described by K.A. Van Someren and G.M.J. Dunbar (1996) and J. Kruger et al. (1997), who reported a lack of correspondence between kayak ergometry and flat water paddling when blood lactate concentration and HR were compared. Also, our data are in agreement with the previous report by J. Bourgois et al. (1998) and J.E. Oliver (1999) who registered similar blood lactate concentration and HR values after comparing kayak ergometry and flat water paddling.

It can be concluded that Dansprint® ergometry can be used to evaluate and to prescribe training AnT intensities of top-level kayakers attending to parameters such us HR, whole blood lactic acid concentration, and SR. Nevertheless, the training

Table 1. Physiological and kayaking performance variables registered in both ergometric and flat water tests.

	Ergo1	Ergo2	r1; p1	FWT	r2; p2
PV ($km \cdot h^{-1}$)	12.99±0.22	13.05±0.32	0.784; 0.004	13.30±0.31	0.496; 0.121
SR ($st \cdot min^{-1}$)	79.5±5.7	79.5±5.6	0.976; 0.000	73.9±5.0	0.985; 0.000
HR ($bp \cdot min^{-1}$)	173.0±6.6	174.5±6.3	0.964; 0.000	172.0±4.7	0.924; 0.000
Lactate ($mMol \cdot L^{-1}$)	2.98±0.56	3.21±0.50	0.899; 0.000	3.13±0.37	0.920; 0.000

r1 and p1 show Pearson correlation coefficient between Ergo1 and Ergo2, and its level of significance, respectively. r2 and p2 show Pearson correlation coefficient between Ergo2 and FWT, and its level of significance, respectively.

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THE EFFECTS OF TWO DIFFERENT ENDURANCE TRAINING PROGRAMS PERFORMED IN HOT ENVIRONMENT ON BODY TEMPERATURE AND SOME PHYSIOLOGICAL PARAMETERS

Cicioglu Ibrahim[1], Kiyici Fatih[2]
[1]Gazi Univ. School of P.E. Ankara / TURKEY
[2]Ataturk Univ. School of P.E. Ankara / TURKEY
Email: cicioglu@gazi.edu.tr / **11.03.2010 / 20.03.2010**

Abstract

The purpose of this study was to compare the effects of two different endurance training programs performed in hot environment on body weight (BW), body fat percentage (BF %), body mass index (BMI), body fluid (humour) percentage (Bf %), basal metabolic rate (BMR), body temperature (BT) and maxVO_2. The subjects Ataturk University School of Physical Education and Sports were divided into two groups randomly as Interval Running Group (IRG) (n= 12) and Continuous Running Group (CRG) (n=12). The subjects participated in training program with three sessions per week during 8 weeks under the hot weather condition, mean weather temperature and humidity ration were 30.76 $\pm$ 1.76 C and 57.92 $\pm$ 5.8 % during 8 weeks period. Before and after the training program all parameters that were mentioned above tested as pre and post test. Also at the beginning and the end of the each training session some physiological parameters and body temperature of subjects were measured to examine adaptation level to the hot environment conditions.

Statistical analysis of data was done by two-way ANOVA with SPSS 11.5 for Windows statistical program.

At the end of the 8 weeks maxVO_2 scores of both groups significantly increased ($P<0.001$). Body temperature and loss of body fluid (***dehydration)*** significantly higher in CRG than that of IRG. Also except BMI, significant changes were observed in BW, BF%, BMR scores of both groups ($P<0.01$).

Consequently, although both endurance training methods are beneficial to improve aerobic capacity, to avoid damages of training in hot environment interval running method is more acceptable than continuous running method.
Key word : Hot Environment, Endurance Training, Aerobic Capacity, Body Temperature.

Introduction

In resting condition, organism produces approximately 1.5 kcal/min. energy. Especially during exercise with the increase in heat production 15 – 40 % of chemical energy converted into mechanical energy, the rest of the energy produced converted into heat that is required to remove from body to maintain heat balance (H.A. Devries, 1986; E.L. Fox, 1988).

Heat dissipation mechanism in body, is unable to cope with the metabolic heat production starts to accumulate and cause on increase in body temperature (S.S. Cheung et al., 2000). In normal weather conditions, players can use 80 % of energy reserves when exercising in hot environment, exhaustion occurs before it reached that level or they perform less work (T. Lav, 1995).

Exercise increases the metabolic heat generation, this increment can be 30 times more in heavy exercise. One important factor affecting body heat loss is the ratio of moisture in the air. In other words, unlike exercising the hot-dry weather the removal of heat is more important in hot-humid air.

Exercises in hot environments have different effects depending on type, duration and intensity of exercise. In such case, organism makes some physiological regulation to resume normal functions of the body. Increased heat during exercise done with 70 % of maxVO_2 removed from body with conduction

and convection (15 %), radiation (5 %) and evaporation (80 %) (J.H. Wilmore, 1994). Complete acclimatization of humanbeing to hot weather occurs in 8 – 12 weeks. Adaptation to heat reduces symptoms such as heat causes dizziness, fatigue, fainting and also body prepares itself for a comfortable working environment. Although different results obtained from different studies, common opinion of the researches about acclimatization to heat and to heat changes is initial adaptation can be observed first 4 – 14 days and complete adaptation occurs between 8 – 12 weeks (D. Wendt et al., 2007). The aim of the study was to determine and compare the effects of two different training programs performed in hot environment on body temperature and some physiological parameters.

Material and Methods

Totally 25 voluntarily university students who were from Ataturk University School of Physical Education and Sports, participated in this study. They were divided into 2 groups as Interval Running Group (IRG) (n=12) and Continuous Running Group (CRG) (n=12). Physical and physiological characteristics of subjects showed in Table 3. Subjects trained in average 30.76 $\pm$ 1.71 ^{o}C weather temperature and 57.92 $\pm$ 5.80 % humidity ratio environment conditions. Measurements were done before and after the training program and some parameters like body temperature (BT), body fluid percentage (Bf %) and basal metabolic rate (BMR) measured before and after the each training session to observe adaptation. The following test were done during study.

Tablo 1. Descriptive Statistics of Interval Running (IRG) and Continuous Running Groups (CRG)

	n	IRG	CRG
		X±SS	X± SS
Age (yrs)	24	24,27±2,71	22,73±3,51
Height (cm)		1,75±,06	1,73± ,06

Body Composition

Body weight (BW), body mass index (BMI), body fat percent (BF%), body fluid percent (Bf%) and basal metabolic rate (BMR) values of the subjects were tested by Bio-Impedance Analysis method with Tanita-TBF 300.

MaxVO_2 scores of the subjects were determined by 20 m Shuttle Run Test.

Body temperature of the subjects was measured with Braun IRT-4520 (Thermoscan) from inside of ear before and after the each training session.

During 8 weeks the subjects participated in either Interval Running Training (IRT) or Continuous Running Training (CRT) programs. The intensity of the training sessions were determined according to target heart rate of subjects that is calculated by Karvenon method. 5–10 min. before and after each session separated as warm-up and cool-down part of the session. Following training programs applied to the subjects during 8 weeks.

Table 2. shows the duration and intensity of interval running for one set. Program planned as first 2 weeks 1 set, 3 -6 weeks 2 sets and 7 – 8 weeks 3 sets.

Table.2. Duration and Intensity of Interval Running Training (IRT)

Running Distance	Maximal Running Times	Intensity (Target HR) beat/min		
		%60	%70	%80
250 m	40 sn	56	52	48
400 m	64 sn	90	83	77
650 m	114 sn	160	148	137
900 m	165 sn	231	215	198

Continuous Running Training (CRT) In this method the subjects trained with 80 – 70 % with Target HR from 25 to 60 min and 3 times per week during 8 weeks (Table.3)

Table.3. Duration and Intensity of Continuous Running Training (CRT)

	Duration (min.)	Yoğunluk (Target HR)	Day / Week
1. Week	25 min	%50	3 days / week
2. Week	30 min	%50	3 days / week
3. Week	35 min	%60	3 days / week
4. Week	40 min	%60	3 days / week
5. Week	45 min	%60	3 days / week
6. Week	50 min	%70	3 days / week
7. Week	55 min	%70	3 days / week
8. Week	60 min	%70	3 days / week

Statistical Analysis The effect of endurance training on body weight (BW), body mass index (BMI), body fluid percent (Bf %), body fat percent (BF %), basal metabolic rate (BMR), body temperature (BT) and maximal aerobic capacity (maxVO_2) were tested before and after training by 2 way ANOVA using General Linear Method (GLM) procedure (SPSS for windows 11.5.0 Chicago, IL,USA). Statistical significant was decelerated at $p<0.05$.

Results

Table 4 showed that at the end of the 8 weeks, maxVO_2 scores of both groups significantly increased ($p<0.001$). Body temperature and loss of fluid was significantly higher in CRG than that of IRG. Also except BMI, significant changes were observed in BW, BF %, and BMR scores of both groups ($p<0.01$).

Table. 4. The Effect of Type and Duration of Training in Hot Environment on Physiological Parameters, Body Temperature and MaxVO_2 Levels of Subjects

Type of Exercise	Time	Parameters						
		BW (kg)	BMI (kg/m^2)	BF (%)	Bf (%)	BMR (kcal)	BT (^{o}C)	MaxVO_2
IRG	**Pre-test**	74.5	24.15	15.23	62.64	1752	36.05	32.45
	Post-test	74.0	23.94	14.66	62.01	1746	36.47	45.93
CRG	**Pre-test**	71.9	24.14	14.46	63.00	1812	35.85	31.93
	Post-test	71.2	23.88	13.92	62.46	1806	36.47	45.63
SEM		0.6	0.12	0.17	0.12	9	0.03	
ANOVA		---------- P < ----------						
E		0.0001	0.74	0.0001	0.001	0.0001	0.0001	-
t		0.28	0.06	0.001	0.0001	0.54	0.0001	0.0001
T		1.00	1.00	1.00	1.00	1.00	0.001	0.75
E x t		0.91	0.84	0.91	0.75	0.99	0.0001	-
E x T		1.00	1.00	1.00	1.00	1.00	0.001	-
t x T		1.00	1.00	1.00	1.00	1.00	0.001	0.93
E x t x T		1.00	1.00	1.00	1.00	1.00	0.001	-

E= Exercise, t= Time, T= Tye of Training, Ext= Exercise and Time, ExT= Egzersiz and Training, ExtxT= ExercisexTimexTrainin

Discussion

In this study, it was aimed that which one of two endurance training methods was more effective to develop maxVO_2 and also in adaptation to hot environment.

Individuals who do endurance training, need less time for full adaptation to heat. The possible reason for this rising in core temperature during training. Thermoregulatory mechanism of the athletes should be strong. Activities carried out at ambient temperature at a level that can be tolerated by the body, through, if the body's thermoregulatory system is not normal, poor results are inevitable (K.B. Pandolf, 1998).

D.E. Rae et al. have done in their study of 35.627 bikes and marathoners, have followed the contest period and only 5 of the athletes were hospitalized with heat shock diagnosis were determined. The standard calculations existing environmental conditions and exercise rates, athletes none of that is difficult due to heatstroke and had a need while hospital admission during the riders' rectal temperature was 42.0 ^oC and 41.2 ^oC, marathoners' rectal temperature of 41.8 ^oC were determined and in these cases death has resulted. As a result, it can be said that increased rectal temperature and disruption in body's cooling mechanism caused these deaths.

According to the results of the study, body temperature of the subjects showed the changes in IRG and CRG due to difference in load. When average body temperatures were analyzed at the beginning of trainings, although CRG had lower body temperature than that of IRG, they reached higher body temperature through the end of the trainings (table 4).

Results also indicated that while resting body temperature of CRG gradually decreased through out the training program, body temperature of IRG has not seen an extreme increase. That occurred as a result the training seems to be an adaptation to the heat environment. However, both endurance training methods resulted in a significant increase in body temperature.

J.G. Morris et al. (2005) compared the effects of the endurance exercise in hot environment at different times of the day (morning and afternoon). Compared to afternoon exercises to morning exercises, fatigue more quickly occurred in afternoon exercise. The reason of that was connected to initial body temperature of the subjects.

Maintaining of homeostasis, human body required to keep body temperature in a certain level (36.9 ± 0.5 ^oC) (N. Altareki et al, 2009). This thermal regulation is much more important and difficult during exercise. There are many factors which affect the thermal regulation, some of them are maxVO_2 , body weight, body mass index, body fat %, body fluid % and basal metabolic rate. In this study, BMI , all parameters were affected from exercise but differences in training methods did nor show different effect against the above mentioned parameters (table 4).

One of the most important differences between individuals is BF %. The amount of fat is extremely effective in heat transfer by conduction and blood flow (M. Tunç, 2004).

At the end of the study both training methods effected, BW, BMI, BF%, Bf %, and BMR (table 4). Especially body fluid percent (Bf%) is very important for body. Normal Bf % range is known as 55 – 66 %.

D.A. Judelson et al. indicated that the athletes who started the endurance exercise with good body fluid level has better hormonal regulation in their body than the athletes with less body fluid level.

Consequently, the results showed that IRT was more beneficial in adaptation heat environment both training methods caused significant increase in maxVO_2 but body temperature further increased during CRT. Starting the exercise with low body temperature can facilitate adaptation to heat environment. Increment in body temperature may cause early exhaustion especially in CRT. Moreover from forth week of the training program, significant increases were not observed between pre and post-test scores of IRG.

In this study, except BMI, all parameters were affected from exercise but the differences in training methods showed different effect on above mentioned parameters.

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THE EFFECTS OF SWIMMING EXECISE AT 35°C WATER AND L-CARNITINE ON BLOOD CELLS OF MICE

Çoksevim Bekir[1], Sarıtaş Nazmi[1], Pepe Osman[1], Akdoğan Hakan[1] Büyükipekçi Serdar[1],
[1]Erciyes University Physical Education and Athletics Collage, Kayseri / TURKEY
Email: coksevim@erciyes.edu.tr / 08.03.2010 / 19.03.2010

Abstract

Objective: We aimed to research the effects of swiming exercise that's water temparature35°C on blood cells of mice administred exhausted exercise.

Methods and procedures: It was used 48 male mice of the type of balb/C in this research. Mice in research were divided into four groups consist of non-training (n:12), swiming training (n:12), practical (n:12), and unpracticle (n:12) L-carnitine. L-carnitine as phamalogical agent was used the dose 100mgr/kg (0.4ml) to experiment groups. It was given saline solution at the same volume of L-carnitine to control group. The mice were swum until exhaustion in the morris water tank at 35°C ambiant .

Swimming exercise was applied during three weeks. Both control group and experiment group mice were measured blood parameters of their pre and post measurements. Blood samples (0.5ml) was taken twice from tail veins of the control and experiment mice during experiments.The blood cell parameter findings obtained by the blood cell counter device. All mice outenasied by eter inhalation long period after from experiment three weekly. All data for the exercise-trained groups were compared to the sedentary groups using ANOVA. The statistical significance among groups were excepted at $p < 0.05$.

Results: The data that's erythrocyte, hemoglobin, haematocrit and RDW, MPW, PDW were not founded significantly ($p>0.05$), when it was compared to the findings of control group with only swimming group. The values of leukocyte, erythrocyte, hemoglobin, RDW and trombocyte parameters were founded differences between two groups significantly ($p<0.05$) when it was compared to the findings of the control group with experiment group is swimming and taking l-carnitine. The values of MCV, PLT and PCT were found differences between two groups significantly ($p<0.05$) when the experiment group that's both swimming exercise and taking l-carnitine compared to with only swimming group.

Discussions and conclusions: The animals' performance exhaustion swimming exercise at 35°C water temperature obtained very low effects than 20°C water temperature on hematologic parameters of mice.It was conclude that data were found because of these factors did the swimming training and the temperature of water near to body heat, no effects of cold stress and the other factors

Key words: L-carnitine, Swimming training, Mouse Training.

Introduction

Swimming sports who are exposed to body temperature heat or sportive activity in hot environments may be in bad condition of heat stress. Exposure to diffrent heat can result in iportannt problems. Overheat stress can result in heat stroke, heat exhaustion, heat cramps, or heat rashes. Inadeqate heat levels can also decrease in the athletic performance. It is very important the effects of environmental factors on athletic performance. The athletic performance affects very bad to have inadequat body temperature in all different areas. Water temperature impacts to performance levels in the range of important (K. Tokizawa et al. 2010, R. Greger, U. Windhorst 1996, T.J. Doubt, 1991). The water temparature that changes to body tempererature 0,5°C is very effective on cardivascular performance levels and so the athletics peformance is being influenced negatively. There is many literatuture about the effects of different environmental temperature on functionel structure (D. Weinert, 2007, J. Bittel, 1992). It has to use more energy. L-Carnitine is very important to use for the mitokondrial energy production that increase during exercise at the brain, liver and kidney (L.A. Calò, 2008, S. Baptista 2008, V. Marken et al. 2003). Endurance sports affect on energy consumption and macrophage and these state obtains many advantage with both beta oxidation of fetty acits and immunity (J. Himms-Hagen, 1996, G.J. Icheng, 1990). Low temparature, humidity, body composition and other factors are negative effects on performance (T.J. Doubt, 1991, J.P. Wehrlin, 2006, P. Robach, 2005). The environmental and intrinsic factors stimulate to erythropoiesis. Swimming exercise affects also haemopoietic activity

during physical activity (L.A. Calò, 2008, W. Aoi, 2004, D. Weinert, 2006). We aimed with in this study that is to demonstrate many different effects of swimming at 35°C water temparature with using L-carnitine on mice blood parameters and swimming performances.

Materıal and method

This research was done in Erciyes University the center of experimental research center. It was used in our research 60 male mice of the type of balb/C and tuwelve mountly age in this research. The mice were devided into four groups consist of 1.group; control sedantery group(C1), 2.group; only swimming group(C2), 3.group;taking salin solution % 0.9 = 0.4ml(D1), 4.group; taking L-carnitin 100mgr(D2). All groups were formed with tuwelve mouse. The salin solution (%0.9Nacl) and L-carnitine (Santa Farma-l-cartine/1gr-3ml) were given at the same volume (0.4ml) by intrperitoneal (IP) injection. The mice were swum until exhaustion in the morris water tank at 35°C ambiant. The mice were swum Swimming exercise was applied during three weeks. Both the control groups and experiment groups at mice as pre-post measuring were tested blood parameters of their red blood cell (RBC), white blood cell (WBC), haemoglobine (Hb), haematocrite (HCT), mean corpuscular volume (MCV), mean corpuscular haemoglobine(MCH), mean corpuscular haemoglobine concentration (MCHC), platelet (PLT), platocrite (PCT) with the animals's swimming time(ST) and body temparature (BT). Blood samples was taken twice during experiments from all mice's tail veins and v.subclavia (0.5ml). .The blood cell parameter findings obtained by the blood cell counter device(CRP Counter, LC-178CRP). All mice outenasied by eter inhalation long period after from experiment three weekly. The statistically analysis of findings were evalueted as means ± SEM. Data for the control groups and experiment groups were compared by using one-way anova. Statistical significance of diffrences among groups were evaluated at $p < 0.05$

Results

While meaningful difference were found at the RBC parameter at all groups which performed swimming excercise according to sedantery group ($p<0.05$), meaningful difference were found between swimming+SF performed and swimming+ L-carnitine performed groups ($p<0.05$) While meaningful difference were found between sedantery group and with other groups increasing in favour of swimming participated group, meaningful differences were not found between groups which performed excercise ($p>0.05$). Hemoglobin and hematocrit levels of groups which performed swimming excercise, were meaningfully increased according to sedantery group ($p<0.05$) While meaningful differences were found at the MCV parameter between sedantery and all other groups($p<0.05$), Meaningful differences were not found between groups which performed swimming excercise($p>0.05$). Meaningful differences were found at the MCH and MCHC parameters in swimming performed groups according to sedantery group ($p<0.05$). While it was not found meaningful differences between swimming performed groups($p>0.05$), The differences which were occured in L carnitine performed group, were meaningful($p<0.05$) While meaningful differences were found at the PLT and PCT parameters in swimming performed groups according to sedantery group ($p<0.05$), Meaningful increases were found between swimming+ SF performed and swimming+ L carnitine performed groups($p<0.05$) In 35˚C swimming water, meaningful difference were found at the rectal temprature parameter of mice in favor of sedantery group ($p<0.05$), Meaningful differences were not found between groups which performed swimming excercise($p>0.05$).

The mice is performed swimming exercise in the 35°C water temparature under laboratory condition. The measurable findings are tested these parameters are red blood cell (RBC), white blood cell (WBC), hemoglobin (Hb), hematocrit (Hct), the erythrosite parameters that are mean corpuscular volume (MCV), mean corpuscular hemoglobine (MCH), mean corpuscular hemoglobine concentration (MCHC), platelet (PLT), Plateletcrit (PCT)

Table 1: The evaluation of some blood parameters in mice at swimming water heat 35°C.

Parameters	C_1 n:12	C_2 n.12	D_1 n:12	D_2 n:12
RBC	**9.4±0.3**	**8.4±0.4**	**9.3±0.4**	**9.5±0.5**
WBC	**5.5±0.3**	**6.7±3.0**	**7.1±2.1**	**7.8±1.0**
Hb	**15.6±0.4**	**12.7±0.5**	**14.0±0.5**	**12.8±1.0**
Hct	**46.3±2.0**	**37.5±1.6**	**43.2±2.6**	**41.6±3.21**

C1:Sedantery, C2: Only swimming D1: Taking Salin solution D2:Taking L-Carnitine

Table 2. The comparison of mice's eryhtrocyter parameters at 35°C

Parameters	C_1	C_2	D_1	D_2
MCV	**44.3±0.7**	**44.8±0.8**	**44.2±0.6**	**45.6±1.4**
MCH	**14.9±0.2**	**15.2±0.1**	**14.9±0.1**	**15.2±0.3**
MCHC	**32.9±0.2**	**33.4±0.6**	**33.8±0.7**	**33.4±0.9**
PLT	**470.1±225.1**	**623.1±243.0**	**802.0±102.7**	**729.6±181.3**
PCT	**0.23±0.1**	**0.35±0.0**	**0.45±0.0**	**0.39±0.0**

C1:Sedantery, C2: Only swimming D1: Taking Salin solution D2:Taking L-Carnitine

Table 3: The findings of the body temparature and the swimming time at water heat 35°C

Parameters	C1 n:12	C2 n:12	D1 n:12	D2 n:12
Body Temp(°C)	38.9±0.0	38.6±0.0	38.8±0.3	38.7±0.2
Swim. Time (min)	----------	76.3±2.6	82.5±2.1	91.4±5.3

Dicussion and conclusion

It has been increased in cardivascular response during swimming exercise because of increasing water temparature. The swimming exercise to be done in the body temperature levels affect vital function related exercise intensity. The increased of 1°C body temperature for reason of water temperature has increase heart rate as much as 10-15 pulse/min. The oxygen consumption and energy production have increase by reason of physical and emotional stress. In this research, the mice erytrosite levels increased in all groups the performed swimming exercise. The erythrocyte values rised for reason of erythropoiesis during swimming exercise three weekly. Erythrocyte quantity was found more levels In the mice of taking L-carnitine. Haemoglobin and haematocrite levels have also increase the cause of rised erythrocyte levels. There is also literature the sustaining this point of view.

In the groups of taking L-carnitine were obtained in the erythrocyte parameters inflation. We have thought that this increasings are collareted by physical activity or swimming exercise. There is papers in the related to literatures(L.A. Calò, 2008). The erythrocyter parameters that are MCV, MCH and MCHC levels have increase in the performed swimming exercise of all groups by swimming exercise and erhytropoiesis but, the increases in resultants eryhtrocytic parameters in the mice groups of taken L-carnitine is by reason of L-carnitine for affected intracellular metabolic activity. The phsical activity or swimming exercise affected in the increased important levels therefore, ıt has been thought that exercise is to come about the acceleration of coagulation mechanism (A. Kuroshima, 1992). The lengthening of mice's swimming time in the water temperature 35°C is by reason of related the metabolic rate level therefore, the exhaust of mice is to prolong because of increasing inntracellular energy production. Despite the swimming exercise time has been lengthened for energy production it has not been increased important body temperature. As a result; It has been determined the positive effects on endurance performances of swimming mice that the results are performed at the water heat near the body temperature in the swimming activity which has been got optimal responses because of oxygen consumption and energy production.

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THE RELATIONSHIP BETWEEN LOCUS OF CONTROL, SELF-ESTEEM AND GOAL ORIENTATION, MOTIVATIONAL CLIMATE IN BADMINTON PLAYERS

Eylem Gencer
School of Physical Education and Sports, Ahi Evran University, Kirsehir /TURKEY
Email: eylemg@gmail.com / 02.03.2010 / 19.03.2010

Abstract

Purpose. The purpose of this study is to research the relationship between locus of control, self-esteem and goal orientation, motivational climate in badminton players.

Methods. (Quantitative approach) The research was carried out in Badminton Turkey Clubs Championship where 12 clubs and 87 athletes participated in 2009. 56 badminton athletes (42 national, 14 non-national) that participated in Badminton Turkey Clubs Championship in 2009 whose mean age 18.78±3.46 constitute our research sample. Wingate Sport Achievement Responsibility Scale that was developed by G. Tannenbaum and G. Weingarten (1984), Rosenberg Self-Esteem Scale that was developed by M. Rosenberg (1965), The Task and Ego Orientation in Sport Questionnaire (TEOSQ- J.L. Duda & J.G. Nicholls, 1992) and The Perceived Motivation Climate Questionnaire (PMCSQ J.J. Seifriz, J.L. Duda, & L. Chi, 1992; M.D. Walling, J.L. Duda, & L. Chi, 1993) were used to gather tha data. The data were analyzed by using SPSS 17.0 programme and the techniques such as desriptive statistics and bivariate correlation.

Results. Results showed that there is positive and significant relationship between locus of control and mastery climate ($r=0.357$, $p<0.01$), there is negative and significant relationship between locus of control and performance climate ($r= -0.504$, $p<0.01$), there is no significant relationship between locus of control and ego, task orientation. There is positive and significant relationship between self-esteem and mastery climate ($r=0.398$, $p<0.01$), there is positive and significant relationship between self-esteem and ego orientation ($r=0.513$, $p<0.01$), there is no significant relationship between self-esteem and performance climate, task orientation.

Conclusion. According to these results it can be said that the higher a badminton athletes' mastery climate is, the more internal his/her locus of control becomes, the higher a badminton athletes' performance climate is, the more external his/her locus of control becomes, the higher a badminton athletes' ego orientation is, the higher his/her self-esteem becomes, the higher a badminton athletes' mastery climate is, the higher his/her self-esteem becomes.

Keywords: locus of control, self-esteem, goal orientation, motivational climate.

Introduction

Achievement goal theory provides a basic framework for examining the motivational processes in sport (C. Ames, 1984; J.G. Nicholls, 1984, 1989). This theory states that an individual's achievement goals and his/her perceived ability interact to influence achievement-related behaviors. Particularly, tiie individual's goal perspective will affect self-evaluations of established ability, effort, and attributions for success and failure, and these self-evaluations may affect state anxiety (J.L. Duda & J.G. Nicholls, 1992; J.G. Nicholls, 1984).

The Achievement Goal Theory is a theory that was developed by J.G. Nicholls (1984) in the context of educational achievement situations. A few years later the theory started to be used in the fi eld of Sport Psychology (J.L. Duda, 1987) as well. The theory explains achievement-motivated behaviours on the bases of task and ego orientation that are presumed to be stable personality predispositions. The Achievement Goal Theory purports that people who appraise success on the basis of self-improvement and mastery of the undertaken task(s) are exhibiting task orientation. For example, swimmers who focus on the improvement of their technical form and lap times are showing task orientation. In contrast, individuals who appraise success by comparing their own performance or results to those of others are showing ego orientation. For example, swimmers who primarily focus on winning and beating opponents regardless of time or technique are manifesting ego orientation (J.G. Nicholls, 1992).

Following the investigation of goal orientations, research progressed to investigating athletes' perceptions of the sporting environment in relation to moral variables. D.L.L. Shields, B.J.L. Bredemeier (1995) have identified motivational climate as a contextual influence on an individual's sporting morality. Motivational climate has been distinguished into mastery (or task-involving) and performance (or egoinvolving) climates (C. Ames, 1984). Mastery climate is salient when significant others (e.g. coach) create an environment in which success and failure are defined in terms of skill mastery and individual improvement. A performance climate is salient when significant others create an environment in which success and failure are defined in normative terms, with an emphasis on outperforming team-mates and opponents. In this study, the terms ''task-involving'' and ''ego-involving'' will be used to refer to the two types of motivational climate. As the effects of motivational climate occur through individuals' perceptions, sport psychology research has typically examined the perceived motivational climate. In line with J.G. Nicholls' (1989) tenet of ego orientation leading to a lack of concern about justice and fairness, similar consequences are expected with an ego-involving climate.

The importance of the perceived motivational climate (PMC), the situational structures seen by the athletes as emphasized in a particular setting, has been highlighted by J.G. Nicholls (1989). It is theorized that the PMC is composed of two goal structures. The mastery climate is a task-involving climate that emphasizes the process of competition and skill development. Performance climate is an ego-involving climate that focuses on tiie competitive outcome. The PMC may be fostered by the coach, parents, team or a combination of these factors. The motivational climate perceived by the athlete has been related to the achievement goal orientations (AGO) held by the athlete. For example, a perceived mastery climate has been related to task orientation, while a perceived performance climate has been related to an ego orientation (S.A. White et al., 2004). Achievement goal theory provides a basic framework for examining the motivational processes in sport (C. Ames, 1984; J.G. Nicholls, 1984, 1989). This theory states that an individual's achievement goals and his/her perceived ability interact to influence achievement-related behaviors. Particularly, tiie individual's goal perspective will affect self-evaluations of established ability, effort, and attributions for success and failure, and these self-evaluations may affect state anxiety (J.L. Duda & J.G. Nicholls, 1992; J.G. Nicholls, 1984).

Self-esteem (sometimes called self-evaluation, self-worth), according to R.F. Baumeister (1990), may be defined as the positivity of the person's evaluation of self. N. Peart et al. (2005) adds the evaluation of self within the context of the person's experiences and the environment in which he/ she lives. It is also described as a sense of self-worth. In other words, this is an emotional side of the self-system, which is created by one's self-concept. These two components (self-esteem and self-concept) can be distinguished only theoretically, because emotional experience is always connected with reflective content, which is applied by a person to his\herself. According to P. Macek (2003), self-esteem applies to all the characteristics the adolescent considers as important and relates them to his/her own self. Self-esteem, i.e. generalized feelings of self-worth that are not specific to a particular situation, but which apply to many activities or areas of life and predispose the subject to view new activities in particular ways (P. Macek & L. Lacinova, 2006). Self-esteem is an indicator of one's emotional side and adaption to life difficulties, has a relation to the subjective well-being and happiness and is connected to positive independence, leadership, adaptability, and stress resistance; moreover, it is linked to involvement in health care activities. A low level of self-esteem is connected to mental disorders, including depression, anxiety and phobia (K.R. Fox, 2000).

People typically assign causes to their personal behavior and the behavior of others. These causal attributions, based largely on past outcomes and attitudes toward the outcomes (B. Weiner, 1979), have relevance for future behavior (e.g., whether a person will try again after failing) and to affective responses such as pride or shame (B. Weiner, 1981). Various models have been established to help conceptualize the naive responses given by the actor (athlete, student, etc.) regarding the responsibility and reasons for success or failure. The examination of an athlete's enduring attitudes or expectations (based on their attributions) can help predict the athlete's dispositions toward success and failure and has relevance for both the researcher and coach in that the athlete's typical mode of behavior may be determined, in part, before a contest. This more enduring attitude would probably be interrelated but not necessarily parallel to causal attributions made after a specific outcome (W. Rejeski & L. Brawley, 1983).

In this research it was purposed to research the retationships between locus of control and goal orientation, motivational climate and also research the retationships between self-esteem and goal orientation, motivational climate.

Method

Participants: 56 badminton athletes (42 national, 14 non-national) that participated in Badminton Turkey Clubs Championship in 2009 whose mean age 18.78±3.46 constitute our research sample.

Instruments: The Task and Ego Orientation in Sport Questionnaire (TEOSQ – J.L. Duda & J.G. Nicholls, 1992), This questionnaire contains 13 items with two subscales determining task (e.g. "*I learn a new skill by trying hard*") and ego (e.g. "*I am the best*") orientation. All the items were rated on a 5-point Likert scale that ranged from 1 (strongly

disagree) to 5 (strongly agree). The reliability and validity of Turkish versions of The Task and Ego Orientation in Sport Questionnaire was made by T. Toros (2001).

The Perceived Motivational Climate in Sport Questionnaire (PMCSQ – J.J. Seifriz, J.L. Duda, & L. Chi, 1992; M.D. Walling, J.L. Duda, & L. Chi, 1993). It was used to assess the athletes' perception of the motivational climate in their sport, or the degree to which their training environment is mastery-oriented (task involvement) and performance-oriented (ego involvement). Sample items included: *Trying hard is rewarded*, or *Most of the players get to play in the game* (mastery orientation) and *Playing better than team-mates is important*, or *Doing better than others is important* (performance orientation). Participants were required to answer the items on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The reliability and validity of Turkish versions of The Perceived Motivational Climate in Sport Questionnaire was made by T. Toros (2001).

Rosenberg Self-Esteem Scale (RSES) The RSES was developed by M. Rosenberg (1965) and adapted to Turkish samples by F. Cuhadaroglu (1986). A 10-item brief RSES refers to the global self-worth of individuals, rating on a 4-point Likerttype scale (1 = *strongly disagree* to 4 = *strongly agree*). Higher scores on the scale items indicate higher levels of self-esteem. Cuhadaroglu reported test-retest reliability coefficients of .71 during a 4-week period on the Turkish version.

Wingate Sport Achievement Responsibility Scale (WSARS) (G. Tenenbaum, D. Furst, G. Weingarten, 1984) was designed to assess the direction of causal attribution in sportevents. The items in the questionnaire present a wide range of positive and negative events in sport settings such as interaction with the coach, teammates, and audience, and perceived successful and unsuccessful athletic performance. The WSARS includes two versions, one for team athletes and the other for individual sport athletes. Each version is divided into two independent dimensions: successful events and unsuccessful events. Each item (event) contains two alternatives, one external and one internal. The alternatives present a variety of attributions such as ability and talent (internal, stable, and uncontrollable), coach, audience, task difficulty, and teammates (external, stable, and uncontrollable), and immediate effort (internal, unstable, and controllable). The athlete is requested to rate his or her opinion on a 5-point continum with respect to the alternatives, ranging from " O " (externality) to " 5 " (intemality). The higher the score, the more internal the athlete perceives successful or unsuccessful events related to sport. The reliability and validation of of Turkish version of Wingate Sport Achievement Responsibility Scale was made by S. Hasirci (1990).

Procedure: Four instruments were administered to all participants in the Badminton Turkey Championship. Researchers provided verbal information on how to respond to items in each questionnaire.

Data Analysis: The data were analyzed by using SPSS 17.0 programme and the techniques desriptive statistics and bivariate correlation.

Results

Table 1: Relationship between ego orientation and self-esteem.

		Self-esteem
Ego orientation	r	,513**
	P	,000
	N	56

The relationship between ego orientation and self-esteem was tested by bivariate correlation analyse technique. It was found that there is positive, medium and significant relationship between ego orientation and self-esteem ($p<0.01$).

Table 2: Relationship between task orientation and self-esteem.

		Self-esteem
Task orientation	r	,216
	P	,109
	N	56

The relationship between task orientation and self-esteem was tested by bivariate correlation analyse technique. It was found that there is no significant relationship between task orientation and self-esteem ($p>0.05$).

Table 3: Relationship between performance climate and self-esteem.

		Self-esteem
Performance climate	r	-,152
	P	,263
	N	56

The relationship between performance climate and self-esteem was tested by bivariate correlation analyse technique. It was found that there is no significant relationship between performance climate and self-esteem ($p>0.05$).

Table 4: Relationship between mastery climate and self-esteem.

		Self-esteem
Mastery climate	r	,398**
	P	,002
	N	56

The relationship between mastery climate and self-esteem was tested by bivariate correlation analyse technique. It was found that there is positive, medium and significant relationship between performance climate and self-esteem ($p<0.01$).

Table 5: Relationship between ego orientation and locus of control.

		Locus of control
Ego orientation	r	-,092
	P	,501
	N	56

The relationship between ego orientation and locus of control was tested by bivariate correlation analyse technique. It was found that there is no significant relationship between ego orientation and locus of control ($p>0.05$).

Table 6: Relationship between task orientation and locus of control.

		Locus of control
Task orientation	r	-,049
	P	,721
	N	56

The relationship between ego orientation and locus of control was tested by bivariate correlation analyse technique. It was found that there is no significant relationship between ego orientation and locus of control ($p>0.05$).

Table 7: Relationship between performance climate and locus of control.

		Locus of control
Performance climate	r	-,504**
	P	,000
	N	56

The relationship between performance climate and locus of control was tested by bivariate correlation analyse technique. It was found that there is negative, medium and significant relationship between performance climate and locuf of control ($p<0.01$).

Table 8: Relationship between mastery climate and locus of control.

		Locus of control
Mastery climate	r	,357**
	P	,007
	N	56

The relationship between mastery climate and locus of control was tested by bivariate correlation analyse technique. It was found that there is positive, medium and significant relationship between mastery climate and locuf of control ($p<0.01$).

Discussion and conclusion

The purpose of this study was to research the relationship between locus of control, self-esteem and goal orientation, motivational climate in badminton players. It was found that there is positive and significant relationship between locus of control and mastery climate ($r=0.357$, $p<0.01$), there is negative and significant relationship between locus of control and performance climate ($r= -0.504$, $p<0.01$), there is no significant relationship between locus of control and ego, task orientation. There is positive and significant relationship between self-esteem and mastery climate ($r=0.398$, $p<0.01$), there is positive and significant relationship between self-esteem and ego orientation ($r=0.513$, $p<0.01$), there is no significant relationship between self-esteem and performance climate, task orientation. According to these results it can be said that the higher a badminton athletes' mastery climate is, the more internal his/her locus of control becomes, the higher a badminton athletes' performance climate is, the more external his/her locus of control becomes, the higher a badminton athletes' ego orientation is, the higher his/her self-esteem becomes, the higher a badminton athletes' mastery climate is, the higher his/her self-esteem becomes. M. Kavussanu and D.L. Harnisch (2000) found that task orientation was a significant influence on global self-esteem, and D.C. Treasure and S. Biddle (1997) found that both orientations influenced physical self-worth. Theoretically, one would assume that self-esteem would be positively related to perceptions of a mastery-involved climate, where evaluative systems promote self-referenced evaluative standards (S. McArdle & J.L. Duda, 2002). In contrast, social comparison processes inherent in ego climates are thought to provide recurrent threats to self-esteem. Consistent with this prediction, several studies have reported that mastery-involving climates are positively associated with athletes' self-esteem, whereas ego-involving climates are negatively related to self-esteem (M. Reinboth & J.L. Duda, 2004; B.W. Walker, G.C. Roberts, & D. Harnisch, 1998). To test this relation with the MCSYS, we administered the Washington Self-Description Questionnaire (F.L. Smoll, R.E. Smith, N.P. Barnett, & J.J. Everett, 1993), a measure of children's global self-esteem, to Sample 3. Consistent with the hypothesis and with previous empirical findings, mastery climate scores correlated positively and significantly with self-esteem,whereas MCSYS ego scores correlated negatively with self-esteem scores. A. Aktop, K.A. Erman (2006) found that there was a significant positive correlation between power motive, motive to achieve success and self-esteem and there was a significant negative correlation between trait anxiety and self esteem, and they emphsized that psychological factors should be considered as much as other factors in talent identification programs. Furthermore, achievement motivation and self-esteem are important trait having permanent character for *sport* attainment and success. M.J. Navarre (1999) found that collective efficacy perceptions were positively related to mastery orientations and negatively related to performance orientations. Meanwhile, there was no significant relationship between perceptions of self-efficacy and motivational climate.

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THE COMPARASION OF STRESS AND BURNOUT LEVELS OF 13-15 AGED SPORTMEN BLINDS

Kaya Mustafa[1] Yardımcı Mehmet[1], Sarıtaş Nazmi[1], Kaya Emire Özkatar[1], Pepe Osman[1]
[1]Physical Education And Sport College Of Erciyes University , TURKEY
Email: nsaritas@erciyes.edu.tr / **05.03.2010 / 19.03.2010**

Abstract

Purpose. At this study, it was aimed to investigate the stress and burnout levels of 13-15 aged sportmen blinds.

Material and Method. Kayseri Blind Handicapped Primary Education Scholl Sport club's 13-15 aged, B3 level blind handicapped 15 sportmen as test group, from the same school 13-15 aged, B3 level blind handicapped 15 sedentary as control group were joined volunteerly. Test and control groups were performed stress inventory included 10 questions. These questions were prepared the five likert type included "never=1, rarely=2, sometimes=3, often=4, always=5". Test and control group were performed Maslach Burnout inventory(MBI). MBI had 22 questions which evaluated burnout in 3 dimensions, were Emotional Exhaustion (EE), Depersonalization (D) and Personal Accomplishment (PA). Datas were recorded on computer by using SPSS 13.0 packet programme. Aritmetic mean, standart deviation, standart error, minimum and maximum values were used for presentation of datas. For statistical analysis, independent-t test was performed. The statistical significance wase set at $p < 0.05$.

Results: As a result of the study, while no meaningful difference was found at age, emotional exhaustion, depersonalization, personal accomplishment and stress avarage ($p>0.05$), a non-statistical decrease of emotional exhaustion, depersonalization, personal accomplishment and stress avarage parameters in favour of blind handicapped sportmen. We concluded that sportive activities had a positive effect on handicapped people's stres and butnout levels even if it was a little

Key Words: Blindness, Stress, Burnout.

Purpose

Handicapped is described as a person which loses one of their physical, mental, sensorial, and social abilities because of any reasons from birth or later, has difficulties about adapting to social life and daily necessity and needs protection, care, rehabilitation, counseling and support services (N.M. Çakmak, 2008).

It is an accepted reality that Blind handicapped people has a special position according to comparement to other illnesses and handicappeds. This special position shouldn't be depend on seen rate of handicapped people's in society, it is depend on hardness and complexity problems belong to this handicapped groups' physicologic, improvemental and educational (T. Günaydin, 1993).

Blindless can be described in two ways commonly. These are legal and educational description of blindless. Legal describtion which is used by medicine area, is eye's losing 10% of vision power. (Y. Özsoy, M. Özyürek, S. Epirek, 1998)

Stres is a very complex concept which is not easy to descript, Stress is first defined by H. Selye (1977) while searching for female hormones. Before Selye, the term "stress" was used to describe a mental strain or unwelcome. Walter Cannon defined stress as "an external factor affecting bodily homeostasis". Cannon, introducing the term "homeostasis" and "fight or flight" response to stres is believed to do the first researches about stres (B. Sayiner, 2006)

H. Selye (1977) is described stres as body's uncertain reaction to any force which is done itself. (E. Göçet, 2006)

Burn out was put forward as concept by H. Freudenberger at 1974. (R. Balay, A. Engin, 2007)

Burnout syndrome can cause a general decrease of work quality and can be associated to important psychological effects, including depression, anxiety, conflicts with colleagues, indifference and cynicism with patients, increasing alcohol/drugs intake, family strain, relationship breakdown and increased irritability (B.J. Kelly, L. Todhumter, B. Raphael, 1996). Burnout is described as emoutional exhaustion, depersonalization and Personal Accomplishment syndrome of human because of intense relations with other. (C. Maslach, 1982).

Another description is "failure, inside out burn, becoming worn out by the over-expenditure of energy, force or resources"(Juliana Inhauser Riceti Acioli, J. Barboza, R. Beresin, 2007). The aim of this study is to compare the stres and burnout levels of 13-15 aged sportmen and sedanteries.

Method

Participants

At this study, Kayseri Blind Handicapped Primary Education Scholl Sport club's 13-15 aged, B3 level blind handicapped 15 sportmen as test group, from the same school 13-15 aged, B3 level blind handicapped 15 sedentary as control group were joined volunteerly. Test group were trained athletics and goal-ball 2 hours a day, 3 times in a week and totally 2 years. Control group weren't performed any sport branch.

Measure

At this study, volunteers were performed 3 questionnaires volunteerly. These questionnaires were demographic properties, stres inventory and maslach

burnout inventory. Demographic properties were included age, experiences, educational level, sport branches, stress inventory was used from Odabaşı's (2006) thesis included 10 questions. These questions were prepared the five likert type included "never=1, rarely=2, sometimes=3, often=4, always=5". (Y. YALÇIN, 2009, C. Kyriacou, P Y. Chien, 2004)

The Maslach Burnout Inventory (MBI) was developed by Maslach and Jackson (1981). (R. Balay, A. Engin, 2007, H. Taşdöven, 2005).

MBI has 3 dimensions. The three dimensions of the inventory are: Emotional Exhaustion (EE) consisting of 9 items, Depersonalization (D) consisting of 5 items and Personal Accomplishment (PA) consisting of 8 items (R. Balay, A. Engin, 2007, J. Dorman, 2003).

These, three dimensions, constitute burnout that: emotional exhaustion, which refers to feelings of being depleted of one's emotional resources, representing the basic individual stress component of the syndrome; depersonalization, which refers to negative, cynical, or excessively detached responses to other people at work, representing the interpersonal component of burnout; and reduced personal accomplishment, which refers to feelings of decline in one's competence and productivity and to a lowered sense of efficacy, representing the self-evaluation component of burnout (C. Maslach, 1993)

Data Analysis

Data was recorded on computer by using Package programe which is called SPSS13.0. While showing datas, mean, standart deviation, standart error of mean, avarage, minimum value, maxmim value were given. Kolmogorow Smirnov test were performed whether normal range or not. Normal range was found. Independent- t test was performed for comparing independent groups. Meaningful level was accepted as 0.05.

Results

Table I. Comparement of Burnout and Stress Levels of Blind Handicapped Athletes and Setanteries

Parameters	Groups	n	X_{min}-X_{max}	X±SD	Sx	t	p
Emotional Exhaustion (EE)	Athlete	15	7-20	12,80±4,52	1,17	-1,045	$0,305^{ns}$
	Sedanter	15	7-21	14,47±4,21	1,09		
Depersonalization (D)	Athlete	15	5-17	10,33±3,92	1,01	-1,792	$0,084^{ns}$
	Sedanter	15	7-21	12,80±3,61	0,93		
Personal Accomplishment (PA)	Athlete	15	10-35	24,27±7,81	2,02	0,250	$0,805^{ns}$
	Sedanter	15	16-34	23,67±5,02	1,30		
Stres Avarage	Athlete	15	1,9-3,8	2,45±0,52	0,13	-1,057	$0,300^{ns}$
	Sedanter	15	1,2-3,6	2,68±0,65	0,17		

*P<0.05, ns: not significant, X±SD: mean ± standart deviation, Sx: Standart error of mean, Xmin: Minimum value, Xmax: Maxmim Value

No meaninigful difference were found at the Emoutional Exhaustion, Depersonalization, Personal Accomplishment and Stress Level of Handicapped Athletes and setanteries(p>0.05).

Discussion And Conclusion

Sport is a concept which contributes to individuals living healthy, increases their productivity and provides their social lifes. If sport was done as professional, sportmen could be one of the most famous person of societies. Trainers' relationships with sportmen is very important for reaching to aims (Y. Yalçın, 2009). This situation sportmen will have treasure from their participated sports so that, blind handicapped sportmen's stress and burnout levels will be minimum.

While meaningful differences weren't found blind handicapped sportmen's emoutiona exhaustion, depersonalization, personal accomplishment and stress parameters, (p>0.05), not significant decrease were found at emoutional exhaustion, depersonalization and stres avarages in favor of blind handicapped sportmen.

Even if there were no meaningful difference, this decrease in favour of blind handicapped sportmen. We think that this data can create possible new article ideas which are on more volunteers.

We think that blind handicapped which were participated this study, weren't all sportmen, is an important reason for getiing these results. Maybe recreational sportive excercise can effect their stres and burnout levels positively.

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ANGİOTENSİN-CONVERTİNG ENZYME POLYMORPHİSM İN ELİTE TAEKWONDO ATHLETES OF TURKİSH AND AZERBAİJAN TAEKWONDO TEAMS

Mehmet Günay[1], Melahat Kurtuluş Ülküer[2,]Çağrı Çelenk[1], Şakir Bezci[3], Kadir Gökdemir[1] Cecilia Gevat[4],Tahsin Kesici[5]

[1] Gazi University, School of Physical Education and Sports, Gazi University, Ankara, TURKEY

[2] Gazi University, Department of Pharmaceutical Microbiology , Faculty of Pharmacy, Ankara,TURKEY

[3]Pamukkale University, School of Sports Science and Technology, Denizli, TURKEY

[4] Ovidius University of Constanta, Faculty of Physical Education and Sport, ROMANIA

[5] TOBB Economics and Technology University, Ankara, TURKEY

Email: mgunay@gazi.edu.tr, 15.03.2010 / 22.03.2010

Abstract

A few attempts have been made to shed light upon the influence of genes in making an Olympic champion. The aim of our study is to elucidate the genetic differences among 18 athletes from National Turkish and Azerbaijan taekwondo teams. Athletes were defined as elite. Angiotensin converting enzyme (ACE) genotypes of athletes were analyzed by polymerase chain reaction technique (PCR) in this study.

The ACE gene is located on human chromosome 17 expressing three genotypes within the intron 16 of the related gene structure. These genotypes are classified as I and D alleles which are termed as insertion and deletion, respectively. Genomic DNA was isolated from peripheral blood and blood stain samples of control and sportsmen. First of all, the genotyping of ACE gene was performed by site specific ACE primers using PCR. To avoid mistyping, each sample found to have the DD genotype was amplified by inserting specific primers. As a result,18 samples including 2 II genotype, 11 ID genotype and 5 DD genotype were determined by conventional PCR. Allele frequencies were determined by gene counting. Genotype and allele frequencies between groups were compared by Chi-square test. P values of >0.05 were not considered statistically significant. There was no difference in ACE genotype frequencies between sedentary group and elit athletes.

Key words: Angiotensin converting enzyme (ACE), taekwondo, athletic performance, polymerase cahin reaction.

Introduction and research objective

Recent advances in genetic research have provided new opportunities for maintaining health and identifying athlete and persons. The development of technology for DNA sequencing and genotyping has allowed the identification of the individual genetic traits that contribute to athletic performance.

Human physical performance is determined by a variety of environmental and also genetic factors. Several studies have revealed that heredity is a strong component of endurance and phenotypes, and that a lot of genes are in the same way responsible for the normal functioning of metabolic pathways and processes which are necessary for a healthy state of an organism in addition to the athletic performance capacity. With regard to athletic performance, more than 200 genes and quantitative trait loci have shown some associations with exercise related phenotypes.

In many cases, the variants associated with performance traits and elite athlete status are common in general population. A common polymorphism in the angiotensin converting enzyme I gene (the ACE I/D variant) is the most crucial genetic variant in the evaluation of elite athlete status and performance-related traits (G.A. Sagnella et al., 1999). The ACE I/D polymorphism could also influence athletic performance via local effects on skeletal muscle function (A. Jones et al., 2003). Another study in this field points out that I allele increases endurance performance through an increase in skeletal muscle efficiency, because of effects on fibre type proportions (B. Zhang et al., 2003), whereas the D allele may enhance sprint/power activity through an increase in muscle strength, potentially via the muscle hypertrophic effects of increased angiotensin II (A. Jones et al., 2003).

This study aims at analysing the ACE gene I/D polymorphism representing the relationships with genotype and athletic performance in some athletes of the National Turkish and Azerbaijan taekwondo teams and sedentary groups.

Research methods and procedures

Subjects

The ACE I/D genotypes were determined in DNA samples from some athletes of the National Turkish and Azerbaijan taekwondo teams (18) and sedentary group (49). Blood samples were collected from blood stain of elite athletes and peripheral blood of sedentary group.

ACE genotyping

Genomic DNA was extracted from blood stain and peripheral blood by phenol-chloroform method (J. Sambrook et al., 1989). ACE genotype was determined by polymerase chain reaction (PCR) method.

Statistical analysis

Genotype and allele frequencies of elite athletes and sedentary group were compared by Chi-square test. ACE I/D genotype frequencies in athletes of the National Turkish taekwondo team and athletes of the National Azerbaijan taekwondo team were compared via Fisher's exact test. As theoretical frequencies in groups are under 5, the chi-square test was not applied.

Results

The ACE genotypes of 12 athletes from the National Turkish team, 6 athletes from the Azerbaijan taekwondo team and 49 subject from sedentary group were determined by PCR (Table 1). Genotypes were analyzed according to presence or absence of the insertion allele - II (homozygote for the insertion allele-490 bp), ID (heterozygote-490 bp and 190 bp) or DD (homozygote for the deletion allele-190 bp). All of DD genotypes were subjected to the second independent PCR amplification with a primer pair, which recognizes an insertion-specific sequence, due to the preferentially amplification of D allele in the heterozygote individuals. Each DD genotype was verified by a second PCR with primers specific to the insertion sequence (K. Lindpaintner et al., 1995).

Table 1- ACE I/D genotypes of the National Turkish and the Azerbaijan teakwondo team

	DD	ID	II	Total
Athletes	5	11	2	18
Sedentary group	17	24	8	49

Amplification products were shown on 2% agarose gel electrophoresis. ACE genotyping was determined according to presence or absence of insertion allele - I allele (490 bp) and D allele (190 bp) (Figure 1).

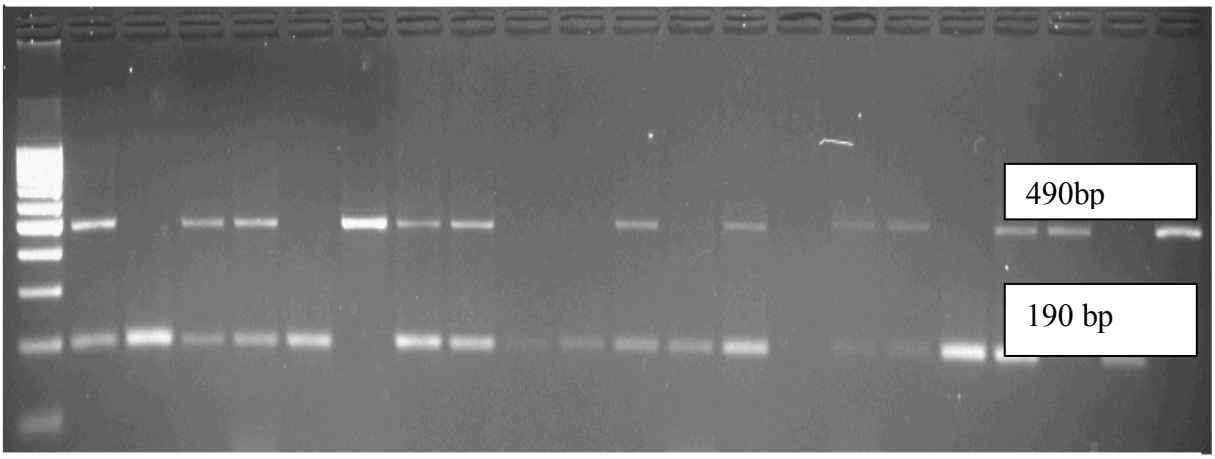

Figure 1. ACE I/D genotypes in the National Turkish and the Azerbaijan taekwondo teams and sedentary group. Lane 1-100 bp marker Lane 3,6,10,11,18,21- DD genotype Lane 2,4,5,8,9,12,13,14,16,17,19,20 ID genotype Lane 7, 22 II genotype

Genotype frequencies were calculated by direct counting of alleles one by one. ACE genotype frequencies of the sedentary group were compared with the genotype frequencies of the National Turkish and the Azerbaijan taekwondo teams. No statistically significant difference was observed in the comparisons made via Chi-square test ($p>0.05$) (Table 1).

Beside ACE I/D genotype frequencies were compared in some athletes of the National Turkish taekwondo team and athletes of the National Azerbaijan taekwondo team via Fisher's exact test. P values of >0.05 were not considered statistically significant (Table 2).

Table 2- ACE I/D genotypes of the National Turkish and the the Azerbaijan teakwondo team

	DD	ID	II	Total
Turkish teakwondo team	2	9	1	12
Azerbaijan teakwondo team	3	2	1	6

It was determined that DD genotype of elite athletes is 27.78%, II genotype is 11.11% and ID genotype is 61.11% in this study.

Discussion

Genetic studies related to taekwondo sport branch have rarely been observed. This study examines the distribution of insertion/deletion (I/D) polymorphism in the ACE gene among some athletes of the National Turkish and the Azerbaijan taekwondo teams. Studies in ACE I/D polymorphism, which determine performance traits and elite athlete status, are common. For instance, one of the studies in the literature indicated that the ACE I alelle has frequencies of more than 30% (G.A. Sagnella et al., 1999). The human ACE gene contains a polymorphism known as the presence (insertion, I) or absence (deletion, D) of a 287 base pair sequence in intron 16 (B. Rigat et al., 1990). The I alelle of the angiotensin-converting enzyme gene is associated with endurance performance; an excess occurs in elite distance runners, rowers and mountainers (G. Gayagay et al., 1998; H.E. Montgomery et al, 1998). Conversely, the D allele is associated with strength gain and increasing elite power-oriented performance.

As stated above, the purpose of this study is to determine the influence of ACE I/D polymorphism in athletic performance. In line with this aim, two different athletes group in, 12 of whom are elite taekwoondo athletes from the National Turkish taekwondo team and 6 of whom are from the National Azerbaijan taekwondo team were used as subjects of this study. These athletes were from various geographic origins, which may have affected genetic properties. In order to find out the differences between two groups of athletes ACE I/D genotype frequencies of athletes from the National Turkish taekwondo team and athletes from the National Azerbaijan taekwondo team were compared via Fisher exact test. As a result, no association between ACE I/D polymorphism and athletic performance of taekwondo athletes was found in this study ($p>0.05$). However, researches indicating that frequencies of the ACE I/D alleles and genotypes vary considerably across different ethnical groups exist in the literature (J. Barley et al., 1994, A. Foy et al., 1996, J.L. Rupert et al., 1999).

This study consists of a small group as subjects. There is no difference in ACE genotype frequencies between elit athletes and sedentary group. A smaller cohort was the limitation of this study. The efficiency of larger cohort might be useful in achieving accurate results. A lot of studies have explained some conflictions on the effectiveness of ACE I/D polymorphism and athletic performance. Although no significant differences between the athletes and sedentary group was found according the allele and genotype frequencies of ACE I/D gene in our results, many studies have also revealed that there may be an association between ACE I/D polymorphisms and enhanced physical performance (K.H. Myburg, 2003). However, some previous studies similar to the results of this study, mentioned above, have reported that there was no association between ACE I/D polymorphism and athletic performance (T. Rankinen et al., 2000, R.R. Taylor et al., 1999).

Conclusion: No significant relationship was found between some athlets of the National Turkish and Azerbaijan taekwondo teams and sedentary group. Further studies with a larger subject group are required in order to study the association between I/D polymorphism and athletic status.

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STATISTICAL ANALYSIS OF BALANCE AND ANTHROPOMETRIC VARIABLES OF MALE BASKETBALL PLAYERS, AGES 9-11

Olga Sevim, Ceren Suveren
Gazi University, School of Physical Education and Sports, Ankara, TURKEY
Email: sevimliolga@gmail.com / 02.03.2010 / 10.03.2010

Abstract

Basketball is a physically demanding team game, utilizing dynamic movements, such as jumping, shooting, passing, dribbling, rebounding, defending and running at different intensities and lengths of times. In order to effectively coordinate these movements and to achieve maximum potential, players must master balance, which is essential for success in any sport. Furthermore, anthropometric characteristics are one of the most significant factors that affect body movements and sports performance. The purpose of this study is to determine whether there is a relationship between body fat percentages and extremity segmental lengths with balance in 26 players, ages 9 to 11, of the Gazi University Junior Male Basketball team.

Each subject performed six different equilibrium measurements: 1) the transfering of weight from left foot to right foot and from right foot to left foot, 2) height, 3) weight, 4) skin fold measurements taken from 7 different body points, 5) length of full arm and leg, and 6) length of overarm. Body fat percentages were calculated according to the "Zorba Formula" (BF% = 0.99 + 0.0047 (body mass) + 0.132 (body fat thickness from 7 different points). Body fat measurements were taken with a Holtain brand skin fold calipper, length measurements with a Holtain tape measure and equilibrium measurements with a Lafayatte 16020 IRF/E stabilometer. By means of a statistical analysis (mean values,

maximum and minimum values, and standard deviation), the results showed that anthropometric measurements highly affect balance parameters.

To determine the parameters of balance and to develop training systems to minimize negative factors affecting balance, this study analyzed whether body fat ratios and extremity length of junior basketball team players of the Gazi University Sport Club were related with balance levels.
Key Words: Balance, Anthropometric, Basketball

Introduction

Basketball is a physically demanding team game with a variety of movements played by both sexes of all ages (H. Wissel, 2004, E. Uzicanin, 2008). These movements are based on running at different intensities and lengths of times, with sudden fluctuations in direction and speed, fast hand and feet movements, different kinds of jumps, throwing and catching the ball (S. Hatchell, 2006), as well as sudden stopping and starting. Moreover, these dynamic movements form the basis of fundamental basketball skills, such as shooting, passing, dribbling, rebounding, defending and moving both with and without the ball, all of which individual players must master to be successful in a team (H. Wissel, 2004). In order to effectively coordinate these movements and to achieve the maximum potential, athletes must master balance, which is essential for success in any sport (C. Sigmon, 2003, T. Emma, 2006).

Static balance can be defined as "…the ability to maintain a base of support with minimal movement" and dynamic balance as "...the ability to perform a task while maintaining a stable position" (D.A. Winter, A.E. Patla, J.S. Frank, 1990). In short, good balance means that an athlete's body is in control and has the capacity to make quick movements (M.P. Reiman, R.C. Manske, 2009). Balance is one of the most important attributes a player can possess (H. Wissel, 2004). After balance skills are mastered, other features, such as speed, agility, and explosiveness can be trained and developed to the fullest (T. Emma, 2006).

Anthropometric characteristics are also among one of the most significant factors that affect body movements and sports performance. In performance sports, such as basketball, physical characteristics particularly play a significant role in athletes and team success (C. Şen, C. Durgun, M.E. Kozanoğlu, 2007). The purpose of this study is to determine whether there is a relationship between body fat percentages and extremity segmental length (upper and lower) with balance in players, ages 9 to 11, of the Gazi University Junior Male Basketball Team.

Material and Methods

Results

Measurements

- Heights of athletes were measured using the Lafeyette measurement tool band on bare foot.
- Body weight measurements were taken using the Tanita brand scale, where, athletes only wore shorts.
- 3 variables: arm span, arm and leg were measured in centimeters using the Lafeyette measurement tool band.
- Skinfold measurements were taken using the Holtain brand skinfold caliper.
- Balance measurements were taken using the Lafayatte 16020 IRF/E stabilometer.

Measurement Methods

Skinfold Measurements:

Skinfold measurements were taken from 7 different areas: Triceps, Biceps, Chest, Scapula, İliac, Abdomen and Femur. Body fat percentages were calculated with the "Zorba" Formula (VY% = 0.99 + 0.0047 (body weight) + 0.132 (skinfold of 7 regions).

Anthropometry Measurements:

Anthropometry measurements were taken from 3 areas: Arm Span, Arm and Leg.

Balance Measurements:

Balance measurements involved the transfer of weight from right foot to left foot and left foot to right foot. These were repeated 3 times, the first one being the trial measurement. For these 3 measurements, the trial measurement for each direction was not taken into account and the greatest values of the latter 2 measurements were used in analysis of this study.

The measurements were recorded by reading the digital indications on the balance device. Each measurement took 30 seconds and the time during which the athlete was in balance was recorded in unit of seconds. Loss of balance measurements were calculated by subtracting the duration of maintained balance from 30 seconds, the maximum period.

Statistical Analysis

Data was analyzed with SPSS v16.0, 2 sampling t-test, Pearson's correlation coefficient and descriptive statistics analysis methods.

Table 1: Minimum, maximum, mean and standard deviation values of each subject's height, weight, arm span, arm, leg, triceps, biceps, chest, scapula, iliac, abdomen and femur.

	Minimum	Maximum	Mean Values	Standart Deviation
Height	130	165	147.92	9.81
Weight	27.5	63.5	42.83	11.46
Arm Span	130	164	147.08	8.96
Arm	54	74	64.69	4.83
Leg	70	102	83.03	7.68
Triceps	5.1	29	14.65	6.46
Biceps	3.3	17.3	8.82	4.14
Chest	4.1	27	13.06	6.99
Scapula	4.2	29	11.95	6.94
Iliac	3.2	23	11.48	6.22
Abdomen	5	30	18.08	7.22
Femur	9.4	37	23.27	7.56
	Minimum	Maximum	Mean Values	Standard Deviation
Height	130	165	147.92	9.81
Weight	27.5	63.5	42.83	11.46
Arm Span	130	164	147.08	8.96
Arm	54	74	64.69	4.83
Leg	70	102	83.03	7.68
Triceps	5.1	29	14.65	6.46
Biceps	3.3	17.3	8.82	4.14
Chest	4.1	27	13.06	6.99
Scapula	4.2	29	11.95	6.94
Iliac	3.2	23	11.48	6.22
Abdomen	5	30	18.08	7.22
Femur	9.4	37	23.27	7.56

As indicated in the Table 1, the mean height of the subjects is 147.92 (cm), the mean weight is 42.83 (kg), the mean arm span is 147.08 (cm), the mean arm length is 64.69 (cm), the mean leg length is 83.03 (cm), the mean triceps is 14.65 (mm), the mean biceps is 8.82 (mm), the mean chest is 13.06 (mm), the mean scapula is 11.95 (mm), the mean iliac is 11.48 (mm), the mean abdomen is 18.08 (mm) and the mean femur is 23.27 (mm).

Table 2: Minimum, maximum, mean and standard deviation values of DMB (the duration of maintaining balance) and LOB (loss of balance) measurements of the subjects starting balance transfer from the right foot.

Starting Balance Transfer from the Right Foot ($n =$)				
	Minimum	**Maximum**	**Mean Values**	**Standart Deviation**
DMB	**10.43**	**27.9**	**16.01**	**4.4**
LOB	**2.1**	**19.57**	**13.99**	**4.4**

The mean DMB of the subjects who started the balance transfer from the right foot was 16.01 and the mean LOB was 13.99.

Table 3: Minimum, maximum, mean and standard deviation values of DMB and LOB measurements of the subjects who started the balance transfer from the left foot.

Starting the Balance Transfer from the Left Foot ($n =$)				
	Minimum	**Maximum**	**Mean Values**	**Standart Deviation**
DMB	**12.64**	**28.14**	**19.01**	**4.27**
LOB	**1.86**	**17.36**	**10.99**	**4.27**

The mean DMB of the subjects transferring the balance from the left foot was 19.01 and the mean LOB was 10.99.

Table 4: Minimum, maximum, mean and standard deviation values of DMB and LOB measurements of the subjects irrespective of the foot direction for the balance transfer.

Irrespective of the Foot Direction for the Balance Transfer ($n =$)				
	Minimum	Maximum	Mean Values	Standart Deviation
DMB	12.03	28.02	17.52	4.12
LOB	1.98	17.97	12.48	4.12

The mean DMB of the subjects irrespective of the foot direction for the balance transfer was 17.52 and the mean LOB was 12.48.

Table 5: The relationship between DMB of the subjects who started the balance transfer from the right foot and the other parameters.

Starting the Balance Transfer from the Right Foot ($n =$)			
	Pearson Coefficient (ρ)	p	Results
DMB-Height	-0.693	0.000	There is a relationship between two parameters
DMB-Weight	-0.521	0.006	There is a relationship between two parameters
DMB-Arm Span	-0.625	0.001	There is a relationship between two parameters
DMB-Arm	-0.668	0.000	There is a relationship between two parameters
DMB-Leg	-0.698	0.000	There is a relationship between two parameters
DMB-Triceps	-0.340	0.090	There is no relationship between two parameters
DMB-Biceps	-0.243	0.231	There is no relationship between two parameters
DMB-Chest	-0.234	0.250	There is no relationship between two parameters
DMB-Scapula	-0.326	0.104	There is no relationship between two parameters
DMB-Iliac	-0.424	0.031	There is a relationship between two parameters
DMB-Abdomen	-0.229	0.261	There is no relationship between two parameters
DMB-Femur	-0.383	0.054	There is no relationship between two parameters

In the table above there was a negative significant relationship between DMB starting the balance transfer from the right foot and Height (0.000), Weight (0.006), Arm Span (0.001), Arm (0.000), Leg (0.000) and Iliac (0.031).

Table 6: The relationship between LOB of the subjects who started the balance transfer from the right foot and the other parameters

Starting the Balance Transfer from the Right Foot ($n =$)			
	Pearson Coefficient (ρ)	p	Results
LOB-Height	0.693	0.000	There is a relationship between two parameters
LOB-Weight	0.521	0.006	There is a relationship between two parameters
LOB-Arm Span	0.625	0.001	There is a relationship between two parameters
LOB-Arm	0.668	0.000	There is a relationship between two parameters
LOB-Leg	0.698	0.000	There is a relationship between two parameters
LOB-Triceps	0.340	0.090	There is no relationship between two parameters
LOB-Biceps	0.243	0.231	There is no relationship between two parameters
LOB-Chest	0.234	0.250	There is no relationship between two parameters
LOB-Scapula	0.326	0.104	There is no relationship between two parameters
LOB-Iliac	0.424	0.031	There is a relationship between two parameters
LOB-Abdomen	0.229	0.261	There is no relationship between two parameters
LOB-Femur	0.383	0.054	There is no relationship between two parameters

In the table above there was a positive strong relationship between LOB starting the balance transfer from the right foot and Height (0.000), Weight (0.006), Arm Span (0.001), Arm (0.000), Leg (0.000) and Iliac (0.031).

Table 7: The relationship between DMB of the subjects who started the balance transfer from the left foot and the other parameters

Starting the Balance Transfer from the Left Foot ($n =$)			
	Pearson Coefficient (ρ)	p	Results
DMB-Height	-0.691	0.000	There is a relationship between two parameters
DMB-Weight	-0.653	0.000	There is a relationship between two parameters
DMB-Arm Span	-0.663	0.000	There is a relationship between two parameters
DMB-Arm	-0.683	0.000	There is a relationship between two parameters
DMB-Leg	-0.697	0.000	There is a relationship between two parameters
DMB-Triceps	-0.579	0.002	There is a relationship between two parameters
DMB-Biceps	-0.495	0.010	There is a relationship between two parameters
DMB-Chest	-0.469	0.016	There is a relationship between two parameters
DMB-Scapula	-0.546	0.004	There is a relationship between two parameters
DMB-Iliac	-0.672	0.000	There is a relationship between two parameters
DMB-Abdomen	-0.509	0.008	There is a relationship between two parameters
DMB-Femur	-0.595	0.001	There is a relationship between two parameters

In the Table 7, a negative relationship was seen between DMB measurements of the subjects who started the balance transfer from the left foot and all parameters.

Table 8: The relationship between LOB of the subjects who started the balance transfer from the left foot and the other parameters

Starting the Balance Transfer from the Left Foot ($n =$)			
	Pearson Coefficient (ρ)	p	Results
LOB-Height	0.691	0.000	There is a relationship between two parameters
LOB-Weight	0.653	0.000	There is a relationship between two parameters
LOB-Arm Span	0.663	0.000	There is a relationship between two parameters
LOB-Arm	0.683	0.000	There is a relationship between two parameters
LOB-Leg	0.697	0.000	There is a relationship between two parameters
LOB-Triceps	0.579	0.002	There is a relationship between two parameters
LOB-Biceps	0.495	0.010	There is a relationship between two parameters
LOB-Chest	0.469	0.016	There is a relationship between two parameters
LOB-Scapula	0.546	0.004	There is a relationship between two parameters
LOB-Iliac	0.672	0.000	There is a relationship between two parameters
LOB-Abdomen	0.509	0.008	There is a relationship between two parameters
LOB-Femur	0.595	0.001	There is a relationship between two parameters

Table 8 revealed a relationship between LOB measurements of the subjects who started the balance transfer from the left foot and all parameters.

Table 9: Comparison of DMB values of the subjects irrespective of the foot direction for the balance transfer and height, weight, arm span, arm, leg, triceps, biceps, chest, scapula, iliac, abdomen and femur variables.

Irrespective of the Foot Direction for the Balance Transfer ($n =$)			
	Pearson Coefficient (ρ)	p	Results
DMB-Height	-0.727	0.000	There is a relationship between two parameters
DMB-Weight	-0.616	0.001	There is a relationship between two parameters
DMB-Arm Span	-0.676	0.000	There is a relationship between two parameters
DMB-Arm	-0.710	0.000	There is a relationship between two parameters

DMB-Leg	-0.733	0.000	There is a relationship between two parameters
DMB-Triceps	-0.481	0.013	There is a relationship between two parameters
DMB-Biceps	-0.386	0.051	There is no relationship between two parameters
DMB-Chest	-0.368	0.065	There is no relationship between two parameters
DMB-Scapula	-0.457	0.019	There is a relationship between two parameters
DMB-Iliac	-0.574	0.002	There is a relationship between two parameters
DMB-Abdomen	-0.386	0.052	There is no relationship between two parameters
DMB-Femur	-0.512	0.007	There is a relationship between two parameters

In the table above there was a negative significant relationship between DMB values and Height (0.000), Weight (0.001), Arm Span (0.000), Arm (0.000), Leg (0.000), Triceps (0.013), Scapula (0.0199), Iliac (0.002) and Femur (0.007).

Table 10: Comparison of LOB values of the subjects irrespective of the foot direction for the balance transfer and height, weight, arm span, arm, leg, triceps, biceps, chest, scapula, iliac, abdomen and femur variables.

Irrespective of the Foot Direction for the Balance Transfer ($n =$)			
	Pearson Coefficient (ρ)	p	Results
LOB-Height	0.727	0.000	There is a relationship between two parameters
LOB-Weight	0.616	0.001	There is a relationship between two parameters
LOB-Arm Span	0.676	0.000	There is a relationship between two parameters
LOB-Arm	0.710	0.000	There is a relationship between two parameters
LOB-Leg	0.733	0.000	There is a relationship between two parameters
LOB-Triceps	0.481	0.013	There is a relationship between two parameters
LOB-Biceps	0.386	0.051	There is no relationship between two parameters
LOB-Chest	0.368	0.065	There is no relationship between two parameters
LOB-Scapula	0.457	0.019	There is a relationship between two parameters
LOB-Iliac	0.574	0.002	There is a relationship between two parameters
DK-Abdomen	0.386	0.052	There is no relationship between two parameters
LOB-Femur	0.512	0.007	There is a relationship between two parameters

Table 10 showed a significant relationship between LOB values and Height (0.000), Weight (0.001), Arm Span (0.000), Arm (0.000), Leg (0.000), Triceps (0.013), Scapula (0.0199), Iliac (0.002) and Femur (0.007).

Table 11: Minimum, maximum, mean and standard deviation values of body weight percentages of the subjects

	Range	Minimum	Maximum	Mean Values	Standart Deviation
Body Weight Percentages (n=26)	20.36	5.89	26.25	14.56	5.68

In the table above, the mean body fat percentage of the subjects were 14.56. These mean values are consistent with literature data.

Table 12: The relationship between DMB and LOB with the body fat percentage of the subjects who started the balance transfer from the right foot.

Starting the Balance Transfer from the Right Foot ($n =$)			
	Pearson Coefficient (ρ)	p	Results
Body Fat Percentage DMB	0.337	0.093	There is no relationship between two parameters
Body Fat Percentage LOB	0.337	0.093	There is no relationship between two parameters

As indicated in the table above, there was no relationship between the body fat percentage and the balance.

Table 13: The relationship between DMB and LOB with the body fat percentage of the subjects who started the balance transfer from the left foot.

Starting the Balance Transfer from the Left Foot ($n =$)			
	Pearson Coefficient (ρ)	p	Results
Body Fat Percentage DMB	-0.592	0.001	There is a relationship between two parameters
Body Fat Percentage LOB	0.592	0.001	There is a relationship between two parameters

In the table above, there was a significant relationship between DMB and LOB values with the body fat percentages of the subjects who started the balance transfer from the left foot.

There was a reverse relationship between the duration of maintaining balance and the body fat percentage of the subjects who started the balance transfer from the left foot; and there was a positive relationship between LOB and the body fat percentages. As the body fat percentage of an athlete, who started the balance transfer with the left foot, increased, DMB decreases and LOB increases.

Discussion and Conclusion

Height, Weight and Body Fat Percentage

In this study, Gazi University Sports Club Male Junior Basketball Team players had the mean height of 147.92 cm, weight of 42.83 and body fat percentage of 14.56. The findings obtained in the study are consistent with the literature. In this study, the mean body fat percentages were calculated using the "Zorba Formula".

Balance and Correlation

The mean DMB of the subjects who started the balance transfer from the right foot was 16.01 and the mean LOB was 13.99. The mean DMB of the subjects who started the balance transfer from the left foot was 19.01 and the mean LOB was 10.99.

Irrespective of the foot direction for the balance transfer, the mean DMB of the subjects was 17.52, and the mean LOB was 12.48.There was a negative significant relationship between DMB of the subjects who started the balance transfer from the right foot and height (0.000), weight (0.006), arm span (0.001), arm (0.000), leg (0.000) and iliac (0.031). There was a positive significant relationship between LOB of the subjects who started the balance transfer from the right foot and height (0.000), weight (0.006), arm span (0.001), arm (0.000), leg (0.000) and iliac (0.031). There was a negative relationship between DMB measurements of the subjects who started the balance transfer from the left foot and all parameters; however there was a positive relationship between LOB measurements and all parameters.

Irrespective of the foot direction for the balance transfer, there was a negative significant relationship between DMB values of the subjects and height (0.000), weight (0.001), arm span (0.000), arm (0.000), leg (0.000), triceps (0.013), scapula (0.0199), iliac (0.002) and femur (0.007).

Irrespective of the foot direction for the balance transfer, there was a positive relationship between LOB values of the subjects and height (0.000), weight (0.001), arm span (0.000), arm (0.000), leg (0.000), triceps (0.013), scapula (0.0199), iliac (0.002) and femur (0.007). No relationship was found between DMB and LOB starting the balance transfer from the left foot with the body fat percentage and the balance.

It was found that there was a significant difference between DMB and LOB values and the body fat percentages of the subjects who started the balance transfer from the left foot. There was a reverse correlation between the DMB and the body fat percentage of subjects who started the balance transfer from the left foot; there was a positive relationship between the LOB and the body fat percentages. As the body fat percentage of the subjects, who started the balance transfer from the left foot, increased, DMB decreases and LOB increases.Under light of the results of this study, it was observed that anthropometric measurements such as height and weight had a significant effect on the balance parameters.

As indicated in the result section, as the height, weight, arm, leg and arm span length are increased, LOB in the body increases. In addition to being one of the motoric parameters, balance is important due to the characteristics of basketball. Therefore, it can be concluded that the athletes with higher extremity length should be subject to special balance trainings.

There was a relationship between the skinfold measurements and the balance parameter. Regional excessive weight has a negative effect on the balance. For this reason, the trainings should aim to give the athletes a more homogenous physical structure so that an increase can be observed in balance skill.

Pınar et al. studied balance on dancers (S. Pinar, L. Tavacioğlu, O.E. Atilgan, 2006, 259-265, S. Pinar, L. Tavacioğlu, O.E. Atilgan, 2006, 297-302). The findings of Pinar's study are consistent with the results of this study. The researchers reported that there was a positive relationship between the height and the static balance levels of the dancers (S. Pinar, L. Tavacioğlu, O.E. Atilgan, 2006, 259-265, S. Pinar, L. Tavacioğlu, O.E. Atilgan, 2006, 297-302). It was found that as the height of the dancers decreased, duration of maintaining the balance increased; in other words, it was concluded that the height and the balance were reversely correlated. Based on the data obtained from these two studies, it can be suggested that height factor has a significant effect on the balance.

T. Tot (2009) found a significant relationship between the weight and the balance measurements on elite male basketball players. The findings of Tot are consistent with the results of this study. As the weight of athletes increased, the balance levels decreased. Based on these findings it can also be suggested that the weight affects the balance at all ages. Therefore, maintaining fitness levels of athletes is also important for balance (T. Tot, 2009).

The ability of balance shows individual variations. As a result of the balance measurements at certain intervals, learning factor become active and affects balance skill. In this study, it was also found that, in general terms, among three measurement values taken from the subjects, the highest measurements were the third measurements.

Balance activities should be given importance at young ages, because an athlete starts his/her sports career at a very young age.

As balance is a motor characteristic, balance trainings at young age increase balance levels of the athletes and this has a positive effect on future performances of athletes (I. Holm, N. Vøllestad, 2008).

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THE COMPARATIVE STUDY OF ANTHROPOMETRICAL CHACACTERISTICS IN TABRIZ ELITE FOOTBALL AND VOLLEYBALL PLAYERS

Paydar Ali [1], Nasrin Golmaganizadeh[1], Erdal Zorba[2], Sakir Bezci[3]
[1]Iran Islamic Azad University Tabriz Branch, IRAN
[2]Gazi University, TURKEY
[3]Pamuk Kale University, TURKEY
Email: **ali_paydar2001@yahoo.com / 12.02.2010 / 20.02.2010**

Abstract

The purpose of this study is comparing the anthropometrical Characteristic of Tabriz elite sportsmen in two courses of Football and Volleyball.

Methods For this purpose 40 Sportsmen (football and volleyball) who participated in the National championships were selected as samples. Twenty eight different Anthropometrics indexes were measured in this research, the variables was Consisted of Age, Wight, Sport Experience, and Height, Sitting height, Upper extremities, Opened hand length, Arm length and …, which of the Anthropometrical Characteristics were measured by Anthropometrics standards methods. After collecting, the data were analyzed using the statistical software, SPSS, and t-student tests ($p \leq 0.05$).The results demonstrated that there is significantly difference between the Heights, Sitting height, Upper extremities, opened hand length, Fat Triceps amount, in samples within two Courses of Football and Volleyball. There is no significant difference between other variables in two groups.

Key words: Anthropometrical Characteristics, Football player, Volleyball player.

Introduction

One of the fields that have drawn the attention of the experts in sports for researches is to find a relation between the physical specifications and skills and sport success. To be successful in a field does a person need special physical specifications? Or any person could be successful in any sport type by his own physical specification? Do any type of sport need special structural, functional and skill specifications?

Measuring and collecting information about the physical condition of the successful athletes in one filed, and analyzing the physical specification and typological dimensions of the individuals averagely, a skillful coach must have some information to select the talented ones for special fields.

Some of the young athletes lose their opportunities to increase their abilities or to achieve the rank of a good athlete because of lack of information about the special features and are not guided towards the blossoming in that filed. In sport, discovering the talents, and selecting in younger ages, controlling, and evaluating their abilities to achieve the highest level of skill is very important. Thus, the main aim of finding the suitable bodies and talents is to select the athletes

that have the most ability in special sport filed (F. Bloom et al., 1994). It has been attempted to direct the athletes towards some majors that could achieve the highest point by spending less energies and time (E. Zorba, 2006). Using the body recognition measures, along with decreasing the time and expenses of achieving the best function, leads to the rise in exercise practices (E. Zorba, 2006).

Form the investigation it is concluded that the anthropometric specifications influences the sport functions and success of the athletes which has been observed in footballers (K. Ebrahim, M., Hallaji, 2008). In addition, in "Yardimci"s (1997) investigations it is observed that in all sport fields the fat percent of athletes bodies are affective on the sportive functions (F. Bloom et al., 1994). Moreover, it could be resulted that he lack of incompatibility in anthropometric specifications in special sport fields could cause the drop-off in athlete's function (A.W.S. Watson, 1995).

The problem is here that whether athletes own special morphology? Is there any relation between the dimensions and their success? Are these relations interdependent? Two of the fields that need physical and physiological and suitable functions are football and volleyball. The need for analyses in two famous fields which draw the attention of many people is felt more. Realizing that which specification distinguishes the usual athletes from the best ones is significant. In the present study the anthropometric and success of the athletes in football and volleyball fields are investigated. Thus, the researcher has tried to study and evaluate the morphological specification of the said fields to analyze and evaluate the anthropometric specification of the athletes and to determine the anthropometric specification of the footballers and volleyballist from the standpoint of body shape and to evaluate their anthropometric indices.

Method

The statistic society of the study involves the football and volleyball players of Tabriz, who has participated in the first league of the 2008-2009. Considering that only one team participated in the said league form Tabriz, thus the society includes 40 players that 22 of them are footballers and 18 volleyball players.

Because of limitations regarding the number of individuals in statistical society the numbers were considered as the testing pattern without using the sampling method. All the samples were considered as full numbers.

The variables of the study includes the followings: age, height, weight, he length of body organs including the arms, forearm, tow stretched hands, height in sitting position, upper parts, lower parts, thigh, calf, which were measured using the a meter. The ambient of the organs including the arm, forearm, wrist, breast, wrest, thigh, hips, ankle, and the width of the organs including the elbow, and knee, were measured using a caliper.

To calculate the amount of the fat in body the lower layer of the skin in arm, armpit, belly and the thigh were kept by thumb and the forefinger and they were measured using a caliper. All the measurements were carried out in the right side of the body after two times of measuring and the average numbers were used.

Generally, the descriptive and inferential statistical methods were used, the said methods includes the following: calculating the centralized statistical indices (average, normal and exponent) dispersal index (changes in range, standard deviance, and variance) of variables in two groups. Using the test (t student) in independent groups to find meaningful difference between the groups in three groups of upper and lower parts and other variables were calculated meaningfully as five percent.

The data of the research

Table 1: Describing the central indexes and the dispersal of the variables studied in football players

Group / statistics	Average	Standard deviance	The least	The most
Age (year)	16.63	1.25	15	18
Weight (kilo)	64.69	6.63	58.40	78.80
Exercise records (year)	7.72	3.46	3	14
Standing height (cm)	171.43	1.89	165	189.50
Sitting height (cm)	88.80	3.45	83	95.90
Open hand length (cm)	176.6	7.34	167	195
Length of upper organs (cm)	76.43	3.30	73	84
The length of arm (cm)	37.33	2.02	35	41
The length of forearm (cm)	26.77	1.42	25.50	30.50
Ambient of the arm (cm)	29.43	1.84	27	32
Ambient of the forearm (cm)	26.72	1.62	24.50	29
ambient of wrest (cm)	18.36	1.51	16.51	21.50
Elbow width (cm)	6.43	0.30	5.90	7
Chest ambient (cm)	87	3.22	82	91.30
Girth (cm)	70.83	3.68	67	79.50

The length of lower parts (cm)	105.23	4.94	95	114.50
Length of thigh (cm)	49.27	5.84	36.50	61
Length of calf (cm)	41.95	4.86	28	46.50
Ambient of high (cm)	45.13	6.08	30.50	52
Ambient of hips (cm)	90	4.22	81	96
Ambient of calf (cm)	35.36	2.55	31.50	39.80
Ambient of ankle (cm)	27.72	1.35	26	30
Width of knee (cm)	9.65	0.36	9	10.50
Under skin fat for armpit (ml)	9.17	1.14	7.50	11.10
Under skin fat for back of arm (ml)	6.81	1.51	4.40	10.40
Under skin fat for thigh (ml)	15.55	1.82	12	17.50
Under skin fat for belly (ml)	12.64	2.50	9	18
Fat percent	11.01	1.04	9.35	12.89

Table 2: Describing the central indexes and the dispersal of the variables studied in volleyball players

Group / statistics	Average	Standard deviance	The least	The most
Age (year)	16.44	0.98	15	18
Weight (kilo)	74.86	6.22	66	84
Exercise records (year)	4.66	1.18	3	7
Standing height (centimeter)	186.34	5.24	167	193
Sitting height (cm)	96.98	2.84	91	101.50
Open hand length (cm)	184.17	7.96	166	195
Length of upper organs (cm)	85.97	3.15	81.50	92
The length of arm (cm)	43.45	1.80	41	46
The length of forearm (cm)	29.47	1.10	27.2	31
Ambient of the arm (cm)	29.44	2.05	26	32.50
Ambient of the forearm (cm)	25.88	1.10	24	27.50
ambient of wrest (cm)	17.71	0.94	16.50	19.50
Elbow width (cm)	6.08	0.48	5.40	6.80
Chest ambient (cm)	93.61	4.61	87.50	99.50
Girth (cm)	78.50	4.28	71	84
The length of lower parts (cm)	98.23	5.87	90	106
Length of thigh (cm)	52.75	3.24	48.50	59
Length of calf (cm)	42.15	3.26	50.36	47
Ambient of high (cm)	54.05	2.03	51	57.50
Ambient of hips (cm)	97.98	4.51	93	106
Ambient of calf (cm)	37.95	1.88	35.10	41
Ambient of ankle (cm)	26.85	1.63	24	29.5
Width of knee (cm)	9.24	0.45	8.60	9.90
Under skin fat for armpit (ml)	7.86	0.75	6.20	9.10
Under skin fat for back of arm (ml)	5.16	1.11	4.10	8
Under skin fat for thigh (ml)	14.77	1.11	13.10	17
Under skin fat for belly (ml)	10.48	2.50	8	15
Fat percent	9.81	870/	8.57	1.56

According to the results there was a meaningful difference between the following issues in football and volleyball: weight variables, sport records, standing height, sitting height, the length of open hands, length of upper parts, length of arm, length of forearm, width of elbow, chest ambient, girth, length of lower parts, length of thigh, ambient of thigh, ambient of hips, ambient of calf, under skin fat in armpit, under skin fat in back of arm, under skin fat in thigh and under skin fat in belly (Diagram 1).

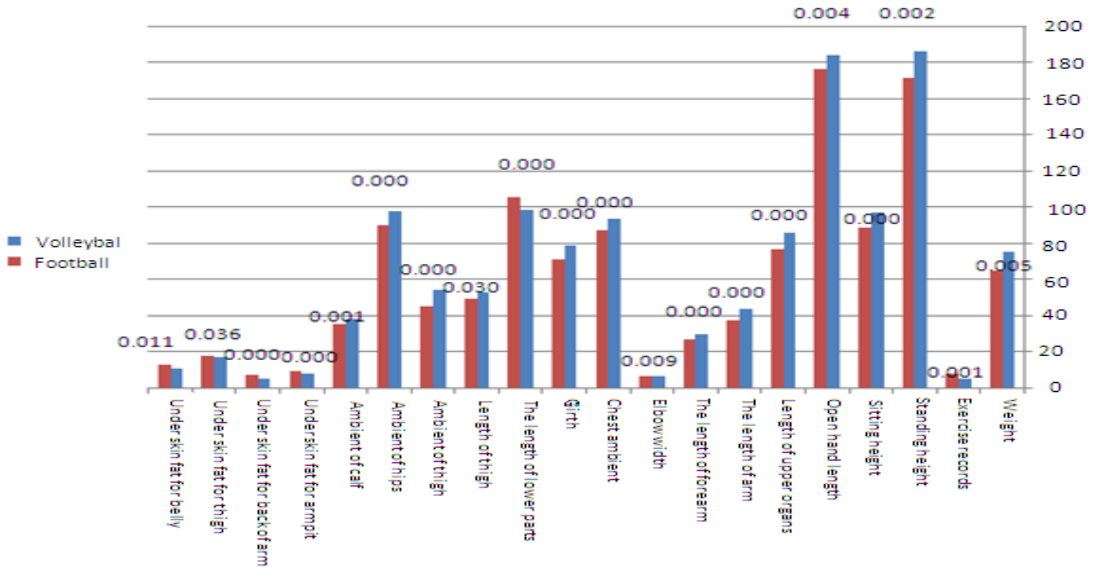

Diagram 1: The results of t test concerning the variables between football and volleyball players which show a meaningful difference.

Discussion and conclusion

Many elements have led to success in being in form for athletes. Recognizing the elements paves the way towards the success. By studying the body of our athletes the time for achieving the best results decreases and athletes useful life could be extended. People are directed towards fields that from the point of view of physical, physiological and psychological standpoints are suitable for them. Considering the said subject all the athletes participated in the present study have started their sport activities in or before the growth ages, and this long period was enough time to influence special organs. The result concerning the meaningful difference in height and record variables was not something far because of long term exercises, and they were in accordance with the results of studies carried out by, Rahimi, Bloum, Diyol Albay and etc (G. Rahimi, 2009; A., Sarneshin et al., 2009).

Correct functions, on time decisions, the harmony of hand and eye, nerve and muscle, eye and leg, hands quick movements in different directions, quick maneuvers and leaps, are possible by having strong and flexible organs. Meaningful differences in upper parts, open hands, arm and forearm and the high amount of average in these elements in volley ball players in relation to footballer's shows that athletes in volleyball need taller and extended organs to perform hand techniques better and to perform the kicks with the least error (H. Peymanizad, 1995; Sarneshin et al., 2009; T. Bielicki, Z. Welon, 1982). The shortness of the upper organs in football players is to perform the kicks better, quicker and stronger and more over they need shorter organs and levers (S. Farajzade, H. Kazemiroor, 2008).

The meaningful difference between the widths of the knee in athletes showed that quick movements, and foot techniques, circular movements and alacrity need more speed and power. It was clear according to the situation of the players in different points of the ground especially in football. It seems that mechanical pressure causes the circulation of blood more in some joints and it causes the increase in volume. It has been approved in the arm and the forearms of the tennis players (H. Peymanizad, 1995; A. Duyul, M. Ark, 2008). Meaningful difference and more volume in the length of thigh in volleyball players could be for lower center of gravity and more stability in football in which having shorter thighs and calves are better. Therefore football players have shorter thigh and calf. The athletes of two fields had meaningful difference in percent of fat (A.W.S. Watson, 1995; E. Zorba, 2006).

Totally it could be concluded that volleyball and football players own special anthropometric patterns, physical form, and body shape. It seems that the said pattern is different in various posts. Perhaps the reason for the said issues is the special needs of the posts from the standpoint of anthropometric and physical specifications to carry out the skills better. Considering the physiological needs of the players in different posts, preparing and performing suitable exercise plans to improve the function of players in their special posts is necessary.

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THE EFFECT OF COMBINED TRAINING ON SOME CONDITIONAL PARAMETERS OF BASKETBALL PLAYERS AGED 12-14

Pelin Aksen[1], Mehmet Günay[2]
[1]School of Physical Education and Sports, Kastamonu University, Kastamonu, TURKEY
[2]School of Physical Education and Sports, Gazi University, Teknikokullar, Ankara, TURKEY
Email: pelinaksen@hotmail.com / 05.02.2010 / 11.02.2010

Abstract

This research has been performed on 34 volunteer male basketball players aged 12-14 age groups from junior male basketball team of Ankara University and Ulaştırma Sports Club. The subjects have been randomly divided into the experimental and control groups . Before training program resting heart rate , systolic-diastolic blood pressure, aerobic-anaerobic capacity have been evaluated for both groups, besides some measurements have been also performed on some parameters by using Eurofit test battery. The same measurements have been performed again after the 8 weeks combined training program for the experimental group and the effect of combined trainings on these parameters has been tried to determine. In this 8 weeks period, the subjects in the control group have not been put to an extra training program, they have carried on their daily sports life.

SPSS 8.0 statistical package program has been used for the statistical analysis and arithmetic average, standart deviation, standart error and range of the values have been determined. The differences between groups have been examined by t-test in the significance level 0.01 and 0.05.

In consequence of this research, it has been observed that while the values of body height (% 0,61 ; $p < .001$), leg power (% 17,21 ; $p < .001$), pull-up motion (% 32,06 ; $p < .001$), standing long jump (% 6,85 ; $p < .001$) and aerobic capacity (% 8,65 ; $p < .001$) have showed an increase, the values of resting heart rates (% 7,71; $p < .005$), 10 x 5 m. (% 13,15 ; $p < .001$) and left hand reaction time to light (% 7,31; $p < .0005$) have showed a decrease after the first and the last measurements of combined training program for the experimental group. It has not been observed any changes in the control group.

As a result, it has been determined that the combined trainings performed on experimental group have been more efficient than technical trainings.

Key Words: Eurofit Tests, Combined Training, Training in Children, Basketball.

Purpose

The aim of the training for the kids and the young is to provide the development of sportive performance with the means of training science and pedagogical.

The contents of training for the kids have been determined in accordance with the principles which have been stipulated by the sports science and the features of their development period.

The aim of this research is to investigate the effect of the 8 weeks combined basketball trainings on the development of some technical and conditional parameters of the male basketball players aged 12-14.

Method

This research has been performed on male basketball players aged 12-14 exercising regularly from junior male basketball team of Ankara University and Ulaştırma Sports Club.

In the experimental group there have been 17 male athletes from junior male basketball team of Ankara University, whose mean age was 13,47±1.12 years, mean height was 163±0.05 cm, mean weight was 53,38±11.10 kg. Before the research, the values of all subjects like weight and height measurement, resting heart rate, systolic and diastolic blood pressure, 30 m sprint, reaction time, leg strength, push-up,

shuttle run test, vertical jumping and anaerobic power measurement have been determined and in addition to these they have been put through Eurofit test.

Subsequently these subjects have been put to combined training, which has been performed for 8 weeks and 4 days a week, lasting approximately 90 minutes per day. After 8 weeks these parameters measured at the beginning have been performed again.

In the control group there have been 17 male subjects from Ulaştırma Sports Club whose mean age was 13,17±1.15 years, mean height was 159±0.12 cm, mean weight was 50,59±14.10 kg. All of the tests have been also performed to the control group like the experimental group but before the combined training pre test and post test measurement have been performed for this group.

Measurement Methods:

1.Weight and Height Measurement

2.Blood Pressure and Heart Rate Measurement: The values have been measured by using Test BM 2001 branded sphygmomanometer. Two measurements have been performed and the best one has been recorded.

3.Percent Body Fat Measurement: Four skinfolds (biceps, triceps, subscapular and supra-iliac) have been measured on the right side of the body. Body fat has been calculated using Sloan ve Weir's Formula

Body density(gr/ml) = 1.1043-0.00133 (leg SF) – 0.00131(subscapular SF)

Percent Body Fat Measurement =(4.57/density-4.142)100

E = 0.0082 (M.C. Şıpal, 1989, K. Tamer, 2000)

4.10 x 5 m Shuttle Test Measurement: Marker cones and/or lines are placed five meters apart. Start with a foot at one marker. When instructed by the timer, the subject runs to the opposite marker, turns and returns to the starting line. This is repeated five times without stopping (covering 50 meters total). At each marker both feet must fully cross the line.

5.30 m Sprint Measurement: Measured with using photocell.

6.Reaction Time Measurement: "Power 2000 Newtest" branded multiple choice reaction time measure has been used for evaluating the reaction times of the subjects to the sound and the light. Every test has been performed five times and the best and the worst values have been removed. Average of the remained three values has been calculated and recorded (K. Tamer, 2000).

7.Leg Strength Measurement: With using the dynamometer .

8.Bent Arm Hang Measurement: The subject has been assisted into position, the body lifted to a height so that the chin is level with the horizontal bar. The bar has been grasped using an overhand grip (palms are facing away from body), with the hands shoulder width apart. The timing has started when the subject has been released. The subject has attempted to hold this position as long as possible and maximum time has been recorded as 1/10 second (A. Kamar, 2003, M.C. Şipal, 1989)

9.Sit-Up Measurement: The maximum number of correctly performed sit-ups in 30 seconds has been recorded.

10. Push-up Measurement: The push-up number with the right technique (bending and stretching the arms fully) has been calculated (Y. Sevim, 2002).

11. Hand Grip Strength Measurement: With adjustable handle dynamometer from dominant hands and recorded as kilograms.

12. Standing Long Jump Test (Broad Jump) : The athlete has stood behind a line marked on the ground with feet slightly apart. A two foot take-off and landing has been used, with swinging of the arms and bending of the knees to provide forward drive. The subject has attempted to jump as far as possible, landing on both feet without falling backwards. The better of two attempts has been recorded in centimeters (E. Erol, 1992, A. Kamar, 2003, O. Sevim, 2002, M.C. Şipal, 1989)

13. Flamingo Balance Test: Metal beam 50cm long, 5cm high and 3cm wide (the beam is stabilized by two supports at each end, and should have a non-slip surface) The subjects have stood on the beam. They have tried to keep balance. While balancing on the preferred leg, the free leg has been flexed at the knee and the foot of this leg held close to the buttocks. The measurement has been performed by calculating of the subject's number of attempts in a minute (A. Kamar, 2003, M.C. Şipal, 1989)

14. Sit And Reach Flexibility Test: The test has been performed twice and the better one has been recorded (A. Kamar, 2003, M.C. Şipal, 1989, K. Tamer, 2000).

15. 20 m Multistage Fitness Test (Beep Test) Measurement: This test involves continuous running between two lines 20m apart in time to recorded beeps. The value heard from the tape has been recorded when the subjects have stopped. According to these values, aerobic power value of the subjects (ml-kg/dk) has been acquired (A. Kamar, 2003, M.C. Şipal, 1989, K. Tamer, 2000).

16. Vertical Jumping and Anaerobic Power Measurement: It has been performed by using Vertec vertical jump tester. The anaerobic power of the subjects has been calculated with the formula below (K. Tamer, 2000).

$P = (\sqrt{}_{4..9} \times W \times \sqrt{}_{Dn})$

P = Anaerobic Power

D = Vertical Jumping Distance (m)

Statistical Analysis

SPSS 8.0 statistical package program has been used for the statistical analysis and arithmetic average (X), standart deviation (S), standart error (SH) and range of the values have been determined. The differences between groups have been examined by t-test in the significance level 0.01 and 0.05.

Result

When compared the conditional features between the group after pre and last tests applied for the experimental and control group. It is point out for the pre test that there were significantly differences at systolic blood pressure, heart beat, height, d,astolic blood pressure, 30 m. sprint, left hand reaction tme to sound, right hand reaction time to light, left hand reaction time to light, bent arm hang, sit-up, push-up, leg strength, aerobic-anaerobic power, standing long jump; on the contrary, there were not significantly differences at body wight, percent body fat, right hand reaction time to sound, 10x5 m., right and left hand grip strength, flamingo balance and sit and reach flexibility. It is determined for the last test applied for yhe experimental and control group that there were significantly differences at systolic blood pressure, heart beat, body weight, height, percent body fat, 10 x5 m., 30 m. sprint, right hand reaction time to light, left hand reaction time to sound, left hand reaction time to light, leg strength, bent arm hang, sit-up, push-up, standing long jump, aerobic-anaerobic power, sit and reach flexibility, on the other hand there weren't significantly differences at diastolic blood pressure, right hand reaction time to sound, right and left hand grip strength and flamingo balance.

When compared the conditional features after pre and last tests applied for the experimental group and the control group, it is point out that there were significantly differences at height, heart beat, 10x5 m., left hand reaction time to light, leg strength, standing long jump, aerobic power, sit-up for the experimental group. On the other hand, it is determined that there weren' t significantly differences at body weight, systolic-diastolic blood pressure, percent body fat, 30 m. sprint, right hand reaction time to sound, left hand reaction time to sound, right hand reaction time to light, bent arm hang, push-up, right and left hand grip strength, flamingo balance, sit and reach flexibility, anaerobic power. It is point out for the control group that there were significantly differences at height, systolic blood pressure, 10x5 m., 30 m. sprint, right hand reaction time to sound, left hand reaction time to sound, right hand reaction time to light, left hand reaction time to light, push-up; on the contrary, there weren't significantly differences at body weight, diastolic blood pressure, heart beat, leg strength, bent arm hang, sit-up, right and left hand grip strength, standing long jump, sit and reach flexibility, aerobic and anaerobic power.

Discussion and Conclusion

The research has been carried out to examine effect of combined training on some conditional features of 12-14 years basket ball players.

Average age of male athletes participating in the survey as experimental group; 13.47±1.12 years, average age of male athletes as control group; 13.17±1.15 years (n=17).

It has been aberved that the body weight of experimental group rised from 53.38±11.10 kg to 54.21±11.02 kg. while the average heigh of them rised from 163±0.05 cm to 164±0.05 cm. ıt has also determined that the body weight of control group rised from 50.59±14.10 kg to 50.71±13.44 kg. while the average height rised from 159±0.12 cm. to 160±0.12 cm. when compared first measurement and last measurement of both group, the body weight values were seen as nonsense statistically. While the height values were found logical statistically ($p< 0.01$).

When compared interms of height and weight, the difference between two group is assumed meaningful statistically ($p>0.05$)

The height and weight values of players participating in the survey are similar to the values explained in researches carried out by İ. Yazarer (2000), A. Şen (2003), E. Erol and and his callgues(1999). The rise of height may be related to their development age.

When we compare first and last systolic and diastolic blood pressure measurements of experimental group; diastolic blood pressure of experimental group decreased from 76.35±6.44 mmHg to 72.06±8.74 mmHg ($p>0.05$), systolic blood pressure decreased from 121.00±16.01 mmHg to 118.06±15.28 mmHg ($p>0.05$). While diastolic blood pressure of control group increased from 70.35±6.42 mmHg to 70.41±6.49 mmHg systolic blood pressure of them increased from 107.47±10.91 mmHg to 110.88±14.77 mmHg ($p<0.05$).

As a result of statistical evaulation, there is a significant difference between experimental group and control group first measurement of systolic ($p<0.01$), diastolic ($p<0.05$) interms of but it isn't the same for the some measurements after the training program ($p>0.05$). the result of our research seems parallelism with those carried out with the same age group by N. Dedekargınoğlu (1992), S. Maraşli (1997), H. Şahin (1999).

It can be said that, blood pressure reduction occuring as a result of the exercise can happen from decrase of the body fat and increase of aerobic power. It has been seen first values of experimental group resting heart beat is; 88.41±12.99 beat/minute but in the second measurement this value decreased to 81.59±9.88 beat/minute. First measurement of the control group was 69.65±5.61 beat/minute but offer the training; it increased to 70.65±6.60 beat/minute.

When we compare experimental group and control group it was found that there was a significant difference between first and last measurements ($p<0.01$). The results of our research show similativies with results of those carried on the some age group by Z. Çelik (2003), İ. Yazarer (2000), E. Erol and his friends (1999).

Being the rate of heart beat lower than normal dispersal level is the most obvious sign of cardiovascular endurance. The low pulse volume of girls and boys during resting and exercise is evualeted that they have high heart beat rate. Especially systolic pressure values of young during exercises are relatively lover than adults. Both increasing aerobic power and decrase of blood pressure effects endurance performance of training.

At the end of the research a significant difference couldn't been found control group's between first and last measurements of triceps, biceps, subscapula, suprailac and calf skinfold and experimental group's ($p>0.05$).

Experimental and control group's first measurement results of triceps, biceps, subscapula, suprailac and calf skinfold are not seen as statistically meaningful ($p>0.05$) while last measurement results are seen ($p<0.01$). the results of the research show parallelism with similar studies M. Loğoğlu (2002), H. Uzuncan (1999).

According to results of the research, there is no important difference between first and last values of experiment group's body fat percentage aren't statistically meaningful ($p>0.05$) whilst last measurements are ($p<0.01$) in the research it was found that measurements on body fat percentage; first values taken 4.32±1.05 dropped with a 17.12 % rate (3.58±1.12) after 8 weeks training program. Compared these values with studies on the same age level, we can see similarities N. Dedekargınoğlu (1992), A. Şen (2003), İ. Cicioğlu, (1995).

Destructing large amount of calories, training causes a decrase in the percentage of body fat (M. Günay, H. Koç, 2000). Decrease of body fat percentage occurring with training is due to biological adaptation to the training and fat metabolism causing an increase in fat oxidation (M. Günay, M. Onay, 1999). Also, contrary to the increase in body weight, decrase of body fat means that there is a development in muscle mass (M. Onay, 1993).

At the end of the research in 10x5 m. measurements of experimental group, first measurements were calculated as 20.29±1.66 second whilst last measurements were calculated 17.62±0.69 second ($p<0.01$). There was no important difference in the same measurements on control group inters of first and last measurements ($p>0.05$).

First measurements results has no sense statistically ($p>0.05$) whilst last measurement results are statistically meaningful ($p<0.01$) when we compare 10x5 m. measurement of experimental and control group. The result seems similar to some other studies (H. Uzuncan, 1991, İ. Demir, 2001).

Obtained from the study first and last measurements of 30 m. sprint were statistically senseless ($p>0.05$). ıt was found in the study that first 30 m. sprint measurements (5.19±0.48) dropped after 8 weeks training program at a 34 % rate (5.12±0.69). Measurement results shows similarities with Z. Çelik (2003) and F. A. Duman (2002)'s studies.

In our study, first and last measurement results of the reaction time to the right and left hand sound were found statistically trivial ($p>0.05$).

It was pointed that reaction time can be developed with regular trainings (T.O. Bompa, 1998). First ($p<0.05$) and last ($p<0.01$) measurement values of right hand reaction time to light between groups were found statistically significant.

In experimental group, first and last measurement values of left hand reaction time to light were found statistically important ($p<0.05$) but in control group, they were found senseless ($p>0.05$). Results of the study show parallelism to the study covering the same age group carried out by H. Şahin, (1999).

Reaction time is an important performance measure showing speed and effect of decision making against any outside stimuli and alsı is an significant factor in starting explosive acts (O. İmamoğlu, A.F. Ağaoğlu, Y.S. Ağaoğlu, 2000). It is natural that with trainings athletes have better reaction times because the time last during the process including observation, identification and assessment of the stimuli and giving order muscles to response will be shorter with training (S. Orhan, 2001).

In our study we find and last measurement result of leg strength of the experimental group meaningful ($p<0.01$) whilst we find the same measurements of control group irrelevant ($p<0.05$). First and last leg strenght measurement results were regarded important compared experimental and control groups. Results of the study show parallelism to the study covering the same age group carried out by M. Loğoğlu (2002).

First and last measurement result of hanging with bent arm were assumed as trivial in both groups ($p>0.05$). However, when it comes to inter-groups, the measurement results were evaulated as important ($p<0.01$). Results have similarities with the study of H. Uzuncan (1991) and M. Loğoğlu (2002) which concerned with the same age group.

Sit up movements done by experimental groups gave statistically logical results when first and last measurement values taken into consideration ($p<0.01$). But, it isn't right to say the same for the control group ($p>0.05$). on the other hand, inter-group first and last results seemed statistically significant ($p<0.01$). Result of our study show similarities to same identical studies (İ. Cicioğlu, 1995, Z. Çelik, 2003).

In the study, first and last measurements of push up movement done by experimental group didn't give substantial results ($p>0.05$) while the results of the control group were found statistically logical ($p<0.05$). When we compare first and last measurements of the groups, results were thought statistically meaningful ($p<0.01$). Results of the study show parallelism with F.A. Duman (2002)'s study on the same age group.

First and last measurement results of right and left handgrip strength performed by experimental and control group were found senseless ($p>0.05$). Results have similarities with some studies (S. İbiş, 2002, İ. Yazarer, 2000).

It is reported that hand dynamometer in Eurofit tests serves to determine arm strength moreover, arm strength can be increased by training and it is available in those who do regular exercises (M. Pense, 1996). In our study first and last measurements results of standing broad jump performed by experimental

group were found statistically important ($p<0.01$) while results of the same act performed by control group were statistically senseless ($p>0.05$). First ($p<0.05$) and last ($p<0.01$) measurement results between groups were considered statistically valuable. These values show similarity the study carried out by Ö. Şenel (1995) ve İ. Demir (2001).

Increases in leg strength, sit up and anaerobic parameters may result from the effect of training on strength. First and last measurement results of balance conducted an experimental and control groups were regarded statistically senseless ($p>0.05$). In our study measurements of balance showed that first that first measurement values (13.24±7.81) increased at a 28.31 % rate (18.47±13.29) after 8 weeks training program. Results of the study seems similarity to some similar studies (İ. Demir, 2001, M. Loğoğlu, 2002).

First and last measurement results of flexibility condacted on experimental and control group were considered statistically trivial ($p>0.05$). But when we compare groups interns of first and last measurements. We regard first results statistically unimportant ($p<0.05$) second results statistically important ($p<0.05$). Results of the study show parallelism with other similar studies E. Erol (1995), H. Şahin (1999), Ö. Şenel (1995).

Flexibility isn't only a indicator of the coordination of condition in a healthy body but also it depends on strength and body shape. Flexibility of the body may vary depending on person's activity and it's reported that flexibility increases obviously in those who particopet activity in sport (M. Pense, 1996).

In our study, first and last measurements result of aerobic power conducted on experimental group were found statistically significant ($p<0.01$) while that of control group were found statistically invaluable ($p>0.05$). When we compare first and last measurements between groups we see results statistically important ($p<0.01$). results of the study show parallelism with some similar studies (N. Dedekargınoğlu (1992), S. Maraşli (1997). There was no development in control group interms of aerobic capacity. That may result from the experimental group training based on developing technical capacity.

Increase in Max VO_2 directly depends on frequency, severity and duration of the training. Depending on quality and quantity, development in VO_2 may be in the range of 8 %-30% (E. Erol, 1995).

Strength training with regular and increasing weight develops athletes' aerobic powers. However, the development may vary depending on various factors. It is possible that some athletes may be effected different than others (H. Demir, 1996).

According to Akgün, Holman (1972) points that aerobic power increase after 12 years and especially between 11-15 ages maximal aerobic capacity increase logically and generally the biggest influence any endurance training on aerobic capacity occurs repid growth period.

After 8 weeks training program in our study, when we compare first and last measurement results of anaerobic power conducted on experimental and control groups, results seem statistically trial ($p>0.05$). However when we compare group results, it can be said that measurement results are statistically important ($p<0.01$). Results of our study show parallelism with some similar studies (İ. Cicioğlu, 1995, S. İbiş, 2002, E. Erol, 1995).

That the highest anaerobic power come out from the group which have combined training may be due the feet that it gives place to basic motor features like strength, speed, endurance and vertical jumping leg strength. The team conducted a combined training program has better averages than a team conducted a normal training program because they develop their motor abilities in a versatile and technical very during they pre paratuar period (Z. Çelik, 2003). This result means that sports like basketball reguries combined training program. All in all, it can be said that combined training is more effective than technical training.

Table 1: The Comparison of Physical and Conditional Features After Pre and Last Tests Applied For The Experimental and Control Group

Varıables	Groups		N	X	SH	T	Difference %
Weight Measurement (Kg)	Experimental	Pre Test	17	53,38	11,10	-1,921	1,38
		Last Test	17	54,21	11,02		
	Control	Pre Test	17	50,59	14,10	-0,255	0,23
		Last Test	17	50,71	13,44		
Height Measurement (cm)	Experimental	Pre Test	17	163	0,05	-4,315**	0,61
		Last Test	17	164	0,05		
	Control	Pre Test	17	159	0,12	-3,771**	0,62
		Last Test	17	160	0,12		
Diastolic Blood Pressure (mm Hg)	Experimental	Pre Test	17	76,35	6,44	1,640	5,61
		Last Test	17	72,06	8,74		
	Control	Pre Test	17	70,35	6,42	-0,293	0,08
		Last Test	17	70,41	6,49		
Sistolic Blood Pressure (mm Hg)	Experimental	Pre Test	17	121,00	16,01	0,750	2,42
		Last Test	17	118,06	15,28		
	Control	Pre Test	17	107,47	10,92	-2,154*	3,17
		Last Test	17	110,88	14,77		
Heart Beat (beat/min)	Experimental	Pre Test	17	88,41	12,99	2,217*	7,71
		Last Test	17	81,59	9,88		
	Control	Pre Test	17	69,65	5,61	-1,844	1,43
		Last Test	17	70,65	6,60		
Percent Body Fat (%)	Experimental	Pre Test	17	4,32	1,05	5,676	17,12
		Last Test	17	3,58	1,12		
	Control	Pre Test	17	2,64	0,72	-2,004	10,98
		Last Test	17	2,93	0,66		
10 x 5 m. (sec)	Experimental	Pre Test	17	20,29	1,66	6,134**	13,15
		Last Test	17	17,62	0,69		
	Control	Pre Test	17	19,39	1,29	0,593	0,10
		Last Test	17	19,37	1,32		
30 m. Sprint (msn)	Experimental	Pre Test	17	5,19	0,48	0,571	1,34
		Last Test	17	5,12	0,685		
	Control	Pre Test	17	6,16	0,76	-1,232	0,16
		Last Test	17	6,16	0,76		
Right Hand Reaction Time To Sound (msn)	Experimental	Pre Test	17	242,35	63,01	-1,409	11,28
		Last Test	17	215.00	77,07		
	Control	Pre Test	17	209,94	43,03	-3,733	21,68
		Last Test	17	255,47	49,56		
Left Hand Reaction Time To Sound (msn)	Experimental	Pre Test	17	209,71	34,55	-1,245	7,04
		Last Test	17	194,94	48,87		
	Control	Pre Test	17	224,18	47,17	-1,938	14,24
		Last Test	17	256,12	50,38		
Right Hand Reaction Time To Light (msn)	Experimental	Pre Test	17	219,71	42,40	0,356	2,27
		Last Test	17	214,71	23,39		
	Control	Pre Test	17	256,59	39,57	-0,932	4,60
		Last Test	17	268,41	51,69		
Left Hand Reaction Time To Light (msn)	Experimental	Pre Test	17	227,71	37,54	2,229*	7,31
		Last Test	17	211,06	17,16		
	Control	Pre Test	17	263,88	49,38	0,823	5,08
		Last Test	17	250,47	62,39		
Leg Strength (kg)	Experimental	Pre Test	17	49,38	16,02	-3,130**	17,21
		Last Test	17	57,88	17,01		
	Control	Pre Test	17	45,50	19,71	0,000	0,00
		Last Test	17	45,50	19,11		
Bent Arm Hang (sec)	Experimental	Pre Test	17	38,60	17,93	-0,324	3,52
		Last Test	17	39,96	19,23		
	Control	Pre Test	17	32,74	11,52		

		Last Test	17	32,65	11,23	0,411	0,27
Sit-up (number)	Experimental	Pre Test	17	31,94	8,75	-3,311**	32,06
		Last Test	17	42,18	7,74		
	Control	Pre Test	17	24,12	2,62	0,460	0,49
		Last Test	17	24,00	2,76		
Push-up (number)	Experimental	Pre Test	17	32,82	7,02	1,271	8,07
		Last Test	17	35,47	10,52		
	Control	Pre Test	17	25,94	7,15	2,519*	5,89
		Last Test	17	24,41	6,53		
Rightl Hand Grip Strength (kg)	Experimental	Pre Test	17	21,81	4,65	-0,900	3,43
		Last Test	17	22,56	5,53		
	Control	Pre Test	17	20,20	5,94	0,483	1,08
		Last Test	17	19,98	5,19		
Left Hand Grip Strength (kg)	Experimental	Pre Test	17	21,66	5,05	-1,212	4,52
		Last Test	17	22,64	6,33		
	Control	Pre Test	17	19,18	4,62	-0,106	0,15
		Last Test	17	19,21	4,47		
Standing Long Jump Test (cm)	Experimental	Pre Test	17	200,00	20,38	-4,538**	6,85
		Last Test	17	213,71	17,60		
	Control	Pre Test	17	179,62	28,06	0,000	0,00
		Last Test	17	179,62	27,93		
Flamingo Balance Test (sec)	Experimental	Pre Test	17	13,24	7,81	-1,618	39,5
		Last Test	17	18,47	13,39		
	Control	Pre Test	17	12,59	8,54	-1,329	3,25
		Last Test	17	13,00	7,97		
Sit And Reach Flexibility Test (cm)	Experimental	Pre Test	17	18,12	4,51	-1,086	7,45
		Last Test	17	19,47	6,10		
	Control	Pre Test	17	15,47	6,99	0,832	3,42
		Last Test	17	14,94	5,79		
Aerobic Power (ml.kg/min)	Experimental	Pre Test	17	67,21	8,90	-4,096**	8,65
		Last Test	17	73,03	8,08		
	Control	Pre Test	17	62,95	10,95	1,731	1,41
		Last Test	17	62,06	10,24		
Anaerobic Power (kg.m/min)	Experimental	Pre Test	17	71,32	12,49	1,977	4,59
		Last Test	17	74,60	15,10		
	Control	Pre Test	17	65,32	17,13	-0,643	0,03
		Last Test	17	65,34	17,14		

**p<0.01 *p<0.05

Table 2: The Comparison of Physical and Conditional Features Between The Groups After Pre and Last Tests Applied For The Experimental and Control Group

Variables	Groups		N	X	SH	T	Difference %
Weight Measurement (Kg)	Experimental	Pre Test	17	53,38	11,10	2,021	5,22
		Last Test	17	50,59	14,10		
	Control	Pre Test	17	54,21	11,02	2,253*	6,45
		Last Test	17	50,71	13,44		
Height Measurement (cm)	Experimental	Pre Test	17	163	0,05	2,176*	2,45
		Last Test	17	159	0,12		
	Control	Pre Test	17	164	0,05	2,217*	2,43
		Last Test	17	160	0,12		
Diastolic Blood Pressure (mm Hg)	Experimental	Pre Test	17	76,35	6,44	2,720*	7,85
		Last Test	17	70,35	6,42		
	Control	Pre Test	17	72,06	8,74	0,624	2,28
		Last Test	17	70,41	6,49		
Sistolic Blood Pressure (mm Hg)	Experimental	Pre Test	17	121,00	16,01	5,006**	11,18
		Last Test	17	107,47	10,91		

	Control	Pre Test	17	118,06	15,28		
		Last Test	17	110,88	14,77	3,332**	6,08
Heart Beat (beat/min)	Experimental	Pre Test	17	88,41	12,39		
		Last Test	17	69,65	5,61	5,467**	21,21
	Control	Pre Test	17	81,59	9,88		
		Last Test	17	70,65	6,60	3,797**	7,45
		Pre Test	17	0,69	0,16		
Percent Body Fat (%)	Experimental	Last Test	17	4,32	1,05	5,430	
		Pre Test	17	2,64	0,72		38,88
	Control	Last Test	17	3,58	1,12	2,071**	
		Pre Test	17	3,16	0,70		11,73
10 x 5 m. (min)	Experimental	Last Test	17	20,29	1,66		
		Pre Test	17	19,39	1,29	1,759	4,43
	Control	Last Test	17	17,62	0,69		
		Pre Test	17	19,37	1,32	-4, 848**	9,93
30 m. Sprint (msn)	Experimental	Last Test	17	5,19	0,48		
		Pre Test	17	6,16	0,76	-4,430**	18,68
	Control	Last Test	17	5,12	0,69		
		Pre Test	17	6,16	0,76	-4,190**	20,31
Right Hand Reaction Time To Sound (msn)	Experimental	Last Test	17	242,35	63,01		
		Pre Test	17	209,94	43,03	0,273	13,37
	Control	Last Test	17	215.00	77,07		
		Pre Test	17	255,47	49,56	-0,590	18,82
Left Hand Reaction Time To Sound (msn)	Experimental	Last Test	17	209,71	34,55		
		Pre Test	17	224,18	47,17	-2,062*	6,90
	Control	Last Test	17	194.94	48,87		
		Pre Test	17	256,12	50,38	-2,726*	31,38
Right Hand Reaction Time To Light(msn)	Experimental	Last Test	17	219,71	42,40		
		Pre Test	17	256,59	39,57	-2,622*	16,78
	Control	Last Test	17	214,71	23,38		
		Pre Test	17	268,41	51,69	-3,903**	25,01
Left Hand Reaction Time To Light (msn)	Experimental	Last Test	17	227,71	37,54		
		Pre Test	17	263,88	49,38	-2,405*	15,88
	Control	Last Test	17	211,06	17,16		
		Pre Test	17	250,47	62,39	-2,511*	18,67
Leg Strength (kg)	Experimental	Last Test	17	49,38	16,02		
		Pre Test	17	45,50	19,71	2,254*	7.85
	Control	Last Test	17	57,88	17,00		
		Pre Test	17	45,50	19,11	3,607**	21,38
Bent Arm Hang (min)	Experimental	Last Test	17	38,60	17,93		
		Pre Test	17	32,74	11,52	3,842**	15,18
	Control	Last Test	17	39,96	19,23		
		Pre Test	17	32,65	11,23	3,946**	18,29
Sit-up (number)	Experimental	Last Test	17	31,94	8,75		
		Pre Test	17	24,12	2,62	8,046**	24,48
	Control	Last Test	17	42,18	7,74		
		Pre Test	17	24,00	2,76	14,137**	43,10
Push-up (number)	Experimental	Last Test	17	32,82	7,02		
		Pre Test	17	25,94	7,15	8,179**	20,96
	Control	Last Test	17	35,47	10,52		
		Pre Test	17	24,41	6,53	6,014**	31,18
Rİghtl Hand Grip Strength (kg)	Experimental	Last Test	17	21,81	4,65		
		Pre Test	17	20,20	5,94	0,881	7,38
	Control	Last Test	17	22,56	5,53		
		Pre Test	17	19,98	5,19	1,403	11,43
Left Hand Grip Strength (kg)	Experimental	Last Test	17	21,65	5,05		
		Pre Test	17	19,18	4,62	1,492	11.40
	Control	Last Test	17	22,64	6,33		

		Pre Test	17	19,21	4,47	1,825	15,15
Standing Long Jump Test (cm)	Experimental	Last Test	17	200,00	20,38		
		Pre Test	17	179,62	28,06	2,424*	10,19
	Control	Last Test	17	213,70	17,60		
		Pre Test	17	179,61	27,93	4,257**	15,95
Flamingo Balance Test (sec)	Experimental	Last Test	17	13,24	7,81		
		Pre Test	17	12,59	8,54	0,231	4,90
	Control	Last Test	17	18,47	13,39		
		Pre Test	17	13,00	7,97	1,448	29,61
Sit And Reach Flexibility Test (cm)	Experimental	Last Test	17	18,12	4,51		
		Pre Test	17	15,47	6,99	1,312	14,62
	Control	Last Test	17	19,47	6,10		
		Pre Test	17	14,94	5,79	2,219*	23,26
Aerobic Power (ml.kg/min)	Experimental	Last Test	17	67,21	8,90		
		Pre Test	17	62,95	10,95	5,628**	6,33
	Control	Last Test	17	73,03	8,08		
		Pre Test	17	62,06	10,24	8,204**	15,02
Anaerobic Power (kg.m/min)	Experimental	Last Test	17	71,32	12,49		
		Pre Test	17	65,32	17,13	4,082**	8,41
	Control	Last Test	17	74,60	15,10		
		Pre Test	17	65,34	17,14	3,295**	12,89

**p<0.01 *p<0.05

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DETERMINING SOME PHYSICAL PARAMETERS OF SOCCER AND IN DOOR SOCCER PLAYERS

Pepe Osman[1], Günay Erkan[1], Çoksevim Bekir[1], Sucan Serdar[1] Polat Metin[1]
[1]Physical Education And Sport College Of Erciyes University, **TURKEY**
Email: ossy_pasha@hotmail.com / 07.02.2010 / 14.02.2010

Abstract

The purpose. At this study, it was aimed to determine some physical parameters of in door soccer and soccer players.

Methods. At this study, 32 indoor soccer players which age avarage was 22,53±0,98 (year) and 37 soccer player which age avarage was 21,16±1,95 (year) were participated volunteerly.

Age, body lenght, body weight, flexibility, vertical jump, 30 seconds shuttle, 10 metre sprint, body mass index and body fat percentage parameters of volunteers were measured.

Data were recorded on computer by using Package programe which was called SPSS. For statistical analysis between groups, independent t test was performed.

Results. According to comparement between groups, it was not found meaningful difference at the lenght, body weight, flexibility and body mass index parameters ($p>0.05$). While meaningful difference was found about body fat percentage parameter at the level of $p<0.05$, meaningful differences were found about age, vertical jump, 30 second shuttle and 30 meter sprint parameters at the level of $p<0.01$

Conclusion. Indoor soccer players were more dominant than soccer players about short timed and high intensitive excercises. We thought that this situation could be based on difference of game field sizes.

Key words: Soccer, Indoor soccer, Physical Parameters

Introduction

One of the most important aim of sport studies originates from wishes about reaching aimed succes during competition

Sport's being reached to big communities, makes it a fact which take it only being a activity out, obtains material and spiritual success at the same time.

Anxieties and questions about how to be successful at sport, how to reach to peak and how to stay at the peak make scientists interest for choosing players according to branch, determaning suitable trainig methods, presenting scientific data about performance and physical fitness according to aims (M. Duyul, 2005).

Even if there are so many documents about how soccer have appeared in world literature, it was started in England at the modern sense. (G. Carnibella el al., 1996)

Strenght, flexibility, anaerobic- aerobic power and speed have a very big importance at performing a movement in soccer

In soccer, essipecially performance and strenght are closely related with lenght, body weight, flexibility levels. At this game, to be enduranced is important as much as being speed because, soccer game is being played with high tempo in long term. For players adapting this situation, they should improve their strenght, endurance, speed, condition and flexibility properties with trainings which are based on scientific basics. (M. Duyul, 2005, H. Taşkin, 2006).

Futsal is an intermittent sport that makes high physical, technical, and tactical demands on players. It is played on a court of 40620 m with goals of 362 m (the same as in handball). As in basketball, two 20-min periods are scheduled, and here there is an important distinction from football, in that like basketball, the clock is stopped for some events, which usually means that the game lasts 75 – 85% longer than the scheduled 40 min. This varies according to the possibilities given by the rules: time-outs, double penalties, court cleaning, stoppages for injuries, medical attention, and so on. Teams can request a time-out (1 min) in each half and there is a break of 10 min between halves.

At literature, only a few studies have analyzed some antropometric and aerobic characteristic of soccer and indoor soccer players (E.M. Gorostiaga et al, 2009).

Even if these branches are basically so similiar, they are different each other according to their rules. So, it is thought that there should be physical differences of these branches' players

The aim of the study was to determine some physical parameters of in door soccer and soccer players.

Methods

Participants

At this study, elite 32 indoor soccer players and 37 elite football players were joined volunteerly. Volunteers were performed some physical measurements

Measure

Age, body weight, body lenght, Body mass index and body fat percentage measurements were done Physology Laboratory of Physical Education and Sport Collegue of Erciyes University.

The age of each volunteer was recorded and calculated from the date of birth which was written in their ID card. Body Height was measured to the nearest 0.1cm using scala

Body Weight was measured by using Bio Impedance Analysis (Tanita BC418MA)

Also body mass index was measured by using Body Impedance Analysis (Tanita BC418MA)

Body mass index was calculated as weight (kg) / height $(m)^2$ according to standards recommended by The World Health Organization (WHO, 1987).

Four sites (Biceps, Triceps, Subscapular and Supraliac) of volunteers were measured by using skinfold callipers and Body Fat Percentage was estimated by Durning and Womersley formula

Durning and Womersley Formula was described in literature as D=1,1631-0,0632X (Biceps + Triceps + Subscapular + Suprailiac) for 20-29 aged man (I. Erdemir, E. Tüfekçioğlu, 2008, F. Akça, S. Müniroğlu, 2006)

30 seconds shuttle, 10 metre sprint, vertical jump and flexibility measurements were done in Süleyman Demirel Sport Saloon of Erciyes University.

The volunteers were performed 20 minutes of individual warm up and then they performed tests.

Vertical jump was performed using a New test vertical jump meter. They performed vertical jump three times and best value was recorded

Volunteers were performed shuttle during 30 seconds and recorded how many shuttle they were performed at the end of 30 seconds

New test was used for measuring volunteers' 10 meter sprint values Volunteers had to choose which foot they had to put on the starting line for the sprint standing position start. They then performed 10 m sprints three times . Best value was recorded

Flexibility measurement was done by sit and reach test (D. Güler, 2009)

Statistical Analysis

Data were recorded on computer by using Package programe which was called SPSS. For statistical analysis between groups, independent t test was performed.

Protocol of the Study

Measurements of volunteers were done at the same time periods and enviromental conditions in Physology Laboratory of Physical Education and Sport Collegue and Süleyman Demirel Sport Saloon of Erciyes University.

Results

Table I: Comparement Of Some Physical Parameters of Soccer and Indoor Soccer Players

Parameters	Groups	n	X±SD	t	p
Age (year)	Indoor Soccer	32	22,53±0,98	3,753	**,000****
	Soccer	37	21,16±1,95		
Lenght (cm)	Indoor Soccer	32	180,16±3,17	,833	,409 ns
	Soccer	37	179,03±7,50		
Body Weight (kg)	Indoor Soccer	32	73,47±3,52	,283	,778 ns
	Soccer	37	73,24±3,04		
Body Mass Index	Indoor Soccer	32	22,64±1,03	-,876	,384 ns
	Soccer	37	22,92±1,61		
Body Fat Percentage	Indoor Soccer	32	9,68±2,38	-2,440	**,017***
	Soccer	37	11,18±2,72		
30 Seconds Shuttle	Indoor Soccer	32	16,38±2,93	10,151	**,000****
	Soccer	37	17,41±3,35		
10 metre sprint	Indoor Soccer	32	61,56±3,72	-9,398	**,000****
	Soccer	37	52,54±8,57		
Flexibility (cm)	Indoor Soccer	32	54,28±1,42	-1,349	,182 ns
	Soccer	37	46,11±4,65		
Vertical Jump (cm)	Indoor Soccer	32	3,73±0,17	5,803	**,000****
	Soccer	37	4,12±0,18		

*P<0.05,**P<0.01, ns: not significant, X±SD: mean ± standart deviation

As a result of the comparement of some physical parameters of Soccer and Indoor Soccer players according to Table I; it was not found meaningful difference at the lenght, body weight, flexibility and doyy mass index parameters (p>0.05). While meaningful difference was found about body fat percentage parameter at the level of p<0.05, meaningful differences were also found about age, vertical jump, 30 second shuttle and 30 meter sprint parameters at the level of p<0.01.

Discussion

At this study, which was aimed to compare some physical parameters of Soccer and Indoor soccer players; Meaningful difference was found at the age parameter (p<0.01). In our study we found age avarage of indoor soccer players as 22,53±0,98 (year) and soccer players' age avarage as 21,16±1,95 (year) . While H. Taşkin et al (2007) were found footbal players age avarage as 22,53 ± 2,78 (year), were found indoor soccer players age avarage as 25,6±2,5(year). The reason of finding this meaningful difference was thought that players which had more sport age, were prefered Indoor soccer.

Meaningful difference was not found at the lenght parameter (p>0.05) In our study we found lenght avarage of indoor soccer players as 180,16±3,17 (cm) and soccer players' lenght avarage as 179,03±7,50 (cm). While A. Bandyopadhyay (2007) was found soccer players' lenght avarage as 165,10±3,90, Barbero Alvarez et al (2008) were found indoor soccer players lenght avarage as 175±6 (cm). The reason of it was thought that most of thet soccer players which participated to study, were playing as mid-fielders and successful indoor soccer players and midfielder soccer players' lenght component of phsyical parameters were close sizes. Meaningful difference was not found at the body weight parameter (p>0.05). I. Guerra et al. (2004) was found body weigt of soccer players as 68,5±4,81(kg) were found body weight of indoor soccer players as 73.8± 5.7 (kg),

E.M. Gorostiaga et al. (2009) were not also found meaningful difference between Indoor soccer and Soccer players. Their findings were also similiar like our study

Meaningful difference was not found at the BMI parameter ($p>0.05$). Underlying reason of it was thouth that Both player groups were elite and they were training regularly with high intensive trainings.

Meaningful difference was found at the BFP parameter ($p<0.05$). It was thought that Mid-fielders are the most distance runners in soccer. So that, their BFP levels were lower than other position players. Indoor soccer players were close to mid-fielders as player profile.

Meaningful difference was not found at the flexibility parameter ($p>0.05$). In soccer and Indoor soccer, flexibility have important advantages for performing a technical movement or combinated technical movements. Underlying reason of not to finding meaningful difference at this parameter was thought that both of the player groups were technical players and their flexibility levels were so close to each other.

Meaningful difference was found at the vertical jump parameter in favor of soccer players ($p<0.01$). The vertical jump height itself is a good measure of specific muscular performance (E. Günay, 2008, S.M. Ostojic, 2000). E.M. Gorostiaga et al. (2009) were found meaningful difference between indoor soccers and soccer players on vertical jump parameter. Their findings were supported our findings

Meaningful difference was found at the 30 second shuttle parameter ($p<0.01$). Strenght is a basic feature (U. Wisloff et al. 1998) Underlying reason of it was thought that characteristic of Indoor soccer game was being faster than soccer, based on indoor soccer players so that Indoor soccer players' muscular strenght and endurance should be beter than soccer players

Meaningful difference was found at the 10 meter sprint parameter ($p<0.01$). The reason of it was thought that Indoor soccer was a multiple-sprints sport in which there were more high-intensity phases than in soccer. As a result of the study, Indoor soccer players were more dominant than soccer players about short timed and high intensitive excercises. We thought that this situation could be based on difference of game field sizes.

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EFFECT OF BOXES OF DIFFERENT HEIGHTS DEVELOPMENTS EXPLOSIVE ABILITY OF LEAGS AND LEVEL OF LONG JUMP

READ FAEQ ABDUL JABBER
University of Suleiman
Sport College of Physical Education, **IRAQ**
04.02.2010 / 12.02.2010

Abstract

Which require Allowathb during the performance in a moment promote transfer of the horizontal speed of the center of gravity to the vertical speed at the lowest possible loss of speed gained from approaching

Requirements include the effectiveness of the motor's long jump, be the outcome resulting from the approach speed, in addition to the amount of power resulting from the upgrade, access leading to high rates of speed at the beginning of aviation and to have a high flight path Allowathb appropriate to be effective. (J. Aweys, 1989; 297)

The most important physical attributes that play an important and positive influence in the development of Falipalothb long and closely linked to motor performance and requirements is the description of the explosive capacity of the two men, and that the use of training Albleomturk of the factors that lead to the explosive increase the capacity of the two men, and for the purpose of developing strength and speed of movement, where allow for the nervous system Pthvezokpr number of muscle fibers and the development of Almnaqbdp Naqbadadtha sequence leading to the production of a larger force, (H.A. Mohammad, 1992: 6) and supply only motor performance requirements as a result of the event, is to combine maximum strength and speed together to achieve a high degree of status of the explosive capacity of the two men to be developed.

It means to be a positive influence in the development of explosive power with less effort and time is Albulayomturk exercises that include jumping Tmarenat types of interference from various jumping exercises, including deep, "the exercises which are based on the fall of a man and a higher place one or both men to the ground followed by the vertical jumping up or forward power and high speed (A. Levchenko, Matveev, 1989:73)

The importance of the research based on the principle of the use of different heights for wooden boxes heights of 20 cm, 40 cm, 60 cm, and find out which one is more influential in the development of explosive power and improve the level of digital Falipalothb term.
Key words: boxes, explosive ability, long jump.

The research problem:

It has been noted researcher through his teaching and coaching in the stage of upgrading totally irresponsible to change the course of the body center of gravity resulting from the force of evolution in the long jump one point, the basic technical and it is one of the difficulties on Allowathb. The fact that the main burden falls on the legs, which it is based Allowathb from the ground to reach a flight assist at the performance of the skill of making a better point is that the more explosive power of the two men helped him whenever Allowathb to achieve maximum height perpendicular to the body Allowathb to improve the quality of achievement. Prompting the researcher to use different altitudes of the funds, scientifically sound knowledge of any of the heights is the best and the best in the explosive development of the ability of the two men, which reflect the development level of performance when the performance of the skill of the litmus tests of significance on the evolution of the explosive capacity of the two men as well as the ability to recruit Allowathb this effort level of achievement in the development of digital

Goals Search:

1 - see the effects of altitude (20 - 40 - 60) cm from the funds in the development of the capacity of the explosive two-digit level and the effectiveness of the long jump.

2 - Find out which rises more influential in the development of the capacity of the explosive two-digit level and the effectiveness of the long jump

Hypotheses:

1 - There are significant differences between groups in tests before and after the explosive capacity and level of digital Falipalothb term.

2 - There are significant differences between the heights of deep jump and capacity development in the explosive tests before and after tests for a posteriori.

The research methodology and procedures of the field:

Research Methodology:

User:Researcher used the experimental method design groups equal the essence of the experimental method

Sample Search:

Phase of the study included students from the second phase of the Faculty of Physical Education at the University of Babylon for the academic year 2007-2008 and took the test on the people of a, b, c, totaling 30 students from a total of 100 randomly selected students has been distributed by the sample (C.P.

Donald, 1984) students of the group became one of our three groups and so we have three groups of experimental groups were divided randomly by lot also, as the experimental group included the first performance in the high jump deep (60 cm) and ABG second experimental performance of the high jump deep (40 cm) and the third experimental group's performance on the high jump deep (20 cm) and control on the variable of performance art (technique) for the long jump lay-researcher training programs for the study of research as he left under the control of the article and a professor of learning so as not to affect the accuracy of the results. Homogeneity of the sample has been made possible through measurements of height and age and weight as shown in the table (A., Ballesteros, 1991).

Training curriculumBeen :

Laying the foundations for the proposed program Albleomturk as follows:-

-The program aims to develop the capacity of the two men using the explosive exercises Albleomturk as a modern means used to develop such capacity and for beginners the effectiveness of the long jump.

- Duration of the program nine weeks for the period 7.10.2007 until 11.12.2007 by training units per week ie total of eight units Ashrouhdp training program consists of three training sessions of the medium and free movement Ptmuj (1:2) The course is composed of medium (3) weeks.

- According to the rules of free training Albleomturk have used a researcher in the program intensity ranging from 50% to 70% of the maximum capacity Allowathb for the distance of horizontal and vertical Albulayomturk exercises and the number of groups 2-8 and the number of iterations from 4-10 repeatedly with the active rest period between the groups 2 -4 minutes between iterations of $ 60-90 seconds. (C.P. Donald, 1984:31)

- After the research sample was divided in three groups of equal researcher prepared a training curriculum was adopted in drafting the results of physical tests consisting of exercises Albulayomturks style deep jump on the funds for the development of some variables Albayumkanikip and explosive ability and achievement as the deployment of each method to the experimental group was guided by their own measure Researcher height appropriate to the Fund every two weeks, both of the two men together or each man individually to determine the appropriate height for each hopper.

- The time allocated for training jump deep three elevations (20, 40, 60) cm long implementation of the program ranges between 50-60 minutes.

- Taking into account the principle of increasing intensity through the maximum height of the wooden box on the hopper for each unit of 20-75 cm..

Table (1) shows the formation of free training exercises Albleomturk

Group	Weeks	Number of the Group	Exercise frequency	Rest between repetitions	Rest between the Group	Time performan-ce	Intensity
1	One	5	6	10	2.30 - 4	S 2 - 3	% 50 – 70
2	Two	5	7	10	2.30 - 4	S 2 - 3	% 50 – 70
3	Three	5	5	10	2.30 - 4	S 2 - 3	% 50 – 70
4	Four	5	7	10	2.30 - 4	S 2 - 3	% 50 – 70
5	Five	5	8	10	2.30 - 4	S 2 - 3	% 50 – 70
6	Sixe	5	6	10	2.30 - 4	S 2 - 3	% 50 – 70
7	Seven	5	8	10	2.30 - 4	S 2 - 3	% 50 – 70
8	Eight	5	9	10	2.30 - 4	S 2 - 3	% 50 – 70
9	nine	5	7	10	2.30 - 4	S 2 - 3	% 50 – 70

Posteriori tests:

The researcher tests a posteriori the research sample on Monday and Tuesday 16-17/12/2007 tribal style test himself and was keen to find the test conditions and requirements of the tribal in all the tests.

Statistical methods :

- Arithmetic mean , test (t) corresponding to the samples , - test (f) , - test LSD

Present the results and analysis

Table (2) shows the results of the tests Alqublipualbaadip of the first experimental group (60 cm)

Variables	Teams circles	Teams deviations	Calculated value of(T)	Significance level
Long jump	-0.360	0.09	-12.75	0.00
Ran 30 meters	0.756	0.26	9.31	0.00
Vertical jump	-7.856	0.55	-45.45	0.00
Hgelat right 5	-0.650	0.06	-34.58	0.00
Hgelat left 5	-0.624	0.07	-26.73	0.00

(*) Since the significance levels of less than 0.05, it means that significant differences between tests before and after the group

Table (3) shows the results of tests before and after the group Altjeribipalthanip (40 cm)

Variables	Teams circles	Teams deviations	Calculated value of(T)	Significance level
Long jump	-0.099	0.05	-5.82	0.00
Ran 30 meters	0.329	0.18	5.83	0.00
Vertical jump	-5.900	0.43	-42.95	0.00
Hgelat right 5	-0.465	0.04	-36.95	0.00
Hgelat left 5	-0.466	0.04	-37.05	0.00

(*)Since the significance levels of less than 0.05, it means that significant differences between tests before and after the group

Table (4) shows the results of tests before and after the third experimental group (20 cm)

Variables	Teams circles	Teams deviations	Calculated value of(T)	Significance level
Long jump	-0.121	0.04	-8.89	0.00
Ran 30 meters	0.311	0.18	5.54	0.00
Vertical jump	-4.940	0.55	-28.60	0.00
Hgelat right 5	-0.443	0.04	-35.26	0.00
Hgelat left 5	-0.451	0.04	-32.54	0.00

(*)Since the significance levels of less than 0.05, it means that significant differences between tests before and after the group

Table (5) shows the results of analysis of variance and the value of (q) and calculated the level of significance

Variables	Source of variation	Sum of squares	Degrees of freedom	Mean-Square	Values (f), calculated	Significance level
Long jump	Groups	0.494	2	0.247	5.909	0.007
	Within groups	1.128	27	0.042		
Ran 30 meters	Groups	1.131	2	0.565	10.043	0.001
	Within groups	1.520	27	0.056		
Vertical jump	Groups	44.896	2	22.448	5.085	0.013
	Within groups	119.198	27	4.415		
Hgelat right 5	Groups	0.292	2	0.146	7.053	0.003
	Within groups	0.560	27	0.021		
Hgelat left 5	Groups	0.226	2	0.113	5.924	0.007
	Within groups	0.514	27	0.019		

(*) Since the levels of significance equal to or less than 0.05, it means that significant differences between the three groups in these variables a posteriori

Table (6) between the value of the least significant difference (LSD)

Variables	Groups	Teams circles	Significance level
Long jump	g (1) – g (2)	0.277(*)	0.005
	g (1) – g (3)	0.267(*)	0.007
	g (2) – g (3)	-0.010	0.914
Ran 30 meters	g (1) – g (2)	-0.396(*)	0.001
	g (1) – g (3)	-0.426(*)	0.000
	g (2) – g (3)	-0.030	0.780
Vertical jump	g (1) – g (2)	2.046(*)	0.038
	g (1) – g (3)	2.919(*)	0.004
	g (2) – g (3)	0.873	0.361
Hgelat right 5	g (1) – g (2)	0.194(*)	0.006
	g (1) – g (3)	0.222(*)	0.002

	g (2) – g (3)	0.028	0.667
Hgelat left 5	g (1) – g (2)	0.176(*)	0.008
	g (1) – g (3)	0.191(*)	0.005
	g (2) – g (3)	0.015	0.810

(*) Since some level of significance equal to or less than 0.05, it means that the differencesMorale among the three groups in these variables

Present the results of accomplishing the long jump for the three experimental groups

Table (7) shows the results of the tests Alqublipualbaadip of the first experimental group (60 cm) in Achievement

Variables	Teams circles	Teams deviations	Calculated value of(T)	Significance level
Achievement	-0.348	0.01	-174.00	0.00

(*) Since the significance levels of less than 0.05, it means that significant differences between tests before and after the group .

Table (8) shows the results of the tests Alqublipualbaadip of the two experimental group (40 cm) in Achievement

Variables	Teams circles	Teams deviations	Calculated value of(T)	Significance level
Achievement	-0.313	0.04	-25.09	0.00

(*) Since the significance levels of less than 0.05, it means that significant differences between tests before and after the group .

Table (9) shows the results of the tests Alqublipualbaadip of the two experimental group (20 cm) in Achievement

Variables	Teams circles	Teams deviations	Calculated value of(T)	Significance level
Achievement	-0.220	0.04	-19.38	0.00

(*) Since the significance levels of less than 0.05, it means that significant differences between tests before and after the group .

Table (10) shows the results of analysis of variance and the value of (q) and calculated the level of significance

Variables	Source of variation	Sum of squares	Degrees of freedom	Mean-Square	Values (f), calculated	Significance level
Achievement	Groups	0.494	2	0.247	5.909	0.007
	Within groups	1.128	27	0.042		

(*) Since the levels of significance equal to or less than 0.05, it means that significant differences between the three groups in these variables a posteriori

Table (11) between the value of the least significant difference (LSD)

Variables	Groups	Teams circles	Significance level
Achievement	g (1) – g (2)	0.047	0.462
	g (1) – g (3)	0.203(*)	0.003
	g (2) – g (3)	0.156(*)	0.020

(*) Since some level of significance equal to or less than 0.05, it means that the differencesMorale among the three groups in these variables

Note from the results presented in the tables, which included tests of explosive power, which represents the totals of the three experimental results showed that there are significant differences between the circles for the calculation results of the tests a posteriori, although the intensity of exercise in terms of altitude used for each sample was able to program for the development of horizontal speed of the moment, we find that upgrading Allowathb to improve performance when trying to achieve the highest possible vertical height so that it can get to fly to the highest point this has to do two variables are key.

A prompt start and the momentum which it is based Allowathb of land to achieve maximum height during the vertical flight path, it is the horizontal distance to achieve better mechanical Taadalhdv for the long jump and defined three key elements of the horizontal speed and vertical speed and high center of gravity of the body during the advancement that is affected by force from the moment of the promotion. (A. Ballesteros, 1991:137) and is associated with a time of advancement, we find that as soon leave the land the greater the chance his vehicle under the influence of the horizontal speed, thus increasing the horizontal distance achieved by the additional level of

departure. Allowathb as having the ability in the highest vertical jump height gain a good position to do this, aviation and depends on the ability to enjoy Allowathb of the explosive force of two men. (M.I. Saad, 1996:44) we find that the rate of speed approaching the speed of vertical turns to acquire Allowathb Ntejthaartqa good outcomes coming up and forward Check the horizontal distance of the leap. and speed is of the variables that control the level of effectiveness of the digital long jump, in addition to upgrading that force is a key influential variable in this event, since the force associated with upgrading as soon as gained during the Alrkdp Rough, and the variable force is affected by raising exercises Albulayomturk used to Ttoiralqop. (A.G.O. Mohamed, 1990:333) And we reached the center of gravity body Allowathb maximum height during the vertical flight path technique allowed to perform well during the phase of flight and in preparation for the landing phase, since the increase in the high center of gravity is the result of common factors are increases in the high center of gravity before leaving the ground directly, and the angle of departure, and accelerate the instantaneous point of departure at the center of gravity directly. (S. Ahmed, 1996:242)

Note from the results presented in tables , which included tests of explosive power, which represents the totals of the three experimental results showed that there are significant differences between the circles for the calculation results of the tests a posteriori, although the intensity of exercise in terms of altitude used for each sample was able to program for the development of the capacity building requirements of the traps that are realistic and rigorous training process according to the principles of proper training, which led to the development of the three groups, due to style and format of the performance of exercises Albleomturk place on the same tracks in order to ensure the privacy of motor training and achieve the greatest benefit of them, as confirmed in this study. As a result of this "sporting achievement level rises rapidly during the use of new exercises is not used for sporting and special carrying doses" (A.N. Abdel, H.H. Kassem, 1988:105) has stimulated exercises that used to jump-style deep muscle groups to unite and lead the work out economically, which led to the development of capacity and the presence of explosive significant difference between the three groups improved explosive power should be used analysis of variance test for knowledge of moral distinctions, and the difference of the moral training of the three methods used in the explosive development of the capacity of a sample search must therefore make use of the test is less significant difference LSD to see any of the methods best course in the development of capacity explosive of the members of the research sample, the results showed that clear in the table (D.R. Chu, 1988), the first experimental group trained at an altitude of funds jumped to 60 cm deep was the best groups, which make the results of the sample in the tests is the best and that is the result of the effectiveness of deep jump, which has become a way for the development of musculature in order to respond more quickly and strongly during the performance of movements requiring muscle ups immediately followed by a palace in the muscle itself (D.R. Chu, 1988:12). We also note that the second and third groups have evolved at rates close despite the fact that the second best of the third set reaching out for billing, but the improvement in the performance of the two groups led to the development of muscles to extend the working muscles and joints of the two men enough high-speed, which had an effective impact in increasing the rate of this tide by the use of training Albulayomturk style deep jump that led to the development of the three groups, as is the training methods of these rises and successful training methods to develop the capacity explosive, but at rates degrees as high levels of funds used with the start-ups and young people prefer to range between (50 cm - 80 cm) in order to exercise influence, not a threat and this is what has already been achieved in tests of the groups that the group being trained at a height of 60 cm was the best, followed by groups Alachritan. As a result of jumping exercises Albulayomturk style deep Ttorp speed and power as there are significant correlation between the two elements of speed and power can not be of the muscle or muscle group would quickly crunch were not strong enough for such a performance (O. Mohamed, 1990:120) for the improved and developed rapidly to all the research sample.

Conclusions and recommendations:

Conclusions:

1 - afternoon Ttorvi explosive development of capacity and achievement Balothb run through tests before and after the research sample.

2 - The experimental group used the deep jump from the high 60 cm had more impact in the development of explosive power and achievement Balothb term aggregates the second and third.

3 - The experimental group used to jump deep 40 cm high had more impact in the development of achievement Balothb long ABG III.

4 - The training curriculum proposed for the deep bounce helps to improve in the long jump Alanejazalno.i 5-2.

Recommendations:

1 - Use a training curriculum to jump deep into the proposal and described the physical preparation of the effectiveness of various types of jump.

2 - the need to provide funds designed to bounce deep into the potential of learning activities and field athletics and training.

3 - Conduct similar studies using the higher altitudes and greater volumes of applicants.

4 - The need to use exercises Albulayomturk (jumping deep) from a height of 60 cm for beginners and beginners.

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EXAMINATION OF THE INJURİES ON THE MUAY THAİ ATHLETES

Taşkin Halil[1], Arslan Fatma[2], Kaya Metin[3], Gevat Cecilia[4], Kumartaşli Mehmet[3], Erkmen Nurtekin[1]
[1]Selçuk University Physical Education and Sport High School, Konya/TURKEY
[2]Karamanoğlu Mehmet Bey University Physical Education and Sport High School Karaman/TURKEY
[3]Gazi University Physical Education and Sport High School Ankara/TURKEY
[4]Faculty of Physical Education and Sport, Ovidius University of Constanta, ROMANIA
Email: htaskin@selcuk.edu.tr / 14.02.2010 / 26.02.2010

Abstract

Objective: The aim of the study, investigated the injuries of athletes who compete at elite level in Muay Thai in Turkey and seventy Muay Thai athletes participated volunteer.

Method: In the study "Athlete's Profile Questionnare" was applied to determine Muay Thai athlete's level of injuries that was modeled by M. Kazemi et al. (2005). The frequency and the percentage of research results were determined by us. Chi-Square test was used for differences between some variables.

Results: To the study, 24 female athlete (ages 17,75±2,93 years, sports ages 7,00±2,88 years, heights 8,24±32,32 m, weights 56,56±7,75 kg); 46 male athlete (ages 18,33±2,76 years, sports ages 7,28±3,07 years, heights 1,77±0,17m, weights 64,48±11,08 kg) participated.

Frequency and the percentage according to the injuries types: Females; Sprain 3 (% 12,5), muscle cramp 1 (% 4,2), bruise 4 (% 16,7); Males; Sprain 8 (% 17,3), muscle cramp 2 (% 4,3), bruise 14 (% 30,4). Female athletes were injured of neck %4,2, lower extremities %29,3; male athletes were injured of body %2,2, upper extremities % 109 and lower extremities % 71,7. Female athletes were injured in training of 5 (% 20,8), in competition 3 (% 12,5); male athletes were injured in training of 13 (% 28,3), in competition 11 (% 23,9).

Conclusion: It was seen that the athletes did not live very critical of injuries. Athletes used in terms of health protective equipment more in competition. It was considered that the protective equipment pay did not attention in training.

Key Words: Muay Thai; İnjury; Sport**.**

Introduction

Most of the in martial arts athletes do training 2 or 4 times in a week. Also, training hours and frequency in any sports may change depending on competition levels of individuals and sports' currency. Training can be defined as improving athletes' skills. A specific training can change between each of the athletes but there is a general format that is followed. The training sections often start with warming or usual streching; that is followed by kick, self-defense, training forms and sparing exercises (M. Kazemi, H. Shearer and Y.S. Choung, 2005; R.M. Buschbacher and T. Shay, 1999). The martial arts sports are done with the aims such as self-defense, mental discipline, body and mental consistency, physical condition (N. Merrilee et al., 2000). Muay Thai is martial arts of Tayland which lets kick, knee and elbow using. It supports both physical and mental development, also emphasizes many useful disciplinaries, respect and morale (C. Suhongsa, 1999). It is estimated that its

popularity increases and it has 1 million participants around the world (International Muay Thai Kickboxing Federation (IAMTF) International Office). Despite this, there is little data about injury types in Mua thai. It is quite different from taekwondo and karate about which there are much publishing. The concept of the activity depends on individuals' level. (T.W. Lloyd, M.P.H. Tyler, A.H.N. Roberts, 1998; S. Gartland, M.H.A. Malik, and M.E. Lovell, 2001) In Mua Thai, the whole body moves. The hip is in rotation with each kick, fist and block and nearly all movements are used in a competition (C. Boykin, 2002). S. Gartland and his friends (2001) investigated kidney and liver functions and muscle injury during and after the competition .While there was no effect on kidney and liver functions they found that skeletal system could be damaged. Soft tissue trauma, laceration and hematoms are among the most common and frequent injury types. Young participants and less experienced ones have a high risk of being injured. Nearly %50 of all injuries are seen on head, face and neck (R.B. Birrer, 1996; M. Oler, W. Tomson, H. Pepe, 1991). Lower extremities are one of the most common injury areas (M.L. Schwartz, A.R. Hudson, G.R. Fernie, 1986).

Material and method

Universe and sample

The aim of this research is to examine the injuries seen in athletes competing in elite level in Mua Thai in Turkey. The universe of the research is consisted of muay thai sporters participated in eliminations done in 7 regions for Turkey championship, the sample is consisted of 70 muay thai athletes of 117 athletes who have reached quarter-final, semi-final and final competitions at the end of these eliminations.

Data Collection Tool

In this study, "profile inquiry of sporters" developed by M. Kazemi et al. (2005) was used in order to determine the mutilation levels of athletes (M. Kazemi, H. Shearer and Y.S. Choung, 2005).

Statistical Analysis

The analysis of data was abstracted as personal information variables (age, gender, sports age, branch, body weight, and mutilation types), frequency and percentage distribution in SPSS software package. In examining the relation between some variables, chi-square was done as in cross table.

Discussion and conclusion

In this study carried out with the aim of examining mutilations seen in athletes competing in elite level in Muay thai branch in Turkey, while most of the injuries are seen in the foot area in females, injuries are seen in knee, leg, ankle and foot area in males. In the study by J.B. Burks and K. Satterfield (1998) over the athletes participated in karate championship, the rates of injuries seen in foot and ankle area have been seen to show similarity with this study. It has been determined that the most common injuries types that female and male athletes have are sprain and bruise and at the end of these injuries, both female and male athletes are out of training for 2 or 3 times at most. Injury is a concept including kicking and being kicked for both females and males and male athletes have more tendency of being kicked than females (K. Beis, P. Tsaklis, W. Pieter, G. Abatzides, 2001).

When the injuries are categorized anatomically as head, neck, body, lower extremity and upper extremity injuries, it has been found that %4,2 of female athletes have neck and %29,3 of them have lower extremity injuries, %2,2 of male athletes have body and %109 of them have upper extremity injuries and %71,7 of them have lower extremity injuries. S. Gartland et al. (2001) found that most of the injuries were in lower extremity (%75),body (%15,9) and upper extremity (%6,8) injuries followed in an investigation that he carried out over amateur and professional athletes dealing with Muay Thai branch. The most common injury for both amateurs (%64) and professionals (%53) was found lower extremity. G. James et al. (2003) and M. Kazemi et al. (2004) declared in their studies done over taekwondo athletes that females' lower extremity was affected mostly and as for males, beside head and neck injuries, their lower extremity was affected most frequently. These findings show similarity with the study being carried out. In taekwondo and general martial arts, mostly kick techniques are stressed to have a high potential of injuries. Throughout the taekwondo tournaments, the injuries that female and male athletes had were observed mostly to be head, neck and lower extremities (M. Feehan and A.E. Waller 1995). When percentage and frequency distribution about where female and male athletes in the research get injured are examined it is seen that both females and males get injured during the training (Table 5). M. Kazemi et al. (2005), reports in the studies about injuries seen in athletes dealing with taekwondo that 13 of 22 athletes in all got injured during training and 9 of them got injured in the competition. The nature of taekwondo is similar to muay Thai being a fighting sports, additionally Muay Thai includes knee, elbow using and is naturally a rough sports. Taekwondo's being similar as a martial arts supports this study. When we look at percentage and frequency distribution about who see the injuries of female and male athletes participated in the research, 4 (% 16,7) of 8 female athletes in all show their injuries to medical doctor,4 (% 16,7) athletes show it to noone; 11(% 23,9), of 24 male athletes show to medical doctor,3(% 6,5) of them show to physiotherapist, 9 athletes (% 29,3) show to no one, and 1 (% 2,2) athletes is seen as other (Table 6). M. Kazemi et al. (2005) founded in injuries seen in athletes dealing with taekwondo, %25 of athletes showed injury to noone,%10,7 of them showed to medical doctor, %10,7 of them showed to physiotherapist. Birrer (1996) emphasizes that most of injuries are seen during sparring and so this part of training should be cared by trainers.

In table 7 no statistically significant difference has been found that in examining the relation between who see the injuries of female and male athletes and

where they get injured (p>0.05). In examining the relation between injury type of female and male athletes participated in the research and where they get injured, whereas a statistically significant difference has been found for females (p<0.05), no significant difference has been found for males (p>0.05).

When table 9 is examined in terms of the relation between injury types of female and male athletes participated in the research and how many times they are out of training due to injury, no statistically significant difference has been found (p>0.05).

In conclusion, it has been seen that whereas female athletes have mostly lower extremity injuries males have body, upper extremity and lower extremity injuries. Also, both female and male athletes have been found to get injured during training. It has been determined that whereas female and male athletes show their injuries to medical doctor, most of them show to no one and only 3 of male athletes show to physiotherapist. Although Muay thai has a high risk of getting injured, it is seen in this study that athletes haven't had a serious injury .This study carried out suggests that protective equipment practice should be increased in both training and competition since it is thought that protective equipment is used more during competition to prevent mutilations and for athletes health but it is neglected in trainings.

Results

Table 1: Descriptive statistics table over athletes participated in the research.

Variables	Gender	N	Mean	Sd
Age (year)	Female	24	17,75	2,93
	Male	46	18,33	2,76
Experience (year)	Female	24	7,00	2,88
	Male	46	7,28	3,07
Height (m)	Female	24	1,59	0,32
	Male	46	1,77	0,17
Weight (kg)	Female	24	56,56	7,75
	Male	46	64,48	11,08

When the table above is examined ,it has been determined that age average of 24 female athletes in all is 17,75±2,93 year, average of experience is 7,00±2,88 year, height average is 1,59±0,32 m, weight average is 56,56±7,75 kg; age average of 46 male athletes in all is 18,33±2,76 year, average of experience is 7,28±3,07 year, height average is 1,77±0,17m,weight average is 64,48±11,08 kg.

Table 2: According to injury areas percentage and frequency distribution of female and male athletes participated in the research

Variables		Female		Male	
		f	%	f	%
neck		1	4.2	0	0
rib	right	0	0	1	2.2
	left	0	0	0	0
arm	right	0	0	1	2.2
	left	0	0	0	0
elbow	right	0	0	0	0
	left	0	0	1	2.2
wrist	right	0	0	1	2.2
	left	0	0	0	0
hand	right	0	0	0	0
	left	0	0	2	4.3
knee	right	1	4.2	4	8.7
	left	0	0	3	6.5
leg	right	0	0	3	6.5
	left	0	0	6	13.0
ankle	right	1	4.2	5	10.9
	left	1	4.2	1	2.2
foot	right	1	4.2	6	13.0
	left	3	12.5	5	10.9
Total		8	33.5	39	84.8

When the percentage and frequency distribution of female and male athletes participated in the research in terms of injury areas are examined ,it has been found that 8 female athletes in all are exposed to injury in reported areas and 1 (% 4,2),of these athletes is exposed to neck injury,1(%4,2) of them is to knee injury, 1(%4,2) of them is to right ankle, 1(%4,2) of them is to left ankle, 1(%4,2) of them is to right foot,3 of them (% 12,5) are to left foot area. It has been found that 39 male athletes in all are exposed to injury in reported areas and 1 (% 2,2)of these athletes is exposed to rib injury, 1 (% 2,2)of them is to left elbow, 1 (% 2,2)of them is to right wrist, 2 (% 4,3)of them are to left hand,4 of them(%8,7) are to right knee,3 (%6,5)of them are to left knee,3 (%6,5)of them are to right leg,6 (%13,0) of them are to left leg,5 of them (%10,9) are to right foot, 1 (% 2,2)of them is to left ankle, 6 (%13,0) of them are to right foot and 5 of them (%10,9) are to left foot area.

Table 3: percentage and frequency distribution of female and male athletes participated in the research according to the types of injuries.

variables	female		male	
	f	%	f	%
sprain	3	12,5	8	17,4
Muscle cramp	1	4,2	2	4,3
bruise	4	16,7	14	30,4
total	8	33,3	24	52,2

When the percentage and frequency distribution of female and male athletes participated in the research in terms of injury types are examined,8 female athletes in all have been found to have injury and it has been determined that 3 of these athletes (%12,%) had sprain,1of them (% 4,2) had muscle cramp, 4 of them (% 16,7) had bruise. 24 of male athletes had injury and it has been determined that 8 of them(% 17,3) has sprain, 2 of them (% 4,3) had muscle cramp and 14 of them(%30,4) had bruise.

Table 4: percentage and frequency distribution about how many times the female and male athletes in the research were out of training at the end of injury.

variables	female		male	
	f	%	f	%
once	1	4.2	4	8.7
twice	4	16,7	6	13,0
Three times	2	8,3	6	13,0
more	1	4,2	5	10,9
total	8	33.4	21	45,7

When table 4 is examined , how many times 8 female athletes in all were out of training at the end of injury has been found and it has been seen that 1 of them (% 4,2) was out of training once, 4 of them (% 16,7)were twice,2 of them (% 8,3)were three times, 1 of them (% 4,2) was more times. How many times 21 male athletes in all in the research were out of training at the end of injury has been found and it has bee seen that 4 of these athletes (% 8,7) were out of training once, 6 of them (% 13,0) were twice, 6 of them (% 13,0) were three times, 5 of them (% 10,9) were more times.

Table 5: percentage and frequency distribution about where the female and male athletes in the research had injury

variables	female		male	
	f	%	f	%
In training	5	20,8	13	28,3
In competition	3	12,5	11	23,9
total	8	33,3	24	52,2

When the percentage and frequency distribution about where the female and male athletes in the research had injury are examined ,8 female athletes in all have been found to have injury in training and competition and it has been seen that 5 of them (%20,8) had injury in training,3 of them (%12,5) had injury in competition. 24 male athletes in all have been found to have mutilation in training and competition and it has been seen that 13 of them (%28,3) had injury in training and 11 of them(%23,9)had injury in competition.

Table 6: percentage and frequency distribution about which female and male athletes in the research show their injuries to

variables	female		male	
	f	%	f	%
Medical doctor	4	16,7	11	23,9
physiotherapist	0	0	3	6,5
noone	4	16,7	9	29.6
others	0	0	1	2,2
total	8	33,3	23	52.2

When table 6 is examined, according to the percentage and frequency distribution about whom female and male athletes in the research show their injuries to ;it has been seen that 4 (%16,7)of 8 female athletes in all showed to medical doctor and 4 (%16,7) of them showed to no one. It has been seen that 11 (%23,9)of 23 male athletes in all showed to medical doctor,3 (%6,5) of them showed to physiotherapist,9(%29,6) of them showed to noone and other 1 athlete (%2,2) showed to others.

Table 7: examining the relation between the person whom the female and male athletes in the research show their injuries and the place where they get injured.

variables		Medical doctor	Physio therapist	noone	others	Chi-square	P
female	In training	3	0	2	0	0.541	0.462
	In competition	1	0	2	0		
male	In training	6	3	4	0	5.244	0.155
	In competition	5	0	4	1		

When the table above is examined, no statistically significant difference has been found between who see the injuries of female and male athletes in the research and where they get injured ($p>0.05$)

Table 8: examining the relation between injury type of female and male athletes in the research and where they get injured

variables		sprain	Muscle cramp	bruise	Chi -square	P
Female	In training	0	1	4	10.585	0.005*
	In competition	3	0	0		
male	In training	6	0	7	4.699	0.095
	In competition	2	2	7		

In the table above, in examining the relation between injury type of female and male athletes in the research and where they get injured, whereas a statistically significant difference has been found for females ($p<0.05$), no significant difference has been found for males ($p>0.05$).

Table 9: Examining the relation between injury types of female and male athletes in the research and how many times they are out of training due to injury

variables		sprain	Muscle cramp	bruise	Chi-square	P
Female	once	0	0	0	5.742	0.219
	Twice	1	1	2		
	Three times	2	0	0		
	more	0	0	1		
male	once	2	0	2	6.868	0.333
	Twice	1	0	5		
	Three times	2	0	4		
	more	3	1	1		

When table above is examined in terms of the relation between injury types of female and male athletes in the research and how many times they are out of training due to injury, no statistically significant difference has been found (p>0.05)

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MARTIAL ARTISTS VERSUS TEAM SPORTSMEN: AGGRESSIVENESS AND RECEIVED SOCIAL SUPPORT

Tekin Ali[1], Phd, Aykora Emrah[2], MSc, Akçakoyun Fahri[1], Phd, Parlak Necmettin[3], Tekin Gülcan[4], MSc.
[1] School of Physical Education and Sport, Muğla University, TURKEY
[2] Doctoral Student, National Sports Academy, Sofia, BULGARIA
[3] School of Physical Education and Sport, Adnan Menderes University, TURKEY
[4] Physical Education and Sport Experts, Muğla, TURKEY
Email: altekin@mu.edu.tr / 12.02.2010 / 26.02.2010

Abstract

Purpose. The aim of this study to determine and compare the received social support and aggressiveness level of martial artists and team sportsmen.

Method. The study was conducted by the athletes in Muğla Province of Turkiye. The researchers gave information about the aim and scope of the study to the athletes, and then they completed the scales voluntarily. There were 180 athletes in both martial arts in team sports group. The instruments of the study were Kiper's Aggressiveness Inventory and Multidimensional Scale of Perceived Social Support.

Results. The scores of aggressiveness for martial artists and team sportsmen were x_m = 46,51±7,85; x_m= 47,74±7,26 and x_f=46,64±7,42; x_f=47,69±7,46 respectively. There is not significant differences between male and female martial artists and team sportsmen (p>0.05) in aggressiveness. Received social support scores for martial artists and team sportsmen were: x_m= 35,19±14,07, x_m = 60,20±12,31 and x_f= 66,86±6,25, x_f= 48,07±8,13 respectively. Thus, the scores of male team sportsmen were significantly higher than martial artists (p<0,001). On contrary this, the social support scores of martial artists for women are higher than team sportsmen significantly (p<0,001). In total, aggressiveness and received social support scores of martial artists (x_{ma}= 46,58±7,62; x_{ma}= 51,02±19,23) and team sportsmen (x_{ts}= 47,72±7,34; x_{ts}= 54,13±12,05) showed no significant differences.

Conclusions. Aggressiveness is not related to sports branches. Future research on this subject is a need.

Keywords. martial artists, team sportsmen, social support, aggressiveness.

Purpose

An important question in the sociology of sport is how and why some people become involved in a a type of sport while others do not. Early studies (J.W. Loy, B.D. McPherson, G.S. Kenyon, 1978; B.D. McPherson, 1971) indicated that most people who become involved in sport have been influenced by others who serve as role models or in some way reinforce the athletic role behavior. They point to the family as being generally responsible for early sport socialization. Parents who have positive evaluations of sports tend to produce children who view sports positively. Participation and/or interest in sport by parents is often one of the antecedents of sport participation by children. Social support refers to "an exchange of resources between at least two individuals perceived by the provider or the recipient to be intended to enhance the well-being of the recipient".

Behaviors that fulfill these support functions include expressing emotional support (e.g., affection), appraisal support (e.g., performance feedback), giving information (e.g., advice and role clarification), offering emotionally sustaining behaviors (e.g., empathy), and listening to the concerns and feelings of the other person (T.L. Albrecht, M.B. Adelman, 1984; C. Conrad, 1985; B.H. Gottlieb, D. Todd, 1979; J. House, 1981). According to I.G. Sarason, B.R. Sarason and G.R. Pierce (l990), social support is effective when the type of social support given matches the type of support needed. This functional or multidimensional approach has received merit elsewhere (T.L. Albrecht, M.B. Adelman, 1984; C.J. Hardy, J.M. Richman, L.B. Rosenfeld, 1991; A.M. Pines, E. Aronson, D. Kafry, 1981; L.B. Rosenfeld, J.M. Richman, C.J. Hardy, 1989). One example of the multidimensional social support perspective is a model of social support from A.M. Pines et al. (1981), which identifies six types of social support:

1. Listening—others who actively listen without giving advice or making judgments, with whom the joys of success as well as the frustrations of failure may be shared. Listening support is the perception that others genuinely care about what you have to say and listen nonjudgmentally.
2. Shared social reality—others with similar priorities, values, and perspectives who can serve as reality "touchstones," through whom perceptions of the social context can be verified. Shared social reality support is the belief that others share your understanding of the world. This knowledge validates the recipient's feelings.
3. Emotional support—others who support an individual during an emotionally difficult time without necessarily taking her or his side. Emotional support is based on the idea that others care about you and are on your side.
4. Emotional challenge—others who can challenge an individual to do her or his best to overcome obstacles and fulfill goals. Emotional challenge is the perception that others care about you while also facilitating personal growth or development.
5. Technical appreciation—others who acknowledge when a good piece of work or performance is accomplished. Technical appreciation is the perception that others appreciate and support your efforts and accomplishments in a specific setting such as sport.
6. Technical challenge—others who can challenge, stretch, and encourage the athlete to achieve more, to be more creative and excited about her or his work. Technical challenge, similar to emotional challenge, can be described as support that encourages the individual to do better or achieve more in a specific setting such as sport.

The last two types of support are thought to be provided by individuals who have knowledge or expertise in the relevant area. In the sport setting, coaches and teammates may be prominent sources of these types of social support. The first four types of support can be provided effectively by most people.

Research by A.M. Pines et al. (1981); provide evidence for operationalizing social support into these six distinct types. In the last decade there has been a sharp increase in research in many professional fields on the effects of social support, for example psychology, education, social work, and communication.

A number of authors have noted that aggression and violence are serious problems in sport (e.g. D.E. Conroy, J.M. Silva, R.R. Newcomer, B.W. Walker, M.S. Johnson, 2001; D.E. Stephens, 1998), particularly contact sports such as ice hockey (G.L. Worrell, D.V. Harris, 1986). Despite growing concern and much debate, the study of aggression in sport has suffered from problems associated with formulating an acceptable definition of aggression (J.H. Kerr, 1999, 2002) and the development of sound measurement techniques (B.F. Husman, J.M. Silva, 1984; J.P. Maxwell, 2004; D.E. Stephens, 1998). A more practical course for psychometric research may be to focus on the measurement of the psychological antecedents of aggression (J.P. Maxwell, 2004). Anger and aggressiveness have been identified as strong predictors of aggressive behavior (L.B. Berkowitz, 1983, 1989, 1993); therefore, it would seem prudent to be capable of identifying athletes who are particularly prone to angry or aggressive feelings. The research presented here attempts to develop a self-report measure of aggressiveness and anger with the aim of furthering our understanding of the antecedents of aggression in competitive sport.

R.A. Baron and D.R. Richardson (1994) define human aggression as "any form of behavior directed toward the goal of harming or injuring another living being who is motivated to avoid such treatment (p. 7)'. The use of this definition in sport is problematic because behaviours that are integral to competitive success would be described as harmful or injurious (e.g. rendering an opponent unconscious in boxing). An alternative definition was adopted by J.P. Maxwell (2004) who operationally defined aggression in sport as

" any [intentional] behaviour, not recognised as legal within the official rules of conduct, directed towards an opponent, official, team-mate or spectator who is motivated to avoid such behaviour' (p. 280). This definition concurs with the International Society of Sport Psychology (ISSP) position stand and acknowledges the role of legitimacy (G. Tenenbaum, E. Stewart, R.N. Singer, & J. Duda, 1997).

The ISSP's definition has come under severe criticism in recent years that would seem to undermine its plausibility see J.H. Kerr (1999) for a rejoinder of the ISSP position, G. Tenenbaum, D..N. Sacks, J.W. Miller, A.S. Golden and N. Doolin, (2000) for a response to Kerr's rejoinder, and J.H. Kerr (2002) for a revisit of the ISSP position stand). The argument put forward by Kerr (and others) states that aggression is an accepted part of many sports (e.g. American football and boxing) and should be acknowledged as such. Merely redefining these acts as non-aggressive simply because they are accepted (or sanctioned in Kerr's terms) does nothing to change their nature and the harmful intentions of the perpetrator. This observation poses significant problems for the measurement of aggression by indirect means; it implies that only the athlete knows whether harm was intentional (G.W. Russell, 1993; M.D. Smith, 1983).

The problem with measuring aggression in sport has been the lack of a sport specific measure of anger arising during competition; though, Terry and colleagues (e.g. P.C. Terry, A.M. Lane, H.J. Lane, & L. Keohane, 1999) have popularised use of the Profile of Mood States (D.M. McNair, M. Lorr, L.F. Droppelman, 1971, 1992) as a state measure of anger. Anger is defined as the subjective evaluation that increased physiological arousal is a result of threat to one's physical or psychological wellbeing (J.R. Averill, 1983). Anger has been linked to aggression by several theorists (e.g. L. Berkowitz, 1993), but has received sparse attention regarding its role in sporting aggression.

Despite problems with measuring aggression, it is still desirable, both theoretically and practically, to develop an efficient method of identifying individuals who are more inclined to use aggression in sport (sanctioned or unsanctioned). To overcome problems with measuring aggression directly in a broad range of sports, it may be more prudent to isolate factors that are thought to precede aggression. L. Berkowitz (1993) identified anger and aggressiveness as important antecedents of aggression. Aggressiveness is defined as the disposition to become aggressive or acceptance of and willingness to use aggression. Acceptance of aggression has previously been linked to increased athlete aggression (e.g. D.E. Conroy et al., 2001). Both anger and aggressiveness are liable to be relatively stable personality characteristics (i.e. trait like) and not sport specific, although individuals with high levels of aggressiveness may be attracted to combat type sports. High levels of both anger and aggressiveness are likely associated with greater propensity for aggression (D.P. Farrington, 1978).

In this study we aimed to determine and compare the received social support and aggressiveness level of martial artists and team sportsmen.

Method. The study was conducted by the athletes in Muğla Province of Turkiye. The researchers gave information about the aim and scope of the study to the athletes, and then they completed the scales voluntarily. There were 180 athletes in martial arts in team sports group, 90 of whom were female in both groups and thye total was 360. The age of the martial artists and teamsportsmen are between 15-30 and 16-28 respectively.

Table 1 The breakdown of the martial artists

	Female	Male	Total
Handball	30	30	60
Basketball	30	30	60
Volleyball	30	30	60
Total	90	90	180

Table 2 The breakdown of the team-sportsmen

	Female	Male	Total
Kick-boxer	30	30	60
Judo	30	30	60
Tae-kwon do	30	30	60
Total	90	90	180

The instruments of the study were Kiper's Aggressiveness Inventory (KAI) and Multidimensional Scale of Perceived Social Support (MSPSS).

Kiper's Aggressiveness Inventory (KAI). Validity and reliability of the inventory was done by İ. Kiper (1984). It has 30 items. Each item has 7 choices from "I agree it completely" to " I dont agree it all. The scores for each item differs from +3 to -3. The highest total score can be 183 while the lowest is 3.

Multidimensional Scale of Perceived Social Support-MSPSS). G. Zimmet et al., (1988) developed the scale and D. Eker, H. Arkar (1995) conducted the reliability and validity of scale for Turkish population. The scale has 12 items with 7 alternatives differ from "completely no" to "completely yes". The total score can be between 12 and 84. The data collected was analyzed by independent samples t-test.

Results The scores of aggressiveness for martial artists and team sportsmen were x_{male} = 46,51±7,85; x_{male}= 47,74±7,26 and x_{female} =46,64±7,42; x_{female}=47,69±7,46 respectively. There is not significant differences between male and female martial artists and team sportsmen ($p>0.05$) in aggressiveness. Received social support scores for martial artists and team sportsmen were: x_{male}= 35,19±14,07, x_{male} = 60,20±12,31 and x_{female} = 66,86±6,25, x_{female} = 48,07±8,13 respectively. Thus, the scores of male team sportsmen were significantly higher than martial artists ($p<0,001$). On contrary this, the social support scores of martial artists for women are higher than team sportsmen significantly ($p<0,001$). In total,

aggressiveness and received social support scores of martial artists (x_{Mas}= 46,58±7,62; x_{Mas}= 51,02±19,23) and team sportsmen (x_{Ts}= 47,72±7,34; x_{Ts}= 54,13±12,05) showed no significant differences.

Discussion and Conclusion. In our study there is not significant difference between female and male MAs and TS in aggressiveness level (Table 1). On the other hand, the scores of male team sportsmen for social support were significantly higher than martial artists (Table 1). On contrary this, the social support scores of martial artists for women are higher than team sportsmen significantly (Table 1). The higher social support for female MAs result in the culture of Turkiye. Doing martial arts for a female can be received as interesting thus the support is higher than the athletes of common sports such as basketball, volleyball and handball. Like many others, we think that the assertiveness level of MAs is higher than team sports athletes. It is not a true claim. Within the general psychological domain, there appear to be affective, cognitive, social, and behavioral benefits from martial arts training. Affective factors associated with martial arts training include higher self-esteem (e.g., M.E. Finkenberg, 1990; C.L. Richman, H. Rehberg, 1986; M.E. Trulson, 1986), a more positive response to physical challenges (J.R. Fuller, 1988), greater autonomy (R.B. Duthie, L. Hope, D.G. Barker, 1978), emotional stability (B. Konzak, F. Boudreau, 1984), assertiveness (B. Konzak, F. Boudreau, 1984), and self-assurance or self-confidence (R.B. Duthie et al., 1978; B. Konzak, F. Boudreau, 1984). Cognitive factors influenced positively by martial arts training include concentration (B. Konzak, F. Boudreau, 1984) and a greater awareness of mental capacities as well as a cultivation of that potential (F.C. Seitz, G.D. Olson, B. Locke, R. Quam, 1990). Social benefits of martial arts training include learning to be more respectful of others (B. Konzak, F. Boudreau, 1984). The martial arts have existed for more than 3000 years, and today, there are hundreds of different styles. The martial arts historically have emphasized the importance of self-regulation, using terms such as self-control, body control, and discipline. The character training inherent in traditional martial arts teaches an individual to become more self-aware and to actively pursue character growth through the constant evaluation of thoughts and actions and subsequent adaptation of thoughts and actions for the better. J.R. Fuller (1988) commented on the martial arts character training by stating, ‘‘From a psychotherapeutic viewpoint, the martial arts may be viewed as formalized, refined systems of human potential training which provide interesting practical models and mechanisms of psychological intervention’’. C.L. Richman and H. Rehberg (1986) suggested that the perseverance and growth of the martial arts over time might provide evidence of their significant physical and psychological benefits. Empirical studies and theoretical reviews of the martial arts has linked to self-regulation theory and provides a more thorough review of the processes involved in martial arts training that strengthen one’s capacity for self-regulation (K.D. Lakes, 2003). Broadly, outcomes of martial arts training can be classified into two domains: physical (i.e., physical skill and psychological effects related to physical appearance and ability) and psychological (i.e., generalized psychological benefits). In the physical domain, earlier researchers attributed outcomes, such as increased physical confidence (M.E. Finkenberg, 1990), improved self-perceptions of physical ability (C.L. Richman, H. Rehberg, 1986), and enhanced body image to martial arts training. As the result of this study is limited it can not be generalized and further research should be done different study design and instruments.

Table 3. The Comparison of Martial Artists (MAs) with Team Sportsmen (TS)

	N	Mean	Sd	t	P
Aggression					
MAs Male-TS Male	90	46,51	7,859		
	90	47,74	7,266	-1,093	0,276
Aggression					
MAs Female-TS Female	90	46,64	7,425		
	90	47,69	7,468	-0,941	0,348
Social Support					
MAs Male-TS Male	90	35,19	14,074		
	90	60,20	12,313	-12,689	0,000*
Social Support					
MAs Female-TS Female	90	66,86	6,258		
	90	48,07	8,133	17,369	0,000*
Aggression					
MAs (Total)- TS (Total)	180	46,58	7,624		
	180	47,72	7,347	-1,443	0,150
Social Support					
MAs (Total)- TS (Total)	180	51,02	19,237		
	180	54,13	12,053	-1,839	0,067

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RELATION BETWEEN MOTIVATION AND TEMPTATION FOR USING THE DOPING SUBSTANCES IN HIGH PERFORMANCE SPORTS

Vâjială G. [1], Epuran M. [1], Stănescu M. [2], Potzaichin I.[1], Berbecaru C. [1]
[1]Romanian Antidoping Agency, ROMANIA
[2]National University of Physical Education and Sport, Bucharest, ROMANIA
Email: monica_iul@yahoo.com / 20.02.2010 / 01.03.2010

Abstract

Purpose. The paper, realized within the project "Risk Factors of Doping Behavior related to Personality Structure and Social Environment of the Athletes", financed by World Anti-doping Agency (WADA) (2007 – 2008) and managed by Romanian Anti-Doping Agency (ANAD) (Project Responsible Prof.Ph.D. Graziela Vajiala), has as purpose to analyze the relation between sportsmen motivation for high performance sports and temptation to use prohibited substances.

Methods. Among the research methods used in the project, we note for this paper momentary psychological state questionnaire (POMS) and opinion questionnaire for athletes. From the 57 items of the questionnaire for athletes, we have examined those which refer to the motivation of athletes for sports performance. This attitude was associated with those related to consumption of prohibited substances and momentary mental states. To analyze the differences between groups of athletes (1404 juniors and seniors) it was used the chi square test.

Results. There were found significant correlation between some type of motivation, sportsmen mood states and temptations to use doping substances.

Conclusions. The athletes externally motivated to practice sport, who present anger-hostility states with over average values, as well as those internally motivated to practice different sport disciplines, who have over average tension-depression values are tempted to use prohibited substances more that other athletes. No matter how content they are, the athletes experiencing certain spontaneous states of mind – such as tension, depression, fatigue might use doping substances. The risk is higher in senior athletes with weak results.

Key words: motivation, risk factors, doping substances, education**.**

Introduction and research objectives.

The phenomenon of prohibited substances use among athletes, intending to increase artificially their performance has its origins in the ancient times and it is now so present, as it is supported and fed by the professional sport, so much commercialized and mediated.

The risk factors are variables associated to the risk, in terms of probability, where one or more variable in some circumstances may be boosts for a deviant behavior such as the use of prohibited substances among athletes. According to WADA "prevention of doping in sport supposes to increase the conscience about the real problems inside this phenomenon, to disseminate relevant and correct information, and also to influence in a positive manner the beliefs, the attitudes and the behaviors."

Specialty literature presents more explanation models concerning the doping behavior in sports. In A. Petroczi, E. Aldman model (2008), the authors consider that the risk factors could be organized in three structures: 1. Personality factors (increased performance, commitment, low self-esteem, anxiety), 2. Systematic factors (motivational climate, structure of authority) and 3. Situational factors (interaction of group members, role models, ambient factors). Some personality factors may act as inhibitors of doping practices (eg., A strong self-esteem, awareness and reduced tendency for risk taking.) K. Wiefferink et al., (2006) initiates a behavioral model using the theory of Ajene (Theory of Planned Behavior) and Bandura's self efficacy (Self-efficacy Theory). The integration of these two theories have led the authors to the three major constructs that explain the doping behavior: attitudes, social influences and self-efficacy.

A.N.A.D. - Romania Model (2007) grouped the risk factors into three groups: 1. Individual 2. Social, 3. Situational. (M. Epuran, 2007 G. Vajiala, 2007, C. Berbecaru et al., 2008, I. Potzaichin et.al, 2008). In the category of individual factors, it was included athletes' motivation for sport performance.

Purpose.

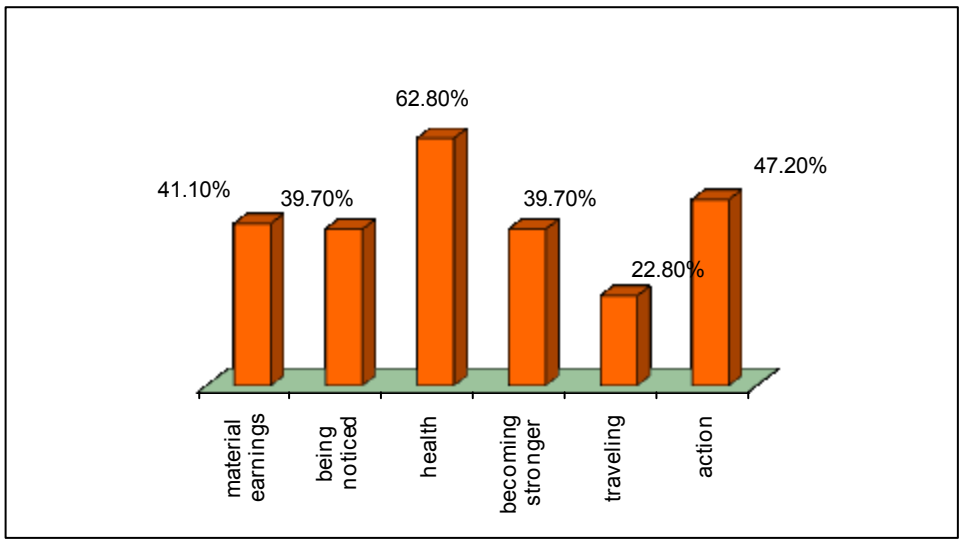
Aim of the paper is to analyze the structure and types of motivation for sports performance in relation to the attitude concerning the consumption of doping substances.

Methods.

Among the research methods used in the project, we note for this paper momentary psychological state questionnaire (POMS) (D.M. McNair, 1992) and opinion questionnaire for athletes. Of the 57 items in the questionnaire for athletes, we have examined those which refer to the motivation of athletes for sports performance. These attitudes were associated with subsequent attitudes to consumption of prohibited substances and momentary mental states. To analyze the significance of differences between groups of athletes (1404 juniors and seniors) it was used the chi square test.

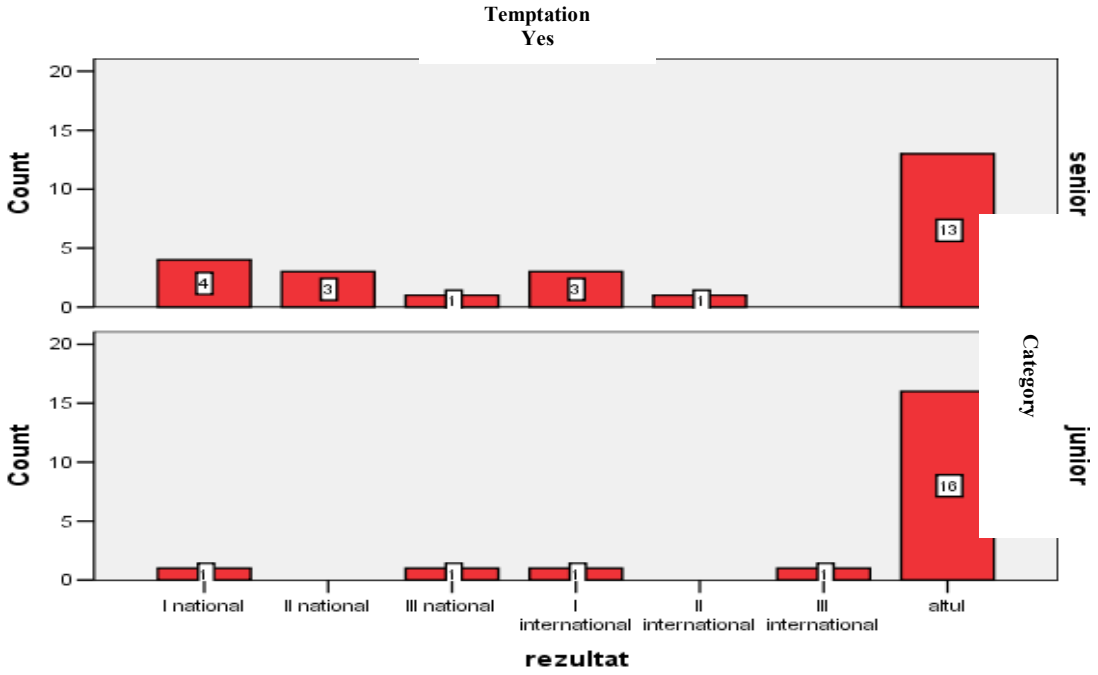
Results and interpretations. *Motivational orientation towards sport practice:* 62,8% (882) of the subjects practice sport for health, 47,2% (662) for action, 41,1% (577) for material earnings, 39,7% (558) for being noticed, 39,7% (557) for becoming stronger and 22,8% (320) for traveling. (Diagram no.1)

Diagram no. 1 – Motivational orientation towards sport practice



The number of athletes with *material earnings orientation* and *tempted to use prohibited substances* are about 45 (20 juniors and 25 seniors). The insignificant difference between them doesn't allow us to analyze the attitudes by reporting to category. (Diagram no. 2)

Diagram no. 2. External motivated athletes, who are tempted to use doping substances, depending on the result and category



Result

Out of the 25 athletes stating that they are, they were or they might become prohibited substances' users, we can notice that most of them are seniors (15 subjects, 11 of them having other results than the first three places).

Out of the 45 athletes orientated towards material earnings and tempted to use substances, 36 athletes (80%) had *over average scores for Anger-Hostility factor*, but the differences between seniors and juniors are not significant at p=0.05 (x=4.50), and the same are the differences between the results achieved by the athletes included in this group.

Out of 41,1% athletes oriented towards material earnings, 66% had *high score on Anger*, from psychic states point of view. Out of this percentage, 56% are seniors and 43% are juniors (among which 68% had higher scores on Anger-Hostility). For those without significant results (69,4%) and for those placed on the 1st position in national championships (67,4%), the moment states associated to anger are more frequent.

In the case of those *oriented towards material earnings and higher tension states*, 56% are seniors and 44% are juniors. These athletes are those who didn't achieve significant results, but also those placed on the first three positions in international championships; they are also athletes using or who had use recently such substances.

Out of the 39,7% athletes (557) *motivated to practice sport by the need to be noticed*, only 33 athletes are also tempted to use prohibited substances and among these ones, 22 athletes present *high values on Tension factor*. The differences between the junior athletes (11) and the senior ones (22) are not significant on p=0.05, but it can be still noticed the increased number of athletes with "other results".

Out of this category of athletes, 15 of them declare that *they used or are using prohibited substances*, among them being 6 juniors and 9 seniors. Most of them, 12 athletes have different results that the first three positions in national or international championships.

Among the investigated athletes, 39,7% (557) answered that they practice sport *to become stronger* and 40 of them are *tempted to use prohibited substances*. The analysis of the moment psychic states underlines the fact that these athletes are included in the group average, except for the tension (23 athletes) and depression (21 athletes) states, where over average values are met. The differences between the number of the junior and senior athletes, for p=0.05 are not significant. According to the results achieved, 26 athletes of this category have "other results" in competitions. 21 athletes (7 juniors and 14 seniors) declare that they were or might become prohibited substances users. It can also be noticed here that most of the athletes (12) don't have results in the first three positions in competitions.

Result achieving orientation. Out of the 1404 athletes, 45,7% (642) want to become national champions, 21,3% (299) want to be ranked on the first 6 positions on national level, 27,1% (380) want to be European champions, 38,2% (536) World champions

and 25,6% (360) Olympic champions, while 17,8% (250) want to be in the first 6 athletes on international level. (Diagram no. 3)

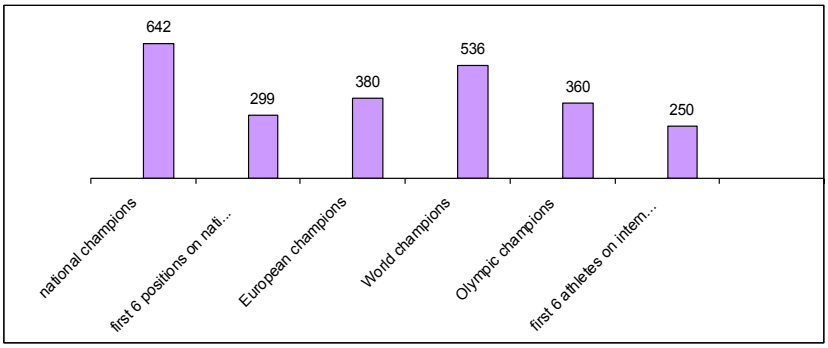


Diagram no. 3 – Result achieving orientation

88 athletes (30 juniors and 58 seniors) would be *tempted to use prohibited substances*. Among them, only 39 declare that they will do this in the future, have done this in the past or are doing now. Among them, 19 athletes want to become national champions, 10 International champions, 16 European champions, 18 World champions and 10 Olympic champions. Most of the athletes don't have significant results in national and international competitions. The analysis of the values of the momentary psychic states' highlights over-average values for tension (25 athletes), depression (22 athletes), and fatigue (20 athletes). Even if the differences between the athletes' number, as well as between the seniors and juniors are not significant, we still underline the tendency of the athletes who declare to be tempted to use prohibited substances and to score over-average values for the previously mentioned psychic factors.

The aspiration level. 7,4% (104) of the subjects are very satisfied with the performance level that they have reached in comparison with the intended level, 36,5% (512) are satisfied, 38,2% (536) are not sure, 14,7% (206) are not satisfied and 3,3% (46) are extremely unsatisfied. (Diagram no.4)

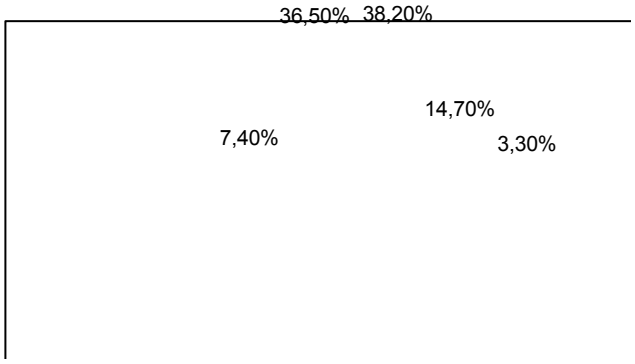


Diagram no.4 – Sportsmen aspiration level

Most of the athletes, 38.2% (536 subjects) are *not sure about the satisfaction provided by the results achieved* until that moment. For 33 of them, the answer to the question regarding the temptation to use prohibited substance was affirmative.

High over-average values are registered on tension (21 athletes), depression (21 athletes) and fatigue (19 athletes). There are no significant values between the junior and the senior athletes for p=0.05. Most of the athletes have other results than the first three positions in national or international competitions.

The number of athletes who are *discontent and very discontent by their performance up to the present moment* is 252 (18%), out of them 82 juniors and 170 seniors. 21 athletes within this category are the ones saying they are tempted to use prohibited substances, while 10 athletes state they already use or will use the prohibited substances.

The diagram no.5 shows that most of the athletes have less noticeable results and they are seniors. The small number of athletes in such a situation is not significant in relation with the investigated pattern. Nevertheless, we underline that most of them show a high tension level (21 athletes), 14 athletes show values of the depression factor above the average of the group and 13 of them show values of the fatigue level above the average. Within the investigated pattern, 54.9% (771) of the athletes say they would have more strength if they use doping substances, 36.3% (510) that the training would be easier, 11.4% (160) that they would reach and maintain the ideal weight, 12.7% (179) that the performances would not be diminished, 47% (660) that would obtain better performances faster, 12.7%

(178) that they would feel they are the masters of the universe, 28.8% (404) that they would have more muscle, 13.1% (184) they would loose weight.

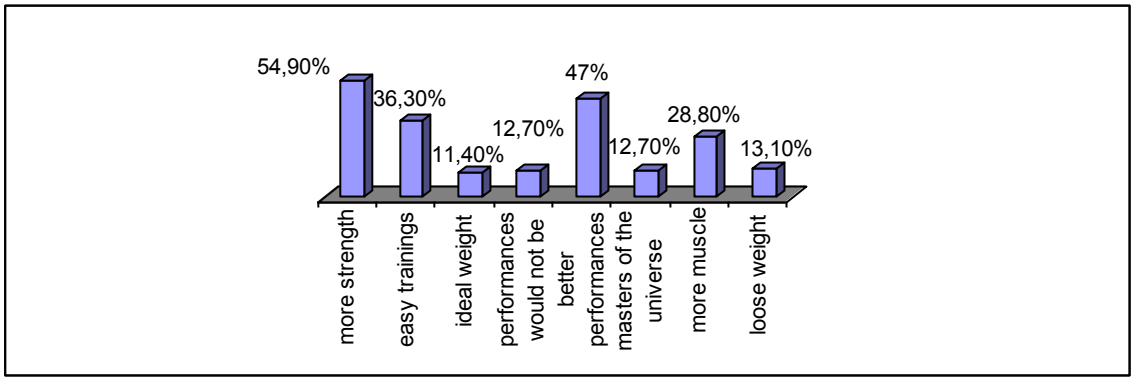


Diagram no. 5 – Athletes' motifs to use prohibited substances

Despite the fact they think *doping substances would provide them with more strength*, 80% are not tempted to use prohibited substances and 87% would not use them ever. The athletes who think that doping substances provide them with more strength and are tempted to use, present high tension level, are furious, depressive and tired.

No matter the purpose they associate with the doping substances, these athletes are characterized by dogmatism and high values of the factors related to spontaneous states of tension, depression, discontent.

Within the investigated pattern, 60.6% (851) of the athletes say that one of the causes of athletes' using doping is the possibility to obtain some material goods, 60.5% (850) think it is the need to be famous, for 34.4% (483) the cause is the doubt, for 20.8% (292) is the tension they feel, while for 23% (323) is the lack of information and 45.7% (641) think the high level of records is the cause of doping use. (Diagram no. 6)

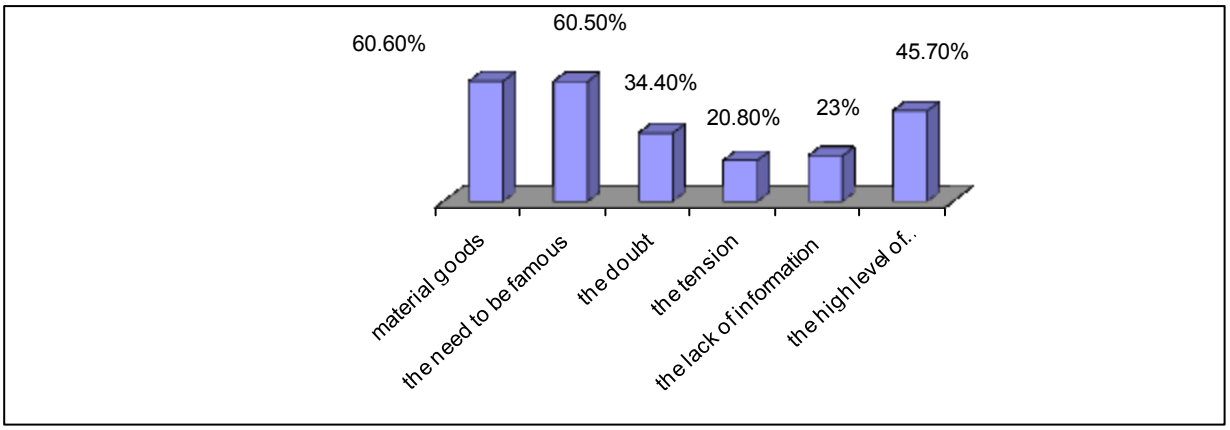


Diagram no. 6– Motifs the athletes think could be the base of using doping

When analyzing the relation between the athletes with *extrinsic motivation to practice sport* and the answers *related to the material benefits*, we noticed these athletes do not have results in the first three places in national and international competitions, and 46% of them state they might or they are tempted to use prohibited substances.

As for the athletes with *intrinsic motivation* who think doping is used for fame, 378 athletes show high values in tension parameter. Those who state they would be tempted to use are the seniors as well as the ones who do not have special results (46%) or the ones wining the first place (20%) and second place (25%) in international competitions.

Most of the 34.4% (483) for who doubt is the reason of doping, are seniors and 78% of them are tempted to use prohibited substances. The athletes who state they are tempted to use doping are the ones who do not have significant results in competitions (56%) or are national champions (18%) or national vice-champion (11%).

The athletes who think tension is what leads to doping are preponderantly juniors. They are also the ones tempted to use doping, especially those with no significant results in competitions (71%).

The motifs are a particular aspect of *the attitudes towards the doping phenomenon*. The athletes' attitudes towards the use of doping substances were revealed by the means *the temptations to use prohibited substances.* 6.3% (88) of the athletes answered they would be tempted to use prohibited substances in order to accomplish the objectives, 81.9% (1150) that they are not tempted and 11.8% (166) that they do not know. (Diagram no.7)

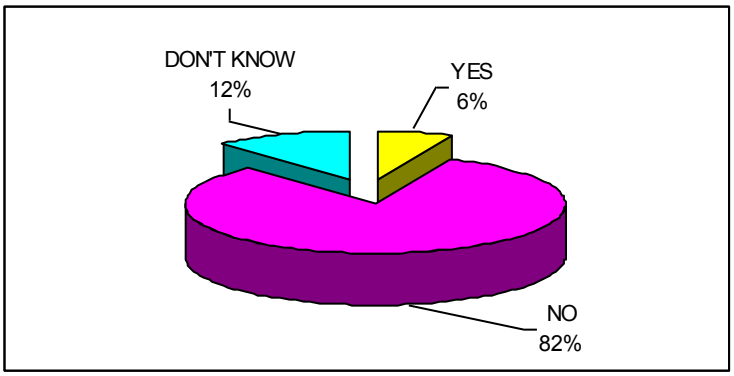


Diagram no. 7 – The temptations to use prohibited substances

Out of 88 athletes, 39 athletes (13 juniors and 26 seniors) state they were or they could become prohibited substances' users.

Most of the athletes have no significant results. Nevertheless, among the athletes who do not exclude the possibility to use doping there are also athletes with results in the first three places in national and international competitions.

Conclusions. The athletes externally motivated to practice sport, who present anger-hostility states with over average values, as well as those internally motivated to practice different sport disciplines, who have over average tension-depression values are tempted to use prohibited substances more that other athletes.

The use of doping substances can be the consequence of an external motivational orientations associated with the tension-anxiety states or internal motivational orientations associated with the moment states of anger-hostility or depression-dejection.

Those aspiring to the highly ranked positions and presenting psychic states – tension, depression, fatigue over the population's average are more tempted to use prohibited substances than those already well-known.

No matter how content they are, the athletes experiencing certain spontaneous states of mind – such as tension, depression, fatigue might use prohibited substances. The risk is higher in senior athletes with weak results.

The doping substances use is a temptation equally perceived by juniors, and seniors, especially under higher tension and higher depression conditions. The athletes who could use prohibited substances and methods are the ones with good results in the first three places as well the athletes with other results.

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FEEDFORWARD, FEEDBACK AND UCM IN MOTOR CONTROL IN HUMANS

Wacław Petryński
Katowice School of Economics, Katowice, POLAND
Email: waclaw.petrynski@interia.pl / **10.02.2010 / 20.02.2010**

Abstract

From among possible movements control methods most efficient is no doubt the feedforward mode. Unfortunately, it may be adopted only in predictable environment, i.e. where the probability of achieving a desirable result by applying a given pattern of action is acceptably high. So, this control mode cannot be adopted in not predictable environment, which forces to current regulation according to instantaneous changes in environment, when the changes cannot be fully anticipated with acceptable probability. In such situation application of feedback mode, slower and involving higher information processing load is necessary. Pure feedforward and feedback modes are in fact some extreme theoretical models of movements' control, but neither of them can be applied in reality in its "pure" form. In practice some combination of both these modes has to be employed, and its theoretical description is addressed as uncontrolled manifold (UCM). However, this notion is not homogenous and unambiguous. The presented paper is devoted to its more detailed description in the light of Bernstein's theory.

Keywords: motor control, feedforward, feedback, uncontrolled manifold, Bernstein's theory.

Introduction

The problem of motor control modes in humans (and animals, too) is one of the crucial issues in motor science. The attempts to describe the whole process mathematically did not give by now satisfactory results. In this respect very promising way seems to be systemic approach. One of first scientists who developed systemic description of motor control in humans was Russian neurophysiologist N.A. Bernstein, founder of what he termed "physiology of activeness" [N.A. Bernstein, 1947; 1991; 1996]. In this theory he harmoniously combined biological, neurological and cybernetic elements. His ideas, along with newer achievements of science, may enable new description of motor control processes in humans.

1. Basic motor control modes

Two basic modes of movements' control are feedforward and feedback (Fig. 1). It has to be noted that in English the word "feedback" has many meanings. In Webster's Dictionary one finds, among others, such definitions of the entry "feedback":

1. *A reaction or response to a particular process or activity: to get feedback from a speech.*
2. *Information derived from such a reaction or response: to use the feedback from an audience survey.*
3. *A self-regulatory biological system, as in the synthesis of some hormones, in which the output or response affects the input, either positively or negatively* [Webster's Dictionary, 1989].

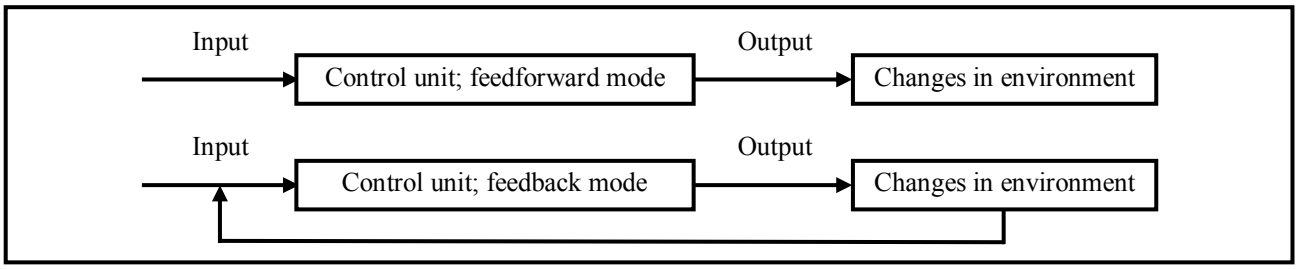


Fig. 1. Feedforward and feedback mode of control.

So, in general the word "feedback" may denote either:

- INFORMATION, received after a given task or part of the task has been already performed, or
- COUPLING of information received after the action with input to information processing system before next action starts.

Across a similar problem one comes with the verb "to control". In English it has, among others, the following meanings:

1. *To exercise restraint or direction over; dominate, regulate, or command.*
2. *To test or verify (a scientific experiment) by a parallel experiment or other standard of comparison* [Webster's Dictionary, 1989].

Looking at Fig. 1 one may learn that basic process in movement management is feedforward process; such a management is described with the word "control". If all goes right, there is no need to apply any other action. However, if something goes wrong, feedforward mode collapses and it becomes necessary to add a feedback loop. Verifying, whether it is necessary or not, is termed in English also "control".

In general the word "control" may denote either:

- STEERING or MANAGING, or
- CHECKING or VERIFYING.

Feedforward and feedback processes are also termed "open-loop control" and "closed-loop control" [R.A. Schmidt, T.D. Lee, 2005; R.A. Schmidt, C.A. Wrisberg, 2008; M.L. Latash, 2008]. I suggest removing these terms from motor control dictionary, because according to Ockham's razor rule (*entities must not be multiplied beyond necessity*) there is no need to use two different terms for the same phenomena. Moreover, the term "open loop" is internally incoherent, because if something is open, then it is no longer a loop. In fact, the basic control mode is feedforward one. Feedback mode may be described as small feedforward chunks accompanied later by feedback process. The word "chunk" has been used here not accidentally. According to G.A. Miller, human memory may process at once maximum 7±2 chunks of information [G.A. Miller, 1956], so one feedforward chunk may be compared to chunk of information (a solution of a task or partial task, worked out in mind) which initiates some motor action. Feedback process, including identification of changes in environment, brought about by just being ended action (first meaning of English word "feedback") and adjusting next actions to it (second meaning of "feedback") is characterized by high flexibility. However, the cost of each sensorimotor activity includes two components: physical (mechanical) effort and information processing load. To make such activity economical, it is necessary to reduce both these components to as low level as possible. The mechanical effort results from environmental conditions and its reduction is hardly possible. On the other hand, the information processing load may be significantly reduced and just here one may look for higher efficiency of sensorimotor activities, e.g. in competitive sport. The efficacious way leading to information processing load reduction makes the "feedforward chunks" bigger and bigger. Just this process makes the basis of gaining skill.

The "feedforward chunks" are theoretically described as "uncontrolled manifolds" (UCM) [J.P. Scholz, G. Schöner, 1999]. This term is highly scientific – the term "manifold" comes from topology – but is not coherent with existing motor control terminology. Moreover, it is quite confusing, because its proper name should read "externally uncontrolled manifold". Inside the "manifold" – or, more coherent with motor control terminology, inside the "feedforward chunk" – all partial processes are controlled. However, there is no stimulus-response constant mapping inside the feed forward chunk (UCM). The essence of the feed forward chunk may be succinctly illustrated by the minimal intervention principle as stated by E. Todorov and M.I. Jordan (2002):

In a wide range of tasks, variability is not eliminated, but instead is allowed to accumulate in task-irrelevant (redundant) dimensions. Our explanation of this phenomenon follows from an intuitive property of optimal feedback control that we call the "minimal intervention" principle: deviations from the average trajectory are corrected only when they interfere with task performance [E. Todorov, M.I. Jordan, 2002].

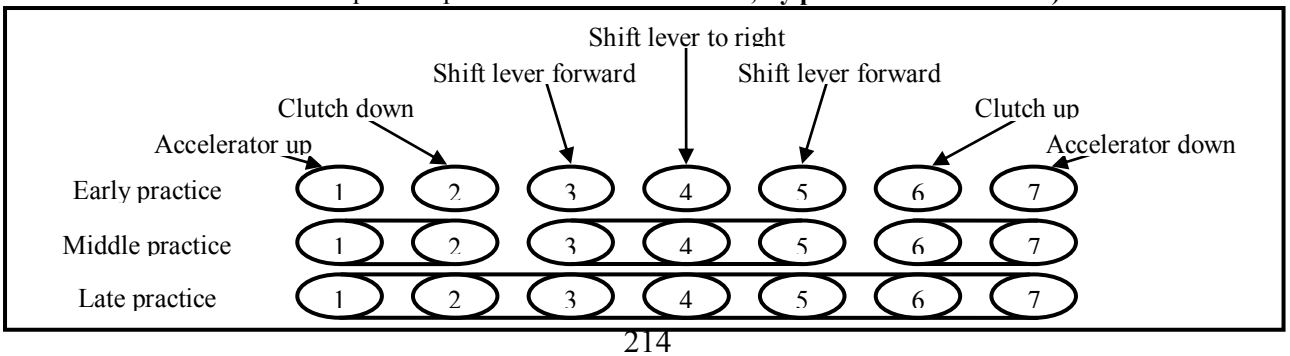
The phenomenon being a manifestation of feedforward chunks action has been described by Bernstein already in twenties of 20th century. He worked then in Work Institute in Moscow and his task was to research the hammer hit made by blacksmith, to teach novices more efficiently. He discovered that hammer's trajectory is different at each hit performed by novice. However, to his surprise, also in skilled blacksmiths each hit had its own, distinct trajectory. Bernstein termed this phenomenon "repetitions without repetitions" [I.M. Feigenberg, 2004; M.L. Latash, 2008]. The only difference was that the hits performed by skilled blacksmiths always met the desirable point (this phenomenon is now popularly termed "equifinality") while novices' hits – did not.

A hammer's hit is typical ballistic movement, i.e. there are no possible any corrections, when started. What informational mechanism controls, then, the different hammer trajectories? And, what's more interesting, what makes them to meet the desirable point? N.A. Bernstein already in 1935 described this phenomenon by means of topological manifold. Moreover, he formulated the following "Law of Equal Easiness":

In each structural scheme, which may perform many different elementary processes belonging to the same specific manifold, the lines of equal easiness suit these directions inside the manifold, using of which does not change neither structure, nor activity principles of the scheme [N.A. Bernstein, 1975].

The process of building and expanding the feedforward chunks may be illustrated by "gearshift analogy" (Fig. 2) by Richard Schmidt and Timothy Lee [R.A.Schmidt, T.D.Lee, 2005, p. 423].

Fig 2. Gearshift analogy (R.A. Schmidt, T.D. Lee, 2005; by permission of Authors).



The feedforward chunk at middle practice level is greater than those at early practice and smaller than at late practice one. So, in motor learning the process of chunk's size increasing proceeds until optimal size of the chunk is achieved, or such a size which guarantees best combination of swiftness, flexibility, stability, physical effort and information processing load, i.e. optimal efficiency. It has to be noted that each chunk has its own internal structure, which gives some flexibility to it. So, a skilled driver can drive different cars (with manual gearbox), even if he has to drive a specific model for the first time in his life.

The feedforward chunk dimension has still another consequence. Taking into account that – according to Miller – a human may process simultaneously at most 7±2 chunks of information, a novice has to engage all his information processing capabilities in gear shifting (7 chunks), while experienced driver engages only one chunk and has at least six other ones "free". It is to be noted that such "chunk growing" runs at the same information processing level, or "rung" of "Bernstein's ladder".

2. Motor control system in humans: the Bernstein's ladder

While building a systemic model of human motor control mechanisms, N.A. Bernstein analysed the development (which not always was a progress) of living creatures' nervous system along with their motor capabilities in the course of whole evolution [N.A. Bernstein, 1947; 1991]. He especially focused his attention on vertebrates. Basing on his analyses, and previous ideas by John Hughling Jackson [N.A. Bernstein, 2003], Bernstein had built a five-level model of human movements' management. It is founded on three primary, clearly recognizable principles (though Bernstein himself never listed them as below).

1. Each motor performance has its main control level where performer's attention is focused.
2. The lower levels make "background" for the main one and work without engagement of performer's attention; they work automatically.
3. In the course of biological evolution, the emerging of higher level of motor control does not suppress, but increases the capabilities of lower ones.

In humans Bernstein ascribed particular levels of motor control (cybernetics) to the particular elements of the CNS (neurophysiology), and to specific motor capabilities (motor control). Then he assembled them into one coherent system which may be termed "Bernstein's ladder" (Fig. 3) [W. Petryński, J.M. Feigenberg, 2009].

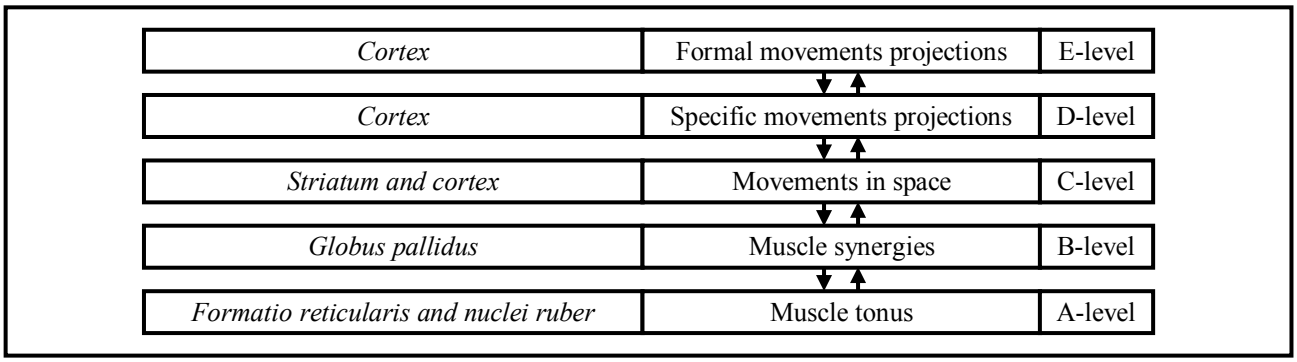


Fig. 3. The five-level Bernstein's ladder – a system of motor control in humans.

Unfortunately, Bernstein himself never made such a diagram; thus, he never termed it "Bernstein's ladder". Nevertheless, though the full presentation of systems theory has been made by Ludwig von Bertalanffy only in 1968 [L. Bertalanfffy, 1968], the model being created by Bernstein already in 1947 is fully consistent with this theory.

According to systems theory, the system is a layered structure of information exchange and processing, built according to following principles:

1. Principle of layers hierarchy: the lower layers (levels) perform the tasks according to orders received from the higher ones.
2. Principle of layers autonomy: each layer performs his particular task without any additional information, i.e. higher levels do not interfere in activities of lower ones,

The listed principles remain in full accordance with two first Bernstein's ones quoted earlier. Moreover, an important consequence of the two principles is the third one, formulated by J.M. Morawski:

3. Principle of scales conformity: each layer uses a definite code of information processing, including temporal relations, "tailored" specifically to its needs [J.M. Morawski 2005].

In short, the scales conformity principle remains in keeping with James Gibson's statement that "perception is specific to information" [M.T. Turvey, 1999]. Nevertheless, Gibson's statement, however accurate it is, unveils only a small peak of the huge iceberg.

Let us consider more closely the latter principle. It means in fact that at given level of a system the three main compounds occur, i.e.:

- The input data – parameters of environment and details of a task,
- The process of information transformations,
- The output data – the response worked out as a result of processing,

They have to be described with the same code, to make possible their common functioning. Moreover, multilevel structure of the whole system of information processing in humans results from rudimental rule of "nature economy", illustrated e.g. by Sir William Rowan Hamilton with the principle of least action [R.S. Ingarden, A. Jamiołkowski, 1980; F.W. Byron, R.W. Fuller, 1973] or Israel M. Gelfand and M.L. Tsetlin with the principle of minimal interaction [M.L. Latash, 2008]. So, it would not be justified to apply too sophisticated code to simple tasks, because it would be wasteful; probably more effort would be necessary to operate the code itself than to process information. On the other hand, using too primitive code to more complicated ones would be inefficacious.

Usually both contactception and teleception is described with one term exteroception. However, in presented analyses it is necessary to make clear differentiation between contactception and teleception. The former enables receiving the stimuli from the part of space limited by outer surface of a body (skin), while the latter – from the part of space which may be recognized by teleceptors (mainly eyes and ears). Moreover, the quantity and quality of teleceptive data is so great and sophisticated as compared with contactceptive data that already in 1909 Sir Charles Sherrington had stated that in the course of evolution just the teleceptors made the brain [N.A. Bernstein, 1947].

The teleceptors (C-level) caused immense evolutionary leap in information processing, which greatly extended living creatures' motor capabilities. They enabled identification of three-dimensional space, which in physical reality is inseparably joined with time.

The other, not less significant revolution was the formation of abstract language (D-level). At first glance the situation was clear: the informational carrying capacity of images is apparently much greater than that of sounds. Important is, however, not only how much information a given carrier contains, but also what is the quality and density of the information. The language is made of words, and sounds are only the physical carriers of words. Andrzej Wierzbicki wrote: *... the invention of a speech was extraordinary shortcut, which changed the character of evolution. It turned out that we may process the signals from environment 10^4 more simple than before. This enabled intergenerational transfer of information and tradition, thus the development of cultural and intellectual legacy of mankind – termed by Karl Popper "the 3rd world" – had been initiated. The biological evolution of a human slowed down (some biologists argue that it stopped at all), but the cultural, intellectual and civilization evolution speeded up* [A.P. Wierzbicki, 2008].

Thus, the visual stimuli may carry much more "rough information", but in words – the natural carriers of which are sounds – the information is much more condensed.

It seems that in the course of evolution the development of sensory organs went ahead of information processing until C-level had been created. Then the information processing capabilities "overtook" the development of sensory organs. For example, until now human has no specific sensory organs for receiving words. Apparently the development of sensory organs stopped at C-level. An individual may receive only sounds (C-level), and the process of words recognition, i.e. ascribing some meaning to the sets of sounds, comes only in attention at D-level.

It has to be noted that though in Bernstein's theory particular levels of motor control are quite clearly discernible, they are not separate entities, co-operating with each other as if they were independent mechanisms. On the contrary, they altogether make a coherent, inseparable system. Here illustrative are words by Michael T. Turvey:

> *Reflexes, for example, were not elements of coordinated actions for Bernstein but, rather, elementary coordinated actions and, therefore, part of the problem of coordination rather than contributors to its solution* [M.T. Turvey, 2002].

Such a view gives some homogeny to all motor actions and eliminates possible division into reflexes and other sensorimotor actions.

3. Feedforward chunks and Bernstein's ladder

Let us take into consideration two conclusions resulting from Bernstein's and systems theory:

1. Each motor control level has its own code of information processing and storing,
2. According to general nature economy rule, in a skilled person a given task (or partial task) is solved at the lowest possible motor control level.

So, each control level has to create its own feedforward chunks, described with its own, specific code. At A-level such a code is built of intrinsic stimulation; at B-level – of contact stimulation; at C-level – of images (generalized); at D-level – of words; at E-level – of symbols. Thus, at A-level the internal pattern of such feedforward chunk is reflex arch; at B-level – routine; at C-level – schema (as by Schmidt); at D-level – specific motor programme; and at E-level – generalized motor programme [W. Petryński, 2008]. Summing up, one may state that in humans the A-level is "feeling-in-hand" level; B-level is "movement's harmony" level; C-level – "measure-by-eye" level; D-level – "motor common reason" level: and E-level – "motor fantasy" level (Tab. 1).

Table 1. Selected functions of particular levels of motor control.

Bernstein's level	Information processing code	Feedforward chunk	Field of action
A	Intrinsic stimulation	Reflex arch	"Feeling-in-hand"

B	Contact stimulation	Movements routine	"Movements harmony"
C	Images	Motor schema	"Measure-by-eye"
D	Words	Specific motor programme	"Motor common reason"
E	Symbols	Generalized motor programme	"Motor fantasy"

Each of the codes enables intelligent, intuitive and instinctive processing of information. Thus, in Bernstein's theory it is not justified the division into "consciousness" (verbal information processing code) and "sub-consciousness" (non-verbal information processing code). John Eccles and Karl Popper described how a dog is able to BUILD A THEORY CONCERNING FUTURE [I.M. Feigenberg, L.P. Latash, 1996]. Because it cannot use the verbal code, thus other codes are efficacious and efficient enough to enable information processing reaching into future, i.e. building the genuine theory. A human uses higher levels – D or even E one – to do it, but a dog has nothing like this to its disposal and has to use the C-level code. As seen from this example, the image code is efficacious enough to enable such construction, though, of course, not as advanced as built of words or symbols. As seen from Bernstein's ladder, in motor control the feedforward chunk (UCM) is a "slave unit", i.e. it works at given level of motor control system "on request" of some higher level. For example, looking at Fig. 2 one may conclude that some cue from D-level (tachometer reading) or C-level (engine sound, driving force) induces a driver to shift the gear, then the feedforward chunk(s), as presented in Fig. 2, is started and the sensorimotor action is being performed (B-level).

4. Motor control and mathematics

The beauty, elegance and "purity" of mathematics make many scientists to overestimate its value. Many of them try to look for solutions of motor control problems in humans just by describing them in categories of numbers and functions. Unfortunately, according to Bernstein's theory such a scenario seems to be hardly probable (Fig. 3 and Tab. 1).

Mathematical theories use only one code of information processing (numbers, in general), which is not "native" to neither of reality perception levels in humans. Trying to describe human reasoning with, say, Linear Quadratic Regulation or Linear Quadratic Gaussian Estimation [E. Todorov, M.I. Jordan, 2002], it has to be taken into account that the Nature did not equipped humans with Kalman filter [R. Grush, 2004] or estimator of Lyapunov exponent. So, mathematics may be very valuable for checking the correctness of reasoning (in limited area and when mathematical descriptions are constructed properly), but it seems hardly possible that it will create ready solutions. Mathematics may produce an image parallel to reality, but it is not able to replace the reality; it not "sits" inside human minds. In other words, mathematics, however attractive it is, do not release a scientist from thinking, at least in the field of motor control.

In humans situation is especially complicated by the fact that *Homo sapiens* uses at least five different codes, specific to each of the movements' construction level. On one hand such a structure enables adjusting a proper code to proper task: a human does not need to use fantasy (E-level) to press the clutch pedal in a car (B-level action). On the other hand, a SYSTEMIC construction of information processing in humans makes great challenge to science. The main question is how the inter-level transformation of information happens? Just such transformation makes the dynamics of a system [J.M. Morawski, 2005]. Unfortunately, by now scientists have no idea, how to solve this problem.

There is still another serious difficulty in motor control. Many scientists prefer experimental method of research. Usually, the hypotheses and theories, if not founded on "stiff" experimental data, are at least "suspected". However, the Bernstein's theory marks serious limits to experiments. There are only two "input gates" from environment to information processing system in humans, at B- and C-level, and one "output gate" – at A-level (Fig. 4).

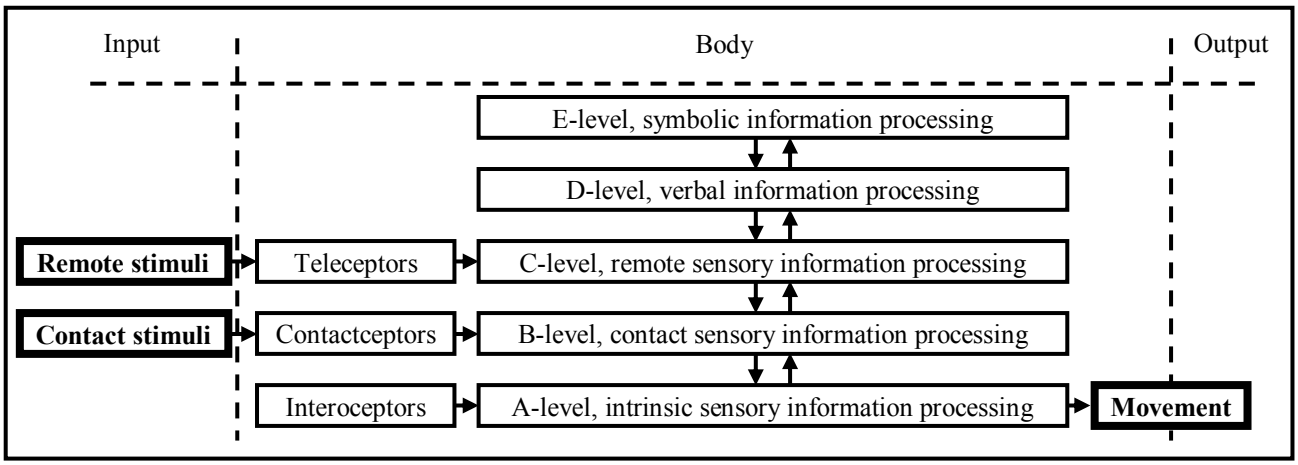


Fig. 4. Input and output „gates" to information processing system in humans.

By the way: according to Antonio R. Damasio there are five specific "input gates" to brain: vision, hearing, touch, taste and smell [A.R. Damasio, 2002]. This is fully coherent with classification based on Bernstein's theory, because vision, hearing and smell may be categorized as "remote stimuli gate" (C-level), while touch (in general) and taste – as "contact stimuli gate" (B-level).

At B-level a human may receive tactile stimuli. They are poorly differentiated, so the variety of information which may be ascribed to them is also poor. Moreover, the part of space, from which stimuli may be received, is limited by outer skin surface. At C-level a human may receive remote stimuli. Their great variety enables ascribing rich and differentiated information to them and to observe a space much more extensive than one's own body dimensions. Moreover, teleceptors enable discovering (though in limited range) one more very important element of reality: the time. And this is all. *Homo sapiens* has no specific sensory organs to receive stimuli at verbal D-level or symbolic E-level. Thus, we can observe experimentally the interaction stimulus-response only at B- and C-level (assuming that information is not processed at higher levels). As far as D- and E- level is concerned, we have to build hypotheses not founded "stiffly" on hard and unambiguous experimental basis. In other words, in this region of motor control the "centre of gravity" of scientific work has to be shifted from observations and measurements to thinking and hypotheses construction. This was illustratively expressed by Mark Latash, who stated that "motor control is the physics of unobservable objects" [M.L. Latash, 2008].

Conclusion

In the paper two main information processing methods in humans, feedforward and feedback, have been presented as extreme modes of motor control. In practice, some combination of them is usually adopted. It may be termed "feedforward chunk" and its theoretical projection may be identified with uncontrolled manifold (UCM). Feedforward chunk may control a task or sub-task independently, without any external supervision. Such a supervision becomes necessary only when action parameters go beyond acceptable limits; then the feedback mode has to be adopted, which makes the action more flexible, but also much slower. Moreover, it engages a lot of attention, which otherwise could be directed towards other tasks.

The most important component of each control mode is anticipation. The more predictable environment, the more control load may be shifted towards feedforward mode.

In humans information processing is, however, quite complicated and may be depicted with 5-level theoretical model, the Bernstein's ladder. At each of "rungs" of the ladder a specific code of information processing and storing is applied. Thus, in humans there are at least five kinds of feedforward chunks: reflex arch (A-level), routine (B-level), schema (C-level), specific motor programme (D-level) and generalized motor programme (E-level according to Bernstein's theory).

The applicability of experimental method and mathematics in researching the human motor behaviour is also limited. In human the spheres of emotions, intellect and movements are intertwined with each other and make one inseparable system. Great part of this is by now not liable to experimental learning ("motor control is the physics of unobservable objects", as stated by Latash). Moreover, most elegant and efficient language of science, the mathematics, seems to be not fully suitable to describe information processing in humans or other living beings.

Important are also terminological issues. It has been suggested to remove from scientific dictionary the terms "closed loop" and "open loop", because the latter seems to be illogical. Moreover, the main task of science is bringing order into already possessed and newly gained knowledge, so adopting different terms to the same notion violates the "Ockham's razor" rule. Instead of "open loop control" and "closed loop control" it is suggested to use "feedforward" and "feedback" mode, respectively. Moreover, it has to be stressed that in English term "feedback" has two meanings – information and coupling – and that the difference between them is significant. Another terminological problem relates to the verb "to control" which means either steering some process, or checking its correctness. The last remark concerns the term "uncontrolled manifold". It is highly scientific, indeed, but not easily understandable to motor control specialists. Thus, it was suggested to use the term "feedforward chunk" which properly expresses the very meaning of this notion and is congruent with already existing motor control terminology.

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❖ PHYSICAL EDUCATION

READINESS DEGREE OF PHYSICAL EDUCATION COLLEGES TO MEET THE EXPECTED NEEDS OF 21ST CENTURY IN LIGHT OF TOTAL QUALITY MANAGEMENT THROUGH ISO STANDARDS

Ali Deiry,
Yarmouk University, Irbid - JORDAN
Email: prof_alideiry@hotmail.com **09.02.2010 / 20.02.2010**

Abstract

The aim of this study was to identify the readiness degree of the colleges of Physical Education in Jordan through **ISO** standards within the domain of Total Quality Management. Two instruments were developed, one measured the application of these standards embedded in three sub domains (quality of teaching, scientific research and community service), the other one measured the readiness degree of the same standards from faculty members and Graduate students point of view. A restricted sample consisted of (181) from faculty member and graduate degree (Yarmouk University., Jordan University., Hashemite University, & Mutta University.). The results indicated that the ratings of all standards in the three sub domains were average, beside that there were no significant differences between the ratings at (à,.05) between the two groups which revealed the readiness of these Universities in tackling the 21st challenges which it faced.

Key words: colleges, management, physical education.

Introduction

The University is a center for cultural and scientific community which seeks to develop economically, scientifically and culturally through its core functions carried out by, education, scientific research and community service. These domains are constantly changing with the evolution of society, so the university must cope with global development, which is witnessing many changes and transformations in various fields, to cope with its role in this world and strive to understand the difficulties they face, and to find solutions to these difficulties and challenges that accompany the quantitative expansion of higher education. In order for the university to play the role assigned to its envision to be a future for the reform of educational policies, linked to a policy of economic reform and social and cultural development and helps the university and possess a wealth of experience and highly specialized skills, which enable it to transform the traditional role of university to become a more influential role in all areas that can overcome the difficulties and challenges they face. (M. Deiry, M. Amjad, 2010).

The researchers believe that the faculties of P.E In any country are the most important part of the educational process, and supports the success of the educational process at the university, and their ability to achieve its goals primarily on the efficiency of faculty members and the provision of material resources and administrative measures, which are available in a set of administrative and qualified leaders who are able to develop policies and objectives. (M. Deiry, 2003).

So the higher education in its various dimensions and technical knowledge and research, is important for both developed and developing countries alike. That is why the university is the appropriate place to create and develop technical expertise and assistance in adapting the result of the number of externalized qualified workforce and knowledge required to deal with that technology, as a result of cooperation between the university and the field of work getting a positive impact in this area, and that the process of integration between the preparation of graduates in University, and follow-up performance in the field of work, and combining the teaching of theoretical and applied practice, and increased interaction of academics and experts in various institutions of society, thus enabling the university to absorb the achievements of technical progress in the world. Despite the efforts made by scientific experts and researchers, but they are unanimous on the existence of global problems of human suffering must be addressed by education system proposed these problems as follows:

1. Lack of natural sources of energy and high cost.
2. Environmental pollution and expansion aspects of sabotage.
3. Weak economic growth or decline.
4. Loss of self-identity for large groups of members of society, especially young people.
5. Increasing health problems.
6. Steady increase in the population of third world countries, and growing shortages of food.

If the universities and other institutions of higher education wants to solve these problems, the universities must prepare the necessary frameworks for the country of specialists in various fields, and universities should strive to progress in the areas of science and technology, culture and arts, and ensure the

preparation of specialists in various branches of science, service and production, and the promotion.

As a result of the above opinions, this study aims at identifying the readiness degree at the collage of physical education in Jordan through ISO standards within the (TQM), also this study will focus the functions of the physical education collages in Jordan for planning, organizing, directing, and encouraging employees in the college faculty members, technicians and managers for the development and modernization of the educational process in these colleges, so there is an important and essential role of management in these colleges to develop and achieve their desired objectives.

Consequently this study will focus in the following functions of universities, namely:

- The efficiency of teaching.
- Scientific research.
- Community service.

Problem of the study: In the past years a lot of talk about a higher education facing a crisis and frequency that raised many questions about the problems facing higher education, especially in the field of physical education and, despite differences of seeing these problems and ways in which instructions to suit with the rapid development, but still there are many questions concerning the extent of these Colleges to solve problems and pursue the completion of jobs created for them. This study aimed to answer this question: to What degree do colleges of physical education meet the expected needs of 21st century in light of (TQM) through ISO standard.

Questions of the study: This study seeks to answer the following questions:

1. The degree to which colleges of physical education to meet the expect needs of 21st century in light of (TQM) through ISO standard in the viewpoint of the study sample?
2. To estimate the willingness of colleges of physical education to meet the challenges of the twenty-first century?

Study Limitations: This study is limited to colleges of physical education at the universities of (Yarmouk, Hashemite, Mutah and Jordan)

Me Method and procedures sample of the study

The sample of the study consisted of (181), faculty member and (101) graduate student were(80) represent, "Yarmouk, Jordan, Hashemite and Muta university," with a percentage of (52%) .

Table (1) The distribution of the subjects of the study sample.

Variable		Number	Percentage
University	Yarmouk University	55	30%
	Jordan	48	27%
	Jordan	42	23%
	Muta	36	20%
Academic level	Academic faculty members	101	56%
	Graduate	80	44%

Validity of instruments:

Data were collected by means of questionnaire administered to the sample, the questionnaire contained two parts:

1. The first one measured the application of this standard embedded in three sub domains (quality of teaching , scientific research and community service)
2. The second part measured the readiness degree of the same standards from faculty members and graduate students point of view.

The final score is calculated for each area according to the total responses for each of the items, according to the five-phased which given as follows , respectively (5, 4, 3, 2, 1).

Very high=5
High=4
Moderate=3
Low=2
Very low=1

The following standard was adopted for the analysis of results:

1. 1 - 1.49 is very low.
2. From 1:50 to 2:49 low.
3. From 2:50 to 3:49 moderate.
4. From 3:50 to 4:49 high.
5. From 4.50-5 is very high.

Validity of Instruments:

To achieve the validity of instrument the researcher used a method of (Test-retest) and used a person reliability Coefficient see Table (2) was found to be equal to, (0.89) and this is a good indicator of the validity and the second tool were(0.91).

Table (2): The correlation coefficient of Pearson reliability of a tool study areas.

	Statement	Test-Retest	Correlation	Items
First Tool	The efficiency of teaching in the college.	0.92	0.90	12
	Scientific research.	0.91	0.88	11
	Community service.	0.88	0.92	11
	Total.	0.89	0.95	33
Second Tool	The degree of readiness of universities to meet the challenges of the twenty-first century.	0.91	0.94	22

Results

First: The results of the first question: "What degree do physical education colleges meet the expect needs the viewpoint of the study sample" in the following functions:

- The quality of the teaching function.
- Function of scientific research.
- Post community service.

To answer this question the averages and standard deviations were used .

Table (3): Mean and S.D, rank of students and respond.

Rank	No.	Statements	Mean	S D
1	2	Teaching at the college provides students with sufficient information and science theory.	3.98	.80
2	21	The college offers researchers enough freedom to select topics of their research which they wish to proceed.	.3.88	.94
3	24	College offers continuing education programs in abundance for the service of Jordanian society.	3.59	1.00
4	7	Teaching in the college Cope with world scientific developments.	3.49	.83
5	10	The college enrich teaching scientific theories, according to the specialties of the students.	3.42	.90
6	33	The college opened graduate programs to cope with new developments and cultural knowledge.	3.42	.93
7	6	Teaching in the college will grown the skills of students in scientific research.	3.38	.89
8	25	The college offers advisory services to promote the performance of actors local and national institutions in society.	3.38	.89
9	3	Takes teaching in the college developed the practic side.	3.26	.83
10	5	Teaching at the college helps the individual to deal with future conditions with a clear vision.	3.26	.83
11	4	Teaching at the college take into account the requirements technology in modern society with high efficiency.	3.24	.94
12	9	Teaching at the college will help the ability of individuals in dealing with modern technology.	3.24	.83
13	29	The College offers necessary training programs to develop the professional skills and life of individuals according to their needs.	3.19	.96
14	11	College should create center for the development of the teaching process by which the process of continuous training for faculty members.	3.17	.98
15	26	College offers projects that serve the local community.	3.10	.96
16	30	College Involve faculty members to contribute to advisory committees to serve the local community.	3.10	.96
17	20	The College provides a comprehensive information base to help faculty members to achieve the quality of research.	3.04	.85
18	16	The college offers hardware and materials necessary for scientific research to facilitate the task of researchers.	3.02	1.04
19	1	Teaching at the College Interested in of issues within the local scientific methodology studied.	3.01	.92
20	31	College plan educational programs to develop requirements of the community.	3.00	.91
21	32	Colleges contribute significantly to the overall science and technology to make important social culture (for all groups of society).	2.99	.90
22	8	Teaching in college will stimulate students to create material and moral aspects	2.97	.94
23	19	The College provides magazines and periodicals resources to facilitate the dissemination of research in which the scientific will be applied.		
24	27	The aims of the college is to study the needs of the community to contribute to the provision.	2.96	.97
25	14	College researchers directed towards research on effective development plans.	2.93	.96
26	17	College guide researchers to solve the problems of society in a scientific way.	2.88	1.04
27	13	Colleges provide researcher publications, so they have the ability to	2.84	.96

		prepare research distinctive.		
28	28	The college offers an information base for all sectors of society; to help the sectors to overcome the difficulties they face.	2.77	.87
29	23	The College provides data bases of researchers at promotional prices to help them accomplish distinct research.	2.75	1.00
30	15	Money allocations is enough to do the research	2.72	.99
31	12	The colleges take into account the total number of students adjust teaching to ensure the success of the educational process.	2.63	1.02
32	22	College employs the results of research in national economic development plans.	2.63	.97
33	18	The college offers lucrative rewards for faculty members for research excellence.	2.51	.92

It is obvious from Table(3) that the averages for all items were ranged between (2.51 -3.98) and the standard deviation ranged between (0.80 - 1.04); The highest items are (2, 21, 24, 7) which states that "teaching at the colleges provides sufficient information theory and science, "The college offers researchers enough freedom to select topics they wish to make their research," the college offers continuing education programs in abundance for the service of the Jordanian society "got averages between (3.59 - 3.98) were high, and the other items got thirty averages, on the other hand items (0.18) with mean (2.51) received the lowest response .

Table (4) Mean and S.D of subject response toward the study area.

Rank	No.	Items	Mean	S D
1	1	the efficiency of teaching	3.26	.62
2	3	community service	3.15	.71
3	2	Research	2.92	.66
	Total		3.11	.59

The results of the analysis, as shown in the table (4) the mean and standard deviations of the study areas, the table showed the mean of the areas where the combined total (3.11) were moderate. Also the table showed that the first area in the first tool the "degree of the colleges of physical education " the quality of the teaching as it showed the mean (3.26) were high among the fields and the second area community service got (3.15), very high and the field of scientific research with a mean (2.92) were moderate .

Table (5) Mean and standard deviations subject response toward "the efficiency of teaching ".

Rank	Nom	Statement	Mean	S D
1	2	Teaching in the college will provide students with sufficient information and science theory.	3.98	.80
2	7	Teaching in the college cope with world scientific developments.	3.49	.83
3	10	Teaching at the college enrich, scientific theories, according to the specialties of the students.	3.42	.90
4	6	Teaching at the college will grown students skills in scientific research.	3.38	.89
5	3	Teaching at the college applied science effectively.	3.28	.81
6	5	Teaching at the college helps the individual to deal with future conditions with a clear vision.	3.26	.83
7	4	Teaching at college take into account the requirements of technology in modern society with high efficiency.	3.24	.94
8	9	Teaching at the college will grown the ability of individuals in dealing with modern technology.	3.24	.83
9	11	University works will create centers for the development of the teaching process by which the process of continuous training for faculty members.	3.17	.98
10	1	Teaching at the College interested of issues within the local scientific methodology studied.	3.01	.92
11	8	Teaching in college will stimulate students through the provision of the creators of the material and moral aspects to them.	2.97	.94
12	12	The college will take into account the total number of students to adjust teaching to ensure the success of the educational process.	2.63	1.02

It is obvious from Table (5) that the mean of the items of this area: "the efficiency of teaching " with mean between (2.63-3.98) with standard deviations (0.80-1.02), were moderate where as the item number (2) got the highest mean in this area (3.98) is significantly and item number got (12) got the lowest (2.63). With regard to the second area / scientific research in the Table No.(6), the results showed the following:

Table (6) Mean and S.D, of subjects responses.

Rank	Nom	Statement	Mean	S D
1	21	The college offers researchers enough freedom to select topics of their research which they wish to proceed.	3.88	.94
2	20	The College provides a comprehensive information base to help faculty members to achieve the quality of research.	3.04	.85
3	16	The college offers hardware and materials necessary for scientific research to facilitate the task of researchers.	3.02	1.04
4	19	The College provides magazines and periodicals resources to facilitate the dissemination of research	2.96	.89
5	14	College researchers directed towards research on effective national development plans.	2.93	.96
6	17	College guide researchers to solve the problems of society in a scientific way.	2.88	1.04
7	13	College supply, researcher's scientific publications until they have the ability to prepare research distinctive.	2.84	.96
8	23	The College provides data bases for the researchers to help them accomplish specific research distinctive.	2.75	1.00
9	15	A total allocation for research is enough for the theoretical and applied research.	2.72	.99
10	22	College employs the results of research in national economic to developed plans.	2.63	.97
11	18	The college offers lucrative rewards for faculty members for excellent research .	2.51	.92

Table (7) Mean and S.D, of subjects response.

It is obvious from table (6) that the mean of this area, "scientific research" were between (2.51 - 3.88), and standard deviations (0.85 - 1.04), between moderate and high (21) got the highest, and item number (18) got the lower average, and item no. (21), titled: "The college offers researchers enough freedom to select topics they wish to make to their research," has got the highest average is (3.88), which is significantly, high.

With regard to the third area, "community service", the results showed the following statement in Table (7):

Rank	Nom	Statement	Mean	S D
1	24	College offers continuing education programs for the service of Jordanian society.	3.59	1.00
2	33	The College open a graduate programs to cope with new developments and cultural knowledge.	3.42	.93
3	25	The college offers advisory services to promote the performance of local and national institutions in society.	3.38	.89
4	29	The College will offer necessary training programs in diverse disciplines to develop the professional life skills and individuals according to their needs.	3.19	.96
5	26	College employs projects that serve the local community.	3.14	.86
6	30	College involves faculty members to contribute to advisory committees to serve the local community.	3.10	.96
7	31	The College plan educational programs for developmental requirements to the community.	3.00	.91
8	32	College will contribute significantly to the overall science and technology to make a social culture is important for all groups of society.	2.99	.90
9	27	The college aim is to study the community needs .	2.96	.97
10	28	The college offers an information base for all sectors of society to help the sectors to overcome the difficulties they face.	2.77	.87

It is obvious from Table (7) that the mean of the item of this area, "community service" has ranged between (2.77 -3.59) and standard deviation between (0.86-1.00) where moderate; where as item number (24), which states that the education is to serve the Jordanian community" got the highest mean of (3.59), which significantly high, while item number (28), which states, the collage offers information for all sectors of society to help the sectors to overcome the difficulties facing them, "have got the lowest mean (2.77), moderate.

II: **results for the second question:** "the value sample study to estimate of the willingness of colleges of physical education for the challenges of the twenty-first century?"

Table (8) Mean and S.D, of subject response.

Rank	Num	statement	Mean	S D
1	13	The College provides faculty members with computers connected to the network site to help them face the information and communications technologies.	3.67	.97
2	4	The parallel programs contribute solving physical education problems in future.	3.49	1.17
3	3	The colleges benefit from modern communication systems to overcome the challenges of the future.	3.43	.78
4	8	College is an information network linked to global networks to monitor any developments and scientific discoveries for the future.	3.37	.95
5	16	College works to provide specialized engineering workshops to train and qualify the cadres to meet the needs of the future.	3.37	.96
6	20	College is where I work out make an agreements with scientific institutions to improve the performance of cadres, and increase productivity for the future.	3.36	.96
7	21	College initiated using advanced technology to cope with modernization.	3.36	.92
8	14	College is where i work provide environment conducive to scientific research.	3.29	.80
9	19	Colleges use the modern technological developments.	3.22	.94
10	1	Colleges will develop educational policies to cope with future challenges in the era of globalization.	3.15	.80
11	2	College works are to adopt the research methodology in teaching to provide students with broad knowledge of the future.	3.13	.86
12	22	College adopts the principle of equal educational opportunities and by opening the door to the college of education in the least advantaged groups of the population.	3.12	1.09
13	18	College urges researchers to do research joint high-level continuously for the development of future solutions to the issues of cultural rights.	3.07	1.01
14	17	Faculty benefit from the experiences of universities in the world of successful problem solving and its future plans.	3.02	.92
15	12	College works in the marketing of services in the college of all workers in order to overcome the financial problems that may face the future.	2.94	.98
16	9	College aims to apply research findings to meet the specialized needs of the future in the sectors of society .	2.83	.94
17	5	College uses the scientific research to predict the difficult problems.	2.80	.88
18	15	Public universities in Jordan seeking to promote transparency in the management to avoid future problems.	2.78	.98
19	6	College's support best researchers, according to an effective system of rewards for research predictive for the future.	2.76	.91
20	7	The college offers productive projects appropriate to meet the requirements of the society for the future.	2.76	.82
21	11	Faculty exchange scientific research programs with other countries to serve the Jordanian society constantly.	2.72	1.00
22	10	College pursue graduates in the labor market to continue to change and update its plans for the future.	2.39	1.02
		Total	3.09	.66

Table(8) showed that all student with mean of(3.09)(S.D.0.66) were moderate (13) with a mean (3.67) significant high, item (10)with a mean of (2.39) with lowest average .

Discussion of the results

First: To Discuss the results on the first question:

-To what degree the colleges of physical education in the viewpoint of the study sample?

The results of the study showed the response of the sample study toward the quality of teaching, community service, and scientific research were all moderate. The sample study respond to quality of teaching highly to the statement that the collages provide students instruction with adequate information and science theory, which mean that the collage provide all the necessary information that students looking for.

The average of the first quality of the teaching (3.26) and of the second community service (3.15), while the third area "scientific research" got average (2.92) it is at least in the medians between the domains.

The Efficiency Of Teaching:

It appears when you look at the items of this area, the highest in the got the average, item No. (2) " the colleges provide students instruction with adequate information and science theory, The average (3.98) which has been achieved significantly. And eleven other items was achieved average.

These results are consistent with the study M. Jaradat and R. Struck (2000).

That teaching at the college has scored the highest averages among other objectives, which means that members of the study sample felt that this objective to achieve a high degree of satisfaction by faculty members, is due to the teaching profession that they are in college and they are the most efficient in the society in accordance with of specialization.

The response of the sample study toward statement (12) which" take into account the total number of Students adjust teaching to ensure the success of the educational process," get low response , (2.63); due to the expansion experienced by colleges in the number of admissions after following some of these universities to parallel system of education, which led to the acceptance of large numbers of students exceeding the capacity of students, faculty, and aim to resolve financial problems, facing the universities.

The Scientific Research:

When you review the item of scientific research shows that the item (21) "The college offers researchers enough freedom to select topics they wish to make to their research," a mean of (3.88) were high significant . This means that's scientific research got the least three areas; which shows that there is dissatisfaction by members of the study sample to achieve this goal; due to lack of sense to support administration of the colleges of this area.

These results agreed with the study of S. Mahmoud (1999),of M. Jaradat and R. Struck (2000) that scientific research received an average moderately.

The Community Service:

The third area has been made "community service" with a mean of (3.15), were moderate .

May be achieved for the second order due to that there are financial incentives given to teachers in college when you bring them to the scientific advice of the community.

This study has been agreed with the study of Y. Aldjaafarh (1996).

II: Discussion of the results on the second question:

The estimates of the study sample of the willingness colleges of physical education to meet the challenges of the twenty-first century?

When looking at the statement that represent a challenge to the universities in the quality of the teaching and development to cope with modern developments, including items (3, 8, 21, 19, 1, 15, 20) showed moderate were as item (13) received the highest response by the sample study in physical education; which mean that the collages contribute with extensive scientific developments in all fields. leading to the development of the teaching process and information technology in college, and contribute to raising the level of graduates of Physical Education, to be similar to the levels of students in developed countries.

With regard to the challenges facing the field of scientific research; item has reflected (14, 18, 2, 5, 6) were moderate. The lowest averages in item (10) provided showed "college graduates follow in the labor market continues to change and update its plans for the future", this indicates that there are no plans at the college from the standpoint of the study sample need to connect the outputs of community education at the college, which means that admission rates in the various disciplines in the universities are in accordance with the principles associated with the college itself, and not to study the needs of society, and therefore must be modified so that this aspect of the overall conduct of national plans in cooperation with the concerned parties to supplement Courses for community needs and the reduction of other disciplines, and this study agree with study.

Conclusions

In the light of the questions of the study researcher concluded the following:

1- The faculties of education administration should play more attention to (TQM) to the application of quality sports.

2- The estimates of the study sample of the willingness of colleges of physical education to meet the challenges of the twenty-first century should meet the needs to (TQM).

3- There is that (the colleges of Physical Education in Jordan for their role and their willingness to face the challenges of the twenty-first century due to the variable academic rank (Professor, Associate Professor, Assistant Professor).

Recommendations:

Based on the findings of this study, the researcher recommends the following:

1- Directing the scientific research for teachers in practice related to the development needs of the community, socially and economically.

2- Organizing courses for the development of teaching methods to improve the performance of faculty and raising the efficiency of teaching.

3- Make college production centers applying the

concept of total production developed planes, research center to serve the community.

4- Total employment results of research on comprehensive development plans and scientific research.

5- To develop distinguish scientific research to solve society's problems.

6- Follow-up with graduates and to harmonize the work output of higher education the future development plans.

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THE MODERNIZATION OF THE SPORTIVE TEACHING PROCESS AND SYSTEM

COLIBABA –EVULET Dumitru
Faculty of Physical Education and Sport, Pitesti University, **ROMANIA**
Email: dumitrucolibaba@yahoo.com / 03.02.2010 / 11.02.2010

Abstract

Essay content. This study deals with the main coordinates of the modernization of the sportive teaching process and system. This is a permanent scientific research theme, regarding the continuous changes produced within the sportive performances process. In other words, it is necessary for us to better understand the components, the nuances and the development directions of the modernization concept in our activity domain and to properly adjust them to the practical reality.

Knowledge problem. The national policy of performance in sports would be expressed through a series of principles, rules, laws and general options regarding the development and the modernization of the selection, training and participation to competition system of the athletes and sportive teams. The main directions of modernization are highlighted: the modernization of the sportive teaching system, the modernization of the institutional organization and of the selection and proper teaching process, the modernization of the technology and didactic strategy, the modernization of the organization forms of the teaching process, the modernization of the cooperation relations between coach and athlete.

Key words: modernization, teaching system, teaching process

Introduction

The "modernization' concept involves many inter- and pluri-disciplinary meanings. Thus, **the verb "to modernize" means (The Encyclopedic Dictionary, 2003)**

-to take up the realities and nowadays requirements, to renovate; to correspond with the contemporary level of civilization;

-to modify a technological process in order to square with the present technical progress"

In the educational sciences (in physical education and sports, too) the concept of modernization implies **"the adjusting action of human personality with all its components, to the present requirements of society, to keep abreast of the present progress, to properly respond to the social demand" (Dictionary of Pedagogy, 1989). Also, it is stated that the teaching modernization is reflected in the following improvement directions:**

-the increasing contribution to the improvement of the cultural level of the population

-the formation of teachers in accordance with the requirements of the social-economical development of the country

-the preparation of the youth for life, work and social-useful activities

-the insurance of an open and democratic character

-the introduction of the permanent teaching principle

-the systematic improvement of objectives, content, methods, didactic technology and assessment instruments

In sport performance the concept of modernization surprises **and it is involved also** in the main sub-systems of the organization and management activities system, in the selection, training and participation to competitions process. Thus, the national policy of **The National Agency for Sports** in

Romania elaborates and **works on a strategic plan of modernization which is characterized by a series of macro social decisions regarding the adjustment of the above mentioned activities** (selection, training and participation to competitions) **to the requirements of the international competitions and in accordance with the social-economical demands of the country.**

The national policy in sport performance would be expressed through an ensemble of principles, laws and general options regarding the development and the modernization of the selection, training and participation to competitions system of athletes and sportive teams.

According to the aspects above mentioned the present meaning of modernization of performance in sport would be represented by the following practical ways of solving:

a)Knowing the international sportive competitive system through the characteristics, demands and innovations systematically promoted especially after the development of competitions established by tradition (OG, WC, EC, JMU, CB etc.) and the elaboration of the national sportive competitive schedule according to their way of development. Therefore, there has to be a synchrony between the International sportive calendar and the National competitions calendar. Thus, the elaboration of the National competitive calendar is an accurate copy of the International sportive calendar. Similar conditions are created or a series of characteristics are shaped such as: the system and the forms of manifestation of competitions, the conditions of participation, the frequency and the sequence of events, the changes of the rules, the criteria of promoting and establishing the value hierarchies, new devices and technical equipment for competition, etc.

b)Promoting the performance management of the sportive structures in our country. This desideratum implies the modernization of the organization and managing system of the entire sport performance activity on national plan. Concretely, it meant the global changing of structures, institutions and the organization frame, according to some purposes or to some performance behavior models. This type of modernization has consistency , revealed through the re-thinking and re-organization of the organizational culture, organizational behavior, procedural and structural organization of the sportive structures etc.

The modernization of the sportive training includes both the organization system of training previously mentioned and the proper training process.

c)The current systematic innovation implies an ensemble of actions performed within different segments and areas of the selection, training and participation to competitions activities regarding the insurance of an optimum functioning inside these. As we can notice, the present meaning of modernization includes both **the institutional system of performance in sport**, the functional structures which **insure the conditions necessary to perform the training process, the materialization of the objectives** of the selection, training and participation to competitions activities of athletes. This relation can be reversely interpreted, the improvement (the modernization) of the activities regarding the building process of the performance capacity would favorably reverberate on the performance behavior of the athletes during competition. **An approximate delimitation of modernization is possible only if it bases on the interdependence between the training system and the training-formation process and participation to competitions of athletes.**

The conceptual frame of the research

THE PRESENT MEANING OF THE MODERNIZATION OF THE SPORTIVE TRAINING PROCESS

As we are concerned, the present meaning of **the modernization of the training process** can be understood only in the context of systemic relations which produce within the content, organization and management of the selection, training and participation to competition activities and, at the same time, through the continuous implementation of the new strategic and technical discoveries which are performed through scientific research.

The efficiency of modernization can be evaluated through the contribution or purposes aimed by high performance in sport.

THE DECISIVE FACTORS OF MODERNIZATION

In specialized literature, there are two categories of decisive factors of modernization: **external factors and internal factors.**

External factors – refer to factors which exercise from the psycho-social field over the performance in sport activity. This psycho-social area has few distinctive elements which influence the selection, formation of athletes and participation to competition processes and they are:

***the psycho-social space** which includes the ensemble of institutions which directly or indirectly participate to the achievement of the educational/training process, the schools and clubs equipments, the way they obtain these material, financial, human, informational sources, natural environment conditions, political parties, the joined interested groups, etc.

***the psycho-social time** – conferred to the selection, formation and participation to competition activities

***the psycho-social habitus** – or the ensemble of the automatized general conditions within the educational community (after D. Colibaba, 2007. The external factors have an urgent role, they imply certain changes and reorganizations of the training system of the performance athletes. Therefore, besides the external factors previously mentioned we should add also the exigencies of the competitive system which impose a series of requirements regarding the selection, formation and the quality of the "human material" requirements in order to achieve performance.

The internal factors represent those elements which constitute inside the functional relation between

subject (coach, team-work) and object (athlete, team) of the training and participation to competition processes. This relation is achieved within a certain atmosphere or psycho-social ambiance and is formed of a series of affective-motivational states which influence from the inside the quality and the efficiency of the training process. The instructional environment fully engages the abilities of the two elements:

- **the coach's personality** (team-work, parents, friends) shows through the quality of projects and training programs the quality of the message transmitted and received by the athlete, the empathy capacity (or affective consonance), the mutual repertory achieved with the athlete, the capacity of adjusting the athlete's behavior, the adjustment to the athletes' particularities, innovation, diversity, management capacity etc.
- **the athlete's personality (of the team)** expressed through motivations, needs, aspiration, learning capacity, favorable availabilities, attitude, behavior, auto-telic preoccupations, assessment capacity etc.

THE MAIN DIRECTIONS OF MODERNIZATION

The modernization of the sportive training system

The concept of system (gr. system- ensemble; from synistemi – to put together), means an ensemble of elements which interact and build up a whole. Any system acts to achieve and bring about a purpose. In our case, the training system in performance in sport aims the continuous increase of the performance capacity of athletes or teams. The functioning of this system is conditioned by some distinctive elements or sub-systems which denote goals subordinated to the general goal of the global system. Thus, we can consider as sub-systems of the global system: the sportive structures system which deal with the organization and the management of performance activities, the selection and promotion of talented subjects system, the formation of high performance athletes system, the competitive activity, etc.

The organization and management of performance activities system frames within over-systems which it serves. Therefore, **this system is subordinated to the international competitive over-system and it permanently adjusts according to it.** In other words, all the systems we deal with (selection, training, formation, etc.) are adjusted by the necessities of the society over-system for which it was created and by the international sportive competitions exigencies for which we prepare. The adjustment of systems takes place through the analysis **of the mentioned sub-systems products** (output), through their comparison with the parameters of the suggested performance objectives, through the results of the performance behavior proved during the events the athletes participate in, etc. **We can conclude that the sportive training system which aims to maximize the performance capacity has three segments (sub-systems)- entrances (**guided and selected people, the proper forming and training process- where qualitative changes are brought about those within the system) **and exits** (performance behavior, results, classifications, etc.). This picture of systemic behavior requires not only their distinct identification but also the multiple connections between them.

In conclusion, the sportive training system is a sub-system of the educational system which includes:

- **all the sportive structures** (institutions) in a country, forming an ensemble coordinated and subordinated to the principles of organization and functioning established by the state with the purpose of drawing the citizens into the sportive life, according to the individual bio-psycho-social availabilities and to international sportive competitions requirements
- **institutions which deal with the initial guidance and selection**
- **sportive structures which deal with training at an early age (children)**
- sportive structures which deal with selection and training on formative phases
- structures which deal with the proper training and have as distinct activities: teaching-training-learning-improving-evaluation and which are modernized by including the modern didactic technology. At the same time, **all these didactic activities are rationalized by "the praxiology circuit or chain" which consists of the following elements: objectives-contents-resources-strategies-evaluation of the quality and efficiency of the training process. (expressed through the acronyms O-C-R-S-E).**

Through this systemic conception – the modernization refers not only to the aspects or parts of the sportive training but also to the relations between them.

2. The modernization of the institutional organization

The modernization of the institutional organization implies bringing about into a proper environment for all the members of the society to develop their possibilities and capacities. In this case we have to deal with a finalist social system which materializes in the fact that its entire organization (structure) is dynamic and is determined by the solving of a finality (sportive capacity for performance). Achieving such a product is caused by the internal organization of an institution or a sportive structure.

A finalist system consists of a lot of actions whose ensemble leads to achieving the finality. As a rule, the finalist systems tend to express their organization in a system of rules and roles. These rules and roles build up a system because each has its function, completing each other in order to insure the achievement of a specific finality. For example: the rules/roles of a coach/athlete form a system whose finality is to involve the maximum capacity for performance; the elements of the logistic system have as goal to insure the conditions for the athlete to successfully participate to competitions.

"The finalist systems" include the following types of elements:

a) actors- subjects, groups or even communities

b) actions, their behavior which represent the essence of the proper system (system means a lot of actions)

c) the interdependence relations between the elements of the system (C. Zamfir, L. Vlasceanu, 1993)

It is necessary to differentiate between system and structure. **The structure represents the way of internally organizing a system.** A system can have different structures.

A sportive organization can be established on an hierarchical-authoritarian structure, on an hierarchical-democratic structure or another leading alternative. Frequently, a system van simultaneously have many **alternative structures.** For instance, an institution tends to have an authoritarian hierarchy (guaranteed by the manager or other leaders which promote authoritarian behavior); democratic structures are provided by the systems which are determined by the democratic style of the manager. An important issue is represented by the relations of subordination, over-ordination or the neighbor relations, by the mutual influence, competition, occurrence or cooperation.

The modernization of the proper selection and training process

The modernization of the selection process of talented elements for high performance sports implies the implementation the sportive activity in order to identify the subjects who have favorable skills to achieve sportive performance.

The guidance process is similar to the professional guidance process which implies informing the subjects about the favorable skills they have and recommending a sportive branch to practice.

The initial selection process – starts with the requirements of the sportive branch, depending on what the subjects choose and whose favorable skills have a striking manifestation.

The modernization of the selection strategy **is** subsequently **achieved** through the reference models of high performance sports according to which **normative** standards and rules are enforced on different formative phases of athletes in their performance sportive activity.

The modernization of the sportive guidance and selection is achieved through scientific diagnosis and prognosis activities which ,nowadays, are well subsidized, scientifically.

The modernization of the sportive training process comes within the provisions of the scientific projection and of the praxiologic measures in order to insure the quality and the efficiency of the process. In other words, the praxiologic chain (or the circuit) consisting of : **Objectives- Contents- Strategies- Evaluation, always insures the quality and the efficiency of training.**

The modernization of the didactic technology and strategy

The role of the didactic technology and strategy is to create a training context of situations so that the one who learns/is trained to be engaged to actively participate to the achievement of the teaching objectives (Nicola, I., 2002, p.470). This statement implies that **stimulation** is the instrument through which a method involves the athlete in the training/improving process more or less. The educational sciences researchers (for example, I. Neacsu, 1990, p. 221) analyzed the formative and stimulating potential of the main methods of training. **Thus, among the formative-stimulating characteristics of the well-known didactic methods** (exposition, modeling, simulation, conversation, problems, demonstration, discovery methods, case study, individual study, guided exposition, systemic observation, debate) **the following effects are recorded** (formative-stimulating):

-building positive motivations towards the social values

-stimulating the independent activity

-stimulating the individual or group creative activity

-building the cognitive- operational (intellectual and motric) abilities

-facilitating the connections among pieces of knowledge

-facilitating the horizontal and vertical positive transfer

-insuring the constancy of knowledge and skills

Analyzed through the above mentioned aspects, the best methods are: divided experimentation, case study, individual study, modeling and simulation, demonstration, etc.

"Stimulation derives from the constructive contribution of the athlete to his own formation. It involves, psychologically speaking, two parameters – **a intellectual-cognitive one consisting of the cognitive processes** (feelings, perceptions, representations, imagination, motric memory, thinking, intelligence, etc with all their operations) **and a stimulating-motivational one** consisting of non-intellectual factors (needs, intentions, affective states, interests, aspiration level, attitudes, characteristics, etc.) (Nicola, I., 2002, p.470).

Within the frame of these elements, we can consider that the modernization of the didactic technology and strategy consists of creating a proper environment in order to insure the transformation of the one who is trained into the subject of his own formation. The valorization of the stimulation possibilities which imply the training methods and means, depends on how they are used by the coaches.

A second tendency of modernizing the sportive training strategies is given, on our opinion, by the dialectic relation between **goal-content-methods-means.** During practice, we often meet difficulties in connecting the four fundamental elements of training. **This relation represents " the pragmatic and generative axis on which the sportive training process stands" (Colibaba, D., 2007, p.167).** In the figure the same author presents more relational aspects

of these elements: objectives- contents- methods- methodical procedures- evaluation instruments.

Nr.	OBJECTIVES/TASKS	CONTENTS	METHODS TECHNICAL PROCEDURES
1.	MOTRIC SKILLS AND ABILITIES (technical-tactics elements, skills, abilities) Knowing how to perform Not knowing how to perform He is able to perform He is skilled He is taught He performs wrongly	Technical/tactical actions or motric acts Movements ; Operations ; Walking ; Running ; Jumping ; Climbing ; Crawling ; Carrying ; Escalating ;	Demonstration Practice Simulated role play Modeling Playing games
2.	MOTRIC AND PSYCHIC ABILITIES What abilities does he have What abilities does not he have He has abilities for He does not have abilities for	Motric qualities General (VARF); Specific motric qualities; Conditional abilities Favorable abilities for role Combined motric qualities	Practice Methods specific for developing the motric qualities Methods and techniques of developing the creativity Contests – competitions (games)
3.	OPERATIONAL CAPACITIES For competition He knows how to perform He does not know how to perform He can/ he cannot ….	Action contents specific for the technical-tactical-physical-psychic behavior	Exercise training Practical application Case study Role play
4.	KNOWLEDGE He knows He does not know	Laws, principles, theories Being aware of resources Fact knowledge Concepts	Explanation Exposition Debate Conversation etc.
5.	ATTITUDES He shows attitude He does not show attitude He has an opinion/ he does not have an opinion…	Situations Life experience Knowledge Specific activities	Group discussion Case study Analysis and self-analysis Experience exchange
6.	PRINCIPLES He does not believe He is not convinced He realizes	Social, politic, ideological, moral activities	Lecture Debate Persuasion Case study
7.	MOTIVATION- INTEREST – ASPIRATION He does not train because… He acts because… He is not interested… He wishes…	Knowledge Activities Interests Principles Affective states Personality features	Principles Individual and group motivation and self-motivation Competition Reward Obligation

The third tendency is promoting the scientific research in training practice. It is not important to memorize the scientific discoveries and to introduce the person who learns into the mechanisms which led to these discoveries. The one who learns has to be aware of the scientific truth and to apply it into practice.

5. The modernization of the organization forms of the training process

The organization forms of the training process aim the relationship between coach and the trained athletes: the frontal relation (with the whole team), group or conventional classes relation, pair and individual work. Usually, these forms combine and alternate.

Frontal form (collective) – is the organization and progress form of the training process achieved with all athletes (team, class), during the training lessons. In frontal training the coach (or the technical team- team-work) transmits a suggested amount of skills and abilities regarding the achievement of the same purpose, but each athlete takes a certain amount of information, according to his individual particularities and his assimilation (memorization) capacity.

The frontal forms of learning/training are: physical education lessons, certain training lessons,

certain parts of the training lessons, lectures, seminars, methodical activities, competitions viewing, etc.

The frontal organization forms (with the whole group) is the most efficient, economically speaking, because the same amount of time is allocated for all the athletes/students. Though, this organization form does not take into consideration the athletes' particularities, their training level or their assimilation capacity.

The organization of group activities (3-8 athletes)

Groups are formed on well-established criteria such as: preoccupations, interests, mutual tasks. The instructive work developed on groups combine some advantages of frontal teaching with the individual ones. Group training , on Ternerry's opinion (quoted by D. Colibaba, 2007 p.190) implies following some didactic operations:

1. Defining the objectives
2. Analyzing the sources
3. Organizing the group training
4. Strategies focused on objectives
5. Permanent evaluation of results
6. Continuous correction of errors

Pair training is recommended any time two athletes work together- correcting each other or helping each other. It is "controlled" by the coach who intervenes whenever it is necessary. Pair training is recommended:

In practicing technical elements and procedures

For repeating the exercises which need insurance at devices

In performing the exercise which need movements development (flexibility – mobility)

In performances which need collaboration between athletes

Individual training – consists of the relation between coach and each athlete. The individual training form implies that each coach should work with each athlete in his own training rhythm, with particular training strategies, which engage the development of some documents such as: **individual record, individual training programs, homework, additional tasks, etc.**

The individual training form combines with the other three when active training forms are used (programmed training, independent work, training through discovery, etc.). During the training process and during one lesson , the 4 organization forms of training can be alternatively used or can be combined.

7. <u>The modernization of the cooperation relations between coach and athlete</u>

The modern characteristic of this cooperation consists of the fact that it enforces and includes an optimum collaboration so that a mutual exchange of messages should be achieved.

The modern concept on coach-athlete-team relation implies a collaboration on vertical circuit (coach-athlete) and on horizontal circuit (athlete-athlete). The easier the messages are transmitted between the two poles the more the formative direction of the cooperation is intensified. The cooperation between coach-athlete does not omit, but implies the coach's authority. It is not regarded just as a way of obeying and listening but it becomes a feature of the didactic act as a whole. Against the background of this authority, the coach's responsibilities are increased and he is not anymore just an information source and a deliverer of restrictions and interdictions but he becomes an organizer, a guide and entertainer of the athlete's activity, as the latter is not just a receiver of transmitted orders and information and he becomes an active participant to his own developing process. In the Anglo-Saxon literature, this atmosphere and collaboration between coach and athlete is called coaching activity and it has two meanings: " as an orientation, observation, guidance activity of the entire training and competing activity which aims the achievement of maximum performance capacities:

a) as an assistance activity of athletes (team) during training and competitions. This assistance has two distinctive objectives:

* insuring the proper development conditions of the performance capacity (transport, accommodation, recovery, invisible training)

*permanent adjustment of psycho-behavioral moods of athletes, anticipation and avoidance of moral misbehavior but not to punish them but to find optimum solutions to correct them so that the performance objectives should be achieved" (D. Colibaba, 1998, p.72).

The modernization of the pedagogical relation includes the increase of the status of the two parts (coach-athlete; team-work-team) with attributes that facilitate a real cooperation. The innovating way of the entire activity can be materialized by creating a proper environment which includes many requirements and challenges in accordance with the individual particularities of the athlete.

Actual methodical tendencies and orientations

In performance training there are many terms, such as: didactic techniques, training techniques, learning/training methodology and technology, etc., which mean work methods of those who lead the learning/training process.

Didactic techniques – represent " an ensemble of processes, methods, procedure, means, operations, rules used by the teachers in order to achieve the training- educational objectives " (Dictionary of Pedagogy, 1979); " such techniques can be different: training/ self-training techniques, evaluation and assessment techniques, information techniques, receiving information techniques, presenting the information techniques, etc.,"(Schaub, H., Zeneke, K., 2001, p.279).

All these are instruments of the coach's and athlete's work style (didactics), insuring a specific mark to the activities they perform.

Training technology – this concept is used in many variants such as (M. Ionescu, I. Radu, 2001, p.123):

- **" as an ensemble of the technical means of training** (which develop due to the introduction of physical and technological theories in the training-teaching process). This signification sustains the existence of a tight connection between the production technology of devices and the teaching-learning-training-evaluation strategies, overestimating the functions and the possibilities of the audio-visual means; the technical devices involved in the didactic activity, especially the **hardware;**
- **as an ensemble of proper instructive programs**, especially those which are called **software** and which are intended for devices. At the bottom of these programs, there is the correlation between the scientific acquisitions regarding behavior and the learning process and motivation. These devices has a presenting purpose" (M. Ionescu, 2001, p.203)

Another definition of the operational didactic strategy is:

"a coherent system of methods, materials, means (exercises), based on principles, rules, teaching, learning styles and organization forms of activity- happily combined to achieve the operational objectives" (Colibaba, D., 2007, p.138).

The didactic technology represents a part of the mass-media which appeared due to the diversification of the communication means. They are training means: projection equipment, films, radio, video cassettes, programmed training and electronic computers- hardware and software elements.

Regarding the modernization of instructional technologies and strategies this process is produced under the influence of changes which occur nowadays and which influence the training process. These changes are achieved by the following factors: the increase of the science, the increasing rhythm of changes, the increasing requirements of society, the globalization phenomenon, the pedagogical research implications etc.

The modernization implies approaching training to **the international contests requirements, teaching to learning** and knowing the athlete, but also approaching training to scientific activity.

The orientation of the improving activity of didactic methodology is to be made emphasizing the active, awareness, objective, creativity features.

Among the main directions of modernizing the didactic methodology specific to the training process we have the following:

*** Revaluation of the traditional methods**

Changing a group of methods considered just instruments of transmitting knowledge into an efficient way of organizing and guiding the motric, active and mobilization activity of athletes. The sportive training practice certifies that a method cannot be used as a recipe and used by itself, but with a system of procedures, actions and operations which form a group of activities, depending on some factors.

In the present phase of developing the didactic methodology- the relation between objectives-content elements-method inherently appears. This axis (O-C-M) is a "sine qua non" condition in order to insure the quality and the efficiency of the training process. Another tendency is represented by the introduction and application within sportive training of methods used in other domains: problems, algorithms, structural analysis, computer training, etc.

***The dynamic and open character of methodology**

Within traditional didactics the teaching-learning/training process is seen following the hierarchy:

1) **knowledge**
2) **skills and habits**
3) **attitudes and intellectual capacities**

This hierarchy of objectives is more and more disputed. **Through its evolution and methodology, the present science highlights the importance of synthesis, attitudes and intellectual capacities, which require the reorganization and the inversion of the pedagogical objectives in the following hierarchy:**

1) **attitudes and intellectual capacities;**
2) **skills and habits;**
3) **knowledge.**

The dynamic character of the didactic methodology, opened to renovations is emphasized by the relations established between certain principles and " guiding" ideas within the increasing efficiency action of training methods used in practice. Modern didactics research, educational science research, bio-psycho-social availabilities research on human being enrich the sportive training methods.

*** The diversity of the didactic methodology**

This tendency refers to the advantage of combining the requirements of the motric learning theory with the possibilities the athlete has during the training activity. We notice the fact that each method correlates only some variables of the training process, the rest remain outside the immediate contact. In this way, we can state that "**each teaching method hides a hypothesis of the learning mechanism of the student" (M. Malita, 1987).**

A method or another becomes useful if we take into consideration the domain the athlete is going to perform: acting (motric) domain, objective manipulation domain, figurative (symbolic) domain. As we know, there are methods which facilitate one of the 3 domains. Beyond these, the ways of access for the athlete to assimilation-acquirement-knowledge are many. It is noticed that, at any age, an instructional and hard objective is more easily acquired if it has real support, objective methods, examples and counter-examples, etc. It appears the necessity for the diversification of the training methodology. In literature, (A. Dragnea, T. Bompa) it is stated that the way the coach works is established, even determined by the training process period. Some methods are used in certain phases and training periods and they have to

be used as such. On the other hand, some methods are used in the teaching and assimilation period of motric skills and abilities, and others are more useful during the fixing and consolidating of knowledge period (practice, for example). In consequence, the coach decides the methodology according to the activity, training elements, contents, the organization forms of training, the used means, etc.

***The development of the formative character of methods**

Sportive training has an important role in building the athletes' personalities, in their training for competitions where self-training and self-improving have to be significant attributes for each individual. The one who finishes (obtains) a training degree is not a finished product but he continuously adjusts for competition. Thus, nowadays, the athlete is not only the trained one (receiver of didactic messages) but he engages in auto-telic actions which sends him into the values hierarchy.

***Elements which lead to the maximizing the performance capacity**

In literature (Dragnea, A., Teodorescu, M., Serbanoiu, S., Dragomir, P., Bompa, T., Popescu, S., Colibaba, D, etc.) the following factors or elements which participate in the maximizing the performance capacities are mentioned:

- **initial guidance and selection** – to promote a qualitative "human material"
- **selection and training on formative phases**; each formative phase has a certain degree of difficulty and specific requirements
- **the increase of the training volume-** during the skills, abilities and knowledge acquisition phases
- **the effort intensity increase** – in the pre-competitive and competitive phases
- **connecting the competition training and training through competition** (competitions)
- **the acceleration of recovery the effort capacity**
- **the technologies transfer from other activity areas**
- **the management of training and participation to competitions** by a technical team (team work)
- **evaluating the performance behavior of the athlete**
- **promoting thinking through reference models**
- **the development of basic training on didactic projects able to be applied to the "well-done work" principle. This statement materializes by promoting the so-called praxiologic circuit O-C-S-E** (objectives-contents-strategies-evaluation) which always insures the quality and the efficiency of the training process.

Conclusions: The role of the didactic technology and strategy is to create a training context of situations so that the one who learns/is trained to be engaged to actively participate to the achievement of the teaching objectives This statement implies that stimulation is the instrument through which a method involves the athlete in the training/improving process more or less. The educational sciences researchers analyzed the formative and stimulating potential of the main methods of training.

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INFLUENCE OF FITNESS TRAINING ON THE COEFFICIENT OF APPLICATION RATE OF BODY

Cecilia Gevat[1], Alin Larion[1], Elena Sabau[2], Monica Gevat[3]
[1]Ovidius University of Constanta, ROMANIA,
[2]Spiru Haret University, Bucharest, ROMANIA
[3]Regina Maria College, Constanta, ROMANIA
Email: cecilia_gevat@yahoo.com 04.02.2010 / 18.02.2010

Abstract

Aim: Any physical activity that involved larges muscle groups and is sustained for prolonged periods of time has the potential increase cardiorespiratory fitness. The purpose of this study was to investigate the effects of 8-week training physical fitness over application rate of body for athletes' children girls, 12 years old age that practice athletics for 6 months.

Method: 15 active athletes girls from experimental group (age = 12.2 ± 0.32 years, body height = 1.48 ± 0.08, body weight 338.2 ± 2.02 kg) volunteered to participate in this study and was trained three times a week for the period

of 8 weeks and ***control group (n=15) with*** age =12.4 ± 0.4 years, body height=1.45±0.07m and body weight 39.06± 1.15kg was trained three times a week for the period of 4 weeks. Measurements were conducted twice before and after training. Main test was *coefficient of application rate of body*: (heart rate differential/ target heart rate)x100

Results: There was significant difference in dominant *application rate of body* between experiment group and control group before and after training t = 1,81, p >0,05pretest, and posttest t=2,32, p<0,025.Between pre-test and post - test for experiment group t=3,87, p<0,005 and for control group t=3,83, p<0.005.

Conclusion: Fitness training has a higher influence over the body coefficient request *application rate of body* in the training period is bigger. If value of the coefficient of application rate of body is smaller, the athlete's training capacity will be better.

Key words: training fitness, girls, coefficient of application rate of body.

Introduction

Cardiorespiratory Fitness is ability to deliver and use the oxygen under the demans of intensive, prolonged exercise or work. Central cardiovascular adaptations is adaptations that occur in the heart and contribute to an increased ability to deliver oxigen. Cross training is the development or maintenance of cardiovascular fitness by alternating between or concurrently training in two or more modalities. (A.S. Plowman, D.L. Smiths, 2002.) Orriginally, the term *cross training* referred to the development or maintenance of muscle functionin the limb by exercising the contralateral limb or upper limbs as opossed to lower limbs (D.J. Housh and T.J. Housh, 1993, D.D. Kilmer et al 1994). Theoretical , there is merit to the application of specificity and cross training to a training program. Any form aerobic andurance exercise will affect both central and peripheral cardiorespiratory functioning. The cemtral cardiovascular system is comprised of heart and oxygen delivery components. Although jogging or running maybe the most time-efficient way to achieve cardiorespiratory fitness, these activities are not enjoyable for many individuals and they have a relatively high incidence of overuse injuries. Therefore, other options should be available in fitness programs. Although many different modalities can improve cardiovascular function, the greatest improvements in performance occur in the modality that was used for training-that is, there is *modality specificity*.

Material and Methods

Table no.1.Subjects experimental and control groups

Variables	Experimental group (n = 15) M ± SD	Control group (n = 15) M ± SD
Age (year)	12.2 ± 0.3	12.4 ± 0.4
Body height (m)	1.48 ± 0.08	1.45 ± 0.07
Weight (kg)	8.2 ± 2.02	9.06± 1.15

Procedures

The main test are coefficient of application rate of body and 300m running 100% intensity. Mode of administration, measurement and data processing by (t-test Student) is added.

Plan preparation

It concerns only the experiment group, the duration of 8 wk. x3 trainings. / wk = 24 trainings: a standard warming-up is settled for all training sessions; control group 4 wks x 3 trainings/week

- administration of breaks, between repetitions only walk

Table no.2 Plan preparatoire

Monday	Wednesday	Friday
50 steps run, 40 steps walk,	50 steps run, 40 steps walk,	50 steps run, 40 steps walk,
50 steps run, 20 steps walk	75 steps run, 10 steps walk,	50 steps run, 20 steps walk
50 steps run, 30 steps walk	100 steps run, 10 steps walk	50 steps run, 30 steps walk
50 steps run, 10 steps walk	15'slowly run	50 steps run, 10 steps walk
75 steps run, 10m steps walk		75 steps run, 10m steps walk
10' slowly run		5'slowly run

Hypothesis of this study is**:**cardiopulmonary fitness factor contributing to improving the Coefficient of application rate of body and values of time in running 300m event.

The results are presented in tables and summary tables and within text they are extracted from summary tables. Results are analyzed in order from: Characterization of the subjects by age, weight, size (Table no 1). Plan preparation table no2, values of heart rate for experimental and control groups for pre test and post testt table no3, t - test student for pre test and post-test in table no 4 and independent t - test student for pre test and post-test in table no5. Table no.6 is for Independent t - test student for pre test and post-test for 300m running 100% intensity.

Subjects of the experiment group achieved superior results, compared with subjects in the control group, in both tests, the initial testing (see results below). Coefficient of application rate of body was calculate after American College of Sport Medicine cited by D. Marza, 2005.

$$\frac{HRD}{HRT}x100$$

HRD=heart rate diferential

HRD=heart rate target

HRD= HR post physical effort – HR before physical effort

HRT= 70-85% from MHR maximum heart rate

MHR=220-age

Results

The increase of age, at the end of the experiment, resulted in minor changes on the weight and height of subjects, a process which could not influence the results of control samples in the final phase.

Table no. 3.Values of heart rate for experimental and control groups for pre- test and post- test

Variables	Experiment group		Control group	
	Pre-test	Post- test	Pre-test	Post- test
Heart rate before effort	123.7±6.87	118,8±6.17	126.3±9.76	122±7.53
	CV%=5.55	CV%=5.44	CV%=7.72	CV%=6.17
Heart rate post effort	181.9±11.60	161.8±8.27	183.2±12.13	173,4±10.4
	CV%=6.37	CV%=5.11	CV%=6.62	CV%=5.99
Coefficient of application rate of body	214±28.5	188±16.2	231±22.5	211±19.3
	CV%=13.3	CV%=8.61	CV%9.74	CV%9.14

Table no. 4 t - test student for pre- test and post-test

		Experiment group		Control group	
	Parameters	Pre-test	Post- test	Pre-test	Post- test
Application rate of body	M±S	214±28.5	188±16.2	231±22.5	231±22.5
	t-test(N-1)		3.87		3.83
	p		<0.005*		<0.005*

*significant p<0.005

Table no.5 Independent t - test student for pre- test and post-test

Application rate of body	Exp group	Control group	t-test(N-2)	p
Pre test	214±28.5	231±22.5	1.81	>0.05*
Post test	188±16.2	231±22.5	2.32	<0.025**

*unsignificant p>0.05, **significant p<0.025

Table no.6 Independent t - test student for pre- test and post-test for 300m running 100% intensity

300m	Exp group	Control group	t-test(N-2)	p
Pre test	6.2±2.5	63.4±4.5	0.9	>0.05*
Post test	57,5±6.3	62.6±2.5	2.91	<0.01**

*unsignificant p>0.05, **significant p<0.01

In table no3 are shown the best results achieved by athletes females before and after 8weeks of training for experimental group and 4 weeks for control groups at Coefficient of application rate of body. Between both goups are difference of 9,26% The result is better for experimental group. For pre–test the results are unsignificant p>0,05.(table no 5) At post-test the result is significant for t- test (N-2) 2.32, p<0,025 (table no5) and Coefficient of application rate of body is smoller than values of pre-test.(12.15% for experimental group and 8.66% is smoller for control group.) For both groups are significant progress from pre-test to post-test (table no 4) p<0.005, t-test =3.87for experimental group and t-test 3.83 for control group.

Discussions

It is known that at sportsmen, especially at sports of endurance type, the heart adjusts to great physical exercises (efforts) so that it behaves in a little

bit different way in comparison to the heart of untrained. Children who are untrained have a smaller heart. At children and youth, the size of heart, circulation of blood and breathing are constantly subject to changes due to the growth and training. With the growth, the indicators of cardio-circulatory system are changed: artery pressure is increased, pulse is made less frequent, stroke and minute volume of heart are increased which improves efficiency of heart work, from the point of energetic needs. Pulse, stroke and minute volume of heart at children and very small children (average results). (T. Okičić, 1999). Ability to adapt of effort of body is increased by decreasing coefficient value obtained in Application rate of body. The result of 300m improved by 4.5 to t-test= 2.91 being significant difference post-test for $p < 0.05$.

Age Pulse beat/min. Stroke volume of heart Minute volume of heart (T. Okičić, 1999)

13	80	35.7	2850
14	78	38.5	3000
15	76	41.4	3250

Exercise intensity can be expressed either as a percentage of maximal heart rate (%HRmax). Intensity in conjunction with duration is very important in improving VO_2max. The intensity of an exercise may be described in relation to heart rate, oxygen consumption, or rating of perceived exertion (RPE). Laboratory studies typically use VO_2, but heart rate and RPE are more practical for individuals anywhere. (H.A. Wenger and G.J. Bell, 1986). As C.L. Otis, 2001, the term "athlete's heart" describes a collection of changes that occur as you train. The two most common findings in trained athletes are bradycardia, or a slow pulse (less than 70 beats per minute), and phasic sinus arrhythmia, a pulse that speeds and slows with respiration.

There have been many validation studies of pulse oximetry during exercise over the last 20 years, with widely varying conclusions offered on the part of the authors. For example, S.K. Powers et al., 1989, tested three devices (two finger sensors and one ear sensor) and found standard error of estimates (SEE; numerically similar to precision) ranging from 1.43 to 1.97%, similar to values we found with the N-395/RS-10 forehead sensor. These authors concluded that the accuracy of pulse oximetry was sufficient for use during exercise testing. We wish to emphasize that our conclusions are strongly influenced by the setting in which the device was used. Clearly, pulse oximeters offer several advantages in the clinical setting. These devices are noninvasive, easy to use, and do not require significant analysis time or maintenance of other equipment to obtain data.

Because increased pulse pressure is recognized as a leading contributor to heart attack and stroke, the results of this experiment suggest that middle-aged or elderly persons, particularly those with pre-existing hypertension, should be careful not to "overdo" it when embarking on an exercise program. If they exercise too vigorously for an extended period of time, they could develop athlete's heart syndrome, or something close to it, which could lead to a dangerously widened pulse pressure.

Conclusion: Fitness training has an higher influence over the body coefficient request *application rate of body* in the training period is bigger. If value of the coefficient of application rate of body is smaller, the athlete's training capacity will be better.

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EXAMINATION ON THE ANTHROPOMETRIC FEATURES AND SOMATOTYPES OF THE MALE CHILDREN AT THE AGE OF 16

Yahya Polat[1], Mürsel Biçer[2], Süleyman Patlar[2], Mustafa Akıl[3], Mehmet Günay[4], Çağrı Çelenk[4]
[1]Erciyes University, High School of Physical Education and Sport-Kayseri-TURKEY
[2]Selcuk University, High School of Physical Education and Sport-Konya-TURKEY
[3] Centre Directorate of Young and Sport - Konya-TURKEY
[4]Gazi University, High School of Physical Education and Sport-Ankara-TURKEY
Email: mgunay@gazi.edu.tr / 04.02.2010 / 19.02.2010

Abstract

Objectives.- The aim of the study id to examine the anthropometric values and the somatotypes of the male children from different branches taking place in physical education lessons and taking regular movement training.

Methods.- 218 volunteer subjects at the age of 16, namely, 68 soccer players, 89 persons doing the fitness and 70 sedentary have participated in the study. In the research, sitting height, crawl length, body width parameters, body environment and somatotypic parameters of the subjects are measured. In this work, the highest humeral width value is achieved from soccer group, whereas it is found to be no different from fitness difference ($P>0.05$) and to be significantly higher than sedentary group ($P<0.05$). When femur width parameter is examined, it is determined that soccer group is higher than the other two groups and that fitness group is significantly higher than sedentary group. In the study, while the highest endomorph value is obtained from sedentary group, it is found to be significantly higher than the other two groups ($P<0.05$). While the highest mesomorph value is achieved from soccer group and the lowest value is achieved from sedentary group, it is determined that each of these three groups is significantly different from one another ($P<0.05$). While the highest ectomorph value is achieved from fitness group ($P<0.05$), it is found to be significantly higher than the other two groups ($P<0.05$).*Conclusions*.- Consequently, it can be said that the soccer players have more optimal dimension, environment and somatotypical structure when compared to those doing the fitness and the sedentary.

Keywords: Anthropometric measurements, somatotype, soccer, fitness, sedentary.

1. Introduction

It has been discussed in the world on which body profiles are appropriate for which branches in the studies conducted and the extent to which this issue will play important role in selecting skills in the background has been researched [B. Lale et al, 2003]. Body composition, anthropometric measures and morphologic characteristics play vital role in playing the success of a sportsman [J. Bloomfield, T.R. Ackland, B.C. Elliot, 1994, J. Keogh, 1999, J. Rico-Sanz, 1998]. These parameters which are evident for the sportsmen are sensitive indicators to diet status and growth process in population [S. Chatterjee, et al, 2006]. Height and growth measurements which constitute one part of anthropometric measurements are the measures used in identifying and comparing physical structures of the people in several countries. Weight and height measurements made in one society provide standards for clinical evaluations. Height and eight values are very apparent factors in creating norms for several sport groups [R.W. Fry and A.R. Morton, 1991]. Body weight was regarded as the indicator whether a person has normal or optimal weight until last times. This criterion is also commonly used for the sportsmen and defined as a criterion for determining optimal performance. However, because body weight gives very limited information about the content of the body composition, body composition has been matter of concern for the sportsmen as well as the normal persons and whether there is relationship between the fat rate and performance is researched [P. Bale et al 1992]. Impact of anthropometric characteristics, body structure, composition, weight and height are accepted to be very important factors in motor functions and performance. By combining several variations such as weight, height, age and gender as the indicators of body measurement, norms are developed. Such norms have been useful in knowing the compliance indicator of the children and young persons taking role in many bodily activities with which group. It has been recognized that anthropometric measurements have relations with the motor performance and potential efficiency on the performance levels [K. Özer, 1993]. Anthropometry is systematic measurement technique which reflects sizes of human body [P.J. Maud and C. Foster, 1995]. Somatotype is the definition of thinness, muscularity and massive features of human body and determination of such features with scientific methods; in other words, it is the definition of morphological type f the human body. As a result of the individual features, in parallel to the ratio of weak or strong points of individuals each other, their success or failure occurs. Pre-determining such weak and strong points is an important factor determining particularly the results of the competitions of national sportsmen [C. Çankaya et al 2002]. W.H. Sheldon, 1954, has created an atlas and classified people according to their features of thinness, fattiness and muscularity.

In this study, the aim is to compare body compositions, anthropometric measurement and

somatotypes of sportsmen and sedentary students at the age of 16 in the province of Kayseri.

2. Methods

2.1. Subjects

Totally 218 health boys have participated in our study voluntarily as subjects, namely, 68 soccer players (average of body weight is 57.00±9.30 year, height average is 174.38±5.12 cm), 80 persons practicing fitness (average of body weight is 59.22±8.85 year, height average is 173.72±5.07 cm) and 70 sedentary (average of body weight is 64.88±9.19 year, height average is 172.87±5.04 cm).

2.2. Measurements

2.2.1. Measurement of Height and Body Weight

The measurements are made by causing the subjects to be on measuring device with their bare foot and only shorts on them. Body weights are made by placing the Kaliper sliding on the scale in a way to touch the upper of the heads of the subjects while they are standing vertically on their foot and the height is read with the accuracy of 1 mm.

2.2.2. Body Mass Index (BMI) Measurement

This is measured with Tanita mark Body Composition Analysator.

2.2.3. Circumference Width Measurement

It is measured with Anthropometric set.

2.2.4. Somatotype Measurements

Under the light of the data, endomorphy, mesomorphy and ectomorphy components of the sportsmen were calculated with the help of the Heath Carter regression equitation. Regression equitation used is as the following

Endomorphy: 0,7182 + 0,1451* (X1) - 0,00068* (X2) + 0,0000014* (X3)

X1 = triceps skin convolution thickness (mm)

X2= sub scapular skin convolution thickness (mm)

X3= supraspinale skin convolution thickness (mm)

Height correction formula = X * 170,18 / boy (cm)

Mesomorphy: (0,858 * elbow weight (mm) + 0,601* knee weight (mm) + 0,188 * corrected upper arm surrounding (cm) + 0,161 * corrected calf surrounding (cm) - (height*0,131) + 4,50

Ectomorphy: Height Weight Rate (HWR) * 0,732-28,58

HWR= height (cm) / weight 1/3 (kg)

If HWR< 40,75 or HWR > 38,25 then Ectomorphy = HWR * 0,463 - 17,63

If HWR< 38,25 then Ectomorphy = HWR * 01

Somatoplot coordinates whose somatocards are formed with the endomorphy, mesomorphy and ectomorphy calculated are calculated with equitation of X = Ectomorphy – Endomorphy, Y = 2 (Mesomorphy) – (Endomorphy + Ectomorphy).

2.3. Statistical Analysis

In the research, SPSS 13.0 statistical program was used for evaluation and calculation of the data. We summarized the data and evaluated the means and standard errors. One Way annova test to determine the difference among the groups and Tukey HSD test to find out the originating group of the difference have been applied. P values equal to or less than 0.05 were accepted as significant ($p<0.05$).

3. Result

No significant difference is found on the height values of all the groups in the study ($P>0.05$, table 1). When parameter of body weight is examined, value of sedentary is found to be significantly higher than other two groups ($P<0.05$, table 1), whereas no significant difference is determined between the groups of soccer and fitness groups ($P>0.05$, table 1). When sitting height parameter of the subjects is evaluated, the value of soccer groups is found to be significantly higher than the sedentary ($P<0.05$, table 1), whereas it is identified to be the same as the fitness group ($P>0.05$, table 1). Value of fitness groups is found to be significantly higher than the sedentary ($P<0.05$, table 1). The value of the highest crawl length in the study is obtained from soccer group, whereas the value of the soccer group is found to be significantly higher than that of sedentary group ($P<0.05$, table 1) and to be the similar to fitness group ($P>0.05$, table 1). The highest humeral width value is achieved from the group of soccer, whereas this is found to be no difference from fitness groups ($P>0.05$, table 2) and to be significantly higher than the sedentary group ($P<0.05$, Table 2). When the femur width parameter is examined, soccer group is found to be significantly higher than both of the groups, and the fitness groups is found to be significantly higher than the sedentary group ($P<0.05$, table 2). In the study, it is observed that three groups are similar one another when compared to Achromial and Btr width parameters ($P>0.05$, table 2). When the parameter of shoulder is assessed in our study, the highest shoulder value is achieved in the soccer players ($P<0.05$, table 3), whereas the lowest shoulder value is achieved from sedentary. While there is no significant difference between the soccer group and fitness group ($P>0.05$, table 3), it is determined that there is significant difference between other groups ($P<0.05$, table 3). The waist values of the subjects are the same in soccer players and fitness groups ($P>0.05$, table 3), the value of the sedentary group is found to be significantly higher than the other two groups ($P<0.05$). In the study, while the highest chest value is achieved from the soccer group, it is found to be the same as the fitness group statistically ($P>0.05$, table 3). The sedentary group value is determine to be significantly lower than the other two groups ($P<0.05$, table 3). While the femur value of the soccer group is found to be significantly higher than other to groups ($P<0.05$, table 3), the value of fitness group is determined to be significantly higher than the sedentary ($P<0.05$, table 3). When the calf, biceps extension and biceps flexion values are examined in the study, it is determined that the values of the soccer group are significantly higher than both of the other groups and fitness group is higher that the sedentary group equally. In the study, the somatotype values of the soccer players are determined as 2.06-4.35-2.60; values of fitness groups

as 2.13-3.16-3.58 and values of sedentary groups as 3.60-2.09-2.90. When the somatotype parameters are examined, while the highest endomorphy value is obtained from sedentary group, it is found to be higher than the other two groups significantly ($P<0.05$, Table 4). It is determined that the value of the fitness group is significantly higher than the value of the soccer group ($P<0.05$, table 4). The highest mesomorphy value in the study is seen in the soccer group, whereas the lowest value is achieved from sedentary and it is determined that the values of three groups are significantly different from one another. ($P<0.05$, table 4). While the highest ectomorphy value is obtained from the fitness group ($P<0.05$, table 4), it is found to be significantly higher than other two groups ($P<0.05$, table 4). While the value of sedentary group is higher than the value of the soccer group, this is determined not to be significant statistically ($P>0.05$, table 4).

4. Discussion

General aim of studies related to the body structure, size and composition is to determine and improve individual physical compliance. Body composition of sportsmen is an important criterion in determining required optimal body profile for the health and performance in terms of many sports branches [T.D. Palo et al, 2000]. That there is no important difference among the all groups in terms of height values is important in terms of indicating that groups are close to one another. When the body weight parameter is examined, the value of the sedentary is found to be significantly higher than the other two groups, while no significant difference is determined between soccer and fitness groups. One of the important issues for the sportsmen is the body weight they can carry without affecting the performance and fat which is excess in the body is harmful in terms of performance. That states that sedentary life style causes significant increase in body growth and fat ratio during 4-week shift period of the soccer players indirectly supports the findings we have found through our study. Johnson [B.H. Heath and J.E.L. Carter, 1967] determined 6% decrease in body fat rate of the group practicing aerobic training for two days a week and 11% decrease for the group practicing aerobic training three days a week. That the growth weight of the sportsmen is significantly lower than the sedentary group in our study, although it shows similarity with the studies, reinforces the idea that fat metabolism can be used effectively as energy in long-term aerobic exercises. In our study, while it is determined that the fitness group and soccer group have the same sitting height and crawl length, that they are higher than the sedentary group in terms of both of the parameters indicates that the sportsmen groups have higher muscle and bone development.

In the study we conducted, all the circumferences measurements were significantly higher than the other groups. [A. Bandyopadhyay, 2007] suggests on the study about Indian sportsmen that sedentary group has higher sub dermal fat thickness and higher fat ratio when compared to the soccer players. D.B. Duthie et al, 2006 and P. Chatterjee et al. S. Chatterjee, 2002 argues that this is resulted from inactive lifestyle of sedentary group. During the childhood, determining somatotype is very important in skills selection. It is because revealing body type will provide competing in advantageous situation in revealing the tendency in the branch and in achieving high performance.

In the study, somatotype values of the soccer players are determined as 2.06-4.35-2.60 (ecto-mecophormic); the value of fitness group as 2.13-3.16-3.58 (ecto-mecophormic); and the values of the sedentary group as 3.60-2.09-2.90 (endo-mesophormic). According to this, while the highest endomorphic value is obtained from sedentary group, it is determined o be significantly higher than the other groups. It is determined that the value of the fitness group is significantly higher than value of the soccer group. In the study where somatotypes of soccer and handball players are examined, C. Raschka and C. Wolthausen, 2007, state hat both of he group players have ectomophic-mesomorphic score according to somatograms of B.H. Heath and J.E.L. Carter, 1967. Bandyopadhyay [A. Bandyopadhyay, 2007] in a study suggests that sedentary has significantly high endomorphic and significantly lower mesomorphic scores and W.D. McArdle et al. [16], says that sportsmen have mesomorphic ectomorphy scores. E. Rienzi et al, 2000, informs that international soccer players of Northern America have balanced mesomorphy (2-5.5-2) and this finding displays sameness with the findings of T.R. Neni et al. and G. Florida-James T. Reill, 1995. In another study, T.R. Neni et al, 2006, inform that Russian soccer players have thin somatotype (1.7-5.6-2.6), soccer players of Liverpoll (2.4-4.2-2.4) and Indonesian soccer players (2.7-4.9-3.0) have middle somatotype. F. Can et al. 2004, determined the somatotype values of the soccer players as mesomorphic–endomorphy (3.07-3.55-2.43) and the values of the young sedentary as endomorphic–mesomorphy (3.57-3.35-2.90). In another study, C. Sánchez-Muñoz et al., 2000, determined somatotypes of the young tennis players as ecto-mesophormic (2.4-5.2-2.9). This finding is important since it displays sameness with the somatotype scores of the soccer players we obtained in our study. Consequently, it may be suggested that soccer players have more optimal width, circumference and somatotype structure than those practicing fitness and sedentary and such measurements are important factor in comparing the sportsmen.

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Table 1: 'F' and 'P' values of the height, body weight, sitting height and crawl length parameters of the groups

Parameters	Groups	N	Mean	SD	F	P
Height	soccer	68	174,3824	5,1228	,768	,466
	fitness	80	173,7250	5,0763		
	sedentary	70	172,8714	5,0473		
Body weight	soccer	68	57,0000	9,3030	6,953	**,001****
	fitness	80	59,2250	8,8506		
	sedentary	70	64,8857	9,1901		
Sitting height	soccer	68	87,9706	3,2797	7,760	**,001****

	fitness	80	87,0000	3,2106		
	sedentary	70	84,9714	3,2312		
Crawl length	soccer	68	174,9412	6,6966	3,219	**,044***
	fitness	80	173,1000	6,7740		
	sedentary	70	170,8571	6,6161		

***p<0,05 **p<0,01**

Table 2: 'F' and 'P' values of the width parameters of the groups

Parameters	**Groups**	**N**	**Mean**	**SD**	**F**	**P**
Humeral width	soccer	68	12,3647	,5140	246,253	**,000****
	fitness	80	11,5425	,4814		
	sedentary	70	9,7629	,5065		
Femur width	soccer	68	16,2794	,6540	274,529	**,000****
	fitness	80	14,3700	,6676		
	sedentary	70	12,5600	,6545		
Achromial width	soccer	68	327,9412	13,1609	1,254	,290
	fitness	80	329,2500	12,6364		
	sedentary	70	324,6000	13,1221		
Btr width	soccer	68	217,4412	15,5587	1,608	,205
	fitness	80	215,8750	14,7304		
	sedentary	70	211,1714	15,4110		

***p<0,05 **p<0,01**

Table 3: 'F' and 'P' values of girth parameters of the groups

Parameters	**Groups**	**N**	**Mean**	**SD**	**F**	**P**
Sholder girth	soccer	68	98,6029	5,6038	14,840	**,000****
	fitness	80	96,1675	5,3678		
	sedentary	70	91,5286	5,5382		
Waist girth	soccer	68	70,2382	7,9327	6,343	**,003****
	fitness	80	70,6950	7,5024		
	sedentary	70	76,1314	7,8407		
Chest girth	soccer	68	82,0088	6,5264	8,019	**,001****
	fitness	80	79,4775	6,2296		
	sedentary	70	75,8743	6,4788		
Thigh girth	soccer	68	47,4441	4,3204	17,512	**,000****
	fitness	80	44,1550	4,1114		
	sedentary	70	41,4314	4,2571		
Calf girth	soccer	68	33,2676	2,3590	26,208	**,000****
	fitness	80	31,0975	2,2653		
	sedentary	70	29,2314	2,3339		
Biceps ekstantion girth	soccer	68	22,4882	2,9250	16,893	**,000****
	fitness	80	20,2450	2,7947		
	sedentary	70	18,4886	2,8817		
Biceps flexion girth	soccer	68	24,6882	3,3668	28,383	**,000****
	fitness	80	21,4375	3,2180		
	sedentary	70	18,7114	3,3198		

***p<0,05 **p<0,01**

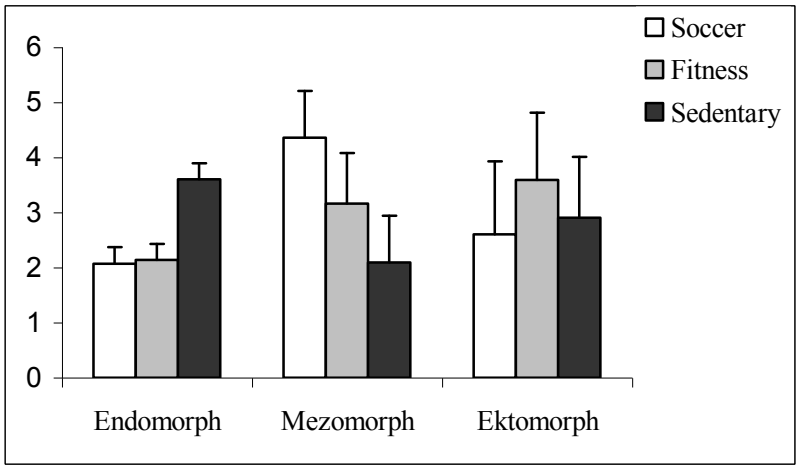
Table 4: 'T' and 'P' values of the body anthropometric parameters of the groups

Parameters	**Groups**	**N**	**Mean**	**SD**	**F**	**P**
Endomorphy	soccer	68	2,0669	,3089	34,201	**,000****
	fitness	80	2,1365	,2930		
	sedentary	70	3,6068	,2936		
Mesomorphy	soccer	68	4,3579	,8485	401,362	**,000****
	fitness	80	3,1620	,9138		

	sedentary	70	2,0939	,8444		
Ektomorphy	soccer	68	2,6031	1,3224	17,485	**,000****
	fitness	80	3,5899	1,2262		
	sedentary	70	2.9091	1,1048		

***p<0,05 **p<0,01**

Figure 1: Somatotype score of the sportsmen and sedentary individuals



VIEWS OF PHYSICAL EDUCATION TEACHERS IN PRIMARY AND SECONDARY SCHOOLS ON IN-SERVİCE ACTIVITIES AND THEIR FREQUENCIES OF PARTICIPATION IN THESE ACTIVITIES

Gündüz, N[1]., Arslan E[1]., Gökyürek B[2].,
[1]The School of Physical Education and Sports in Ankara Universities, TURKEY
[2]The School of Physical Education and Sports in Gazi Universities, TURKEY
Email: Nevin.Gunduz@sports.ankara.edu.tr / 02.02.2010 / 19.02.2010

Abstract

The purpose of this study is to determine the views of physical education teachers in primary and secondary schools in Ankara on in-service activities as well as their frequency of participation in these activities.

The voluntary participation of total 117 physical education teachers who work in 67 primary schools and 50 secondary schools in Ankara. The data were obtained via questionnaire method in the study. The views which are in the questionnaire were obtained from various sources with regards to the point and then they were made to be referred to specialists. The questionnaire is made up of five chapters and total 34 questions. Likert scale method was used for the questionnaire. Crombach Alpha confidence coefficient was found α: .864 in the second chapter of the questionnaire while it was found α : .788 in the third part of the questionnaire.

Averages, standard deviations, frequencies and percentage distributions were notated in tables for the evaluation of the data obtained from the questionnaires. t test and one-Way Anova was made and found in $p< 0.05$ significance level in order to determine whether there were differences among the answers of these teachers to the questions about their age, gender and period of service. Tukey HSD test was used in order to determine from which the differences stem.

As a result of the study, teachers stated that they agreed with the questionnaires about in-service activities (X=3,61). The general conditions and the percentage of physical education teachers participating in in-service trainings such as courses and seminars were 3,83% whereas the peak participation was realized in "Computer and Internet Use" in the rate of 60,7%. On the other hand, the rate of not participating in this kind of trainings was 95,93%. The seminar which rendered most participation according to gender, age, educational background and period of service was "Computer and Internet Use".

In their suggestions about in-service training the physical education teachers have stated that they would like to get their in-service training in the form of "seminar" (48.7%), and the most appropriate time period for getting in-service training is "June – September" period (33.3%).

Key Words: In Service Training, Physical Education Teacher, Primary and Secondary School

Introduction

Teachers have necessities for in-service training so as to renew themselves, to acquire the knowledge about their fields, to benefit from new technological instruments throughout the education process, to have a modern education understanding, to be capable of using modern methods and techniques

and to carry on a teaching process in which they could protect mental health of the students and pave the way for them to use their potentials at top levels (I. Yildirim, 2001).

Teachers, first of all should not settle for their knowledge and skills but renew themselves continuously in order to reflect the innovations on educational institutions. The necessity that the innovations in teaching method and techniques, arising as a result of the studies made on teaching and learning process so as to provide more efficient learning and to ensure the stability of knowledge should be employed is one of the major factors making in in-service training compulsory (R.R. Parker, 1997).

The aims of in-service training are to accommodate the teachers coming from pre-service training into the system, to understand the goals of national education, school and lessons and to have a common opinion in practice, to provide what is inadequate in pre-service training, to furnish them with the information, skills and attitudes required by the educational innovations and to enable brilliant ane competent personnel make an advance and their progress in their careers (B. Mehmet, 2004).

Research Methods and Procedure

Subjects

The voluntary participation of total 117 physical education teachers who work in 67 primary and 50 secondary schools in Ankara in 2006-2007 academic year makes up the study group.The data were obtained via questionnaire method in the study.

The views which are in the questionnaire were obtained from various sources with regards to the point and then they were made to be referred to specialist. The questionnaire is made up of five chapters and total 34 questions. Likert Scale method was used for the questionnaire. Levels of the scale are 1:Strongly disagree, 2:Disagree, 3:Neither disagree nor agree, 4:Agree, 5: Strongly agree. Crombach Alpha confidence coefficient was found α:.864 in the second part of the questionnaire, while it was found α:.788 in the third part of the questionnaire.

Statistical Analysis

Avarages, standart deviations, frequencies and percentage distributions were notated in tables for the evaluation of the data obtained from the questionnaires. "t test" was used in order to determine whether there were differences among answers of teachers to the questions about their age and gender whilst Single way Variance Analysis was made and found in $p< 0.05$ significance level in order to determine whether there were differences among the answers of these teachers to the questions about their age and period of in-service training. Tukey HDS test was used in order to determine from which the differences.

Results

Table 1. Personal Features of the Respondent Physical Education Teachers

AGE	**N**	**F**	**%**
	Ages of 20-29	19	16,2
	Ages of 30-39	68	58,1
	Ages of 40-49	18	15,4
	Ages of 50 and more	12	10,3
	TOTAL	**117**	**100**
SERVICE PERIOD	**N**	**F**	**%**
	0-5 years	17	14,5
	6-10 years	29	24,8
	11-15 years	28	23,9
	16 years or more	43	36,8
	TOTAL	**117**	**100**
GENDER	FEMALE	55	47
	MALE	62	53
	TOTAL	**117**	**100**
ACADEMIC BACKGROUND	Bachelor's Degree (BA)	76	65
	Master's Degree (MA)	41	35
	TOTAL	**117**	**100**

It has been determined in the study that 47% of the teachers are women while 53% are men, and 65% of them have Bachelor's Degree while 35% of them have Master's Degree (Table 1). The general conditions and the percentage of physical education teachers participating in in-service trainings such as courses and seminars were 3,83% whereas the peak participation was realized in "Computer and Internet Use" in the rate of 60,7%. On the other hand, the rate of not participating in this kind of trainings was 95,93%. The seminar which rendered most participation according to gender, age, educational background and period of service was "Computer and Internet Use".

Table 2. Suggestions of Physical Education Teachers about In-Service Training

NO	3. SURVEY QUESTIONS	N	X	SS	(PERCENTAGE) AND (N) DISTRIBUTIONS			
					1*	2*	3*	4*
1	Through which way would you like to get the in-service training you are in need of?	117	2,40	0,83	% 11,1 13	%48,7 57	% 29,1 34	% 11,1 13

1- Course 2- Seminar 3- Professional Conference 4- Internet

2		N	X	SS	(PERCENTAGE) AND (N) DISTRIBUTIONS				
	Can you write the most appropriate time periods for physical education teachers for the in-service training activities to be held in?				1*	2*	3*	4*	5*
		117	2,95	1,08	% 10,3 12	% 23,9 28	% 33,3 39	%25,6 30	% 6,8 8

1*Weekend in Education Period 2*Weekday in Education Period 3*Seminar Period in June-September 4*Summer holiday 5*Half term holiday

In their suggestions about in-service training the physical education teachers have stated that they would like to get their in-service training in the form of "seminar" (48.7%), and the most appropriate time period for getting in-service training is "June – September" period (33.3%). (*Table 2)*

A statistically meaningful difference has been found as the result of the t-test, made in order to compare the answers that physical education teachers gave about the in-service training activities, according to their genders. According to these results, the average of the answers given by the female physical education teachers about the in-service activities is higher than the average of the answers of the male physical education teachers. Female physical education teachers have stated that they agree with the views abovementioned more than male teachers.

Table 3. T-Test Results Of the Physical Education Teachers About In-Service Training According to Their Academic Backgrounds

Questions	Academic Background	N	X	Ss	T	Sd	P
5- Some kind of knowledge and skills can only be achieved through the in-service training to be received.	BA	76	3,36	0,97	-1,22	115	0,011*
	MA	41	3,58	0,77			
6- In-service training activities increase the efficiency of physical education teachers in teaching-learning process.	BA	76	3,81	0,84	-0,09	115	0,009*
	MA	41	3,82	0,54			
7- In-service training activities contribute to the personal development of physical education teachers.	BA	76	3,61	0,90	-3,13	115	0,000**
	MA	41	4,09	0,49			
16- In-service training activities prevent physical education teachers from being engaged with unnecessary details.	BA	76	3,52	0,70	0,25	115	0,005**
	MA	41	3,48	0,92			
19- In-service training activities assist physical education teachers in solving the problems they come across.	BA	76	3,57	0,69	0,04	115	0,020*
	MA	41	3,58	0,92			
20- Training and practices included in the in-service training program are employed in schools.	BA	76	3,65	0,66	1,33	115	0,006*
	MA	41	3,46	0,89			

* ($p<0.05$), **($p<0.01$)

A statistically meaningful difference ($p<0.05$) has been found as the result of the t-test, made in order to compare the answers given by the physical education teachers to the questions about in-service training activities, according to their academic backgrounds. According to these results, the physical education teachers who have M.A. degree agree with the opinions about in-service training activities more than the physical education teachers having B.A. degree. (Table 3)

Discussion

In our country, educational process contains in service and pre service training. In public establishment in service training includes two groups. The first group is the new staff and the secons group is the staff still working. The aim is to teach the changes in the work and to learn changes. But, the studies on in service training is not successful and are thought to remain on a theoretical level (G. Hüseyin, 2000). Although in service training is thought to be necessary in our country, activity level is not enough. There are two reasons why in service training activities are not popular. First reason is that labor cost is not reflected in and the second reason is that additional training is not reflected in employee rights (A. Tufan, 2002).

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THE RELATIONSHIP BETWEEN SELF ESTEEM AND PHYSICAL EXERCISE IN WOMEN SPORTS PRACTICE

IONESCU SIMONA, VOICU SORINEL, ULMEANU ANDREEA
University of the West, Timişoara, ROMANIA
Email: ionescusi@yahoo.com / 04.02.2010 / 14.02.2010

Abstract

Aim: The research starts from the assumption that women, in their desire to improve their physical appearance resort to various methods and means, among these physical exercise being the more beneficial one. The objectives of this paper are to identify to what extent the improvement of the physical self brings with itself the increase of self esteem of the women who exercise.

Methods: By using the method of the questionnaire along with the Rosenberg test to evaluate the self esteem of the women in sports practice.

Discussions and conclusions: It was concluded that physical exercises done at least twice a week have an effect on the mind of the women by improving the physical self but also their self image.

Keywords: physical self, self image, self esteem , physical activities

Introduction

The purpose of the paper is to analyze the relationship between self esteem and physical exercise such as aerobics in women. The self is defined as "an organized collection of beliefs and feelings about ourselves (R.Baron et al.,1998,) and it can be treated as a central mental scheme of the self, its essence or identity, it being the way we categorize both our outer conduct and our inner condition". It also comprises the notion of the physical self containing elements such as: physical looks, the proportionality of the segments of the body, the attitude, muscular tonus, corporality.

For P. Popescu-Neveanu (1978,) self consciousness is the primary condition for self-regulating activism, selectivity and creative intervention in the environment, based upon models or images of objective reality. Self image represents the central part of self organization, which, in its turn, is considered to be the main structure of the psyche. Self adequacy is a central concept of the image of the personality, thus, an adequate personality has a positive self image, feels capable, wanted, accepted, knows and accepts itself (M.Epuran et al., 2001).

Body image refers to the way one sees oneself but also to the way one believes one is perceived by the others (P.Iluț, 2001). The physical self determines the degree of acceptance of one's own body (R.Stevens, 1996,). There is an ideal self image and a real one; the ideal image is the image desired by the woman who exercises and self esteem marks the discrepancies existing between an ideal physical self and the real one and it is the result of a lengthy process. When the difference between the ideal physical self and the real one is big, then personal adaptation has a lot to suffer (K.Gergen, 1991,).

The solutions to diminish the differences between the ideal and the real physical self come from various areas, and in the recent years plastic surgery gained a lot of ground but the range of offers of non-invasive procedures in the area of body aesthetics has also diversified. In a competition with all these aesthetics offers on the market, physical exercise has also diversified quite a lot, its advantage consisting of the connection between the physical self, the outer (what is there to be seen) and inner self, the one which is felt and lived by the women and an improvement of the physical self through various procedures (such as the non-invasive body aesthetics ones) does not bring with itself an increase of self esteem as well. Thus, in a competition with all these types of activities, body

education centres offer a diversified range of ways to practice physical exercise, using various methods and means and their customers are aware that in order to find the balance between the desired self and the image they have about themselves physical activity is one of the solutions, though not the easiest one, compared to the non-invasive body modelling procedures, but more efficient due to the implicit effect it has on the psyche. The new types of gymnastics practiced in these centres consider the relationship between physical effort and the psyche of the subjects, focusing on breathing methods, relaxing of the muscles, mental relaxation. Amongst these we have: Pilates, core & balance, yoga. Even if initially leisure time sports is an alternative for health and aesthetics (A.Dragnea & S. Mate-Teodorescu, 2002, the envisioned objective is to find inner balance, to eliminate stress and discontent regarding the reflected physical image as well as to accept oneself and manage the anguish concerning physical looks (J-P. Famose & Guerin, 2002,).

Due to the very common incidence of depression (A. Ehrenberg, 1998), taken as an overall phenomenon in modern society (especially in the past ten years), we feel that yet another additional "tool" used to prevent the negative effects of low self esteem is very useful. Low self esteem leads to a psychological fall and to isolation from the rest of the people. People tend to compare themselves with others similar to them from the point of view of their personal image, admitting the importance of self esteem as far as efficiency and mental health are concerned, thus constantly trying to increase it. Nevertheless, self esteem is a very weak predictor of social performance, as it has no positive consequences later on. People with low self esteem can have a pleasant physical appearance, but they may not see this, as they may be pessimists and negativists in regards to every detail. The value of one person does not arise from his/her performances in a certain field, but from his/her overall behaviour, actions and past potentialities. A negative self image increases the risk of eating disorders such as bulimia or anorexia. People with high self esteem prove to be perseverant when facing failures, and sometimes they conduct themselves better in certain social situations. People with positive self esteem are happier and less depressed. Depression is tightly connected to low self esteem, this being the main reason why it is important to have positive self esteem.

We want to find out to what extent physical activities carried out in body education centres contribute to the improvement of the image the subjects have of their physical appearance and implicitly on their self esteem. The relationship between physical effort and the physical self is highlighted, along with the desire to reach a balance between the inner self and the outer self through their own efforts.

The tasks and the objectives of the paper

The tasks of the paper are:

- to identify to what extent physical exercises done in body education centres have an effect on the improvement of self image,
- if there is a relationship between low self esteem and the desire to change
- who are the persons that want changes as far as their exterior look is concerned,
- what are their favourite types of activities,
-the frequency of the physical activity practice,
-what are the body parts subjects want to remodel with the help of physical exercise.

The purpose of the research

The matter of study of this research consists of the relationship between practicing physical activities and the self image of the subjects. We want to find out to what extent aerobics contributes to the improvement of the image the subjects have of their body, how long they have been practicing for and what short or long term effects it had on their body, what their expectations were and to what extent were they met by the aerobics classes offered.

The relationship between physical effort, improvement of self respect, gaining of a better self image though avoiding the resort to plastic surgery or to pharmaceutical- therapy means is highlighted, in order to improve the outer image and patience, the will to achieve a balance between the inner self and the outer self by one's own efforts.

Hypothesis

Practicing of physical activities with the purpose to improve the physical self has a positive effect on the increase of self esteem.

Research methods used

We used the self esteem test drawn up by M. Rosenberg (1965, 97), presented in a short version (Stephan & Stephan-1984, 45) as the subjects had to choose between the variants "I totally agree", "I agree", "I disagree", "I totally disagree", depending on how they appreciate that the sentences that followed characterize them.

We put together a questionnaire (de Singly, 198, 69) consisting of 15 questions that highlight some of the aspects of physical exercises such as aerobics, like: the reasons for practicing, frequency of weekly attendance, the psychological effects of practicing, remodelling of certain parts of the body, the positive influence on the person's own self, improvements of the physical image etc.

Organizing the research

The research was carried out during an 8 month period of time in a body education centre in Timişoara. Of the 20 people taking part in the physical activities, for 7 of them the activity was a new one, meaning a new start and marking the desire for change and the rest of 13 were long term practicants of physical activities. The physical activities on offer varied from: step, dance, tae-bo, pump, body sculpt to Pilates, core & balance and yoga.

The subjects

The sample group put together with the agreement of the subjects consisted of 20 female subjects, starting from the assumption that part of them have as motivation for practicing these activities certain problems they faced in their personal lives, such as: a sedentary lifestyle, small depressions, some

medical disorders (treatable), the improvement of their physical appearance, overweight, the need to socialize, etc. The following personal information on the subjects results from studying the sample group:

Age	Subjects	Percentage	Education	Subjects	Percentage
21-29 years	13	65%	University	8	40%
30-38 years	7	35%	Post-university	12	60%
Total	20	100%	**Total**	20	100%

Table no.1

The subjects taking part in this study are young women with high education, with a desire to change their physical appearance. These changes of their physical appearance reflect low self esteem. Most of these women are not married (75%) and they are career women, with positions reflecting their studies (95%).

Civil status	Subjects	Percentage	Profession	Subjects	Percentage
Married	4	20%	Unemployed	1	5%
Single	15	75%	IT engineer	1	5%
Divorced	1	5%	Economist	15	75%
Total	20	100%	Teacher	2	10%
			Councillor	1	5%
			Total	20	100%

Table no. 2

Results

a. Practicing sports

The frequency with which the subjects practice physical activities is of 3-4 sessions per week for 55% of them, 1-2 sessions for 35% and only 10 % of the subject come with regularity 5-6 times per week.

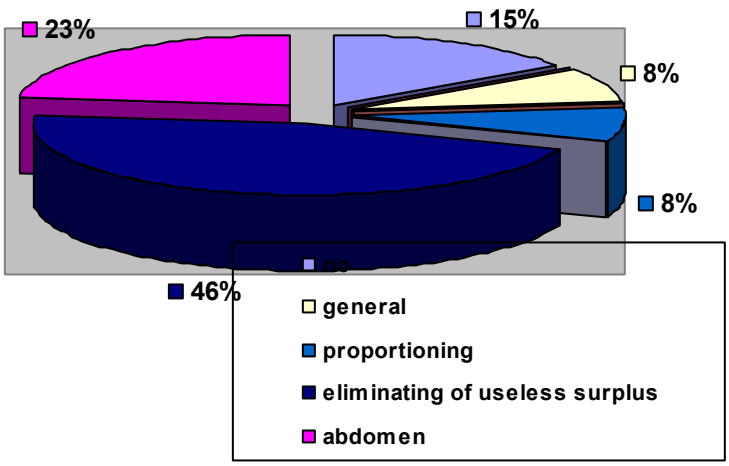
b. The effects of exercising on the body

If upon the initial testing we had a higher percentage of subjects wanting to lose weight (45%), upon the final one, after 8 months of training, we find that the subjects have started to come out of pure pleasure, clearly revealing an improvement in the attitude of the subjects, as well as a positive change in regards to their self esteem due to the socializing factor of this kind of physical activity and to becoming more acquainted with the practice, so the reasons show first of all the need and the desire for general change (40%) and improvement of the outer appearance (30%).

Also, there is a desire for body change, the changes varying from a flat abdomen (34%) to appearance (15%) while others noticed improvements of their looks under various forms: loss of weight (46%), strengthening of the abdominal muscles (23%), strengthening of the buttocks (21%), thighs (15%) but harmonization through graduation (15%) or a general also of the entire body (24%).

Ever since they started to attend the gym, some persons may not have noticed any change in their physical state of well being (8%).

Image no. 1: General physical change



c. **The effects of practicing exercises on the psyche**. As for the psychological effects physical activity has had on the subjects, on the initial test they said physical activity offered them a state of tranquillity, most likely felt at a body level, later on inducing a state of psychological calmness and nervous discharge.

Upon the final test the subjects become aware of the other effects physical activity may have on them, so the percentage reflecting their self confidence as far as overcoming their own limitations is on the increase, as the subjects prove once again that they have learned to overcome their own problems. In the chart below one can see to what extent physical practice has had any effects on the psyche, self confidence being the most important one (41%), followed by overcoming their own limitations (31%) and self acceptance.

d. Self image

Upon the initial testing, it is observed that 5% of the subjects have a less positive opinion of themselves and another 5% have a rather negative opinion, the percentage of the subjects content with themselves being of 70% and 20% of them being very happy with themselves.

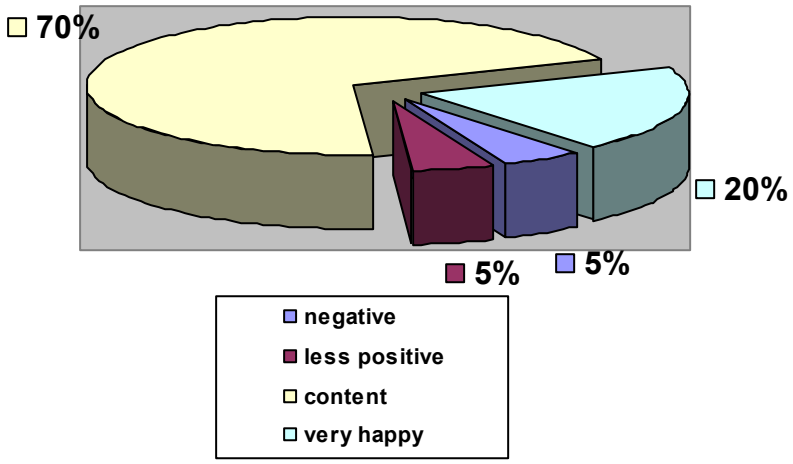


Image no. 2: Initial testing

Upon the final testing, after 8 months of training, one can observe a shift in the extremities of the values (negative and very happy) due to the fact that the 5 % of the subjects with a negative opinion of themselves has disappeared and the 20% of those feeling very happy with themselves dropped to 15% but this is not a negative aspect, quite to the contrary, as we can relate it to self acceptance and to the fact that one can permanently work on one's physical self, looking for changes. The percentage of those subjects with a positive opinion of themselves increased by 1+ percent, going up to 80%.

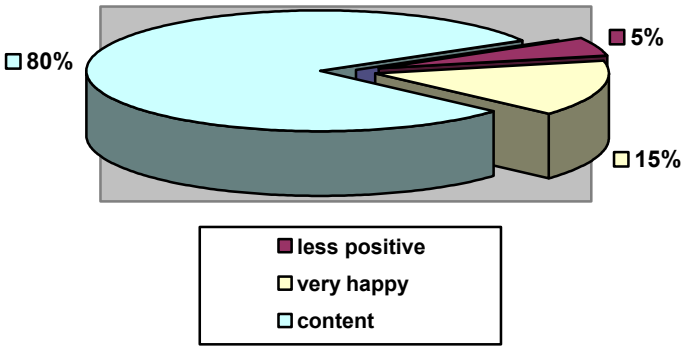


Image no. 3: Final testing

e. Self esteem. The Rosenberg test

Upon the initial testing, as far as the Rosenberg method is concerned (see info in the addendum), the sample group mainly consisted of subjects who displayed self esteem values comprised between 27 and 32, the top value being 40. The result of the initial test showing this percentage underlines the fact that the subjects with a pleasant physical appearance (none of the subjects showed any form of disharmony, obesity, etc) nevertheless felt they were too thin or too fat, this being perceived only by themselves and reflect their

image of themselves. This only helps prove that there are discrepancies between the real image perceived by the rest of the world and self image. Upon the final testing one can note real improvements of the values of the Rosenberg test, the values being comprised between 27 and 34 (an increase by 2 points of the maximum value recorded upon the initial testing:

No.	Score	Initial testing		Final testing	
1	27	6	30%	1	5%
2	28	7	35%	1	5%
3	29	3	15%	5	25%
4	30	2	10%	5	25%
5	31	1	5%	3	15%
6	32	1	5%	3	15%
7	33	0	0%	1	5%
8	34	0	0%	1	5%
9	**Total**	20	100%	20	100%

Table no. 3

This improvement is reflected in the chart below, showing a significant increase of the upper end values, compared to the inferior ones recorded upon the initial testing. In six of the cases one can note an involution of the self esteem index, which can be accounted to those persons who have not noticed any changes in their physical appearance while training or to those who have recorded a state of well being, but with no consequences on their self esteem, but only on their self image.

Conclusions

The advances in technology have allowed for the old practices of gaining an aesthetic, healthy and strength physical appearance guided on lots of training and controlled eating habits to be replaced nowadays with plastic surgery (invasive), body modelling (non invasive) or even pharmaceutical (medicines) techniques. But the advantage of physical training is that besides the transformations on the physical self, changes also take place at the level of the self image, leading to an increase in self esteem. High self esteem is an important factor in maintaining a balance between the body and the psyche, and the physical activities with a direct impact on body changes can prove to be a mean to obtain this balance.

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PILOT STUDY REGARDING THE STRUCTURE OF THE MOTIVATIONAL SYSTEM FOR STUDENTS MAJORING IN PHYSICAL EDUCATION AND SPORTS

GRIGORE VASILICA
National University of Physical Education and Sport, Bucharest, **ROMANIA**
Email: liligri@yahoo.com 04.02.2010 / 19.02.2010

Abstract:

The present paper is a pilot study about the motivational systems of students majoring in various disciplines in the field of Physical Education and Sports. Knowing the characteristics of the personality orientation system, configuration of the general motivational system and of the discipline the students specializes in and emphasizing the structure of the above-mentioned, represents the purpose of our research. The main task consists in creating a hierarchy of the components of the motivational system that characterizes the students majoring in Physical Education and Sports. The investigation through questionnaire, the main method applied to 225 students of UNEFS, bachelor level, aimed at three aspects related to the motivation of each student participating in this research: personal development, the development of the psychological qualities and the importance of certain reasons in their future professional activity.

The results obtained indicate that at this level, there are no important differences between the points awarded / years of study and the majors in the field, the dynamics of the motivational system structure / different components from one year to another but there is a certain balance of the majors. We believe the study can be extended in view to obtaining objective data for the optimization of the educational management concerning the bachelor level in Psysical Education and Sports.

Key words: motivational system, physical education, students.
liligri@yahoo.com

Introduction and research objectives

The motivation, an extremely complex phenomenon comprises in its structure elements characteristic to the species and also typical of each individual in particular. Motivation represents the fundamental law and the explanatory principle in human pshychology, facilitating the comprehension of a certain behaviour. The totality of the internal factors, of the mobiles that have the role to stimulate, activate and selectively direct the actions and the conduct, represents the ontogenesis of the human being in a hierarchical system.

Within the human psychological system, motivation fulfills the following functions: it's an energetic propelling factor activating, dynamizing, directional factor, mediating and regulating of the human activity, being the first chronological element of any human activity. The motivational system has various components that vary in origin, satisfaction procedure and functions. These includ necesities, motives, interests, convictions, tendencies, intentions, desires, aspirations, expectations. According to P. Golu (1974) motivation represents „a subjective model of the objective causality, causality psychologically reproduced, accumulated in time, transformed and transferred through learning and education in the internal sphere of each person. Motivation fulfills inside the human psychological system a double function, through its reflective nature it connects the person to the external world and through its specifical internal causality it „builds between the stimuli and the reaction a system of filters and comparative elements that allows the information to propagate itself selectively, depending on the significant lines of the persons system.

Thus, only resorting to motivation we can explain why individuals react differently in one and the same situation, why the behavioral reaction can gain unusal porportions, an insignificant expression or even lack completely (P. Golu, 1974).

We consider that a good knowledge of the characteristics of the personality-orientation system and of the motivational hierarchical structure of students majoring in Physical Education and Sports, the inventorization and hierarchization of the important elements generating satisfaction (individually, for each subject) can show important aspects regarding the aspirations and expectations of our students and of their disponibility to work in the field they have chosen.

In the light of the above-mentioned, the configuration of the general motivational system as well as of the specialized one and emphasizing its structure represents the purpose of the present research.

Tasks: The main task consists in creating a hierachy of the components that embody the structure of the motivational system typical for students majoring in Physical Education and Sport and the particular fields they specialize in.

Research and procedure methods

The investigation through questionnaire, the main method used for this study, focused on three aspects related to the motivation of each student participating in the research: personal development, the development of the pshychological qualities and the importance of certain motives for their future professional activity. For each aspect of interest, there were 5 questions reffering to different motives. The motives presented by the three groups involved the following: harmonious physical development, strong

personality development, performance capacity development, self-esteem improvement - first aspect.; better social integration, the development of the psyhic endurance capacity, the development of intelectual capacities, the development of emotional inteligence, the development of the self-regulating capacity, the development of the communication capacity – second aspect and the optimization of the cooperation relationships with their colleagues, the accumulation of new knowledge specific to their field of activity, belonging to a group, posibilities of personal development, safety and stability – third aspect.

The specially made qustionnaire was applied to a number 225 students of UNEFS, from 3 particular areas they major in (bachelor level).

The evaluation was made based on a five-step scale.

Points were awarded for each step according to the importance for each person. Thus, 5= *most important to me; 4= very important to me; 3= important to me; 2= less important to me; 1= not important to me.*

Points were then totalized and the obtained results were arranged, transposed into charts and graphics, depending on the year of study, majoring field and components of the motivational system structure.

Results and discussions

The results we obtained, are presented below in the following charts.

Table nr.1

MOTIVATIONAL SYSTEM STRUCTURE CENTRALIZER

FIELD PHYSICAL EDUCATION AND SPORTS	SPEC.	COMP	Years of study			Total comp	Total spec.
			I	II	III		
	EFS	1	475	495	404	*1374*	*4158*
		2	434	450	479	*1363*	
		3	465	431	525	*1421*	
	SPM	1	504	522	434	*1460*	*4202*
		2	472	494	434	*1400*	
		3	434	404	504	*1342*	
	KTM	1	473	475	424	*1372*	*4178*
		2	450	495	479	*1424*	
		3	464	464	454	*1382*	
TOTAL/ year of study			*4171*	*4230*	*4137*		

The points awarded indicate the fact that there aren't big differences between the majors corresponding to this field of activity (min. 4158/EFS – max. 4202/ SPM). Motivational structure is balanced when reffering to the years of study as well; the highest score was that of the 2nd year students.

As for the components of the motivational system structure, we notice that their dynamic changes depending on the years of study and majors. When speaking of personal development. SPM students present a higher level of motivation whilst when reffering to the development of psychological qualities, KTM students have the best score.

The relation with the future profession scored the following: 1342 points (SPM), 1382 points (KTM) and 1421 points (EFS). We believe the dynamic of this component is influenced as well by the tendencies and offers related to the job market, given the fact that nowadays the number of fitness clubs and facilities registers a spectacular increase which provides new career opportunities.

Furthermore, we are of the opinion that the high score the SPM students obtained on the first and second component can bee seen as a result of the motivational profile correlated

With the systematic training and participation in competitions.

KTM students present a balanced structured with a minimum of 1372 points (personal development) and 1424 (psychological development). The relation with the future profession registers equal scores in the first years of universitary studies.

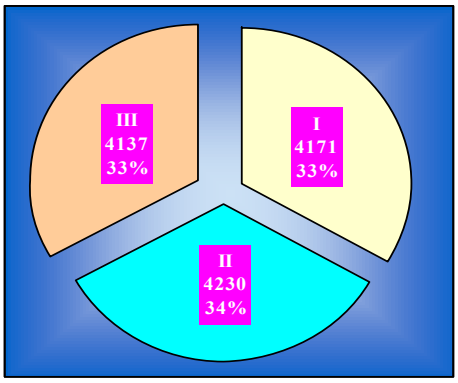
We present below the result and graphics of the scores obtained by each major / each component of the motivational structure and the total cumulated on years of study / all majors.

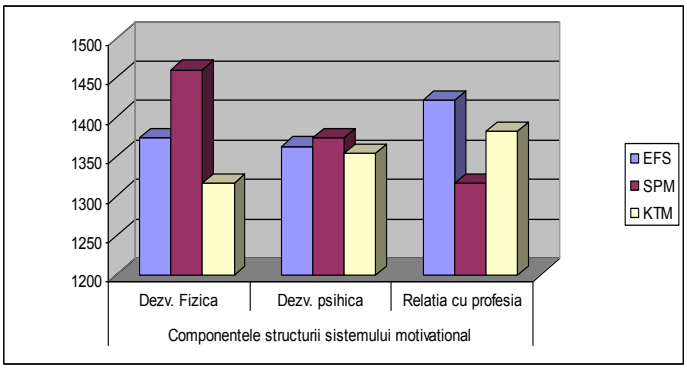
SITUATION OF THE COMPONENTS OF THE MOTIVATIONAL SYSTEMS STRUCTURE FOR VARIOUS MAJORS

Major	Component			Obs.
	1	2	3	
EFS	1374	1363	1421	
SPM	1460	1400	1342	
KTM	1372	1424	1382	

SITUATION OF THE MOTIVATIONAL SYSTEM STRUCTURE FOR THE YEARS OF STUDY

YEAR OF STUDY	POINTS	OBS
I	4171	
II	4230	
III	4137	





Conclusions

The carried out study emphasizes the structure of the motivational systems of students majoring in Physical Education and Sports. Motives were organized in a hierarchy and the structure of the motivational system was configured based on the aspects of this research.

The study did not reveal significant differences between the groups of motives / years of study / majors. We consider that the experience and the relationships with the field of Pshysical Education and Sports have a major influence in configuring the motivational system. Also, the differences of dynamics can be interpreted as the result of certain information and knowledge accumulated during the years of study.

Some decreases in the area of personal development (III year EFS compared to II year), psychological development (III year SPM compared to II year) or the relation with the future profession (III year KTM compared to II year) can indicate certain insatisfactions determined by cognitive dissonances.

We are of the opinion that the studies regarding the motivational system and the personality of our students can offer important data that later correlated with other information may provide an objective platform for the optimization of the management of the bachelor level, the curricula, the organizing and unfolding of studies, the content of the disciplines and probations, the teaching-learning methods, interpresonal relationships or the relationships with potential employers.

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FREE TIME SPENDING WAYS OF UNIVERSITY STUDENTS, AND THE BENEFITS THEY GAINED THROUGH THESE ACTIVITIES

Kadir Pepe[1], Ibrahim Bozkurt[2]
[1]Mehmet Akif Ersoy Üniversity, Education Faculty Physical Education and Sports Teaching Department, Burdur / TURKEY
[2]Selçuk University Gymnastic and Sports Education College / Konya / TURKEY
Mail. kpepe@yahoo.com **/ 08.02.2010 / 19.02.2010**

Abstract

The aim of the research is to define free time spending ways of university students, and the benefits they gained through these activities. The universe of the research is Mehmet Akif Ersoy University and the sample group of the research is composed of the students of all Faculties and high schools of the Univeristy. The data of the research has been obtained through literature review and questionnaire.

After the comprehensiblity, scope validty and reliability of the questionnaire which were prepared paralel to the purpose have been tested it has been applied to the 1,2,3,4 and 5th grade stundets of faculty and high schools with random sampling method. The questionnaire has been applied to 1294 male, 1629 female students. 12 of the participants did not mention their genders. The total number of the students who have participated in the questionnaire is 2935. The data obtained has been coded to SPSS packet program in electronic environment. As statistic operation, frequency (f), percentage (%) and cross table has been applied. Result of each question were interpreted in accordance with % distributions

As a conclusion, it can be said that students generally spend their free times by listening to music, walking around, watching TV and VCD, reading books-gazettes, visiting friends, going to the cinema and theatre, researching on internet, participating social activities, having sports which require active participation, conducting hand-craft activities which develop hand skills and watching sport programmes.

The students mention that free time activities are beneficial for their health and they create a friendly environment between participants and let them know teach other better.They also mentioned that these activities help them get rid of the tiredness of the day, make them happy and they increase their knowledge.

Key words: Student, Free Time, Spending, benefit.

Introduction

In today's monotonous life, in order to keep healthy, it is very important for humans to evaluate their free times which they spare from their daily labors. In their free times, humans usually participate in recreational activities in urban or rural areas -through either open or closed grounds or passively and actively- with many aims such as staying away from monotonous things, resting, changing of air, sightseeing, feeling excitement and having different lives. As free time activities, many activities which are carried out in many ways and with a lot of varieties are for recreational purposes which are exercised daily, at weekends, in annual leaves, and in retirement periods (S. Karaküçük, 1999).The most important distinction of developed countries from those of developing or underdeveloped is their conscious and determination in using time efficiently and actively. While the research carried out for human health and efficiency is determining communities' future plans and targets, it has to deal delicately with work and free time balance within permanent-time-dimension. The solution of the problems should be chased by regarding time as a source which is influenced by people's development period and requires witty use. (A. Bilgütay, 1973).

We see that, time concept which has much importance in human life is defined in different ways; some of these definitions are such;According to Weber, "time is a period which is long or short depending on man's life, impossible to repeat and the start and end of which can be measured with a certain hour." (E. Weber, 1973) According to another definition, "time is life itself, and spending time in vain is spending life in vain in fact" (A. Baltaş; Z. Baltaş, 1987).We see that *recreation* meaning evaluating free time comes from the Latin word "recreation". Its meaning is refreshing, recreating. Its Turkish meaning is referred as "serbest zamanları değerlendirme". This means the relaxing and entertaining activities that individuals or social groups carry out voluntarily in their free times. (Ö. Ozankaya, 1980; S. Karaküçük, 1999)

In their free times other than their daily activities, work and similar things, individual's doing or participating in all activities for enjoying life, relaxing, entertaining, being busy with and amusing events and actions for the purpose of rejoining both psychologically and physically are defined as recreation (M. Bayer, 1974). A more comprehensive definition is defined as followed: "They are voluntarily and wishful group or individual activities which are carried out within a free and disconnected time from individuals daily works and obligatory necessities and they are carried out with the aim of getting back the health of body and mental health, saving and sustaining them and at the same time with the aim of taking pleasure, enabling satisfaction (S. Karaküçük, 1999). Especially, there is no similar point in recreational (free time) activities presenting differences of interest, aim, participation and different perspectives for many other factors (E. Zorba, 2002).Recreational activites can show differences according to free time way, its duration, climate, economical, geographical conditions along with cultural differences. (S. Karaküçük, 1999) We can list recreational activities as;

- **Music activities** such as: Musical instruments, ochestra, solo, choro
- **Sportive activities** such as: Team, individual, nature, competitions and mental
- **Games;** Educative games for all ages
- **Dance;** Folklores, modern and rhythmic dances
- **Activities requiring art and skills**; Plastic, fur, graphic, seramic, metal, picture
- **Outdoor activities**; Camping, picnic, environmenalism.
- **Scientific and cultural activities**; Literature, theatre and scientific Works,

Recreative activities are known to have a major effect on individuals. (E. Zorba, 2002) We can list effects of recreational activities on individuals as;

- Improving physical and mental health
- Improving individual skills and abilities
- Developing creativity in recreational activities
- Work success and productivity
- Its pleasure and happiness for individuals
- Its providing communicative solidarity and unity
- Enables an opportunity to create a democratic community.

Permanent habits should be adobted through recreational (free time) activities. We can vary these habits or senses as evaluating free times in the best way, doing sport, sharing, and solidarity, sense of winning and losing, sense of appreciating, obeying the rules, group conscious, and feeling of success. Recreational activities aims at enchancing life standards of people of all ages, useing body properly form childhoon onward, adopting true values as life philosophy. Moreover, they try to provide suc richness as avoiding from smoking and alcholol, adopting active life forever, being in solidarity with the family and the community. That's why it is important for all individuals, families, educators and managers to be conscious about healthy life nd exercises. (E. Zorba, 2002).These habits and senses, either gained or will be gained, will be easier to be adopted by our community's young and dynamic and at the same time organized students of higher education. Because this youth is such a youth that, they are ready to be directed, to be able to exhibit their skills, search for environment, exciting, liable to get angry easily, eager, dynamic, lively and have the desire to be appreciated. By contributing to the safety of the students and their survival, recreational avtivities in our educational institutions enable them to take pleasure from life and to be satisfied with their life. Education and recreation should not be though as one. Recreation is a means of education, and it can be used as a tool for education. As well as being the key of productivity, this means sets the grounds for physical, social and psychological developlement of the individuals (P.W. Dawer; R.P. Pangraz, 1975).In order that recreational activities will be successful on individuals, first of all individuals should do their desired activies. Because, there have to be voluntarily actions and desires in the essence of recreational activities. That's why, in recreational activities and in preparing recreational activities, wishes and expectations should be taken into consideration.As can be seen, evaluating recreational (free time) activities and evaluating styles are very important for individuals, especially the young.Research has been done with the aim of determining free time evaluation styles and their benefits for university students.

MATERIAL AND METHOD

The research has been done with the aim of determining university students' free time evaluation ways and their benefits for them. The research population is Mehmet Akif Ersoy University and its sample group is students studying at faculties and high schools.Research data have been obtained through literature scanning and survey method. After ensuring intelligibility, scope validity and reliability of the survey developed for the research, it has been applied to students studying at 1st, 2nd, 3rd, 4th, 5th grades through random sampling method. Gender option has been determined among 1294 male and 1629 female participators and 12 of them did not define their genders. In this way, a total of 2935 people have been reached. Obtained data have been coded with SPSS package program in computer environment. As statistical operations, frequency (f), and percentage (%), cross table (Croostab) have been applied. As a result of the operation, comments have been made for each question by examining % distributions.

Findings

Table 1. Socio-Economic Features Distribution of Participators

Changeable		**N (Distribution)**	**% (Distribution)**
Participators' Gender Distribution	Male	1294	44,1
	Female	1629	55,5
	Not answered	12	,4
	Total	**2935**	**100,0**
Participators' Age Distribution	Age of 17-18	209	7,1
	Age of 19-20	1294	44,1
	Age of 21-22	1104	37,6
	Age of 23-24	252	8,6
	Age of 25 and over	55	1,9
	Not answered	21	,7
	Total	**2935**	**100,0**
Participators' Class Distribution	1. class	1166	39,7
	2. class	1210	41,2
	3. class	373	12,7
	4. class	106	3,6
	5.class	80	2,7
	Total	**2935**	**100,0**
Distrubution of the Birth Place of Participars' families'	City	1341	45,7
	Province	1016	34,6
	Village	193	6,5

	Town	368	12,5
	Not answered	17	,6
	Total	**2935**	**100,0**
Distribution of the Occupation of Participators' Fathers	Shopkeeper-Merchant	426	14,5
	Civil servant	562	19,1
	Artisan	20	,7
	Self-employement	510	17,4
	Worker for state	186	6,3
	Farmer	393	13,4
	Private Sector worker	205	7,0
	Other	593	20,2
	Not Answered	40	1,4
	Total	**2935**	**100,0**

Table 1. Continue

Occupation of Participators' Mothers Distribution	Shopkeeper-Merchant	41	1,4
	Civil servant	163	5,6
	Artisan	6	,2
	Self-employement	50	1,7
	Worker for state	24	,8
	Farmer	55	1,9
	Private Sector worker	70	2,4
	Housewife	2427	82,7
	Other	81	2,8
	Not Answere	18	,6
	Total	**2935**	**100,0**
Education level distribution of participators' father	İlliterate	34	1,1
	Elementary school	1202	40,9
	Secondary school	529	18,0
	High School	717	24,4
	Üniversity	418	14,2
	Other	18	,6
	Not Answered	17	,5
	Total	**2935**	**100,0**
Education level distribution of participators' mother	İlliterate	248	8,4
	Elementary school	1682	57,3
	Secondary school	409	13,9
	High School	435	14,8
	Üniversity	136	4,6
	Other	15	,5
	Not Answered	10	,3
	Total	**2935**	**100,0**

In Table 1, socio-demographic features of participators are inquired .When we examine participators' answers according to **"gender distributions"**, 1294 males and 1629 females participated in the research. 12 participators didn't answer to this question. In this way, a total of 2935 participators participated in the research.When we examine participators according to **"age distributions"**, %44,1of them are 19–20, %37,6 are 21–22, %8,6 are 23–24, %7,1 are 17–18, %1,9 of them are 25 and older ages. %0,7 of participator did not answer to this question. When we examine participators according to **"class distribution"**, %41,2 of the are in the 2.class, %39,7 are in the 1.class, %12,7 are in the 3. class, %3,6 are in the 4. Class and %2,7 of them are in the 5. class.In the inquery of **"the distribution of participators' residence place"**, we see that %45,7 of them are in a city, %34,6 are in a province, %12,5 are in town, and %6,5 of them are in a village. %0,6 of participators didn't answer to this inquery. To "**jobs of participators fathers**" inquery, %20 say a different vocation other than stated in the inquery, %19, 1 are civil servants, % 17,4 are self-employed, %14,5 are shopkeepers – merchants, %13,4 are farmers, %7 are private sector workers, %6,3 are workers for the state and %0,7 are craftsmen. %1,4 of the participators didn't answer to this inquery. For "**mother's occupation"** inquery, while %82,7 of them say "housewife", %5,6 say "civil servant", %2,8 say an occupation which is not included in the questionnaire form, %2,4 say "private sector worker", %1,9 say "farmer", %1,7 "self-

employed", %1,4 say "shopkeeper-merchant", %0,8 say "worker for the state", %0,2 say "craftsmen"; %0,6 of them did not answer this inquery at all.**For "education level of participators' fathers"**, while %40,9 of the participators say "elementary school",%24,4 say "high school and its equal", %18 say "middle school", %14,2 say "university", %1,1 say "illiterate", %0,6 say "other", %0,of them did not answer this question at all.**For "education level of participators' mothers"**, on the other hand, %57,3 of participators say elementary school, %14,8 say high school and its equal, %13,9 say middle school, %8,4 say illiterate", %4,6 say university, %0,5 say "other" while %0,3 did not reply this inquiry at all.

Table 2. Participators' Answers Distribution According To Gender Variable To The Question "How Long Is Your Daily Free Time Length?"

Changeable	1-2 hours	3-4 hours	5-6 hours	7hours and mor	I Have no Free time	Total
Male	123		445	234	53	1287
	9,6%	33,6%	34,6%	18,2%	4,1%	100,0%
Female	166	621	561	209	65	1622
	10,2%	38,3%	34,6%	12,9%	4,0%	100,0%
Total	289	1053	1006	443	118	2911
	9,9%	36,2%	34,6%	15,2%	4,1%	100,0%

As can be seen in the table above, the inquery "how long is your daily free time length?" has been inquired. When we examine participators' answers according to genders, %34,6 of male participators say 5-6 hours, %33,6 say 3-4 hours, %18,2 say 7 hours and more and %4,1 say "I have no free time", while %38,3 of female participators say 3-4 hours, %34,6 say 5-6 hours, %12,9 say 7 hours and more and %4 of them say "I have no free time."

When we look at the answers in total, 36,2 of them say 3-4 hours, %34,6 say 5-6 hours, %15,2 say 7 hours and more, %9,9 say 1-2 hours, %4,1 say "I have no free time."

According to the obtained data, male participators have more free time than females and in total; we can say that participators have free time between 3-4 hours.

Table 3. Participators' Answers Distribution According To Gender Variable To The Question "How Do You Evaluate Your Free Time?"

Changeable		Yes N	Yes %	No N	No %	Total N	Total %
I go to cinema and theater	Male	774	59,8	520	40,2	1294	100,0
	Female	1193	73,3	434	26,7	1627	100,0
	Total	**1969**	**67,4**	**954**	**32,6**	**2921**	**100,0**
İ read book and newspapers	Male	854	66,0	439	33,9	1293	100,0
	Female	1286	79,0	341	21,0	1627	100,0
	Total	**2140**	**73,3**	**780**	**26,7**	**2920**	**100,0**
I do sports requiring active participation	Male	714	55,2	580	44,8	1294	100,0
	Female	409	25,1	1218	74,9	1627	100,0
	Total	**1123**	**38,4**	**1798**	**61,6**	**2921**	**100,0**
I deal with social and communal activities	Male	591	45,7	704	54,3	1295	100,0
	Female	669	41,1	957	58,8	1626	100,0
	Total	**1260**	**43,1**	**1661**	**56,9**	**2921**	**100,0**
I deal with scientific and cultural activities	Male	523	40,4	772	59,5	1295	100,0
	Female	602	37,0	1024	62,9	1626	100,0
	Total	**1125**	**38,6**	**1796**	**61,4**	**2921**	**100,0**
I deal with handcraft and art requiring skill	Male	466	35,9	828	63,9	1294	100,0
	Female	716	44,0	911	56,0	1627	100,0
	Total	**1182**	**40,4**	**1739**	**59,5**	**2921**	**100,0**
I listen to music	Male	1126	87,0	168	12,9	1294	100,0
	Female	1449	89,1	178	10,9	1627	100,0
	Total	**2575**	**88,2**	**346**	**11,8**	**2921**	**100,0**
I wander bazaar and fair	Male	918	70,9	376	29,1	1294	100,0
	Female	1311	80,6	316	19,4	1627	100,0

	Total	**2229**	**76,3**	**692**	**23,7**	**2921**	**100,0**
I visit my friend	Male	906	70,0	386	29,8	1292	100,0
	Female	1156	71,1	468	28,8	1624	100,0
	Total	**2062**	**70,7**	**854**	**29,2**	**2916**	**100,0**

Table 3. Continue

I play a musical instrument	Male	409	31,7	883	68,3	1292	100,0
	Female	436	26,8	1189	73,1	1625	100,0
	Total	**845**	**29,0**	**2072**	**70,9**	**2916**	**100,0**
I watch sportive competitions	Male	919	71,1	373	28,9	1292	100,0
	Female	660	40,6	967	59,4	1627	100,0
	Total	**1579**	**54,1**	**1340**	**45,9**	**2919**	**100,0**
I watch TV and VCD	Male	1021	78,9	272	21,0	1293	100,0
	Female	1208	74,2	419	25,8	1627	100,0
	Total	**2229**	**76,3**	**691**	**23,6**	**2920**	**100,0**
I practice on computer	Male	951	73,6	341	26,4	1292	100,0
	Female	967	59,4	660	40,6	1627	100,0
	Total	**1918**	**65,7**	**1001**	**34,3**	**2919**	**100,0**
I chat	Male	698	53,9	595	46,0	1293	100,0
	Female	555	34,1	1070	65,8	1625	100,0
	Total	**1253**	**42,9**	**1665**	**57,0**	**2918**	**100,0**
I go to cafeteria or cafe	Male	480	37,1	814	62,9	1294	100,0
	Female	181	11,1	1445	88,8	1626	100,0
	Total	**661**	**22,6**	**2259**	**77,4**	**2920**	**100,0**
I chat in the canteen	Male	638	49,3	656	50,7	1294	100,0
	Female	671	41,2	956	58,8	1627	100,0
	Total	**1309**	**44,8**	**1612**	**55,2**	**2921**	**100,0**
I deal with fine arts	Male	272	21,0	1022	79,0	1294	100,0
	Female	348	21,4	1279	78,6	1627	100,0
	Total	**620**	**21,2**	**2301**	**78,8**	**2921**	**100,0**
I do nothing **I rest sleeping**	Male	934	72,2	358	27,7	1292	100,0
	Female	1232	75,7	395	24,3	1627	100,0
	Total	**2166**	**74,2**	**753**	**25,8**	**2919**	**100,0**

In Table 3, the question "how long is your daily free time length?" has been inquired according to genders and total answers. From this inquery;

From the participators to the inquery "**I go to the cinema and theater"** %59,8 of males say "yes" %40,2 say "no"; %73 of females say "yes", %26,7 say "no", and in total; %67,4 of them say "yes", %32,6 say "no". **"I read book and papers"** %66 of females say "yes", %33,9 say "no", %79 of females say "yes", %21 say "no", and in total, %73,3 say "yes", %26,7 say "no". To the inquery "**I do sports requiring active participation",** %55,2 of male participators say "yes", %44,8 say "no", %25,1 of females say "yes",%74,9 say "no", and in total; %38,4 of them say "yes, %61,6 say "no".To the inquery **"I deal with social and communal activities"**, %45,7 of males say "yes", %54,3 say "no", %41,1 of females say "yes" ,%58,8 say "no", and in total; %43,1of them say "yes", %56,9 say "no".To the inquery **"I deal with scientific and cultural activities"**, %40,4 of male participators say "yes", %59,5 say "no", %37 say "yes", %62,9 say "no", and in total; %38,6 say "yes", %61,4 "no".To the inquery "**I deal with handcraft and art requiring skill",** ,%35,9 of males say "yes", %63,9 of them say "no", %44 of females say "yes", %56 of them say "no", and in total; %40,4 of them say "yes", %59,5 of them say "no". To the inquery **"I listen to music"** %87 of males say "yes", %12,9 of them say "no", while %89,1 of females say "yes", %10,9 say "no", and in total; %88,2 of them say "yes", %11,8 of them say "no".About the inquery "**I deal with handcraft and art requiring skill",** %70,9 of male participators say "yes, %29,1 of them say "no", while %80,6 of female participators say "yes", %19,4 say "no", and in total, %76,3 of them say "yes", %23,7 say "no".For the inquery **"I visit my friends"**, %70 of male participators say "yes", %29,8 of them say "no", while %71,1 of female participators say "yes", %28,8 say "no", and in total; %70,7 say "yes", %29,2 say "no".To the inquery **"I play a musical instrument",** %31,7 of males say "yes", %68,3 say "no", while %26,8 of females say "yes", %73,1 of them say "no", and in total; %29 of them say "yes", %70,9 say "no".To the inquery "**I watch sport matches**", ,%71,1'i of males say "yes", say %28,9 "no", while %40,6 of females say "yes", %59,6 of them say "no", and in total; %54,1 of them say "yes", %45,9 say "no".

To the inquery **"I watch TV and VCD",** %78,9 of males say "yes", %21 say "no", while %74,2 of females say "yes", %25,8 of them say

"no", and in total; %76,3 of them say "yes", and %23,6 say "no". To the inquery **"I do research on computer",** %73,6 of males say "yes", %26,4 say "no", while %59,4 of females say "yes", %40,6 of them say "no", and in total; %65,7 of them say "yes", %34,3 say "no".To the inquery **"I chat",** %53,9 of males say "yes", %46 say "no", while %34,1 of females say "yes", %65,8 of them say "no", and in total; %42,9 of them say "yes", %57 say "no".About the inquery **"I go to cafeteria or cafee",** %31,1 of males say "yes", %62,9 say "no", while %11,1 of females say "yes", %88,8 of them say "no", and in total; %22,6 of them say "yes", %77,4 say "no".For the inquery **"I chat in the canteen",** %49,3 of males say "yes", %50,7 say "no", while %41,2 of females say "yes", %58,8 of them say "no", and in total; %44,88 of them say "yes", %55,2 say "no".About the inquery **"I deal with fine arts",** %21 of males say "yes", %79 say "no", while %21,4 of females say "yes", %78,6 of them say "no", and in total; %21,2 of them say "yes", %78,8 say "no"."To the inquery **"I do nothing, I rest sleeping",** %72,2 of males say "yes", %27,7 say "no", while %75,7 of females say "yes", %24,3 of them say "no", and in total; %74,2 of them say "yes", %25,8 say "no".

Table 4.Distrubution of Percentages for Fulfilling Free Time Activities of Participators

Changeable							
	Individual	Communit	University Activity	Group for Special Aim	Clup	Other	Total
Male	308	557	127	154	69	31	1246
	24,7%	44,7%	10,2%	12,4%	5,5%	2,5%	100,0%
Female	439	704	152	145	56	53	1549
	28,3%	45,4%	9,8%	9,4%	3,6%	3,4%	100,0%
Total	747	1261	279	299	125	84	2795
	26,8%	45,1%	10,0%	10,7%	4,5%	3,0%	100,0%

In Table 4, the proposal **"Your way of fulfilling free time activities"** has been inquired. When participators answers are examined according to gender status about this inquery, we see that %44,7 of male participators answer "community", %24,7 say "individual", %12,4 say "group for special aim", %10,2 say "university activity", %5,5 say "club", and %2,5 say "other", while %45,4 of female participators answer "community", %28,3 answer "individual", %9,8 say "university activity", %9,4 "group for special aim", %3,6 say "club," and %3,4 of them answer as "other" and in total; %45 of them say "community", %26,8 say "individual", %10,7 say "group for special aim", %10 say "university activity", %4,5 say "club" and %3 of them answer "other".According to this data, we can say that participators mostly spend their free times in groups or as individual activities. As well as not seeing a meaningful difference of opinion, female participators are seen as more in number than male participators in individual activities.

In table 5, the inquery "**What do you think about free time activities and how do you evaluate them?"** is inquired. When participators wievs are examined according to changeable, we see that.About the changeable, "**I see it as a means of playing with friends",** %80,1 of male participators say "yes, %19,7 of them say "no", while %75,2 of female participators say "yes", %24,6 say "no", and in total; %77,3 of them say "yes", %22,5 say "no".About the changeable, "**I find it educative and beneficial",** %74,1 of male participators say "yes, %25,6 of them say "no", while %74,3 of female participators say "yes", %25,7 say "no", and in total; %74,2 of them say "yes", %25,6 say "no".About the changeable, "**I think it is improving knowledge and culture",** %64,9 of male participators say "yes, %35,1 of them say "no", while %65,5 of female participators say "yes", %34,4 say "no", and in total; %65,3 of them say "yes", %34,6 say "no".About the changeable, "**I see it as a way of getting away from being bored",** %75,2 of male participators say "yes, %24,8 of them say "no", while %71,8 of female participators say "yes", %28 say "no", and in total; %73,3 of them say "yes", %26,6 say "no". About the changeable "**I find it beneficial for my health",** %79,6 of male participators say "yes, %20,4 of them say "no", while %76,3 of female participators say "yes", %23,7 say "no", and in total; %77,8 of them say "yes", %22,2 say "no".About the changeable "**I see it as a means of happiness",** %71,1 of male participators say "yes, %28,9 of them say "no", while %74,2 of female participators say "yes", %25,8 say "no", and in total; %72,8 of them say "yes", %27,1 say "no".

According to obtained data, we can say that most of the participators find free time activities as beneficial for their health; they see it as a way of playing with friends, educative and beneficial, a means of getting away from being bored and a tool for happiness and a factor to develop knowledge and health. There is no meaningful difference of opinion between inter-gender answers.

Table 5. "The Distrubution Of Participators' Answers According To Gender Variable For The Inquery **"What Do You Think About Free Time Activities And How Do You Evaluate Them?"**

Changeable		Yes N	Yes %	No N	No %	Total N	Total %
I see it as a means of playing with friends	Male	1038	80,1	257	19,7	1295	100,0
	Female	1225	75,2	403	24,6	1628	100,0
	Total	**2263**	**77,3**	**660**	**22,5**	**2923**	**100,0**
I find it educative and beneficial	Male	959	74,1	335	25,6	1294	100,0
	Female	1211	74,3	418	25,7	1629	100,0
	Total	**2170**	**74,2**	**753**	**25,6**	**2923**	**100,0**
I think it is improving knowledge and culture	Male	839	64,9	453	35,1	1292	100,0
	Female	1068	65,5	559	34,4	1627	100,0
	Total	**1907**	**65,3**	**1012**	**34,6**	**2919**	**100,0**
I see it as a way of getting away from being bored	Male	973	75,2	321	24,8	1294	100,0
	Female	1166	71,8	455	28,0	1621	100,0
	Total	**2139**	**73,3**	**776**	**26,6**	**2915**	**100,0**
I find it beneficial for my health	Male	1030	79,6	264	20,4	1294	100,0
	Female	1244	76,3	385	23,7	1629	100,0
	Total	**2274**	**77,8**	**649**	**22,2**	**2923**	**100,0**
I see it as a means of happiness	Male	920	71,1	374	28,9	1294	100,0
	Female	1205	74,2	419	25,8	1623	100,0
	Total	**2125**	**72,8**	**792**	**27,1**	**2917**	**100,0**

Discussion and conclusion

Students, studying at Education Faculty, Veterinary Faculty, Health High School and Vocational Schools of Mehmet Akif Ersoy University have participated in the research. 2935 of these who answered the questionnaire flawless have been taken into evaluation. 1294 of participators are male, 1629 are female and 12 of these are also participator students who did not answer this question.(Table 1).If we examine with regards to participators' age,we see that ,%44,1of them are aged 19–20, %37,6 age 21–22, %8,6 aged 23–24, %7,1 aged 17–18, %1,9 of them are aged 25 and older. %0,7 of the participators did not answer this question. According to this data we can say that overall age average of the participators are aged 19-22. When we examine with regards to class distinction, we see that %41,2 of them are in the 2nd class, %39,7 are in the 1st class, %12,7 are in the 3rd class, %3,6 are in the 4th class, %2,7 are in the 5th class 5th. (Table 1). With this data, we can say that mostly 1st, 2nd,3rd class students participated in the research.In questioning family residence of the participators, we see that %45,7 of them live in cities, %34,6 live in province, %12,5 live in town, %6,5 of them are from village(Tablo 1). %0,6 of the participators did not answer to this question. According to this result, we can say that students mostly reside in cities on in their provinces.To the inquiery about father's occupation, %20,2 of them say a different vocation other than stated in the inquery, %19, 1 answered as civil servants, % 17,4 said self-employed, %14,5 said shopkeepers – merchants, %13,4 said farmers, %7 said private sector workers, %6,3 said workers for the state and %0,7 answered as craftsmen. %1,4 of the participators didn't answer to this inquery. For "**mother's occupation"** inquiry, while %82,7 of them say "housewife", %5,6 say "civil servant", %2,8 say an occupation which is not included in the questionnaire form, %2,4 say "private sector worker", %1,9 say "farmer", %1,7 "self-employed", %1,4 say "shopkeeper-merchant", %0,8 say "worker for the state", %0,2 say "craftsmen"; %0,6 of them did not answer this inquiry at all. (Table 1). This data show us most of the participators' morthers are housewives and craftsmen as the least. This data indicates that women in our country mosly have no occupation; they help their families at their homes and support their family economically.**For "education level of participators' fathers"**, while %40,9 of the participators said "elementary school",%24,4 said "high school and its equal", %18 said "middle school", %14,2 said "university", %1,1 said "illiterate", %0,6 answered "other", %0,of them did not answer this question at all. (Table 1). As can be understood from the answers, most of the participators' fathers are elementary school graduates, and high school, middle school and university follow this. At the same time there is still illiteracy. With the data, we can say that literacy rate has increased. This rate makes us happy, being minor, though, illiteracy rate upsets us.For **"education level of participators' mothers"**, on the other hand, %57,3 of participators said elementary school, %14,8 said high school and its equal, %13,9 said middle school, %8,4 said "illiterate", %4,6 said university, %0,5 said "other" while %0,3 did not reply this inquery at all. (Table 1). According to the obtained data, mothers mostly graduated from elementary schools and high school and middle school follow this, unfortunately, the rate of illiterate mothers are more that those of university graduates. We can attribute this bitter reality to the fact that from the foundation of Turkish Republic until now, in a country where there have been many campaigns to read-and-write, it is the responsibility of state governers and educators to have had more illiterate women than those of university graduates.

About the question, **"how long is your daily free time length?",** ,%34,6 of male participators said 5-6 hours, %33,6 of them said 3,4 hours, %18,2 of them said 7 hours and more, %9,9 of them said 1-2 hours, %4,1 of them said "I have no free time", while %38,3 of female participators said 3-4 hours, % 34,6 of them said 5-6 hours, %12,9 of them said 7 hours and more, %10,2 said 1-2 hours, %4 of them said "I have no free time". If we look at the total answer, %36,2 of the participators said 3-4 hours, %34,6 of them said 5-6 hours, %15,2 of them said 7 hours and more, %9,9 said 1-2 hours, %4,1 of them said "I have no free time". (Table 2).

According to the obtained data, we can say that male participators have relatively more free time than female participators and in total; participators have a free time of 3-6 hours. This result shows us that participators have enough free time to participate in a free time activity. Our finding is parallel with the research finding carried out by (Z. Başaran; T. Erenci 2006) about determining recreation preferences in a university campus. For the question **"How do you evaluate your free time?";**From the participators to the inquiry "**I go to the cinema and theater"** %59,8 of males said "yes" %40,2 said "no"; %73 of females said "yes", %26,7 said "no", and in total; %67,4 of them said "yes", %32,6 said "no". **"I read book and papers"** %66 of females said "yes", %33,9 said "no", %79 of females said "yes", %21 said "no", and in total; %73,3 said "yes", %26,7 said "no". To the inquiry "**I do sports requiring active participation",** %55,2 of male participators said "yes", %44,8 said "no", %25,1 of females said "yes",%74,9 said "no", and in total; %38,4 of them said "yes, %61,6 said "no". To the inquiry; **"I deal with social and communal activities"**, %45,7 of males say "yes", %54,3 said "no", %41,1 of females said "yes" ,%58,8 said "no", and in total; %43,1of them said "yes", %56,9 said "no".To the inquiry **"I deal with scientific and cultural activities"**, %40,4 of male participators said "yes", %59,5 said "no", %37 said "yes", %62,9 said "no", and in total; %38,6 said "yes", %61,4 "no". To the inquiry "**I deal with handcraft and art requiring skill",** ,%35,9 of males said "yes", %63,9 of them said "no", %44 of females said "yes", %56 of them said "no", and in total; %40,4 of them said "yes", %59,5 of them said "no". To the inquiry **"I listen to music"** %87 of males said "yes", %12,9 of them said "no", while %89,1 of females said "yes", %10,9 said "no", and in total; %88,2 of them said "yes", %11,8 of them said "no".About the inquery "**I deal with handcraft and art requiring skill",** %70,9 of male participators said "yes, %29,1 of them said "no", while %80,6 of female participators said "yes", %19,4 said "no", and in total; %76,3 of them said "yes", %23,7 said "no".For the inquiry **"I visit my friends"**, %70 of male p said articipators said "yes", %29,8 of them said "no", while %71,1 of female participators said "yes", %28,8 said "no", and in total; %70,7 said "yes", %29,2 said "no".

To the inquiry **"I play a musical instrument",** %31,7 of males said "yes", %68,3 said "no", while %26,8 of females said "yes", %73,1 of them said "no", and in total; %29 of them said "yes", %70,9 said "no".To the inquiry "I watch sport matches", ,%71,1'i of males said "yes", said %28,9 "no", while %40,6 of females said "yes", %59,6 of them said "no", and in total; %54,1 of them said "yes", %45,9 said "no".To the inquiry **"I watch TV and VCD",** %78,9 of males said "yes", %21 said "no", while %74,2 of females said "yes", %25,8 of them said "no", and in total; %76,3 of them said "yes", and %23,6 said "no".To the inquiry **"I do research on computer",** %73,6 of males said "yes", %26,4 said "no", while %59,4 of females said "yes", %40,6 of them said "no", and in total; %65,7 of them said "yes", %34,3 said "no".To the inquiry **"I chat",** %53,9 of males said "yes", %46 said "no", while %34,1 of females said "yes", %65,8 of them said "no", and in total; %42,9 of them said "yes", %57 said "no".About the inquiry **"I go to cafeteria or cafee",** %31,1 of males said "yes", %62,9 said "no", while %11,1 of females said "yes", %88,8 of them said "no", and in total; %22,6 of them said "yes", %77,4 said "no".For the inquiry **"I chat in the canteen",** %49,3 of males said "yes", %50,7 said "no", while %41,2 of females said "yes", %58,8 of them said "no", and in total; %44,88 of them said "yes", %55,2 said "no".About the inquiry **"I deal with fine arts",** %21 of males said "yes", %79 said "no", while %21,4 of females said "yes", %78,6 of them said "no", and in total; %21,2 of them said "yes", %78,8 said "no"."To the inquery **"I do nothing, I rest sleeping",** %72,2 of males said "yes", %27,7 said "no", while %75,7 of females said "yes", %24,3 of them said "no",and in total; %74,2 of them said "yes", %25,8 said "no"(Table3). According to this data, on evaluating given answers in general, participators mostly listen to music, watch TV and VCD, wander around bazaar and fair, rest without participating any events, read book and newspaper, visit their friends, go to the cinema or theatre, make research on computer, watch sport matches. In other activities, there is no inter-gender difference. Our findings are parallel with that researched by (B. Ateş and His Friends)'s comparison of university departments from the perspective of campus recreation. According to this data, participators do their activities mostly in goups or as individuals. As well as there is no meaningful difference of opinion, it is seen that female participators participate in free time activities more than male participators.The inquery "**How do you evaluate your free time activity?"** is inquired. When participators wievs are examined according to changeable, we see that; %44,7 of male participators said "group",%24,7 of them said "individual", %12,4 of them said "group for special purpose", %10,2 of them said "university activity", %5,5 of them said "club", %2,5 of them said "other", while %45,4 of female participators said "community", %28,3 of them said "individual", %9,8 of them said "university activity", %9,4 of them said "group for special purpose", %3,6 of them said

"club", %3,4 of them said "other", and in total; %45,1 of all participators said "group", %26,8 of them said "individual", %10,7 of them said "group for special purpose", %10 of them said "university activity", %4,5 of them said "club", %3 of them said "other"(Table 4).About the changeable, "**I see it as a means of playing with friends",** %80,1 of male participators say "yes, %19,7 of them say "no", while %75,2 of female participators say "yes", %24,6 say "no", and in total; %77,3 of them say "yes", %22,5 say "no".About the changeable, "**I find it educative and beneficial",** %74,1 of male participators say "yes, %25,6 of them say "no", while %74,3 of female participators say "yes", %25,7 say "no", and in total; %74,2 of them say "yes", %25,6 say "no".About the changeable, "**I think it is improving knowledge and culture",** %64,9 of male participators say "yes, %35,1 of them say "no", while %65,5 of female participators say "yes", %34,4 say "no", and in total; %65,3 of them say "yes", %34,6 say "no".About the changeable, "**I see it as a way of getting away from being bored",** %75,2 of male participators say "yes, %24,8 of them say "no", while %71,8 of female participators say "yes", %28 say "no", and in total; %73,3 of them say "yes", %26,6 say "no".

About the changeable "**I find it beneficial for my health",** %79,6 of male participators say "yes, %20,4 of them say "no", while %76,3 of female participators say "yes", %23,7 say "no", and in total; %77,8 of them say "yes", %22,2 say "no".About the changeable "**I see it as a means of happiness",** %71,1 of male participators say "yes, %28,9 of them say "no", while %74,2 of female participators say "yes", %25,8 say "no", and in total; %72,8 of them say "yes", %27,1 say "no". (Table 5)According to the data, we can say that most of the participators see free time activities as beneficial for their health, a means of playing with friends, getting away from being bored and a means of happiness, a tool for improving knowledge and culture. There is no meaningful difference of opinion between genders. This result is parallel with that of (S. Önder 2003), a research for determining students recreational inclinations and determining their wishes at Selçuk University

As a result. 2935 students who study at different faculties and vocational schools of Mehmet Akif Ersoy Uniiversity have been inquired. We can say that;Most of the participators' age are aged between 19-22, they mostly live in cities or their provinces, their fathers' occuapation are mainly civil servants, self-employed, shopkeeper, merchant and farmer and their mothers are mostly housewives, their fathers' literacy level are mostly elementary school and high school and middle school. Participators mostly listen to music, watch TV and VCD, wander around bazaar and fair, rest without participating any activity, go to the cinema and theatre, make research on computer, watch sport matches and do sport, and they mainly do these activities through group activities or as individuals.Most of the participators find free time activities as beneficial to their health, see it as a means of playing with friends, educative, beneficial, a way o getting away from being bored, a means of happiness, and see it as a tool imporiving knowledge and culture.

Suggestions

- First of all, the concept of recreation should be told to our students and its principles and ways should be taught scientifically.
- Reacreative activities should be presented by classifying and changing it into a suitable format suitable for our counrty's necessities.
- Proper grounds where university students can spend their existing energy in a beneficial way should be created and presented.
- Student participation shoul be encouraged by frequently arranging recreational activities.
- Free time activity areas should be enlarged and varied for students' wishes by asking their opinions.
- Educated staff should be trained for recreational activities.
- Managers should produce more conscious politics on this issue.

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THE COMPAREMENT OF HAEMATOLOGICAL SYMPTOMS OF PHYSICAL EDUCATION AND SPORTS COLLAGE'S STUDENTS

Hürmüz Koç[1], Atilla Pulur[2], Yahya Polat[1], Mehmet Yardımcı[1], Mustafa Kaya[1], Bekir Çoksevim[1]
[1]Erciyes University, Physical Education and Sport College, Kayseri, TURKEY
[2]Gazi University, Physical Education and Sports College, Ankara, TURKEY
Email: hurmuzkoc@hotmail.com / 21.02.2010 / 02.03.2010

Abstract

In the study with the aiming to compare blood profile of the 20 males and 20 females students studying in different department of Physical Education and Sports College with the age range of 18-23 year-old voluntarily involved in the study. No any other exercise applied to subjects. However, with analyzing first year theorical and practical lessons at Physical Education and Sports College the effects of practice lessons on blood profile were searched.

The taken antecubital venous blood in 5 ml tubes contain EDTA from subjects analyzed in university center laboratory with using auto-analyzer. To define the differences between groups Mann-Whitney U test used.

By looking at results belong to male students, the comparison between department showed that leukocyte, granulocyte numbers and its percentage were high in coaching departments, lymphocyte and monocyte percentage were high in sports managements. Leukocyte numbers and granulocyte numbers were high in education and sport managements. Monocyte percentage value found statistically significant in sport management departments ($p<0,05$). In female students, average hemoglobin concentration, monocyte number and its percentage found high in coaching departments ($p<0,05$). As a result; although increasing and decreasing variables of blood profile levels according to the education departments of subjects, differences were within reference range values. It is thought that significant differences between departments can be because of the understanding and quality of the life, social-economic statue and personal differences. However, It is thought that reason of the differences do not depend on the applied curriculum.
Key Words: Blood Profile, Coaching Education, Physical Education and Sport Management

Introduction

Human body is a great asset with special talents when examining closely. This great asset needs movements continuously due to presence of the congenital talents. Developing technology in this century we are living now provides great convenience and comfort. But, as a result of the conveniences of developing technology human suffers from the disease of sedentary life and human physiological features are being affected by the sedentary life (N. Erkan, 1994).). However, regular exercises help to improve physical and physiological capacities distinctly (E.L. Fox, R.W. Bowers, M.L. Foss, 1999). Applied exercises for long makes positive contribution to human organism stressed in all studies have done so far. Positive effects of applied exercises on physical, physiological, psychological and motoric features have been reported8. One of the most important possitive effect of regular excirse can be on blood cells. Analyzed blood cells shows that doing regular exercise has different effects. The differences can be depend on exercise intensity, duration, frequency, and physical, physilogical and physical fitness of the subjects participated in the study. However, as noted above, both positive effects of regular exercise on all body cells and prevent health problems identified in the researches (H.W. Grıffith, 2002, Ö. Şenel, 1995).

To be able to get possitive changes in blood cells, intensity, duration and frequency of the execises must be determined carefully (F. Turgay, S.O. Karamızrak, Ç. İşleğen, 2002). Because, in the results of the study in this area, there are different findings with the level of blood biochemistry as associated with the exercise. While Forger et al., indicates that blood biochemistry has positive improvement after acute exercise, Sucic et al., indicates that changes in blood biochemistry happen not with acute exercise only with long-term and regular exercises in their study (M.R. Şekeroğlu, R. Aslan, M. Tarakçıoğlu 1997).

This study done in order to analyze blood samples of first-year students follow different curricula and studying in Physical Education and Sports Coaching (AE), Education (BES), and Sports Management (SY) departments.

Methods

30 males and 30 females studying in different department at Physical Education and Sports College with the age range of 18-23 year-old voluntarily involved in the study. No any other exercise applied to subjects. However, first-class theoretical and practical curriculum analyzes done. As an analyzed result of fall semester of first academic year it is determined that subjects take practical lessons 20-14-8 hours in Education, Coaching and Sports Managements departments, respectively. This results shows that subjects take different hours of practical lessons. 5ml venous blood samples took from forearm antecubital region of participated subjects at the end of fall semester according to rule of hygiene in tubes contain EDTA and blood cells analyzed in university center laboratory with using auto-analyzer. To determine

differences between departemnets Mann-Whitney U test used.

Results

Table1. Leukocyte values of male and females students studying in A.E-S.Y and B.E.S Departments

Parameters	Leukocyte values of male students studying A.E-S.Y departments						Leukocyte values of female students studying A.E-S.Y S departments					
	Section	n	X	Sd	z	P	Section	X	n	Sd	z	p
Leukocyte	A.E	10	6,2	1,1	-2,308	,021	A.E	10	7,3	1,6	-,178	,859
	S. Y	10	4,8	,9			S. Y	10	8,1	1,6		
Lymphocyte Numbers	A.E	10	1,9	,4	-,304	,761	A.E	10	2,0	,5	-,534	,593
	S. Y	10	1,9	,4			S. Y	10	2,2	,5		
Monocyte Numbers	A.E	10	,3	,0	-,163	,871	A.E	10	,5	,1	-1,971	,049
	S. Y	10	,3	,1			S. Y	10	,3	,1		
Granulocyte Numbers	A.E	10	3,9	1,0	-2,801	,005	A.E	10	4,7	1,4	-1,112	,266
	S. Y	10	2,6	,5			S. Y	10	5,4	1,3		
Lymphocyte (%)	A.E	10	31,1	5,2	-2,570	,010	A.E	10	31,9	12,9	-,800	,424
	S. Y	10	39,2	5,1			S. Y	10	28,2	7,4		
Monocyte (%)	A.E	10	5,5	1,7	-2,121	,034	A.E	10	6,9	2,3	-2,135	,033
	S. Y	10	7,6	1,8			S. Y	10	4,9	1,1		
Granulocyte Numbers Granulocyte (%)	A.E	10	63,2	6,7	-2,570	,010	A.E	10	63,6	8,3	-,711	,477
	S. Y	10	53,0	5,9			S. Y	10	66,7	7,2		

Table 2. Erythrocyte values of male and females students studying in A.E-S.Y and B.E.S Departments

Parameters	Erythrocyte values of male students studying A.E-S.Y departments						Erythrocyte values of female students studying A.E-S.Y S departments					
	Section	n	X	Sd	z	P	Section	X	n	Sd	z	p
Erythrocyte	A.E	10	5,9	,3	-,907	,364	A.E	10	4,7	,3	-,178	,859
	S. Y	10	5,7	,5			S. Y	10	4,8	,4		
Hemoglobin(Hb)	A.E	10	16,4	1,1	-,833	,405	A.E	10	13,8	,7	-,667	,505
	S. Y	10	16,2	1,1			S. Y	10	13,5	1,2		
Hematocrit	A.E	10	53,2	4,9	-,756	,450	A.E	10	42,3	4,3	-,355	,722
	S. Y	10	51,0	4,2			S. Y	10	41,6	5,1		
Average Erythrocyte Numbers	A.E	10	90,2	7,5	-1,058	,290	A.E	10	87,3	3,4	-,267	,790
	S. Y	10	89,6	3,2			S. Y	10	85,8	7,1		
Average cell Hb	A.E	10	27,9	2,5	-,567	,570	A.E	10	29,2	1,6	-1,734	,083
	S. Y	10	28,4	1,7			S. Y	10	27,9	1,7		
Concentration of Average Cell Hb	A.E	10	31,0	1,7	-1,022	,307	A.E	10	33,5	1,5	-,847	,397
	S. Y	10	31,7	1,5			S. Y	10	32,7	2,9		
Distribution of erythrocyte Width	A.E	10	13,24	,5	,000	1,000	A.E	10	13,9	,7	-,756	,449
	S. Y	10	13,3	,3			S. Y	10	14,2	,5		

Table 3. Platelet values of male and females students studying in A.E-S.Y and B.E.S Departments

Parameters	Platelet values of male students studying A.E-S.Y departments						Platelet values of female students studying A.E-S.Y departments					
	Section	n	X	Sd	z	P	Section	X	n	Sd	z	p
Platelets	A.E	10	185,2	23,0	-,759	,448	A.E	10	218,0	22,7	-,578	,563
	S. Y	10	182,6	30,3			S. Y	10	226,6	39,8		
Average Platelet Volume	A.E	10	8,6	,9	-,265	,791	A.E	10	9,4	1,0	-1,426	,154
	S. Y	10	8,7	,4			S. Y	10	8,8	,7		

Table 4. Leukocyte values of male and females students studying in A.E-S.Y and B.E.S Departments

Parameters	Leukocyte values of male students studying A.E-B.E.S departments						Leukocyte values of female students studying A.E-B.E.S departments					
	Section	n	X	Sd	z	P	Section	X	n	Sd	z	p

Leukocyte	A. E	10	6,2	1,1	-1,430	,153	A. E	10	7,3	1,6	-,668	,504
	B.E.S	10	7,2	1,3			B.E.S	10	6,7	2,2		
Lymphocyte Numbers	A. E	10	1,9	,4	-1,872	,061	A. E	10	2,0	,5	-,357	,721
	B.E.S	10	2,3	,6			B.E.S	10	2,0	,3		
Monocyte Numbers	A. E	10	,3	,0	-1,635	,102	A. E	10	,5	,1	-3,094	,002
	B.E.S	10	,4	,1			B.E.S	10	,3	,0		
Granulocyte Numbersı	A. E	10	3,9	1,0	-,623	,534	A. E	10	4,7	1,4	-,400	,689
	B.E.S	10	4,3	1,2			B.E.S	10	4,4	2,0		
Lymphocyte (%)	A. E	10	31,1	5,2	-,178	,859	A. E	10	31,9	12,9	-,355	,722
	B.E.S	10	33,4	8,1			B.E.S	10	31,7	8,2		
Monocyte(%)	A. E	10	5,5	1,7	-,578	,563	A. E	10	6,9	2,3	-1,201	,230
	B.E.S	10	6,1	1,9			B.E.S	10	5,6	2,1		
Granulocyte(%)	A. E	10	63,2	6,7	-,222	,824	A. E	10	63,6	8,3	-,178	,859
	B.E.S	10	60,4	9,5			B.E.S	10	62,6	10,0		

Table 5. Erythrocyte values of male and females students studying in A.E-S.Y and B.E.S Departments

Parametreler	**Erythrocyte values of male students studying A.E-B.E.S departments**						**Erythrocyte values of female students studying A.E-B.E.S departments**					
	Section	**n**	**X**	**Sd**	**z**	**P**	**Section**	**X**	**n**	**Sd**	**z**	**p**
Erythrocyte	A. E	10	5,9	,3	-1,023	,306	A. E	10	4,7	,3	-,668	,504
	B.E.S	10	5,6	,6			B.E.S	10	4,6	,3		
Hemoglobin	A. E	10	16,4	1,1	-,224	,823	A. E	10	13,8	,7	-,979	,328
	B.E.S	10	16,2	1,2			B.E.S	10	13,3	1,2		
Hematocrit	A. E	10	53,2	4,9	-1,022	,307	A. E	10	42,3	4,3	-,089	,929
	B.E.S	10	50,2	5,2			B.E.S	10	42,0	4,2		
Average Erythrocyte number	A. E	10	90,2	7,5	-,933	,351	A. E	10	87,3	3,4	-,978	,328
	B.E.S	10	89,7	4,0			B.E.S	10	89,7	5,8		
Average cell Hb	A. E	10	27,9	2,5	-,978	,328	A. E	10	29,2	1,6	-,800	,424
	B.E.S	10	29,1	2,1			B.E.S	10	28,4	2,4		
Concentration of average cell Hb	A. E	10	31,0	1,7	-1,870	,062	A. E	10	33,5	1,5	-2,721	,007
	B.E.S	10	32,4	1,7			B.E.S	10	31,7	1,6		
Distribution of erythrocyte Width	A. E	10	13,2	,5	-1,204	,228	A. E	10	13,9	,7	-,311	,755
	B.E.S	10	13,6	,4			B.E.S	10	14,3	1,3		

Table 6. Platelet values of male and females students studying in A.E-S.Y and B.E.S Departments

Parameters	**Platelet values of male students studying A.E-B.E.S departments**						**Platelet values of female students studying A.E-B.E.S departments**					
	Section	**n**	**X**	**Sd**	**z**	**P**	**Section**	**X**	**n**	**Sd**	**z**	**p**
Platelet	A. E	10	185,2	23,0	-1,157	,247	A. E	10	218,0	22,7	-,986	,324
	B.E.S	10	203,6	29,9			B.E.S	10	206,7	25,9		
Average Platelet Volume	A. E	10	8,6	,9	-,401	,689	A. E	10	9,4	1,0	-,401	,688
	B.E.S	10	8,5	,5			B.E.S	10	9,1	,4		

Table 7. Leukocyte values of male and females students studying in S.Y - B.E.S Departments

Parameters	**Leukocyte values of male students studying S.Y -B.E.S departments**						**Leukocyte values of female students studying S.Y -B.E.S departments**					
	Section	**n**	**X**	**Sd**	**z**	**P**	**Section**	**X**	**n**	**Sd**	**z**	**p**
Leukocyte	S Y	10	4,8	,9	-3,293	,001	S Y	10	8,1	1,6	-1,631	,103
	B.E.S	10	7,2	1,3			B.E.S	10	6,7	2,2		
Lymphocyte Numbers	S Y	10	1,9	,4	-1,651	,099	S Y	10	2,2	,5	-1,106	,269
	B.E.S	10	2,3	,6			B.E.S	10	2,0	,3		
Monocyte Numbers	S Y	10	,3	,1	-1,553	,121	S Y	10	,3	,1	-1,641	,101
	B.E.S	10	,4	,1			B.E.S	10	,3	,0		
Granulocyte Numbers	S Y	10	2,6	,5	-2,981	,003	S Y	10	5,4	1,3	-1,261	,207
	B.E.S	10	4,3	1,2			B.E.S	10	4,4	2,0		

Lymphocyte (%)	S Y	10	39,2	5,1	-1,777	,076	S Y	10	28,2	7,4	-,945	,345
	B.E.S	10	33,4	8,1			B.E.S	10	31,7	8,2		
Monocyte (%)	S Y	10	7,6	1,8	-2,677	,007	S Y	10	4,9	1,1	-,525	,599
	B.E.S	10	6,1	1,9			B.E.S	10	5,6	2,1		
Granulocyte (%)	S Y	10	53,0	5,9	-1,866	,062	S Y	10	66,7	7,2	-,735	,462
	B.E.S	10	60,4	9,5			B.E.S	10	62,6	10,0		

Table 8. Erythrocyte values of male and females students studying in S.Y- B.E.S Departments

Parameters	**Erythrocyte values of male students studying S.Y-B.E.S departments**						**Erythrocyte values of female students studying S.Y-B.E.S departments**					
	Section	**N**	**X**	**Sd**	**z**	**P**	**Section**	**X**	**n**	**Sd**	**z**	**p**
	B.E.S	10	60,4	9,5			B.E.S	10	62,6	10,0		
Erythrocyte	S Y	10	5,7	,5	-,311	,756	S Y	10	4,8	,4	-,423	,672
	B.E.S	10	5,6	,6			B.E.S	10	4,6	,3		
Hemoglobin	S Y	10	16,2	1,1	-,535	,593	S Y	10	13,5	1,2	-,369	,712
	B.E.S	10	16,2	1,2			B.E.S	10	13,3	1,2		
Hematocrit	S Y	10	51,0	4,2	-,222	,824	S Y	10	41,6	5,1	-,053	,958
	B.E.S	10	50,2	5,2			B.E.S	10	42,0	4,2		
Average Erythrocyte Numbers	S Y	10	89,6	3,2	-,445	,657	S Y	10	85,8	7,1	-1,157	,247
	B.E.S	10	89,7	4,0			B.E.S	10	89,7	5,8		
Average cell Hb	S Y	10	28,4	1,7	-,400	,689	S Y	10	27,9	1,7	-,105	,916
	B.E.S	10	29,1	2,1			B.E.S	10	28,4	2,4		
Concentration of average cell Hb	S Y	10	31,7	1,5	-1,203	,229	S Y	10	32,7	2,9	-,999	,318
	B.E.S	10	32,4	1,7			B.E.S	10	31,7	1,6		
Distribution of erythrocyte Width	S Y	10	13,3	,3	-1,614	,107	S Y	10	14,2	,5	-,211	,833
	B.E.S	10	13,6	,4			B.E.S	10	14,3	1,3		

Table 9. Platelet values of male and females students studying in S.Y- B.E.S Departments

Parameters	**Platelet values of male students studying S.Y-B.E.S departments**						**Platelet values of female students studying S.Y-B.E.S departments**					
	Section	**n**	**X**	**Sd**	**z**	**P**	**Section**	**X**	**n**	**Sd**	**z**	**p**
Platelet	S Y	10	182,6	30,3	-1,422	,155	S Y	10	226,6	39,8	-1,003	,316
	B.E.S	10	203,6	29,9			B.E.S	10	206,7	25,9		
Average Platelet Volume	S Y	10	8,7	,4	-,847	,397	S Y	10	8,8	,7	-,738	,461
	B.E.S	10	8,5	,5			B.E.S	10	9,1	,4		

By looking at the tables belong to male students, the comparison between department showed that leukocyte, granulocyte numbers and its percentage were high in coaching departments, lymphocyte and monocyte percentage were high in sports managements. Leukocyte numbers and granulocyte numbers were high in education and sport managements. Monocyte percentage value found statistically significant in sport management departments ($p<0, 05$). In female students, average hemoglobin concentration, monocyte number and its percentage found high in coaching departments ($p<0,05$).

Discussion

In the study with the aiming to compare blood profile of the students studying in different departments such as Physical Education and Sports Coaching (AE), Physical Education and Sports Education (BES), and Sports Management (SY), differences in level of blood cells estimated. At the end of the study, no differences were found in value of blood cells including erythrocyte (4.00-5.55), hematocrit (36-48), average erythrocyte volume(80-100), distributionof erythrocyte width (12-15), hemoglobin (12–16.5), average cell hemoglobin (26-34), concentration of average cell hemoglobin (32 -36), platelet (180–350), average platelet volume (7.6–10.8), leukocyte (3.8–9.8), lymphocyte numbers (04-08), lymphocyte percentage (20-48), monocyte number (0.1–1.0), monocyte percentage (2-10), granulocyte numbers (1.4–7.0) and granulocyte percentage (42-80) when compare with their own reference range values. However, when we look at the result of the measurements as individually, it was found that some values were out of the reference range values. Obtained results at the end of the study compatible with previous studying done in the same area. When we compare our results with previous works It indicated that leukocyte values (WBC) were similar with the results of (M. Ercan, F. Bayıroğlu, R. Kale, 1996; R. Varol, Y. Taşkıran, 1995 and O. Özcan, B. Çoksevim, F. Koca, 1993) and values of lymphocyte number (LYM), lymphocyte percentage (LYM %), monocyte (MONO), monocyte percentage (MONO%), granulocyte number (GRA) and granulocyte percentage

(GRA %) were similar with the results of (R. Moğulkoç, A.K. Baltacı, B. Üstündağ, 1997).

Obtained results from values of the erythrocyte (RBC), hematocrit (HCT), average erythrocyte volume (MCV), hemoglobin (HGB), average cell hemoglobin (MCH) and concentration of average cell hemoglobin (MCHC) were similar with the works of (M. Ercan, F. Bayıroğlu, R. Kale, 1996; O. Özcan, B. Çoksevim, F. Koca, 1993; C. Arslan, B. Gönül, B. Kaplan, 1992, R. Moğulkoç, A.K. Baltacı, B. Üstündağ, 1997; F. Özyener, H. Gür, K. Özlük, 1994; İ. Şemin, M. Kayatekin, G. Oktay, 1993; S. Dinçer, C. Arslan, B. Kaplan, 1993). The reason of the increased erythrocyte values can be because of the effect of hypoxic hypoxia and training supported with the previous works placed in literature.

Values belong to platelet (PLT) and average platelet volume (MPV) were parallel with the works of (M. Ercan, F. Bayıroğlu, R. Kale, 1996, F. Özyener, H. Gür, K. Özlük, 1994; R. Moğulkoç, A.K. Baltacı, B. Üstündağ, 1997 and S. Akar, H. Beydağı, S. Temoçin, 1992). When blood biochemistry analyzed at the end of acute maximal exercise obtained different hematological parameters depended on the exercise with different durations and intensities showed in similar works (A.K. Baltacı, R. Moğulkoç, B. Üstündağ, 1998). As a result of the study, although having increasing and decreasing results from all volunteer subjects trained in different department, most of the those differences within the reference range values. It is thought that significant differences between departments can be because of the understanding and quality of the life, social-economic statue and personal differences. However, It is thought that reason of the differences not depend on the applied curriculum.

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AN INVESTIGATION ON ADEQUACY OF PYSICAL EDUCATION SPORTS HIGHSCHOOL STUDENTS ABOUT ANATOMY LESSON

Lok Sefa, Bastug Gulsum
Selcuk University Physical Education and Sports Academy, Konya, TURKEY
Email: sefaloc@gmail.com / 22.03.2010 / 02.03.2010

Abstract

The purpose of this study is to measure the students' self-sufficiency status to anatomy lesson who had taken anatomy lesson and who study at Karamanoglu Mehmetbey university of physical education and sports.

The type of descriptive work has been done in Karamanoglu Mehmetbey university in the spring semester of 2008-2009 academic year. The surveying has consisted of 147 university students in all in the 1., 2., 3. and 4. classes who had taken anatomy lesson and who study in Karamanoglu Mehmet Bey University at the department of Physical Education and Sports academy (BESYO). The first stage is expected to reach all students in Academies. 147 physical education and sports teaching students in the scope of research have already been taken.

The average age of students participating to the surveying is 21.58 type. 37.2 % of students' as women and 63.8 % as men were found. Class percentages of students participating in this study are emphasized as: 27.9% in 1. class, 25.2% in 2. class, 24.5% in 3. class, 22.4% in 4. class. Self – sufficiency statues of students to the anatomy lesson according to in the different classes shows significant differences [t (294) = 6.74, $p<0,01$]. First-class students' self-competence scores average (X = 76.17) is more positive than the students' in other classes self-competence scores average. The main reason for the anatomy lesson of physical education students receive first-class over the short period of time than students from other classes can connect through.

It was found that students' self-sufficiency perception to the anatomy lesson who study at first class was much higher than students' self-sufficiency perception to the anatomy lesson who study at second,third and the senior class.
Key words: University Students, Anatomy Lesson, Self Sufficiency.

Introductıon

According to Bandura's self-sufficiency theory (A. Bandura, 1977), the beliefs for self-sufficiency has a relation with special activities. In this condition, three low scale was created three different activities whic had relations with the teacher's beliefs for self-sufficiency accordingly theory. It is neccessary to improve or adapt self-sufficiency scale which is special for private abilities or specific areas to make the investigations to gain accelaration in the view of qualification and quantity in our country. At the same time, it is needed to improve and adapt specific equipments which is based on activity in our country (S. Aksayan and S. Gözüm, 1998).

Self-sufficiency becmae more cognitive as specific belief and sense for condition and also individual wide self-efficiency-sufficiency sense contributes to condition and specific expectation of person (D. Bahçeci, 2006). The person may transfer self-efficiency-sufficiency senses to another. For example, it is found that the diabetic children of mothers who have high self-efficiency-sufficiency sense are better than the children whose self-efficiency-sufficiency has a lower period (M. Schriver and C.M. Czerniak, 1999).

Bandura's theory which he sperated into components as an expectation for self-sufficiency and result, according to these invetigators, is described as individual teaching sufficiency and common teaching sufficiency. They made a comment about these 2 educational form's presence in this way: "In education, self-sufficiency sense can be described as the belief of the teacher about their own ability to make increase the success level of students and to make positive changes in students behaviours" (A.M. Santiago and M.K. Einerson, 1998). At the same time self-sufficiency is related to classroom organization, training strategies, questioning techniques, tasking in fulfilling the level of patience, degree of innovation and risk taking, teacher feedbacks for students, tasking of the student administration and control tactics (M.A. Anderson, S. Dragsted, et al., 2004). In education the result expectation is the belief of a teacher's ability to effect the learning of the students (S.N. Kushner, 1993; A.W. Lorsbach and J.L. Jinks, 1999). Self-efficiency for lessons effects the success of the students directly.

The self-sufficiency belief effects the way of thinking and emotional reflections of persons. Individuals who have high self-sufficiency can be more relax and productive in hard works. Individuals who have low self-sufficiency believe that the investigations which they will carry out will be harder than its real condition. While this kind of idea increases the anxiety and stress, it makes the outlook of the person's narrowed. For this reason the self-efficiancy belief effects the success level of individuals in a impressive way (M. Schriver and C. M. Czerniak, 1999).

The aim of this survey is to measure the self-efficiancy conditions of the students who are in Karamanoglu Mehmet Bey university physical education and sport academy and took anatomy lesson.

Limitataion of the Survey

1. Survey includes only the students who are 2., 3., and 4th grade in Karamanoglu Mehmet Bey university physical education and sport academy and took anatomy lesson.

2. It includes only anatomy lesson.

Hypothesis It is obvious that the students who are taking anatomy lessons have low level of success. In this condition,it is thought that the self-efficiancy for anatomy lessons can be effective for this.

Materıal and method *The kind of survey and its place*: The type of descriptive work has been done in Karamanoğlu Mehmetbey university in the spring semester of 2008-2009 academic year.

The working group of the research: The surveying has consisted of 147 university students in all in the 1., 2., 3. and 4. classes who had taken anatomy lesson and who study in Karamanoglu Mehmet Bey University at the department of Physical Education and Sports academy. The first stage is expected to reach all students in Academies. 147 physical education and sports teaching students in the scope of research have already been taken.

Method and tools of collecting data: The equal periodic likert anatomy manner scale was used. While finding the age and sex from socio- demographic data was used While measuring it; equal periodid likert manner scale was used to measure the loyalty for anatomy lesson,positive or negative behaviours, the prejudice and belief for anatomy lesson.

Bahçeci, in his doctorate thesis, 35 sentence which is thought to have an efffect on self-sufficiency for anatomy lesson was found and they were changhed into equal periodic likert kind quinary scale. Some of them changed by the experts and some of them omitted completely and finally there were 30 topics. Factor analysis was used fort his 30 topics. The topics which have charge lower than 0.40 were omitted and finally there were 26 topics. These factors ;

Factor 1 – The sense of trust for knowledge in anatomy.

Factor 2- Being aware of the application skills in anatomy.

Factor 3- Changing the theoric informations in anatomy into life skills.

The inner consistency of the scale was calculated as Cronbach alfa (α)=0,75 and the scale was used in investigation that it was enough saf efor this (G. Wenner, 2001).

The statistics of the survey were collected in class area between 15- 26 December 2008 date and it was collected as collectively and with a questionnaire which was based on the students self-sufficiency.

Independent variables: Age ,sex ,branch and grade.

Dependent variables: 26 questions in scale

Statistical analysis: Number distribution percent and T test were used in analysis of the data. While assessing the data SPSS 10.0 programme was used.

Findings The average age of students participating to the surveying is 21.58 type. 37.2% of students' as women and 63.8% as men were found. Class percentages of students participating in this study are emphasized as: 27.9 % in 1. class, 25.2 % in 2. class, 24.5 % in 3. class, 22.4 % in 4. Class.

Table 1. The T-test result of anatomy lesson's self-efficiancy points for physical education teaching branch

Measurement	Method	N	*X(ort)*	S	sd	t	P
Self-efficiancy	1. Class	40	76.17	6.75	294	6.74	0.00*
	2. Class	37	74.59	6.96			
	3. Class	36	69.75	8.35			
	4. Class	34	65.73	9.73			
	Total	**147**	**71.56**	**7.62**			

*p<0,01

When you examine the Tablo 1, the self-efficiancy condition of the students for anatomy lesson shows diffrence according to students' class. [t (294)=6.74, p<0,01].

First-class students' self-competence scores average (X=76.17) is more positive than the students' in other classes self-competence scores average. The main reason for the anatomy lesson of physical education students receive first-class over the short period of time than students from other classes can connect through.

Table 2. T test results of the self-efficiancy points according to student's branch in the view of factors

Self–efficiancy factors	Group	N	*X*	S	Sd	t	P
1. The sense of trust for knowledge in anatomy	1.Class	41	78.06	7.58	294	3.16	**0,000***
	2. Class	37	75.47				
	3. Class	36	69.49				
	4. Class	34	65.19				
	Total	**147**	**72.03**				
2. Being aware of the application skills in anatomy	1. Class	41	75.33	10.43		4.78	**0,001***
	2. Class	37	73.97				
	3. Class	36	71.42				
	4. Class	34	66.57				
	Total	**147**	**71.82**				

3. Changing the theoric informations in anatomy into life skills.	1. Class	41	75.14	9.57		5.64	**0,003***
	2. Class	37	72.33				
	3. Class	36	67.34				
	4. Class	34	65.19				
	Total	**147**	**70.0**				

*p<0,01

When you checked the findingsn table 2, the main factor which effects the self-efficiancy for anatomy lesson was found as the sense of trust for knowledge in anatomy. As in table 2, the sense of trust for knowledge in anatomy has relation with the grade of the students [t (294)=3.16 p<,05].

1st grade students' the sense of trust for knowledge in anatomy (X =78.06) is more positive than 2, 3 and 4th grade students' sense of trust for knowledge in anatomy.

The second factor which effects the self-efficiancy for anatomy lesson was found as being aware of the application skills in anatomy. As you see in second part of table 2, being aware of the application skills in anatomy has a relation with diffrenet grades of the students. [t (294)=4.78, p<,05]. 1st grade students have more higher points avarage than 2,3 and 4th grade in the view of behaviour of setudents' being aware of the application skills (X =75.33).

The 3rd factor which effects the self-sufficiency for anatomy lesson was found as changing the theoric informations in anatomy into life skills.

As in 3rd part of table 2 the behaviours of the students for changing the theoric informations in anatomy into life skills have a meaningful diffrence according to students different grade. [t (294)=5.64, p<,05]. 1st grade students have higher points avarage than 2, 3 and 4th grade students in the view of changing the theoric informations in anatomy into life skills. 1st grade students according to other students in class can apply succesfully knowledge learned as a theoretical in life. It is found as a meaningful the difference between the skills to convey the theoric informations from class to real life. (p<0,05).

A. Altunçekiç et al. (2005) declared that teacher candidates' self-sufficiency beliefs shows difference according to level of class. The same diffrence was found in our survey. Nowadays, it is important that students whose branch is physical education should have high self-sufficiency sense in every area and lesson.

Discussion and conclusion

In this survey, the self-efficiancy sense of the students whose branch is physical education and sport academy was analyzed for anatomy lesson. 1st grade students' self-efficiancy sense for anatomy lesson is higher than 2., 3. and 4th grade students' self-efficiancy sense for anatomy lesson. The main reason for the anatomy lesson of physical education students receive first-class over the short period of time than students from other classes can connect through. But, the students whose branch is physical education and sport academy will need these informations for their possessions in specific periods.

As stated in other surveys, self-efficiancy sense is an important features (D. Bahçeci, 2006; Ö. Koray, 2003). Teacher candidates's self-sufficiency beliefs is the top middle level in research related to self-sufficiency (S. Aksayan and S. Gözüm 1998; S. Yaman, 2003). As a result ,results of this survey and the result of other formal surveys has a positive relation.

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PHYSICAL ACTIVITY AND HEALTH OF YOUTH

Robert M. MALINA
University of Texas at Austin, U.S.A.
Email: rmalina@skyconect.net / 22.02.2010 / 27.02.2010

Abstract

Development of voluntary control of movement begins in infancy and progresses into childhood as the child attains postural, locomotor and prehensile control. With the refinement of walking, control of locomotor and manipulative abilities improves so that a considerable amount of independent action is possible. These basic movement patterns are the foundation upon which other movements and combinations of movements are subsequently developed and refined. And, movement is the substrate of physical activity.

The development of motor competence during early childhood is the outcome of the interaction of the growing, maturing and developing child with his/her environments. Child-environment interactions should be viewed in the context of changing body dimensions and proportions (body scaling) and improving levels of motor competence (action scaling). Body size, proportions and composition change as the child grows, and levels of motor proficiency change as the child develops. These in turn influence the interactions between the child and his/her environments, specifically home, day care and nursery school. An additional factor is the emergence of the child's perception of these environments as they relate to his/her physical and motor characteristics.

There is increasing interest in relationships between proficiency in basic movement skills and habitual physical activity in young children. Evidence indicates that specific motor skill instructional and physical activity interventions are associated with improvements in basic movement skills in preschool children. By inference, improving the motor proficiency of young children has the potential to enhance levels of habitual physical activity beyond the preschool years. Moreover, motor coordination is an important predictor of physical activity during middle childhood.

Given current concern for the worldwide obesity epidemic, the movement proficiency of overweight and obese children is receiving more attention. Although the issue of reduced physical activity in obese children is somewhat equivocal, one can inquire whether proficiency in movement skills influences activity in obese children and adolescents.

The teaching of skills, rules and strategies of a sport is often indicated as an objective of youth sport programs. Observations would suggest that this objective is generally achieved. Specific evidence for participants in youth sports is limited. Relative more emphasis is given to the talented few in contrast to the majority of youth participants. Individual differences are considerable and these are often dependent on the quality of coaching/instruction.

Key words: movement, physical activity, youth sport.

Introduction

Physical activity and sedentary behavior are issues of considerable interest to public health, medicine and education. Public health and biomedical views focus on physical activity in the context of health promotion and disease prevention and physical inactivity as a major risk factor, among others, for degenerative disease. The educational view highlights activity in the context of physical education as a component of the overall school experiences of youth.

Physical activity and sedentary behavior occur in many contexts. Both are important avenues for learning, enjoyment, social interactions and self-understanding. Currently, evidence and opinion suggest an imbalance in the direction of increased inactivity and reduced activity underlying the emergence of metabolic risk factors for cardiovascular disease and current epidemic of obesity in youth.

Physical activity is a multi-dimensional behavior. It is viewed most often in terms of energy expenditure and the stresses and strains associated with weight bearing and ground reaction forces. Fitness (performance- and health-related) and skill (proficiency in a variety of movements) are other important dimensions of activity. Context is an important dimension of physical activity that is often overlooked. Context refers to types and settings of activity, and includes play, physical education, exercise, sport, work, and others. Contexts per se and meanings attached to them vary with age among youth and also among and within different cultural groups (R.M. Malina, 2008).

Sedentary behavior or physical inactivity also has several dimensions. Public health and medicine view inactivity in terms of insufficient energy expenditure, force generation and health-related fitness. Sedentary behavior also has a major cultural

component; many forms of inactivity are highly valued by societies - school, study, reading, music, art, television viewing, video games and the like. Motorized transport is a form of inactivity that is also valued by major segments of society.

Physical activity and inactivity represent a repertoire of behaviors performed in a societal context, and both have high valence in society. Physically inactive and active behaviors span the spectrum of minimal to maximal energy expenditure.

It is generally assumed that regular physical activity is essential to support the normal growth and maturation. Studies spanning nearly a century have suggested that regular physical activity, including training for sport, has a stimulatory influence on growth and maturity. In one of the first comprehensive reviews of exercise and growth, it was suggested:

"There seems to be little question that certain minima of muscular activity are essential for supporting normal growth and for maintaining the protoplasmic integrity of the tissues. What these minima mean in terms of intensity and duration of activity has not been ascertained" (G.L. Rarick, 1960, p. 460).

At the same time, concern was also expressed and is still currently expressed about potentially negative influences of physical activity, specifically of intensive training for sport during childhood and adolescence. This issue of training and the growth status of young athletes has been previously addressed (R.M. Malina, 1994, 1996, 1998; see also R.M. Malina et al., 2004). For the present, it is important to note that regular physical activity is not equivalent to training for sport, although sport is a major context of activity for children and adolescents (R.M. Malina, 2008, 2009a).

Scope

The focus of this paper is the potential of regular physical activity to improve the health status and physical fitness of youth. Two questions, among others, that need attention are the following:

(1) What are the health and fitness benefits of regular physical activity for school-age youth?

(2) What type and amount (frequency, intensity, duration) of activity may be needed to bring about beneficial effects on indicators of health and fitness in youth?

The influence of regular physical activity and specific activity programs on several indicators of health and physical fitness school age youth are subsequently summarized. Indicators considered include (1) two components of body composition - adiposity (fatness) and bone mineral; (2) several markers of cardiovascular health - lipids and lipoproteins, blood pressures, heart rate variability; (3) components of the metabolic syndrome - especially insulin and triglycerides; (4) two indicators of health-related physical fitness - aerobic capacity and muscular strength and endurance; and (5) several behavioral variables potentially related to health status of youth - self-concept, anxiety and depression. Physical activity is not without risk. Injuries are associated with an active lifestyle. Evidence dealing with injury is thus briefly reviewed.

The subsequent discussion is drawn in part from several summaries (W.B. Strong et al., 2005; Physical Activity Guidelines Advisory Committee, 2008; R.M. Malina, 2010). The respective reports include a comprehensive summaries and reference lists. More recent data are also included, especially dealing indicators of cardiovascular health and the metabolic syndrome and complications of obesity in youth. In summarizing the available evidence, comparisons of active and less active youth based on cross-sectional and longitudinal studies are initially considered. Then, the influence of specific activity programs on the health indicators is evaluated.

The Evidence

Adiposity: Indicators of adiposity include skinfold thicknesses, Body Mass Index (BMI) and percentage body fat (% Fat). Results of correlation and regression analyses in youth of mixed weight status (normal weight, overweight, obese) indicate a low to moderate relationship between habitual physical activity and adiposity. Statistics are reasonably consistent across studies considering the mix of methods used to measure/estimate activity; they indicate that most of the variance in adiposity is not explained by PA. Nevertheless, youth who engage in more physical activity, specifically vigorous activity, tend to have less adiposity than those who engage in less activity.

Enhanced activity programs in normal weight youth appear to have a minimal effect on adiposity. The issue of activity volume has not been systematically addressed. It is possible that normal weight youth require a greater activity volume as suggested by several studies of obese youth which used 80 min/day of moderate-to-vigorous physical activity. In contrast to normal weight youth, physical activity interventions with overweight and obese youth result in reductions in overall adiposity and in visceral (abdominal) adiposity. These programs include a variety of activities, largely aerobic, of moderate and vigorous intensity, 3 to 5 times per week, for 30 to 60 minutes. The most consistent favorable effects of activity on adiposity were found in studies that used more direct estimates of body composition, specifically dual X-ray absorptiometry (DEXA) estimates of % Fat and magnetic resonance imaging of visceral adiposity, in contrast to the BMI, skinfolds per se estimates or % Fat predicted from skinfold thicknesses (R.M. Malina et al., 2007).

Skeletal/Bone Health: Evidence from a variety of cross-sectional and longitudinal studies indicates a beneficial effect of regular physical activity on bone mineral content in youth. Most data are derived from pre-pubertal children of both sexes and youth in the early stages of puberty, girls more often than boys. Among post-pubertal youth or those nearing maturity, the influence of physical activity, though generally positive, is more variable. In a longitudinal series of

Canadian youth followed through the adolescent growth spurt, youth who are active during the interval of maximal growth have a greater accrual of bone mineral compared to less active youth (D.A. Bailey et al., 1999). This would suggest an enhanced effect of physical activity on bone mineral accrual during the period of rapid growth in both boys and girls.

Activity interventions aimed at augmenting bone mineral are consistent with observations based on comparisons of active and less active youth. These programs generally met 2 to 3 times per week for moderate-to-high intensity activities, weight bearing activities of a longer duration (45-60 minutes and/or high impact activities over a shorter duration (10 minutes). More recent data based on three-dimensional imaging suggest a positive role of physical activity in enhancing bone strength in youth. Accordingly, changes in bone geometry indicate a substantial increase in bone strength. Bone strength is related to habitual physical activity and short bouts of activity may be as effective as sustained activity in youth (H. MacDonald et al., 2006).

Lipids and Lipoproteins: Cross-sectional and longitudinal studies indicate relatively weak associations between level of physical activity and total cholesterol, HDL-C, LDL-C and triglycerides. The relationships, though weak, are best for physical activity and HDL-C and triglycerides. These observational data are consistent with a variety of intervention studies which show a weak, beneficial influence of moderate-to-vigorous physical activity, 40 minutes per day, 5 days per week over 4 months on HDL-C and triglycerides; on the other hand, such programs have no influence on total cholesterol and LDL-C. Of interest, school-based intervention programs were generally not effective in improving lipid and lipoprotein profiles of youth. Intervention studies vary in duration. It is possible that a more sustained volume of activity may be needed to beneficially influence lipids and lipoproteins. Further, school-based programs may be confounded in part by youth who had relatively normal values of lipids and lipoproteins at the start of the intervention.

Blood Pressures: There is no clear association between physical activity and blood pressures in normotensive youth, i.e., youth with normal blood pressures. However, aerobic training programs have a beneficial effect on the blood pressures of hypertensive youth. The programs ranged in duration from 12 to 32 weeks. Aerobic training programs may also reduce blood pressures in youth with mild essential hypertension. Limited data for resistance (strength) training indicate no effect on blood pressures of hypertensive youth.

Other Indicators of Cardiovascular Health: Physical activity may improve other indicators of cardiovascular health among youth but presently available data are limited though increasing. Data relating physical activity to fibrinogen level and C-reactive protein are weak in youth, while data relating physical activity to endothelial function in are inconclusive. On the other hand, evidence suggests that aerobic training increases resting vagal tone in obese youth evident in beat-to-beat variability in the RR interval of an electrocardiogram. It is called heart rate variability and is a marker of cardiac parasympathetic activity. Implications of this change for the development of cardiovascular disease are uncertain, but low parasympathetic activity is a strong predictor of mortality after myocardial infarct. Among adults, parasympathetic activity is relatively low in the obese, is high in the endurance trained, and increases in response to regular training (B. Gutin et al. 2000).

Metabolic Complications: The clustering of risk factors for cardiovascular disease - low HDL-C, high triglycerides, elevated blood pressures, impaired glucose metabolism, insulin resistance, obesity, and abdominal obesity - is commonly labeled as the metabolic syndrome. The syndrome places individuals at elevated risk for type 2 diabetes and cardiovascular morbidity (S.M. Grundy, 2007). Of relevance to the present discussion, risk factors that define the metabolic syndrome is increasingly documented in youth, specifically obese youth (S. Cook et al., 2003, 2008). In largely non-obese sample of youth, a favorable metabolic profile (lower blood pressures, total cholesterol, triglycerides and glycemia; higher HDL-C; lower skinfolds) is independently associated with high physical activity and low physical inactivity and with high aerobic fitness (P.T. Katzmarzyk et al., 1999). Evidence from the European Youth Heart Study, a multi-center, international, cross-sectional study, shows consistent associations between physical activity (measured via accelerometry) and aerobic fitness (cardiorespiratory fitness, maximal power output on a cycle ergometer), on one hand, and a better metabolic profile, on the other (L.B. Andersen et al., 2006, 2008; S.A. Anderssen et al., 2007; S. Brage et al., 2004; N.S. Rizzo et al., 2007; U. Ekelund et al., 2007). Data from the European Youth Heart Study indicate interactions between physical activity and cardiorespiratory fitness affecting the metabolic profile (S. Brage et al. 2004), stronger relationships between cardiorespiratory fitness and reduced metabolic risk than between physical activity and risk (N.S. Rizzo et al. 2007), and also independent inverse associations between aerobic fitness and metabolic risk and between habitual physical activity and metabolic risk (U. Ekelund et al., 2007). Overall, youth who are regularly active and/or who have good aerobic fitness tend to present a favorable metabolic risk profile. Adiposity is an independent risk factor for metabolic risk - youth who are leaner and with less central adiposity (measured indirectly as waist circumference) tend to present a more favorable metabolic risk profile.

The preceding studies are cross-sectional and demonstrate important associations between physical activity and metabolic risk. What is the influence of physical activity programs on metabolic risk factors individually or clustered? Trends in studies of several individual risk factors were noted above, e.g., adiposity, lipids and lipoproteins and blood pressures.

Increasingly, evidence shows that experimental physical activity programs improve the metabolic risk profile of overweight and obese youth - reduction in adiposity, insulin and triglycerides; improved insulin sensitivity, lipid profile and cardiorespiratory fitness; increased heart rate variability; and reduction in inflammation indicators (B. Gutin et al., 2000; 2008; L.M. Bell et al., 2007; A.L. Carrel et al., 2005; G.P. Nassis et al., 2005). However, the favorable responses to regular activity are lost when obese youth are no longer involved in regular physical activity (A.L. Carrel et al., 2007), i.e., the youth relapse to a lifestyle without or with reduced physical activity. The results highlight the need for physical activity on a regular basis.

Aerobic Fitness: Data from both cross-sectional and longitudinal studies indicate higher levels of aerobic fitness, measured as maximal aerobic power ($\dot{V}O_2$ max) or endurance runs, in active youth than in less active youth. Some longitudinal data suggest an enhanced effect of physical activity during the interval of maximal growth on $\dot{V}O_2$ max (R.L. Mirwald and D.A. Bailey, 1986). In experimental studies of youth 8 years through adolescence, continuous, vigorous physical activity has a favorable effect on maximal aerobic power. Programs generally involved continuous, vigorous activity (e.g., 80% of maximal heart rate) for 3 days per week at 30 to 45 minutes per session. The associated gain in $\dot{V}O_2$ max was about 10% (3-4 ml/kg/min).

Muscular Strength and Endurance: Cross-sectional and longitudinal data are equivocal regarding the association of physical activity with muscular strength and endurance among youth with one exception. Longitudinal observations indicate better upper body muscular strength and endurance (flexed arm hang) in active compared to less active boys (G.P. Beunen et al., 1992). Experimental data show significant gains in muscular strength and endurance in children and adolescents with resistance training programs involving a variety of progressive activities that incorporate reciprocal and large muscle groups. Most programs involved sessions of 30 to 45 minutes duration 2 or 3 days per week with a rest day between sessions. Programs were generally 8 to 12 weeks in duration. Results of resistance programs with youth show some degree of specificity. Larger strength gains are associated with protocols of relatively high resistance and low repetitions, while greater muscular endurance gains are associated with protocols of relatively low resistance and high repetitions. An essential ingredient in the safety of strength training protocols is adult supervision (R.M. Malina, 2006).

Behavioral Health: Self-concept and symptoms of anxiety and depression are common concerns among youth, particularly adolescents. Evidence dealing with physical activity and these concerns in youth is limited from several perspectives. A variety of outcome measures are used which limits comparisons. Sample sizes are small and largely of convenience, and many are limited to adolescents. This may reflect biological and behavioral interactions as youth adjust to or cope with changes and social demands during the transition into and progress through puberty. Studies looking at the potential influence of physical activity are largely associational, although some quasi-experimental data are available. Variable contexts or modes of physical activity are considered, e.g., sport, aerobic and dance separately or in combination. Activity together with cognitive behavioral modification is also considered.

Physical activity is positively associated with measures of global self-concept and two sub-domains, physical self-concept and perceived sport competence. The influence of physical activity on perceived sport competence is generally positive but there is considerable variation that is likely associated with winning (positive) and losing (negative) and the quality of adult supervision and involvement in sport. In contrast, there is no consistent association between physical activity and the appearance, social/emotional and academic domains of self-concept.

Data are less extensive for the relationship between physical activity and symptoms of anxiety and depression and the trends are variable. Overall, sport, aerobic, and aerobic plus other activities have a small positive effect on anxiety and depression symptoms in youth, but physical activity in conjunction with cognitive behavioral modification tends to have a stronger positive effect on anxiety and depression symptoms.

Risk of Injury: Potential for injury is inherent in many physical activities, but information is very limited for school, recreational and free time activities. Data are available for specific sports (R.M. Malina, 2009b), which of course are major forms of recreation and leisure activities. Most information, however, is derived from case series based on convenience samples from hospital emergency departments or sports medicine clinics, accident reports, insurance records, interviews, and retrospective questionnaires. As such, they are of limited utility in estimating injury rates or risk due in part to variable definitions of an injury and lack of exposure statistics. Limited evidence indicates a very low risk of injury associated with physical education programs of moderate-to-vigorous activity, 3 days per week (W.B. Strong et al., 2005). A recent study monitored physical activity (parent-complete diary) and injuries requiring first aid attention over a one year period in 744 children 4-12 years of age (A.B. Spinks et al., 2006). About 79% of 504 recorded injuries occurred in the context of physical activity and of these, about 80% occurred outside of school and about one-third required medical treatment. The estimated injury rate for injuries outside of school hours was 1.7 per 10,000 hours of exposure. Rates of injury were 2.4 and 1.6 per 10,000 hours of exposure in organized and non-organized physical activity, respectively.

Overview

The “business of growing up” through childhood and adolescence places many demands on

the individual and some of these demands are conflicting from the perspective of physical activity. Many of the demands placed upon youth are socially sanctioned forms of physical inactivity, e.g., school, home work, non-school reading, television and video games, extra-curricular classes (tutoring, music, art), and probably others. In addition, motorized transport is highly valued. There is a need for systematic study of physical inactivity or sedentary behaviors in their many forms and contexts. Both inactivity and activity have different meanings and contexts in childhood and adolescence, and they are generally independent of each other. A confounding factor in evaluating the effects of physical activity on youth is individual differences in normal growth and maturation. Many of the variables of interest change with normal growth and maturation and are influenced by individual differences in growth and maturity status, especially timing and tempo of sexual maturation and the adolescent growth spurt. Moreover, several variables of interest (e.g., bone mineral content, aerobic fitness, HDL-C, adipose tissue) have their own growth patterns and some have adolescent spurts which vary in timing and tempo (Malina et al., 2004).

The beneficial effects of physical activity on indicators of health, fitness and behavior appear to differentiate between "healthy" and "unhealthy" youth. Among "healthy" children and adolescents (i.e., normal weight, normotensive blood pressure), the evidence base is strongest for skeletal health, aerobic fitness, and muscular strength and endurance, with relatively small effects on lipids, adiposity and blood pressures. It is possible that a greater volume of activity may be needed to induce greater effects in healthy youth. On the other hand, beneficial effects of systematic physical activity are generally more apparent among "unhealthy" youth - the obese, hypertensive, and those with features of the metabolic syndrome. Among "unhealthy youth," physical activity programs have a beneficial effect on adiposity in the obese, blood pressures in the hypertensive, and insulin, triglycerides and adiposity in obese youth with the metabolic syndrome. Evidence for beneficial effects of physical activity programs in conjunction with cognitive behavioral modification on anxiety and depression is suggestive.

Intervention and experimental studies of the influence of physical activity on indicators of health and fitness are generally focused on the effects of the respective programs. Unfortunately, the studies do not address the issue of the amount of activity that is needed to maintain the beneficial effects of activity programs on the health and fitness indicators in question. In general, beneficial effects of associated with systematic physical activity are lost or markedly reduced when the program stops.

Many indicators of health and fitness, in particular metabolic risk factors are affected by obesity in children and adolescents. A key issue, therefore, is the prevention of unhealthy weight gain in youth, specifically in the context of reducing the risk of overweight/obesity and associated complications. Given the individuality of growth rate and the timing and tempo of growth and maturation during the adolescent growth spurt, it may be difficult to specify "unhealthy weight gain." Limited longitudinal data indicate smaller gains in the BMI in physically active youth (C.A. Berkey et al., 2003). Maintenance of smaller gains in the BMI through physical activity over time may prevent unhealthy weight gain and in turn reduce risk of overweight/obesity. Two longitudinal studies suggest an important role of physical activity in the prevention of excess weight gain in different phases of growth: more active children between 4 and 11 years have less fatness in early adolescence and may also have a later adiposity rebound (L.L. Moore et al., 2003), and an increase in physical activity during adolescence may limit the accrual of fat mass in males though not females (C.A. Mundt et al., 2006).

The majority of intervention and experimental studies used programs of moderate to vigorous physical activity for 30-45 minutes, 3 to 5 days per week. It is likely that a greater amount of activity is necessary to achieve similar beneficial effects in youth under ordinary daily circumstances, which often involve intermittent and unsupervised activities. It was recommended that school age youth in the United States should participate daily in 60 minutes or more of moderate-to-vigorous physical activities that are developmentally appropriate and enjoyable, and involve variety (W.B. Strong et al., 2005).

Most of the experimental protocols used a continuous activity program, with the exception of studies of bone health and muscular strength and endurance. Activities of children, especially young children, however, are primarily intermittent. There is a need for data that examine the effects of high intensity, intermittent activity protocols on indicators of health and aerobic fitness. Further, activity needs vary with age during childhood and adolescence. It is likely that emphasis during childhood should be on general physical activity with an emphasis on movement skills. As children make the transition into puberty and adolescence, their capacity for continuous activities increases and activity can be more prescriptive with emphasis on health and fitness (R.M. Malina, 1991)

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MONITORING OF SPRET EFFECTS ON SENIOR ELEMENTARY SCHOOLBOYS AND SCHOOLGIRLS INVOLVEMENT IN RECREATION

Nemanja-Tibor Stefanović, Dušan Mitić
Faculty of Sport and Physical Education, University of Belgrade, SERBIA
Email: drdusan44@yahoo.com / 15.03.2010 / 20.03.2010

Abstract

Purpose. Development of technology facilitates the production and communication, but at the same time reduces physical activities necessary for pupils in order to ensure them proper growth and development in biological, motor and social terms. The model of sporting-recreational competitions of pupils, SPRET, fosters self-organization and it is based on public records of participating students in those activities that they themselves created.

Methods. In a sample, consisting of 89 boys and 82 girls, SPRET model was experimentally applied for a period 21 day. Each individual participation is marked and additional points are given for successfulness in competitions and contribution to the organization. There is only a team placement that is based on participation of an individual from a particular class. The project object is the degree of pupils' engagement in extracurricular sporting-recreational activities. We monitored the effects of SPRET model application on increase of the volume of extracurricular activities of elementary school pupils during the experimental realization of the project and three months later.

Results. Girls' involvement in recreation raised after the SPRET model application from 17.1% to 31.7% in those female pupils who are regularly engaged in recreation (at least three times a week), and three months after the number of these pupils decreased slightly to 28.0%. Statistically significant difference compared to the initial measurement is $p = 0.00$, the value of $\chi 2 = 24{,}713$ at 8 degrees of freedom. In boys, involvement in recreation raised from 39.3% to 40.4% after the project, i.e., 41.6% three months later, in those pupils who are regularly engaged in recreation. Statistically significant difference is on the level $p = 0.02$, the value of $\chi 2 = 18{,}212$ at 8 degrees of freedom.

Conclusions. After SPRET model application, physical activity of both male and female pupils has permanently raised.

Keywords: SPRET Model, public records, encouraging to physical activity, pupils' involvement, pupils' organization

Introduction

In order to find ways that would make pupils interested in physical activity, we are seriously addressing the idea of sporting-recreational competitions (hereinafter SPRET) in elementary school. SPRET is organized as an extracurricular activity and is based on pupils' self-organization, where it raises awareness of the importance of physical education and the need for constant physical activity. Linking PE instruction to life and work becomes a necessity of modern teaching process. Nowadays, pupils are very burdened with daily school tasks. In school, most of the time they spend sitting, and after the classes they are loaded with plenty of homework, which, again, they do in sitting positions. Additionally, reading and participating in various school clubs again means sitting. Studying, studying and just studying or inactivity, inactivity and just inactivity. However, we do not advocate the thesis that one should not study and be a good student, but we only want to point out the problem and the importance of physical education in classes, especially in form of extracurricular forms of work. A pupil is a "working" human with round the clock duties. Stress due to assessment, checking and writing assignments are additional burden to pupils. Students should rest, rehabilitate, they should be offered to satisfy their needs for motion. Through regular physical education classes it is not possible to affect properly growth and development, in order to improve health and create habits for exercising.

This leads to the necessity of imposing extracurricular forms of work. However, when selecting the, attention should be paid to what students really want, to their interests. The desire and need for socializing, travel, sports and recreational activities dominate in adolescent period (D. Pantic, 1981; B. Bokan, 1985). Hence the need, or better said, the obligation of physical education teachers to design and implement contents through which students will meet their needs and desires, aimed at healthy life where physical activity is part of the culture of living. Primary Education Curriculum stipulates that the third PE class, which is regular and compulsory for all students, is for the students to choose activity, sport which they prefer according to the possibilities offered by particular schools and local community. This class in expanded form should be realized in extracurricular time where students can choose activities for themselves, an activity to participate in, and through which they will be realized. However, school clubs are attended by a small number of students - only the most capable, while others have no place in them.

The period of puberty and adolescence is deemed to be period of great and tumultuous changes in the life of every individual, both in physical and in psychological development and maturation. It is a period when a strong need of self-actualization and self-affirmation emerges in all students. The advocate of humanistic psychology, Abraham Maslow (A.H. Maslow, 1982) puts emphasis on the motive for self-actualization sometimes even before the basic biological motives for survival, such as, for example, hunger. Puberty is a very sensitive period in the life of every human being and should be filled with diverse range of contents through which the student will become aware of his/her values and qualities. Each person is searching for his/her identity which is fully established only when a person experiences himself/herself as a fully separated individual from the others, with specific, unique composition of needs, motivations, value system, style, behavior, and all integrated in a firm and connected system (N. Kapor-Stanulović , 1988, pp. 105).

SPRET Model is one of the ways that enables each student to find the activity for himself/herself, the activity in which he/she can fully distinguish himself/herself.. For, although all students attend PE classes, only few schools organize additional sports activities within the school. Only, the already affirmed athletes - those who are already competing in their clubs – participate in school competitions. However, SPRET model involves all students regardless of gender, age, ability, weight. In our SPRET model students are encouraged to participation and creativity. They choose from the offered range of sports and recreational activities where and how to participate. Scoring system that rewards each initiative and creativity, shall induce students to organize events on their own, which further motivates and educates them, as the organization requires different knowledge and skills that must acquired to make the whole thing successful. The role of PE teachers is reflected in orienting of students in the right direction, helping them to organize and channel their energies towards acquiring new knowledge, skills, and abilities, because success will further motivate them to be active.

Research methods

The main method used in this study is an experiment. We have chosen this method because it is a rational and objective method. The initial measurement was done and then an experimental factor was applied. The final measurement was performed after administration of the experimental factor. The third measurement was performed three months later to determine the durability of the achieved effects. The experiment was done with a single group.

The aim of the research

The aim of this research is to monitor the effects SPRET model on involvement of schoolboys and schoolgirls and monitoring of change of habits in physical activity in after-class time, as well as SPRET's effect on the regular physical education classes.

Research Tasks

The research tasks were:

1. To incite schoolboys and schoolgirls to physical activity, so that physical culture should become part of the culture of living.
2. Nurture the habit of exercising so that it continues to exist for a long period of time, for at least three months after our project in pupils both sexes.

Hypotheses

1. Involvement in physical activities of schoolboys and schoolgirls shall increase in after-class time.
2. Increased involvement of schoolboys and schoolgirls in physical activities during in after-class time shall last for at least three months after the project.

Statistical data processing

Within the descriptive statistical analysis for each of the variables in which the results are expressed in proportional or scale rank, the measures of central tendency (arithmetic mean) will be determined as well as the measures of result dispersion (variance, standard deviation, arithmetic mean). The form of data distribution in these variables will be determined by indicators of skewness and kurtosis curve distribution. The assessment of the degree of data distribution matching in the population from which the samples with normal distribution were extracted shall be determined based on the results of the test set by Kolmogorov and Smirnov.

The main data distribution is displayed in the descriptive statistics with the usual indicators of mean value and dispersion of responses by the standard deviation and variance coefficient. Statistically significant differences in response categories in all three measurements were tested by $\chi 2$.

Data processing was done in the applicative computer statistical program SPSS 12.0 for Windows.

For monitoring the effects of SPRET model in continuous scale of intensity, a comparative statistical method of t-test was used comparing the arithmetic means between the three measurements.

The survey used a questionnaire technique to collect data immediately before, three weeks later, i.e., upon the completion of the experiment and 3 months after the project realization. Five-degree Likert type scale technique was used to range the answers.

Instruments

A questionnaire was used as the basic instrument (Appendix 3), uniform before and after the testing. The questionnaire was used at the territory of Belgrade in the survey which included 506 students in five primary and five secondary schools in December 1988 (D. Mitic, 2001; pp. 163-169). We compared our data with this survey and some other surveys performed in diploma papers. The questionnaire was modified in several items, adapted to our project and it contains 26 cloze type items.

Research results with discussion

Table 1. Involvement of **boys** in recreation in free time

			Involvement in recreation					Total
			1	2	3	4	5	
			Never and I do not care	Never but would like to	Sometimes, when I have time	Yes, at least once a week	Regularly at least three times a week	
Measurement	1	Count	3	12	23	16	35	89
		% initial	3,4%	13,5%	25,8%	18,0%	39,3%	100%
	2	Count	1	1	33	18	36	89
		% final	1,1%	1,1%	37,1%	20,2%	40,4%	100%
	3	Count		3	23	22	37	89
		% after three months	4,5%	3,4%	25,8%	24,7%	41,6%%	100%
Total		Count	8	16	79	56	108	267
		%	3,0%	6,0%	29,6%	21,0%	40,4%	100%

$\chi^2 = 18{,}212$ DF=8 $p = 0.02$

For the questionnaire item number 9 "People in their free time, you of course, are engaged in various activities. How often in your free time do you active go in for some sports or recreation?" (Table 1), there is a statistically significant difference $p = 0.02$, value of $\chi 2 = 18.212$ at 8 degrees of freedom. This indicates to the fact that in the course of the project, the students' involvement in sport and recreation significantly increased.

The number of boys who were engaged recreation in their free time "regularly, at least three times a week" increased after the experiment from 39.3% to 40.4%. In the next three months the number of students increased to 41.6% (Table 1). The boys showed a desire for regular exercise during and after the application of SPRET model.

Table 2. Involvement of **girls** in recreation in free time

			Involvement in recreation					**Total**
			1	2	3	4	5	
			Never and I do not care	Never but would like to	Sometimes, when I have time	Yes, at least once a week	Regularly at least three times a week	
Measurement	**1**	Count	7	10	32	19	14	82
		% initial	8,5%	12,2%	39,0%	23,2%	17,1%	100%
	2	Count	1	3	37	15	26	82
		% final	1,2%	3,7%	45,1%	18,3%	31,7%	100%
	3	Count	1	2	46	10	23	82
		% after three month	1,2%	2,4%	56,1%	12,2%	28,0%	100%
Total		Count	Count	15	115	44	63	246
		%	%	6,1%	46,7%	17,89%	25,6%	100%

$\chi^2 = 24{,}713$ DF=8 p = 0.00

For the questionnaire item number 9 "People in their free time, you of course, are engaged in various activities. How often in your free time do you active go in for some sports or recreation?" (Table 2), there is a statistically significant difference p = 0.00, value of $\chi 2 = 24.713$ at 8 degrees of freedom. This indicates to the fact that in the course of the project, the students' involvement in sport and recreation increased.

The boys showed a desire for regular exercise during and after the application of SPRET model.

The number of girls who were engaged recreation in their free time "regularly, at least three times a week" increased after the experiment from 17.1% to 31.7%. In the next three months the number of students increased to 28.0% (Table 1). The tendency of girls to regularly exercise is clearly evident after the application of SPRET model.

Table 3. Involvement in physical activity of boys in free, after-class time

			Active daily				**Total**
			1	**2**	**3**	**4**	
			15 min.	30 min.	1 hour	More than 1 hour	
Measurement	**1**	Count	3	21	24	41	89
		% initial	3,4%	23,6%	27%	46,1%	100%
	2	Count	0	8	32	49	89
		% final	0%	9%	36%	55,1%	100%
	3	Count	3	13	21	52	89
		% after three month	3,4%	14,6%	23,6%	58,4%	100%
Total		Count	Count	42	77	142	267
		%	%	15,7%	28,8%	53,2%	100%

$\chi^2 = 13{,}029$ DF=6 p = 0.04

For the questionnaire item number 10 "How active are you during the day?" (Table 3), there is a statistically significant difference p = 0.04, value of $\chi 2 = 13.029$ at 6 degrees of freedom. The level of activity, thanks to the incitement and scoring system provided by SPRET model, increased to the fantastic one hour a day. The number of boys who have been active for over an hour a day was constantly growing so at the first measurement it was 46.1%, 55.1% at the second and 58.4% at the third one. Taking into account that the project was done in autumn and the third measurement was in winter season when the possibility of movement, as a rule, is lower than in summer, especially in rural areas, it can be concluded that students satisfied their need to move through physical exercise in a club, sports center, school or at home.

Those boys who were active only 15 minutes a day increased their activity during the project, so that prior to the project there was 3.4% of these students while there was 0% of them after the project, and 2.2 three months after the project. Those who were little active woke up for the duration of the project.

Table 4. Involvement in physical activity of girls in free, after-class time

			Active daily				Total
			1	2	3	4	
			15 min.	30 min.	1 hour	More than 1 hour	
Measurement	1	Count	6	22	37	17	82
		% initial	7,32%	26,83%	45,12%	20,73%	100%
	2	Count	2	25	27	28	82
		% final	2,44%	30,49%	32,93%	34,15%	100%
	3	Count	4	15	29	34	82
		% after three month	4,88%	18,29%	35,37%	41,46%	100%
Total		Count	Count	62	93	79	246
		%	%	25,20%	37,80%	32,11%	100%

$\chi^2 = 12{,}00$ DF=6 p = 0.06

With the girls there were no no statistically significant differences in involvement in physical activity in free, after-class time.

Conclusion

The number of boys who were engaged in recreation in their free time "regularly, at least three times a week" has increased after the experiment from 39.3% to 40.4%. In the next three months the number of students increased to 41.6%, which is a statistically significant difference of p = 0.02, value of $\chi 2 = 18.212$ at 8 degrees of freedom. The number of girls who were engaged in recreation in their spare time "regularly, at least three times a week" increased after the experiment from 17.1% to 31.7%. In the next three months the number of such students dropped to 28.0%, which is a statistically significant difference on the level of p = 0.0, value of $\chi 2 = 24.713$ at 8 degrees of freedom. The tendency of students to regularly exercise is clearly noted after application of SPRET model.

The number of boys who have been active for over an hour a day has constantly been growing so at the first measurement was 46.1%, 55.1% at the second and 58.4% at the third, which is a statistically significant difference of p = 0.04, value of $\chi 2 = 13.029$ at 6 degrees of freedom.

This confirms the first and second hypothesis "It will increase the involvement of students in physical activity in extracurricular time" and "Increased engagement of students in physical activities in after class time lasts for at least another three months after the project.

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STUDY ON THE MANIFESTATION OF CREATIVE ATTITUDES IN PHYSICAL EDUCATION STUDENTS

Raţă Gloria, **Raţă Bogdan Constantin**, **Raţă Marinela, Mareş Gabriel**
„Vasile Alecsandri" University Of Bacău, Faculty Of Movement, Sport And Health Sciences, ROMANIA
Email: gloria_rata50@hotmail.com / 27.02.2010 / 05.03.2010

Abstract
Objective: I. Cerghit (2006, p.343) highlights that the fundamental acquisitions in the pedagogical process lead to „easiness of thinking, dexterity and practical skills; attitude and interest" and that the "behavior patterns are achieved through practice and exercise"; therefore we initiated a study on the creative attitudes of students in order to perform a formative education activity. Subscribing to the idea that "the approach of the compulsory contents and the appropriate assessment system… can lead to increased interest and motivation for the practice of physical exercises" (G. Raţă and Gh. Raţă, 2008 p. 142), and that physical education is a creative activity, we start from the hypothesis that students in physical education have a score above half of the reference value in all sixteen creative attitudes.
Method: The study involved *twenty subjects* (male and female students) and the *method* consists of administration of the *questionnaire of creative attitudes* adapted by M. Roco (2001, pp.211-214). The survey is made up of fifty assertions which measure sixteen creative attitudes: Energy (En), Concentration (Cn), Orientation toward novelty (On), Argumentation of ideas (Ai), Independence (I), Nonconformity (N), Self-confidence (Sc), Moral values (Vm), Orientation toward the distant future (Of), Finalization (F), Risk (R), Preference and attraction to difficult problems (P), Diversity of interests (Di), Spiritual values (Vs), Practical Values (Vp), Lie scale (L).
Discussions and Conclusion: *The results* underline that four out of twenty students get a percentage under 50 percent, whereas the other sixteen have a percentage over 60 percent for all sixteen creative attitudes, a fact which certifies that they present the attitudes required for their professional training. The lowest average is registered for the spiritual values (9.40), and the highest average value for the lie scale (16.55). *The conclusions* point out that students in physical education get scores above the average reference value (7.50) in all sixteen creative attitudes, thus the hypothesis is confirmed and it is certified that the attitude background for the professional training exists. The maximum value ranges from 12 to 15 points, close to the maximum value of the reference value, and this fact demonstrates that some of these students have a good potential to become creative educators.
Key words: attitude, creativity, training, professional.

Introduction

Taking into account the current situation, the physical education and sports (an activity of national interest) must be approached so that to offer children's participation in attractive activities other than those promoted by the consuming society: *drugs*, *smoking*, *commercial sex*, *violence*, *alcohol*, *sedentary life*, *excessive TV-watching and internet navigation*, etc. To consider the physical education class as the compulsory class attended by a child only for performing movements but without taking into account the acquisition of certain operational objectives and without using various and attractive methods and techniques can determine the children to ignore the physical exercises or the participation in sports activities and consequently the truancy and the fictitious medical certificate are indirectly encouraged.

The assimilation of knowledge and of motor skills, the training of verbal and motor skills are achieved through practice and are based on TRAINER's indications, and the creative ability is expressed in the way in which an individual acts under conditions of permanent changing of the subject-object relationships. Nowadays, the creative ability of the teaching staff is one of the conditions for an attractive and effective education process. The instructive-educative activities in the primary and secondary education are carried out by the teaching staff trained in the higher education system. This staff must be trained so that the classes/lessons to be focused not only on reaching the pedagogic objectives in a mechanical manner but rather on stimulating children's interest in sports activities that bring joy and health.

I. Cerghit (2006, p. 243) emphasizes the importance of practice, of applying the acquired knowledge and of professional training, as well. He considers that the essential acquisitions within the teaching process lead to:

- ✓ " easiness of thinking which is developed through repeated exercise of solving problems;
- ✓ dexterity and practical skills which are achieved through exercise/practice;
- ✓ attitude which is trained by approaching a phenomenon from different points of view;
- ✓ interest which can be cultivated through the successful cognitive experiences with an incentive effect, etc. In all these situations, the behavior patterns are acquired exclusively through practice and exercise".

As far as the creative attitude is concerned, M. Roco has adapted a questionnaire of J.M. Jaspard, University of Louvain-la-Neuve, Belgium. The Questionnaire of Creative Attitudes (published in *Creativitate şi inteligenţă emoţională,* 2001, pp.211-214) consist of 50 assertions that assess sixteen specific attitudes toward creativity. This questionnaire helps the teaching staff to understand their students and by

means of well chosen modalities to educate their creative attitudes, developing students' new modality of thinking and creative management of situations.

In order to perform an effective didactic process, the major condition is to know the human resources available for the training activity but "combining the acquisition of compulsory contents with an appropriate assessment system… can lead to an increased interest and motivation for physical exercise practice" (G. Rață and Gh. Rață, 2008, p.142). The student must be both the object and the subject of the training and education process and of his own person, but the student must be equipped with the appropriate means and methods for both training and assessment and research.

Materials and methods

The professional training is a complex process which involves the assessment of the abilities of individuals involved within the education process. This knowledge of the potential skills and attitude is achieved through test administration which assesses the various skills and attitudes that can influence the human personality development.

The hypothesis of this observational study states that the students in physical education have a score above the average reference value for all sixteen creative skills.

In order to establish a good assessment of students' attitudes, the research used the Questionnaire of Creative Attitudes adapted by Mihaela Roco after J.M. Jaspard (University Louvain-la-Neuve, Belgium). The answer rating scale is as follows: "completely false" = 1 point; "false" = 2 points; "relatively false" = 3 points; "true" = 4 points; "very true" = 5 points. The items of the lie scale can totalize 25 points while the other 15 assertions cannot exceed 15 points. Comparing to a maximum value of 15 points, the reference value of 7.5 points can be considered the average value, and can be the starting basis in the professional training process of the future teacher.

The present study involved 20 subjects, all of them 2nd year students (bachelor's degree level) at the specializations: Physical and Sports Education and Sport and Motor Performance at the Faculty of Movement, Sports and Health Sciences of Bacau.

The period of research: 5-15 December 2009.

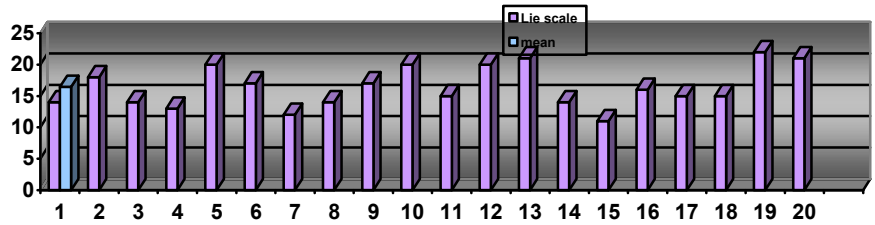
The following methods were used in carrying out the research: bibliographical study, survey method, statistical-mathematical method and graph method.

Results of research

In order to establish the value of creative attitudes in physical education and sports students, there were analyzed the results included in Table no.1 and depicted in Graphs no.1-15 following the analysis of the questionnaire of creative attitudes.

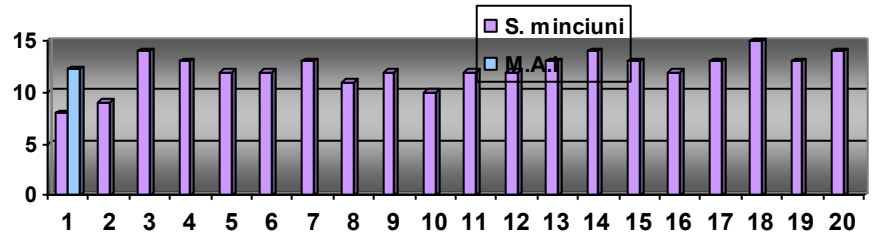
The creative attitudes influence the professional training of the future teachers therefore we tried to analyze students' answers. The study pointed out some individual aspects that concern the skills and attitudes, and some general aspects related to the arithmetic mean, maximum value, minimum value, standard deviation and percentage.

Lie scale (L), graph no.1, shows an average value of 16.45 out of maximum 25 points; the other values ranged from 11 to 21. This fact underlines that students aged 19-21 are not enough mature, they often try to give rather conventional answers, or answers in correlation with the social desirability but in discrepancy with the elements related to the declarative component of their answers.



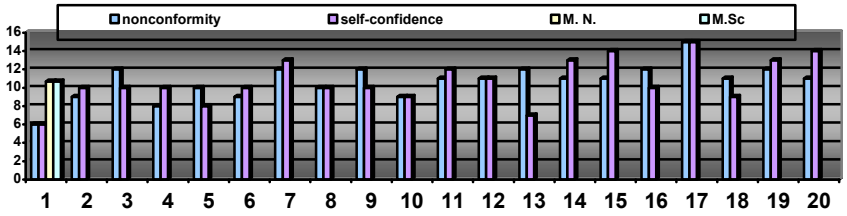
Graph no.1. Results for lie scale

Argumentation of ideas (Ai) and the finalization (F) have both an average value of 12.25 out of maximum 15 points, with individual values ranged from 15 to 8; this emphasizes students' ability to argue, their interest in giving a coherent argumentation of opinions and to finalize activities, a fact that underlines responsibility.



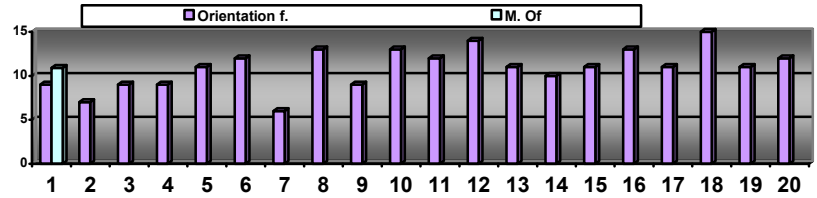
Graph no.2. Results for argumentation of ideas and finalization

Nonconformity (N) and ***self-confidence*** (Sc) have an average of 10.70, with individual values ranged from 15 to 6 points. These values show a predisposition toward discontent, but toward affirmation and work as well.



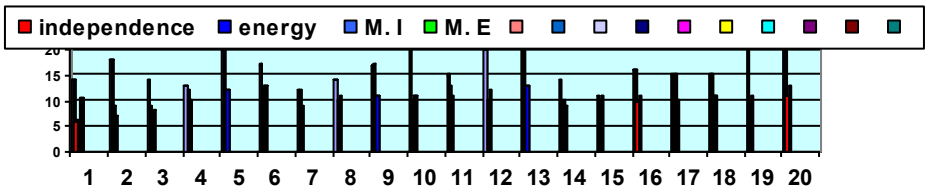
Graph no. 3. Results for nonconformity and self-confidence

Orientation toward the distant future (Of) has an average of 10.90 points and individual values between 15 and 6 points. There are six values under 10 points and fourteen above 10 points, a fact which demonstrate students' concern for the future.



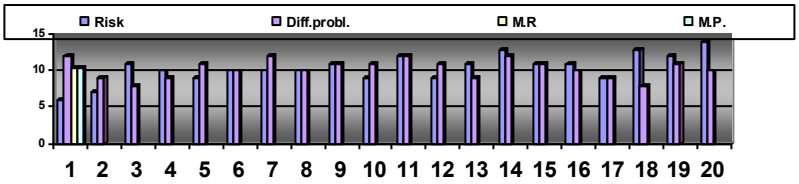
Graph no.4. Results for *Orientation toward the distant future*

Independence (I) and ***energy*** (En) have averages of 10.55 points and 10.50 points respectively, with individual values between 15 and 6 points and 13 and 6 points respectively. These values show that the group has both energy and independence. Only 5 students have results less than 10 points.



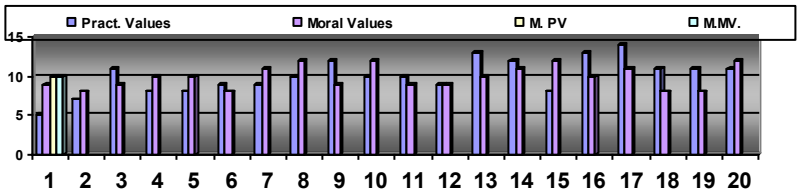
Graph no.5. Results for independence and energy

Risk (R) and ***preference and attraction to difficult problems*** (P) have averages of 10.40 and 10.30 points, individuals values ranged from 14 to 6 and from 12 to 8, respectively. This means that students have the tendency to risk and prefer to deal with difficult problems, an aspect which is a good one.



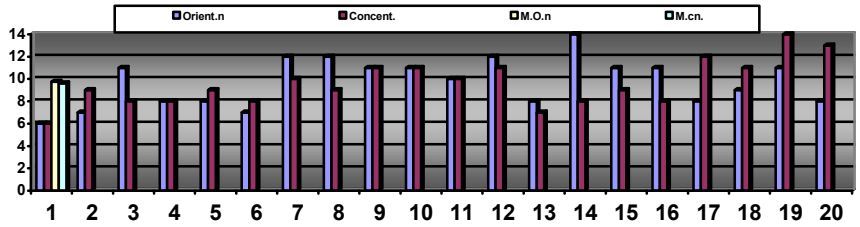
Graph no. 6. Results for risk and preference and attraction to difficult problems

Practical values (Vp) and ***moral values*** (Vm) have averages of 10.05 and 9.90, respectively, and individual values between 14 and 5 points and between 12 and 8 points respectively. The student group has a tendency toward practice and morality.



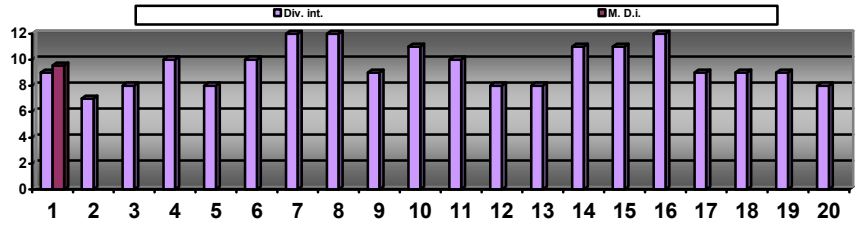
Graph no. 7. Results for practical values and moral values

Orientation toward novelty (On) and ***concentration*** (Cn) have average values of 9.75 and 9.6 points, respectively, with individual values ranged from 14 to 6 points. Even if there are no values above 10 points which can prove the orientation toward novelty and concentration, there are no clues for the contrary.



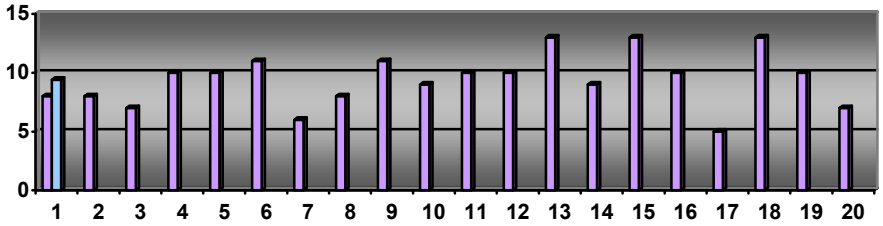
Graph no.8. Results for orientation toward novelty and concentration

Diversity of interests (Di) has an average of 9.55 points and individual values between 12 and 7 points, which demonstrates poor concern for various interests.



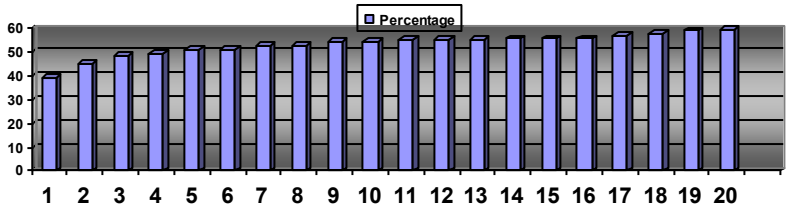
Graph no. 9. Results for diversity of interests

Spiritual values (Vs) present the lowest average value 9.40 points out of maximum 15 points, with individual values ranged from 5 to 13 points. This result emphasizes some lacks in education at the secondary school level, lacks that can be observed during the didactic process as well.



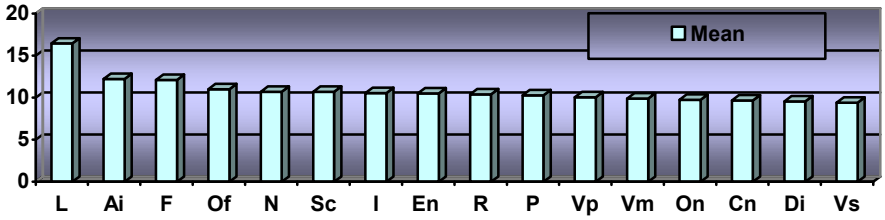
Graph no.10. Results for spiritual values

The ***percentage*** was computed in order to evaluate to what extent (%) the maximum of creative attitudes is present in each subject included within this research. Four out of twenty students have a percentage under 50 percent of the maximum percentage, the other sixteen having percentages over 60 percent; therefore they have the requested attitudes for their professional training.



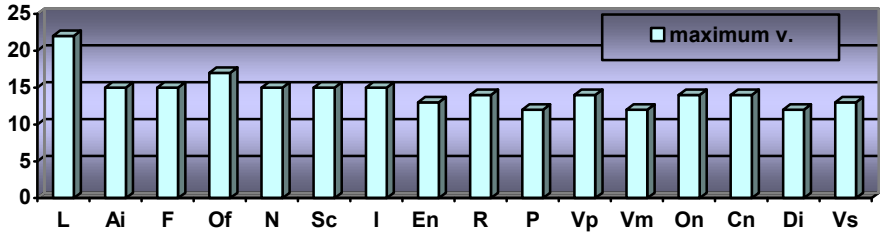
Graph no.11. Results for the total percentage in creative attitudes

Analyzing the data of Table no.1 and Graph no.12, the arithmetic means of the creative attitudes are decreasingly ordered: lie scale (L) 16.45, argumentation of ideas (Ai) and finalization (F) 12.25, orientation toward the distant future (Of) 10.90, nonconformity (N) and self-confidence 10.7, independence (I) 10.55, energy (En) 10.50, risk (R) 10.4, preference and attraction to difficult problems (P) 10.3, practical values (Vp) 10.05, moral values (Vm) 9.9, orientation toward novelty (On) 9.75, concentration (Cn) 9.60, and spiritual values (Vs) 9.4 points. There are 17 results out of 320 results under the reference value, a fact that indicates that, at the moment, some students do not have the attitudes which can help them in the professional training and these attitudes must be stimulated and encouraged.



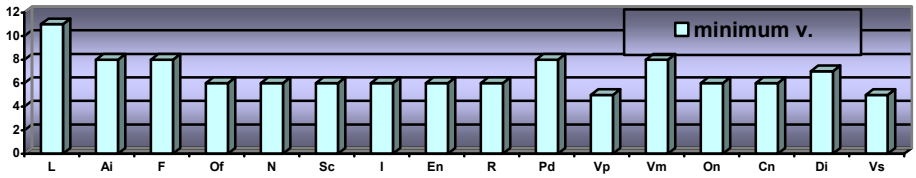
Graph no.12. Arithmetic means of creative attitudes

As far as the ***maximum value*** (graph no.13) is concerned, the results of all twenty students ranged from 22 to 12 which demonstrate that some of them have creative attitudes that may help them throughout the professional training process.



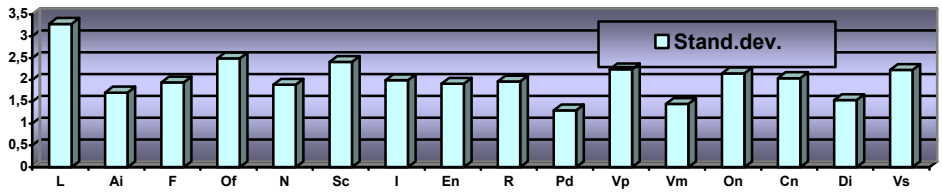
Graph no.13. Maximum results in creative attitudes

The ***minimum value*** (graph no.14) has results between 11 and 5; 11 out of 16 creative attitudes have results under the half of the reference value.



Graph no.14. Minimum results in creative attitudes

The ***standard deviation*** (graph no.15), according to the data of Table no.1, has values between 3.28 and 1.45, values considered to be high, and indicating a low level in group homogeneity, a normal aspect.



Graph no.15. Results for standard deviation

Conclusions:

The results presented in Table 1 and Graphs 1-15 point out the following aspects related to the creative attitudes of the students in physical education:

- ✓ the hypothesis which states that students in physical education have a score within the upper half of the reference value in all sixteen attitudes has been confirmed;
- ✓ all the creative attitudes have an average value which ranges from 16.45 to 9.40 points, above the half of the reference value (7.50), a fact that demonstrates that the attitudinal background for the professional training exists;
- ✓ the maximum value is ranged from 12 to 15 points, close to the maximum of the reference value, a fact which demonstrates that some of the students have real potential to become creative teachers;
- ✓ the minimum value has results between 11 and 5 points; 17 results out of 320 results in all sixteen attitudes are under half of the reference value (a small percentage);
- ✓ there is a problem concerning the results of the lie scale (L) which has a very high arithmetic mean (16.45) compared to the maximum value (25 points);
- ✓ the highest average values are related to the argumentation of ideas and to the finalization of activities which both are representative for a successful teaching career.

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ROCO, M., 2001, *Creativitate şi inteligenţă emoţională,* Polirom Publishing House, Iaşi.

Table no.1 – Results of the questionnaire of creative attitudes (adapted by M. Roco, 2001) in physical education students

Identification notation			The 16 creative attitudes																Total points	Percentage %
No.	Initial	Age	En	Cn	On	Ai	I	N	Sc	Vm	Of	F	R	P	Di	Vs	Vp	L		
1	B. M.	20	6	6	6	8	6	6	6	9	9	11	6	12	9	8	5	14	127	39,07
2	C.V.	19	7	9	7	9	9	9	10	8	7	15	7	9	7	8	7	18	146	44,92
3	M.A	20	8	8	11	14	9	12	10	9	9	8	11	8	8	7	11	14	157	48,30
4	A.A.	20	10	8	8	13	12	8	10	10	9	13	10	9	10	10	8	13	161	49,53
5	N.M	21	12	9	8	12	9	10	8	10	11	12	9	11	8	10	8	20	167	51,38
6	R.V.	20	13	8	7	12	11	9	10	8	12	10	10	10	10	11	9	17	167	51,38
7	C.A.	20	9	10	12	13	12	12	13	11	6	12	10	12	12	6	9	12	171	52,61
8	R.R	20	11	9	12	11	10	10	10	12	13	10	10	10	12	8	10	14	172	52,92
9	M.I.	20	11	11	11	12	9	12	10	9	9	13	11	11	9	11	12	17	178	54,76
10	M.O	20	11	11	11	10	10	9	9	12	13	12	9	11	11	9	10	20	178	54,76
11	ZC	21	11	10	10	12	13	11	12	9	12	11	12	12	10	10	10	15	180	55,38
12	U.I.	20	12	11	12	12	10	11	11	9	14	11	9	11	8	10	9	20	180	55,38
13	R.A.	21	13	7	8	13	11	12	7	10	11	13	11	9	8	13	13	21	180	55,38
14	I.S.	20	9	8	14	14	10	11	13	11	10	10	13	12	11	9	12	14	181	55,69
15	C.A.	20	11	9	11	13	10	11	14	12	11	14	11	11	11	13	8	11	181	55,69
16	E.A	20	11	8	11	12	10	12	10	10	13	12	11	10	12	10	13	16	181	55,69
17	P.B.	20	10	12	8	13	15	15	15	11	11	14	9	9	9	5	14	15	185	56,92
18	P.D.	21	11	11	9	15	14	11	9	8	15	15	13	8	9	13	11	15	189	58,16
19	P.I.	20	11	14	11	13	10	12	13	8	11	14	12	11	9	10	11	22	192	59,07
20	B.V.	21	13	13	8	14	11	11	14	12	12	15	14	10	8	7	11	21	194	59,69
Arithmetic mean			10,5	9,6	9,75	2,25	),55	10,7	10,7	9,9	10,9	12,2	10,4	10,3	9,55	9,4	0,05	16,4		
Standard deviation			1,91	2,04	2,15	1,71	1,99	1,89	2,41	1,45	2,27	1,94	1,96	1,30	1,54	2,23	2,24	3,28		
Maximum value			13	14	14	15	15	15	15	12	15	15	14	12	12	13	14	22		
Minimum value			6	6	6	8	6	6	6	8	6	8	6	8	7	5	5	11		

Legend: Energy (En), Concentration (Cn), Orientation toward novelty (On), Argumentation of ideas (Ai), Independence (I), Nonconformity (N), Self-confidence (Sc), Moral values (Vm), Orientation toward the distant future (Of), Finalization (F), Risk (R), Preference and attraction to difficult problems (P), Diversity of interests (Di), Spiritual values (Vs), Practical Values (Vp), Lie scale (L).

THE INVESTIGATION SOMATOTYPE PROFILES OF UNIVERSITY STUDENTS

Nazmi Saritaş[1] Irfan Özkarafaki[2] Osman Pepe[1] Serdar Büyükipekçi[1] Bekir Çoksevim[1]
[1]Physical Education and Sports College of Erciyes University/ Kayseri, TURKEY
[2]Kızılırmak *Anatolian* High *School* Physical Education Teacher/ Kırşehir, TURKEY
Email: nsaritas@erciyes.edu.tr / 08.03.2010 / 19.03.2010

Abstract

Objective. In this study, it was aimed to investigate somatotypes of Erciyes University students which were studying in different colleges and faculties.

Method. At this study, 405 men and 282 women students of Erciyes University, aged between 20-25 were joined voluntarily. Volunteers'' height, body weight, thickness of skin which are necessary for determining somatotypes, the environment and diameter parameters were measured. After all data was collected, all values were compared according to gender and their higher education. One Way ANOVA test was performed for determining the differences between students. Heath-Carter method was performed for determining somatotype profiles of Study grouped. Significance level was accepted as 0.05.

Result. In the study, while, body mass index parameter wasn't found significant between male students, it was found significant between female students according to faculties ($p<0.01$). Endomorph, mesomorph and ectomorph values were found significant between female students of Physical Education and Sport School and the other faculties

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($p<0.05$). While endomorph and mesomorph parameters were found significant between male students of Physical Education and Sport School and the other faculties ($p<0.05$), meaningful difference wasn't found echtomophy parameter ($p>0.05$)

Conclusion. Because of students which were studying at Physical Education and Sport School were being more active than other faculties according to their curriculum, continuing sportive activities and sporting facilities had a positive effect on consisting of somatotype of University Students were observed.

Key words: Anthropometry, Somatotype, Body Mass Index, University students.

Introduction

The somatotype is a description composed by the individual's physique, and it is defined by a set of components. There are three main somatotypes: endomorph; characterized by a rounded body shape mesomorph; characterized by muscular and stocky physique of medium height, ectomorph; characterized by a tall, thin body (J.E.L Carter, T.A. Ackland, D.A. Kerr 2005, C.A. Fett, W.R. Fett, S.R. Oyama, 2006., S.P. Singh, 2007)

Individuals usually have elements of each type, and their composite somatotype is described in a three-figure rating system. In one system (the Heath-Carter somatotype system) the ratings are based on a number of factors, such as Skinfold measurements, age, height, and weight; (D.M. Hopper, 1997., İ. Gahhar and S.L. Malik, 2002) in another system the classification of body types into three basic types: endomorphy (roundness), mesomorphy (muscularity), and ectomorphy (linearity). Sheldon based his classification on thousands of photographs of naked individuals taken from three different perspectives. From these photographs, measurements were taken and each individual ascribed a three-number classification. Each number has a value from one to seven designating the amount each component contributes to the individual's physique: one represents the least contribution and seven the most.

The first number represents the amount of endomorphy, the second number the amount of mesomorphy, and the third number the amount of ectomorphy. Thus, 7–1–1, represents extreme endomorphy; 1–7–1, extreme mesomorphy; and 1–1–7, extreme ectomorphy (S.P. Singh, 2007).

At this study about university students, is important for evaluation effects of students' life styles on their body types and suggesting exercise programmers according to them. Also, this study is very important because of over weight and obesity's being one of the most important healthy problems of the world and for informing about somototypes of our youth of society

Method

This study was done on 20-25 aged healty 405 male and 282 female students which were studying at the different departments of Erciyes University and, also lived in female and male dormitories of General Directorate of Credit and Dormitories Agency. Informed consent was obtained from all subjects before the study. The study protocol and the procedures were approved by the local ethical committee. The study was conducted in accordance with the Declaration of Helsinki or local laws depending on whichever afforded greater protection to the subjects.

Codes of Faculty or College

Physical Education and Sports College (F1)**,** Faculty of Arts And Sciences (F2), Faculty of Engineering (F3), The Faculty of Economics and Administrative Sciences (F4)**,** The Faculty of Education (F5)**,** Faculty of Medicine (F6) as given.

Somatoytpe Measurement and Calculation

The anthropometrical measurements were taken by the same researcher. Morphological conformation was determined by utilizing the Heath-Carter Anthropometric Somatotype Rating Method. The following 10 body measurements were obtained for each subject employing the method as described in (J.E.L. Carter and B.H. Heath., 1990, J.E.L. Carter, 2002). 1. Height (stature), 2. Body weight, 3. Bicondylar humerus, 4. Bicondylar femur, 5. Upper arm circumference, 6. Calf circumference, 7. Skinfold at triceps, 8. Skinfold at Subscapula, 9. Skinfold at supraspinale and 10. Skinfold at calf. Stature was measured to the nearest 1 mm with an anthropometry, body weight with minimal clothing was recorded to the nearest 0.05 kg employing a weighing scale, and skinfolds were obtained using a Holtain caliper with a constant pressure of 10 g/mm. Outlier subjects in each group with a measurement value greater than 3 standard deviations (SD) from the mean were deleted. After the mean values and Standard deviations were obtained for the final data set, the somatotype components of the individual subjects were calculated according to the Heath–Carter method, using the following equations (J.E.L. Carter and B.H. Heath., 1990, J.E.L. Carter, 2002).

Somatotype component scores were obtained with calculations which can produce an exact decimal rating based on the measurements provided:

Endomorphy = $-0.7182 + 0.1415(X) - 0.00068(X^2) + 0.0000014(X^3)$

Where X = triceps skinfold + subscapular skinfold+ supraspinale skinfold

Mesomorphy = [(0.858 × humerus breadth) + (0.601 × femur breadth) + (0.188 × corrected arm girth) + (0.161 × corrected calf girth)] − (height × 0.131) + 4.50

Ectomorphy = HWR × 0.732 − 28.58 (if HWR ≥ 40.75),

Ectomorphy = HWR × 0.463 − 17.63 (if 40.75 > HWR> 38.25),

Ectomorphy = 0.1 (if 38.25 ≥ HWR).

HWR is height/ (cube root of weight) (J.E.L Carter and B.H.Heath., 1990, J.E.L Carter 2002).
Body Mass Index (BMI) was calculated as weight (kg)/ (height m)^2 according to standards recommended by The World Health Organization (WHO, 1987).

Statistical Analysis

In this study, the data obtained to evaluate the statistical package program SPSS 13.0 was used. All Results are given as mean±standard error of mean (SEM) (X±Sx) Differences between groups was investigated with the use of ANOVA followed by post hoc testing (Tukey's honestly significant difference, Tukey HSD). The level of significance was set at $p<0.05$.

Results

Meaningful differences were found at the age parameter according to comparison of male students studying in different faculties and colleges of our university

These differences were; between F1-F6 and F2-F4 at the level of ($p<0.001$), between F3-F4 at the level of ($p<0.01$), between F1-F3 and F2-F3 at the level of ($p<0.05$) "F6 < F3< F5< F1< F2< F4".

Meaningful difference weren't found between their height and body mass index ($p>0.05$). Body weights of male students were found significant. According to this between F1-F3 and F1-F6 at the level of ($p<0.05$), between F1-F2 at the level of ($p<0.01$). It was determined as "F1<F4<F5<F3< F6<F2" (Table 1).

At this study, meaningful differences weren't found when age and body weight average compared according to their faculties and colleges ($p>0.05$).

In the height average, meaningful difference was found between F1-F2 ($p<0.05$). No meaningful differences were found when the other schools compared each other ($p>0.05$). It was determined as "F2< F3< F6< F5< F4 < F1".

According to statitistically comparison of female students' body mass index values between faculties and colleges; meaningful differences were found between F1-F2 at the level of ($p<0.01$) and between F1-F6 at the level of ($p<0.05$). No meaningful differences were found when the other schools compared each other ($p>0.05$). It was determined as "F1< F3< F4 < F5< F6< F2" (Table 2).

According to statitistically comparison of male students' endomorphy values between faculties and colleges; while meaningful differences were found between F1-F2 and F1-F3 at the level of ($p<0.01$), and between F1-F6 at the level of ($p<0.01$), no meaningful differences were found between F1-F4 and F1-F5. It was determined as "F1< F4 < F5< F6< F3< F2".

According to statitistically comparison of male students' mesomorphy values between faculties and colleges; while meaningful differences were found between F1-F3 at the level of ($p<0.05$), no meaningful difference were found when other schools were compared each other ($p>0.05$). It was as "F3< F6< F2< F4 < F5< F1". According to statitistically comparison of male students' echtomorphy values between faculties and colleges; meaningful differences weren't found ($p>0.05$) (Table 3).

According to statitistically comparison of female students' endomorphy values between faculties and colleges; meaningful differences were found between F1-F2, F1-F3, F1-F4, F1-F5 and F1-F6 at the level of ($p<0.001$). No meaningful differences were found when the other schools compared each other ($p>0.05$). It was determined as "F1< F4 < F5< F3< F2<F6"

According to statitistically comparison of female students' mesomorphy values between faculties and colleges; meaningful differences weren't found ($p>0.05$). It was determined as "F3< F4 < F5< F6< F2< F1" According to statitistically comparison of female students' echtomorphy values between faculties and colleges; meaningful differences were found between F1-F2 at the level of ($p<0.001$), and between F1-F6 at the level of ($p<0.01$). No meaningful differences were found when the other schools compared each other ($p>0.05$). It was determined as "F2< F6< F5< F3< F4 < F1" (Table 4).

Discussion and Conclusion

In this study, it was aimed to investigate somatotypes of Erciyes University students which were studying in different colleges and faculties.

In this study, minimum age average was seen students of F6, maximum age average was seen students of F4. Meaningful differences were found comparing faculties and colleges each other. Also, meaningful differences were not found at the female student's age parameter

The reason of finding this meaningful difference of age parameter of male students was thought that measured students lived in the same block of dormitory, were in different age and classroom groups. Meaningful differences were not found at the height average of male students according to comparison between colleges and faculties.

Only, it was found statistically meaningful difference between F1 and F2's female students according to age average. Underlying reason of that was thought that there were active volleyball and basketball players in F1's students and one of the ability identification criteria of these sports were being length. It was found meaningful difference between F1 and some other faculties according to body weight average. The reason of it was thought that F1's student had an active life so, they had a lower body fat percent

While the lowest and the highest body weight average of female was found at F1 students and F6 and F2 students respectively, meaningful differences were not found between body weight averages of female students. R.W. Boyce, E.L. Boone, B.W. Cioci (2008) was reported that obesity was increased because of not to doing exercise, also losing weight was related with exercise

N.M. Mirza, K. Kadow, M. Palmer, (2004) was observed that overweight had a relationship with high body fat and not to doing exercise. Studies which were done, were showed that exercising and living an active life had a positive effect on body weight

For population studies the Body Mass Index (BMI) can be used as a surrogate measure for body fatness (M. Deurenberg-Yap, G. Schmidt, W.A. Staveren, 2000). An important aspect of health related to nutritional status is body composition (C. Gamez, M.D. Ruiz-Lopez, R. Artacho, 1998).

At this study, it was seen that the lowest and the highest BMI average were F1 and F2 respectively but it was not found a meaningful difference at this parameter. While the lowest BMI average values of female students were found F1, the highest values were found F2 and F5 respectively. Meaningful differences were found between F1, F2 and F5.

H. Kaya and O. Özçelik (2009) was not found meaningful difference at the BMI parameter of different aged female students, they were found meaningful difference at the BMI parameter of different aged male students, Results of (G.. Sinirkavak, U. Dal, Ö. Çetinkaya, 2004)'s study were lower than our study, the reason of that was thought that volunteers in their study were active elite athletes. In this study most of the volunteers were not physically active people

D. Sevimli (2008) was reported that BMI values of individuals which were joined physical activities were lower than sedanteries and regular physical activities had a positive effect on individuals' BMI. A. Photiou et al. (2008) were studied on Hungary people and they reported that Hungarians were living a sedentary life, it had a negative effect on their body position and BMI. All of these studies were showed that physical activity had a positive effect on BMI.

It was known that as sport was needed for a healthy lifestyle, also sport branches had effects on somatotype, sport branches were chosen according to somatotypes. If we thought that phenotypes was under intensive effect of genetic and environmental factors, it was occurred how much sportive activities were important. That's why, there were somatotype differences between athletes and sedanteries, also between athletes according to sport types (A. Kamanli, R. Özmerdivenli, K. Karacabey, 2003).

Endomorphy

At this study, it was compared somatotype profiles of male and female students according to their faculties and colleges. While minimum endomorphy component average of male students was seen at F1, maximum endomorphy component average was seen F2, F3 and F5 respectively. It was found meaningful difference between F1 and F2, F3 and F5. Minimum endomorphy component average of female students was seen at F1. Meaningful difference was found at endomorphy component between F1 and all other faculties. Endomorphy component was described as body fatness.

This result was because of F1 students being less body fat values. N. Gupta, G. Balasekaran, S. Jalnapurkar, (2009) was found that endomorphy values of female university students were high. M.J. Munoz-Cachon, I. Salces, M. Arroya, (2007) were also found that endomorphy values of female university students were high in Spain.

A. Kamanli, R. Özmerdivenli, K. Karacabey, (2003) were expressed that while physically active students' endomorphy component levels were decreasing, inactive students' endomorphy component levels were increasing. In our study, finding meaningful differences between F1 male students and some other faculties, also F1 female students and all other faculties were showed that female university students had higher body fat values.

Mesomorphy

When mesomorphy values of male students were compared, the highest value was found at F1 students, the lowest value was found at F3 students. While mesomorphy component values were found meaningful between F1 and F3, meaningful differences weren't found between F1 and other faculties.

While the highest mesomorph value of female students was found at F1 students, meaningful differences weren't found F1 and other faculties. A. Kamanlı, R. Özmerdivenli, K. Karacabey, (2003) were expressed that while physically active students' mesomorphy values were high, but when they were compared with inactive students, meaningful difference was not found.

M.J. Munoz-Cachon, I. Salces, M. Arroya, (2007) were determined that highest values of Spanish male university were found as Mesomorphy.

Mesomorphy component was described as muscularity. Underlying reason of mesomorphy component values of F1 students were high, due to being more sportsmen in F1 students.

Ectomorphy

Meaningful difference was not found between male students at the echtomorphy parameter. When female students' echtomorphy components were compared the highest value was found at F1 students and the lowest values were found for F2 and F5 students. Meaningful difference was found between F1 and F2 and F5at the echtomorphy values of female students. Ectomorphy component was described as thinness and length of body. Because of F1 female students were being longer than female students of other faculties, this component values were found high. When all components were compared in all faculties except F1, Meaningful difference was not found

A. Kamanlı, R. Özmerdivenli, K. Karacabey, (2003) were reported that it was not found meaningful difference at the echtomorphy values of sedanteries and sportsmen. This study's results were similar like our study. Y. Bektaş, B. Koca Özer, T. Gültekin, (2007) were studied on female basketball players of different categories, were found somatotypes of young players as 4.1 for endomorphy, 3.28 for mesomorphy, 5.35 for echtomorphy and somatotypes of adults players as 4,28 for endomorphy, 4,03 for mesomorphy, 2,22 for echtomorphy. They were founded that mesomorphy and mesomorphy values increased according to age increased. In our study, our findings of female students'

mesomorphy values at the same age group were showed that sport had an effect on somatotype.

According to Heath-Carter Scale, somatotype component averages of male students studied in

Erciyes university were found Endo-mesomorphy as 3,43-5,01-2,6, somatotype component averages of female students were found mesomorphic endomorphy as 5,37-4,25-2,40. M.J. Munoz-Cachon, I. Salces, M. Arroya, (2007) were also found similar findings with our study. N. Gupta, G. Balasekaran, S. Jalnapurkar, (2009) were studied on Indian and Singaporean, while they were found Singaporean female students as balanced endomorphy, Indian female students as endomorphic mesomorphy, they were not found meaningful difference between them. While they were found Indian and Singaporean male students as endomorphic mesomorphic, they were not found meaningful difference between them.

It was seen that our students were similar with Spanish (M.J. Munoz-Cachon, I. Salces, M. Arroya, 2007), Indian and Singaporean (N. Gupta, G. Balasekaran, S. Jalnapurkar, 2009) students according to data which were obtained from our study.

As a result of the study, it was seen that female students were against obesity risk. It was thought that female students need more aerobic exercises. It was seen that exercise and active life style has a positive effect on body weight, BMI and somatotyp.

Acknowledgments

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Table 1. Characteristics of male students studying in different faculties and colleges of our university

Gender	**Faculty**	**n**	**Age(years) X±Sx**	**Height(cm) X±Sx**	**Weight(kg) X±Sx**	**BMI (kg/m^2) X±Sx**
Male	F_1	137	22,43±0,15^{abc}	174,88±0,46^{a}	69,69±0,74^{a}	22,77±0,21^{a}
	F_2	52	22,67±0,24^{ab}	176,31±0,92^{a}	74,15±1,53^{bc}	23,87±0,48^{a}
	F_3	79	21,71±0,20^{d}	177,14±0,63^{a}	73,24±1,22^{bc}	23,32±0,36^{a}
	F_4	66	22,79±0,22^{a}	175,62±0,74^{a}	71,38±1,21^{abc}	23,11±0,33^{a}
	F_5	36	21,78±0,29^{abcd}	175,64±1,19^{a}	71,78±1,80^{abc}	23,28±0,50^{a}
	F_6	35	21,14±0,25^{d}	177,74±1,13^{a}	73,73±1,93^{c}	23,34±0,59^{a}
	TOTAL	405	22,21±0,09	175,94±0,30	71,76±0,50	23,17±0,15
		F	**7,086**	2,227	**2,389**	1,184
		p	**0,000*****	0,051^{NS}	**0,037***	0,316^{NS}

abcd: Vertical columns with different letters have significant differences between them ($p < 0.05$) (ANOVA variance analysis), BMI:body mass index;, NS: Not significant. $^{***}p<0.00$,1Values are expressed as mean±standard error of mean (SEM) (X±Sx)

Table 2. Characteristics of female students studying in different faculties and colleges of our university

Gender	**Faculty**	**n**	**Age(years) X±Sx**	**Height(cm) X±Sx**	**Weight(kg) X±Sx**	**BMI (kg/m^2) X±Sx**
Female	F_1	61	21,00±0,16^{a}	164,07±0,70^{a}	55,86±0,85^{a}	20,75±0,29^{c}
	F_2	58	21,19±0,19^{a}	160,43±0,71^{b}	58,14±1,04^{a}	22,59±0,38^{a}
	F_3	33	21,12±0,22^{a}	161,39±1,21^{ab}	56,63±1,64^{a}	21,67±0,49^{abc}
	F_4	61	21,15±0,15^{a}	162,80±0,77^{ab}	57,85±1,07^{a}	21,81±0,36^{abc}
	F_5	35	21,14±0,22^{a}	162,14±1,05^{ab}	57,69±0,96^{a}	21,95±0,34^{abc}
	F_6	34	20,71±0,18^{a}	162,09±1,00^{ab}	59,21±1,72^{a}	22,46±0,51^{ab}
	TOTAL	282	21,07±0,07	162,26±0,36	57,48±0,48	21,82±0,16
		F	0,792	**2,521**	1,001	**3,421**
		p	0,556^{NS}	**0,030***	0,418^{NS}	**0,005***

abc: Vertical columns with different letters have significant differences between them ($p < 0.05$) (ANOVA variance analysis) BMI:body mass index;, NS: Not significant, $^{**}p<0.01$, $^{*}p<0.05$Values are expressed as mean±standard error of mean (SEM) (X±Sx)

Table 3. Comparison of somatotype profiles of male students studying in different faculties and colleges of our university

Gender	**Faculty**	**n**	**Endomorphy X±Sx**	**Mesomorphy X±Sx**	**Ectomorphy X±Sx**
Male	F_1	137	2,84±0,08^{d}	5,25±0,12^{a}	2,68±0,09^{a}
	F_2	52	4,06±0,24^{a}	5,02±0,17^{ab}	2,42±0,19^{a}
	F_3	79	3,87±0,18^{ab}	4,65±0,14^{b}	2,63±0,16^{a}
	F_4	66	3,39±0,16^{abcd}	5,05±0,13^{ab}	2,58±0,14^{a}
	F_5	36	3,57±0,27^{abcd}	5,08±0,21^{ab}	2,55±0,23^{a}

	F_6	35	$3,79\pm0,30^{abc}$	$4,71\pm0,21^{ab}$	$2,70\pm0,25^{a}$
	TOTAL	405	3,43±0,07	5,01±0,06	2,61±0,06
		F	**9,189**	**2,616**	0,367
		p	**0,000*****	**0,024***	$0,871^{NS}$

abcd: Vertical columns with different letters have significant differences between them ($p < 0.05$) (ANOVA variance analysis) NS: Not significant, $^{***}p<0.001$, $^{*}p<0.05$ Values are expressed as mean±standard error of mean (SEM) (X±Sx)

Table 4. Comparison of somatotype profiles of female students studying in different faculties and colleges of our university

Gender	**Faculty**	**n**	**Endomorphy X±Sx**	**Mesomorphy X±Sx**	**Ectomorphy X±Sx**
Female	F_1	61	$4,03\pm0,14^{a}$	$4,44\pm0,17^{a}$	$2,98\pm0,15^{a}$
	F_2	58	$5,87\pm0,16^{b}$	$4,34\pm0,16^{a}$	$1,99\pm0,15^{b}$
	F_3	33	$5,72\pm0,26^{b}$	$4,02\pm0,23^{a}$	$2,40\pm0,22^{ab}$
	F_4	61	$5,47\pm0,19^{b}$	$4,10\pm0,16^{a}$	$2,45\pm0,14^{ab}$
	F_5	35	$5,69\pm0,22^{b}$	$4,24\pm0,20^{a}$	$2,28\pm0,17^{ab}$
	F_6	34	$6,04\pm0,21^{b}$	$4,30\pm0,18^{a}$	$2,12\pm0,19^{b}$
	TOTAL	282	5,37±0,09	4,25±0,07	2,40±0,07
		F	17,785	0,764	5,049
		p	$0,000^{***}$	$0,576^{NS}$	$0,000^{***}$

ab: Vertical columns with different letters have significant differences between them ($p < 0.05$) (ANOVA variance analysis) NS: Not significant.$^{***}p<0.001$Values are expressed as mean±standard error of mean (SEM) (X±Sx)

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IMPLEMENTATION OF TEACHING OF PHYSICAL EDUCATION (PHYSICAL FITNESS)

Syed Kamaruzaman Syed Ali, **Julismah Jani**
Faculty of Sport Science, Sultan Idris Educational University, MALAYSIA
Email: s_kamaruzaman@yahoo.com / 29.01.2010 / 25.02.2010

Abstract

Purpose. The subject of physical education (physical fitness) is very important. Due to physical educator have to implement teaching and learning of physical education properly in secondary school. The objective of the study are a) to identify the level of the implementation of teaching and learning strategy, source and teaching material, facilities and equipment, and evaluation, b) to identify the relationship between the teaching and learning strategy, source and teaching material, facilities and equipment, and evaluation, c) to identify the most important aspect in teaching of physical education (physical fitness).

Method. In exposing an existence of connection between variables in research, a descriptive framework in terms of correlation research has existed to study the implementation on teaching of physical education (physical fitness). It is focusing on two or more variables data collected and identify the correlation of it.

Result. The level of implementation of physical education teaching and learning strategy (physical fitness) is moderate. While, the level of implementation of source and teaching material at moderate. And then, the level of implementation of facilities and equipment is moderate as well. However, the level of implementation of evalaution is high. Beside that, there was a relationship between teaching and learning strategy, source and teaching material, facilities and equipment, and evalutaion. Among those aspect, the most important aspect is teaching and learning strategy.

Conclusion. Teaching and learning strategy, source and teaching material, facilities and equipment, and evaluation, are important factors in the teaching of physical education (physical fitness). However, the most important aspect is teaching and learning strategy.

Keyword: Physical Education, Teaching, physical fitness.

Introduction

Physical Education subjects were core subjects in Malaysia, but still there is a problem in terms of implementation. Reports from Curriculum Development Centre (2001) on the implementation of Physical Education in schools in Kelantan and Sabah are part of Physical Education teachers are not in daily planning and existing curriculum, teachers do not write daily lesson plans properly, to train football school teams during Physical Education period, monitor student progress during Physical Education classes, and leave time used by Physical Education teachers for teaching other subjects. Divison of Planning and Educational Research Policy (2005) reported that the implementation of Physical Education subjects were given less compare to other subjects. It is because Physical Education is not included the critical subjects. In general, the management of schools considered the subject of Physical Education can be taught by teachers who are not options. Therefore, the Physical Education subject taught without giving serious emphasis on the importance of achieving the goals of Physical Education. Through the reports presented at the Seminar, E.H. Wee (2002) considers the whole teaching of Physical Education in schools is still low. Problems that exist in the implementation of the

Physical Education curriculum indirectly desirable researchers to conduct a study to determine the extent of teaching Physical Education (physical fitness) in secondary schools with more depth. Researcher found that the study has not been carried out in Malaysia. To see the extent of teaching Physical Education (physical fitness), researcher use the evaluation models (D.L. Stufflebeam, 2000a). Through this model, the implementation of the teaching of Physical Education (physical fitness) are reviewed by evaluating the only dimensions of the process. Dimension of process including a few component such as the strategy of teaching and learning, sources and material of teaching, facilities and equipment, evaluation.

Research Objective

The objective of the study are:

a. To identify the level of the implementation of teaching and learning strategy, source and teaching material, facilities and equipment, evaluation.

b. To identify the relationship between the teaching and learning strategy, source and teaching material, facilities and equipment, evaluation.

c. To identify the most influential factors most influential in the teaching of physical education (physical fitness).

Research Method

In exposing an existence of connection between variables in research, a descriptive framework in terms of correlation research has existed to study the implementation on physical education (physical fitness). It is focusing on two or more variables data collected and identify the correlation of it (J.R. Thomas, J.K. Nelson & Silverman, 2005) whereas the Stufflebeam Assessment Model is implied as conceptual framework in this research.

Sample Some 50 physical educators from secondary schools, technical secondary schools, and boarding schools (Division of Planning and Educational Research, 2008) were chosen as a sample for this research though the minimum sample size in this correlation study is engaged to 30 candidates respectively (L.R. Gay, G.E. Mills, & P. Airasian, 2009; 2006).

Instrument This research uses observation method (structured checklist) to clloect information related to the dimensions of the process.

Result and Discussion

a. Implementation strategies of teaching dan learning

Table 2 indicates frequency, percentage, mean, standard deviation and level of implementation for teaching and learning strategy.

Table 1 Frequency, percentage, mean, standards deviation and level of implementation for teaching and learning strategy

Item	*Mean*	*SD*	**L**
Induction set	3.64	.96	M
Warm up	3.89	.95	H
Teacher demonstration	3.56	.88	M
Student demonstration	2.96	.79	M
Class task	2.98	1.12	M
Group task	3.41	1.12	M
Minor games	3.51	.75	M
Warm down	3.17	.95	M
Questionaire/ discussion	2.91	.83	M
Assessment	2.88	.91	M
Assignment	2.60	1.09	M
Overall mean	3.23	.94	M

L-Level; H-High; M-Moderate; L-Low

Based on the Table 1, the overall mean show that the level of implementation of teaching and learning strategy is M=3.23;SD=.94. This finding indicates that the level of implementation physical education teaching and learning strategy (physical fitness) is moderate. This finding parallels that of R.Y. Abdul (1997) whereby implementation of teaching and learning of physical education in Tanah Merah, Kelantan is at a moderate level with a mean score 152.02. Indirectly, these findings indicate that teaching is an important aspect of implementation that needs to be implemented in schools.

b. Sources and Material Teaching Used

Table 3 is an identification of frequency, percentage, mean, standard deviation and level of sources and material teaching used.

Table 2

Percentage, Mean, Standard Deviation and Level of Sources and Teaching Material Used

Item	*Mean*	*SD*	**L**
Internet	3.53	.79	M
News paper excerpt	3.10	.92	M
Magazine	2.87	.85	M
Article or journal	2.88	.96	M
PE book reference / Sport Science	2.38	.77	M
Depatrment of PE	2.19	.98	L
Text Book			
Structural heart	4.00	.81	H
Respiratory	3.80	.88	H
Training zone for CV	3.40	.73	M
Practice stamina activity of CV	3.44	.76	M
Muscular activity endurance	3.96	.76	H
Endurance training schedule	3.44	.73	M
Endurance activity	3.43	.76	M
Training – comparision between MS and ME	3.44	.77	M
MS training – Upper Body	3.34	.69	M
MS training- without Weight	3.40	.70	M
MS training – Lower body	3.36	.72	M
Weight training (games)	3.40	.73	M
Training activity for MS	3.42	.81	M
Total of Mean	3.31	.79	M

L-Level; H-High; M-Moderate; L-Low

Finding through observation (checklist structured) Table 2 show that the level of utilization of resources and teaching materials are at moderate levels. Findings of this study support research by F.T. Hoe (1999) who found that levels of resources use among teachers to help teach physical education were low. Research conducted by the Planning and Policy Research, Ministry of Education Malaysia (2005) aslo found that relief materials such as reference materials for teaching subjects physical education and health education are limited. Circumtances such as this can also cause problems in the use of resources and teaching materials among teachers in physical education in schools. Resources and teaching materials are necessary to improve student understanding of content teaching. Therefore, teachers must ensure that adequate resources and teaching materials are available. With sufficient resources and materials it is easy for teachers to plan teaching of physical education, thus implementating effective teaching and learning.

c. Facilities and Equipment Item Used

Table 3 is a clarification of frequency, percentage, mean, standard deviation and level of facilities and equipment used.

Table 3

Frequency, percentage, mean, standard deviation and level of facilities and equipment used

Item	*Mean*	*SD*	**L**
Field	4.02	.76	H
Aerobic VCD	3.61	.80	M
High-Fi	3.62	.60	M
Rope	3.43	.96	M
Game Court	4.15	.89	H
Chining	3.10	.97	M
Chair	3.30	.98	M
Dumbell	3.75	.89	H
Barbell	3.35	.88	M
Mattress	4.08	.75	H
Total of Mean	3.64	.84	M

L-Level; H-High; M-Moderate; L-Low

Based on the findings observations (checklist structured), Table 3 show that the use of facilities and equipment are at moderate levels. Fidnings of this study conflict with research findings by F.T. Hoe (1999) who found that the use of facilities and equipment have been implemented effectively with mean values between 3.65 to 48.5. While research conducted by the Planning and Policy Research, Ministry of Education Malaysia (2005) also found that facilities for implementating of teaching and learning of physical education have been reduced. Fields schools have been lost to computer labs. In the implementation process of physical education, especially for the title physical fitness, facilities have to be provided with adequate equipment. This is because the activities in physical fitness involve more use of facilities and equipment.

d. Physical Education Assessment

Table 5 shows the distribution of frequency, percentage, mean, standard deviation and level of implementation of aspects of evaluation.

Table 4

Frequency, Percentage Min, Standard Deviation, and Level Implementation of Evaluation

Item	*Mean*	*SD*	**L**
First monthly test	3.05	.88	M
Second monthly test	2.96	.78	M
First Fitness test	3.54	.89	M
Mid-Year Exam	4.83	.38	H
Second Fitness test	3.42	.79	M
End of Year Exam	4.85	.36	H
Coursework	3.71	.93	H
Overall Mean	3.76	.72	H

L-Level; H-High; M-Moderate; L-Low

Refer to Table 4, findings through observation (structured checklist) show that the level of implementation of physical education evaluation (physical fitness) is high (M=3.76;SD=.72). However, research findings of I. Abang, P. Noraini, (2008) in a secondary school in Kuching City, found that 6.7% of teachers still do not implement the physical fitness test every semester, and 20% of teachers state that they are not satisfied with the implementation of the physical fitness test in their school. According to Roberts, Evans, and Ormond (2006) aspects of assessment should be conducted to obatain objective and subjective data to assess the effectiveness of physical education. E.H. Wee (2002) also pointed out that in the physical education curriculum, assessment is carried out not only to provide feedback on student learning, but also determine the effectiveness of the physical education teachers at the school.

2. Relationship Between teaching and learning strategy, source and teaching material, facility and equipment, evaluation.

In this section the researcher used Canonical correlation analysis to see the relationship between variables (teaching and learning strategy, source and teaching material, facility and equipment, evaluation) and identify the most influential variable.

Table 5

Multivariate Tests of Significance

Test Name	*VA*	*F*	*Hypoth. DF*	*Error DF*	**Sig. of F**
L.Wilks	.80	3.75	3.00	46.00	.02*

* P < .05; VA – Value Approx

Based on Table 5, exist relationship between variables between teaching and learning strategies, sources and teaching materials, facilities and equipment, assessment [Wilk's lamda = .80, F (35, 46.00) = 3.75, p < .05]. Those aspects an important in the implementation of teaching physical education (physical fitness) in schools. To ensure that the four aspects can be implemented with good progress during the process of teaching, physical education teachers need to do effective of planning. Effective planning is one of the most significant factor for the effective performance of teachers (R. Bailey, 2003). H.

Shahabuddin, Y. Rohizani and Z.A. Mohd (2003) have also urged teachers to make plans for teaching. Planning before teaching refers to decisions made about managing, implementing and evaluating teaching.

Table 6
Standardized Canonical Coefficients

Dimension of Process	**D**
a.Implementaion strategy teaching and learning	1.29
b.Use of resources and teaching materials	.49
c.Use of facilities and equipment	-.63
d.Implementation of physical education assessment	.47
Canonical Correlation	.44

D- Dimension

While, from the Table 6, it was found that the aspect most strongly influential in the process of teaching is teaching and learning strategies (1.29). This indicates that the variable of teaching and learning strategies is the most important variable in implementing the teaching of physical education (physical fitness) in secondary schools. This finding is in line with the opinion of O. Juliana (2007) which states that for implemention of effective teaching and learning, teachers need to learn various teaching strategies and try to apply different strategies for different circumstances.

Conclusion

The study was conducted to identify the implementation of teaching physical education (physical fitness) in secondary schools in Gombak District, Selangor. As a result of the discussion results show aspects of physical education assessment have been implemented at a high level. The implementation strategies of teaching and learning, use of teaching materials and resources and use of facilities and equipment, however are only at the moderate level. Based on the analysis of Canonical correlation, four aspects actually relate to each other in the process of teaching physical education (physical fitness). This shows that the implementation aspects of teaching and learning strategies, utilization of resources and teaching materials, use of facilities and equipment and implementation of physical education assessment are important factors in the process of teaching physical education (physical fitness). From four aspects, the available aspects of the implementation strategies of teaching and learning are key aspects that need to be emphasized by the physical education teachers in the process of implementating the physical education (physical fitness).

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❖ KINETOTHERAPY

BRAIN ATROPHY AND MELOTHERAPY: CLINICO-IMAGING CORRELATIONS

Hancu A.[1], Docu Axelerad Any[1], Adam T.[1], Docu Axelerad Daniel[2], Damian Mirela[2], Niscoveanu A.[3]
[1]University „Ovidius" Constanta, General Medicine Faculty, ROMANIA
[2]University „Ovidius'' Constanta, Sports and Physical Education Faculty, ROMANIA
[3]Neurology clinic, Constanta county emergency hospital, ROMANIA
Email: hancuanca@hotmail.com / 27.03.2010 / 12.04.2010

Abstract

Our study presents correlations between brain atrophy measured by CT-scan images and clinical diagnostics of these patients and the way in which melotherapy modify possible associated depression.

Material and method: Our study consisted of 210 patients admitted to Neurology Department Constanta between June-December 2007 and diagnosed (by means of brain CT-scan done in the first days from admission) with diffuse brain atrophy in majority of cases and secondary to a neurologic affection. For all patients we performed BECK depression scale. Our patients were submitted to a musical program consisting in 15 minutes, three times a day.We divided the study group in four smaller group.

Results: The majority of our patients proved to have two or more risk factors, specially hypertension and dyslipidemia, age over 61 in 80%. Brain atophy was present in almost half of patients. On Beck scale evaluation we discovered medium and severe degree of depression. Patients with brain atrophy associated with Binswanger's disease were presenting pseudobulbar syndrome associated or not with gait disturbances, with or without dementia, and leukoaraiosis on CT-scan.

Conclusions: The majority of our patients were age over 61. Hypertension is the main risk factor. Correct treatment of arterial hypertension, dyslipidemia, diabetes mellitus and other cerebral vascular risk factors delays development of brain atrophy.

Melotherapy seams to have a positive impact in patients with acute ischemic stroke, and less important in those with large brain atrophy and Binswanger disease.

Keywords: brain atrophy, CT-scan, vascular brain diseases, risk factors, associated diseases, lacunarism, leukoaraiosis.

Introduction

Brain atrophy (A.H. Ropper, 2005) diagnosed by CT-scan can be:

1) Cortical atrophy: superficial sulci are widened due to atrophy and retraction of circumvolution, which separate them, but cerebral ventricles are of normal size.
2) Subcortical atrophy: ventricular system is widened due to existence of internal communicating hydrocephalus, but cerebral cortex is normal.
3) Mixed cerebral atrophy (cortico-subcortical): sum of first two types together.

Cerebral atrophy (A.M. Samuels, K.S. Feske, 2003) can be localized or diffuse, secondary or idiopathic.

Our study presents correlations between brain atrophy measured by CT-scan images and clinical diagnostics of these patients and the way in which melotherapy modify possible associated depression.

Material and method:

Our study consisted of 210 patients admitted to Neurology Department Constanta between June-December 2007 and diagnosed (by means of brain CT-scan done in the first days from admission) with diffuse brain atrophy in majority of cases and secondary to a neurologic affection. Only 2 patients were diagnosed with localized brain atrophy secondary to trauma and in 3 patients we couldn't find any underling cause. The patients with vascular brain diseases were divided in four subgroups according to their diagnosis: first stroke, repeated stroke with neurologic sequelae, cerebral lacunarism and Binswanger's disease. Diagnosis on discharge was: primary stroke, repeated brain stroke with neurologic sequelae, cerebral lacunarism, Binswanger disease, Alzheimer's disease, Parkinson's disease, multiple sclerosis, chronic alcoholism or brain atrophy of unknown etiology, all cases with brain CT-scan image of brain atrophy. For all patients we performed BECK depression scale.

Results:

First group consisted in 100 patients admitted to Neurology Department with first acute stroke. Brain atrophy was revealed by CT-scan on 1-3 days from admission. We performed Beck depression scale and applied melotherapy to 80 patients, correlated with the degree of depression. The musical program consisted in 15 minutes three times a day.

Distribution according to sex was of 37 cases female and 63 cases male. The distribution according to age is seen in table 1 and the distribution according to urban-rural medium in figure 1.

Presence of brain atrophy in first days from brain stroke shows clear evidence of underling risk factors (C. Arseni, 1982): arterial hypertension, diabetes mellitus, atrial fibrillation and presence of associated diseases: neoplasms with different localization, chronic alcoholism, epilepsy and brain trauma. All this items are seen in tables 2, 3, 4. Most of patients had two or more risk factors. On brain CT-scan we also found other imaging signs such as: lacunarism and leucoaraiosis (table 5).

In this group, cerebral lacunae and leukoaraiosis found on CT-scan are not associated with clinical symptoms.

Cerebral lacunae has a diameter between 3-4 mm and 1-2 cm; in our cases they are due to obstruction of small penetrating arteries branches of middle cerebral and vertebro-basillar arteries. In our study those 5 cases with brain lacunarism were associated with increased blood cholesterol, diabetes mellitus and old myocardial infarction.

Leukoaraiosis on brain CT-scan images is defined as (T. Scarabino, U. Salvolini, 2006): diffuse hypoattenuating anomalies at the level of brain white matter, with irregular border. (Fig. 2) Their presence indicate presence of other risk factors, the most important being arterial hypertension.

The results on first group were: 81% of patients older than 61, arterial hypertension present in 79% of cases and 61% cases with cortical atrophy. On the latest Beck scale evaluation we observed an improved depression in 75% of patients after melotherapy.

The second group in our study consisted in 55 patients with one or more strokes in their background.

They were 27 females and 28 males. The distribution according to age and urban-rural medium is seen in table 6 and figure 3. Most of the patients had two or more risk factors. (tables 7 and 8)
These patients were readmitted to our department for:

- a new stroke: 39 cases with brain infarct and 2 cases with hemorrhage (M. Sessa, 2008),
- vascular epilepsy: 12 cases,
- repeated stroke and vascular epilepsy: 2 cases.

Stroke was diagnosed clinically and by brain images. On brain CT we found also other imaging signs. (tables 9 and 10)

On Beck depression scale we identified 20 patients with medium and severe depression and we conducted a musical program consisting in 15 minutes of music three times a day.

For the second group of study the results showed: 73% of patients were with age of more than 61 years, and arterial hypertension was found in 91% of cases. On furthere evaluation on Beck scale, after melotherapy, we observe an improvement of depression at 15% of patients.

Cortical brain atrophy was present in 31 cases and mixed brain atrophy in 23 cases, associated with brain lacunarism and leukoaraiosis in 16% of cases.

The third group consisted in 15 cases with discharge diagnosis of brain atrophy with lacunarism.

There were 5 females and 10 males. 12 patients were from urban medium and 3 from rural medium. Patients age is shown in table 11. Most of the patients had two or more risk factors. (table 12) We perform beck depression scale and apply melotherapy to 10 patients corelated with the degree of depression. The musical program consisted in 15 minutes, three times a day.

Imaging diagnosis of brain lacunarism correlated well with clinical features; the patients presented one of the following symptoms: ataxic hemiparesis, pure motor hemiparesis, dysarthria-clumpsy hand syndrome, and pure sensory stroke. (tables 13 and 14)

In the third group dyslipidemia was present in all cases, associated with diabetes mellitus in 8 cases and old myocardial infarction in 5 cases; most patients were with age more than 61 years old. On the latest Beck scale evaluation we observe an improve of depression in 25% of patients after melotherapy

The fourth group consisted in 18 patients with brain atrophy associated with Binswanger's disease**.**

Clinically the patients were presenting pseudobullbar syndrome, associated or not with gait disturbances, with or without dementia, and leukoaraiosis on CT-scan images.

There were 6 females and 12 males, 12 from urban medium and 6 from rural medium. Risk factors and imaging findings are shown in tables 15 and 16. On Beck depression scale we identify 10 patients with medium and severe depression and we conduct a musical program consist in 15 minute of music of three times a day.

The fourth group of our study revealed that all 18 patients, predominantly old males, were presenting with pseudobulbar syndrome associated or not with gait disturbances with or without dementia. Arterial hypertension and dyslipidemias were most frequent risk factors. On furthere evaluation of Beck scale after melotherapy we observe an improvement of depression at 5% of patients. Imaging features consisted in mixed brain atrophy and leukoaraiosis in the majority of cases.

Presence of diffuse brain atrophy of unknown etiology was found in 3 cases of 45, 58 and respectively of 65 years old, two female and one male, all of them with cortical brain atrophy. (table 17)

Localized brain atrophy was represented by two male patients of 21 and respectively 61 years old,

with background of brain trauma associated with epilepsy. Localization was of right and respectively left temporo-parietal lobes.

Table 1 Age distribution in first group

Age	Number of cases
Below 40	0
41-50	3
51-60	16
More than 61	81

Table 2 Presence of risk factors in first group

Risk factors	Number of patients
Arterial Hypertension	79
Diabetes Mellitus	12
Atrial fibrilation	15
Dyslipidemia	52
Myocardial infarction/Cardiopathy	16

Table 3 Presence of associated diseases in first group

Associated diseases	Number of patients
Chronic Alchoolism	7
Cancer	10
Epilepsy	3
Brain trauma	2

Table 4 Types of brain atrophy in first group

Brain atrophy	Number of cases
Cortical	61
Subcortical	4
Mixed	35

Table 5 Other CT scan signs in first group

Other imaging signs	Number of cases
Lacunarism	5 cases
Leukoaraiosis	9 cases

Table 6 Age distribution on second group

Age	Number of cases
Below 40	0
41-50	5
51-60	10
More than 61	40

Table 7 Presence of risk factors on second group

Risk factors	Number of patients
Arterial Hypertension	50
Diabetes Mellitus	7
Atrial fibrilation	9
Dyslipidemia	18
Myocardial infarction/Cardiopathy	7

Table 8 Presence of associated diseases on second group

Associated diseases	Number of patients
Chronic Alchoolism	3
Cancer	2
Brain trauma	5

Table 9 Types of brain atrophy on second group

Brain atrophy	Number of cases
Cortical	31
Subcortical	1
Mixed	23

Table 10 Other CT scan signs

Other imaging signs	Number of cases
Lacunarism	3 cases
Leukoaraiosis	6 cases

Table 11 Age distribution on third group

Age	Number of cases
Below 40	0
41-50	1
51-60	2
More than 61	12

Table 12 Presence of risk factors in third group

Risk factors	Number of patients
Arterial Hypertension	5
Diabetes Mellitus	8
Atrial fibrilation	1
Dyslipidemia	15
Myocardial infarction/Cardiopathy	5

Table 13 Types of brain atrophy in third group

Brain atrophy	Number of cases
Cortical	2
Subcortical	1
Mixed	12

Table 14 Other CT scan signs on third group

Other imaging signs	Number of cases
Leukoaraiosis	12

Table 15 Presence of risk factors on fourth group

Risk factors	Number of patients
Arterial Hypertension	17
Diabetes Mellitus	2
Atrial fibrilation	1
Dyslipidemia	8
Myocardial infarction/Cardiopathy	3

Table 16 Types of brain atrophy on fourth group

Brain atrophy	Number of cases
Cortical	3
Subcortical	2
Mixed	13
Other imaging signs	**Number of cases**
Lacunarism	8
Leukoaraiosis	18

Table 17 Presence of brain atrophy in other diseases (rather than vascular brain diseases)

Disease	Male	Female	Below 40	41-50	51-60	More than 61	Cortical atrophy	Subcort. atrophy	Mixed	Associated disease
Multiple Sclerosis	**1**	**2**	**0**	**1**	**2**	**0**	**1**	**0**	**2**	**0**
Parkinson disease	**1**	**2**	**0**	**0**	**0**	**3**	**1**	**0**	**2**	**1 Arterial hypertension**
Epilepsy	**5**	**3**	**1**	**2**	**5**	**0**	**7**	**0**	**1**	**0**

Chronic alchoolism	**3**	**1**	**0**	**1**	**2**	**1**	**2**	**0**	**2**	**2 Arterial Hypertension 1 Dyslipidemia**
Alzheimer's disease	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**Dyslipidemia**

Fig. 1 Distribution according to provenience medium on first group

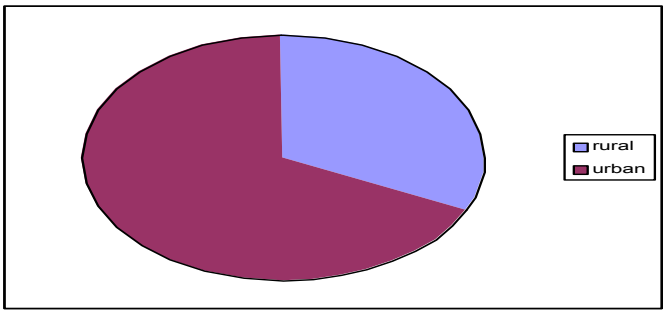

Fig. 2. B.E., 72 years old, known with arterial hypertension, admitted with left hemiparesis. CT-scan shows acute right parietal lobe infarction, mixed brain atrophy and leukoaraiosis.

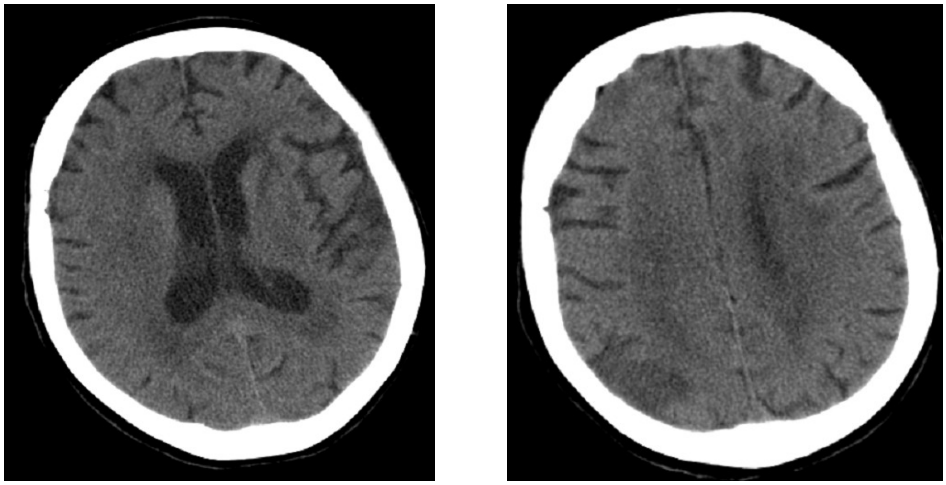

Fig. 3 Distribution according to provenience medium on second group

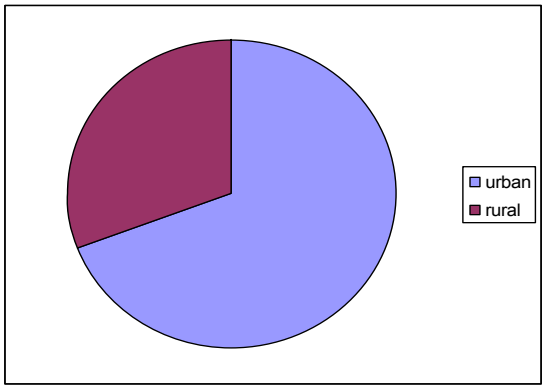

Fig. 4. T.V., 70 years old, known with arterial hypertension, chronic atrial fibrillation, right cerebellar infarction in 2003, admitted with right hemiplegia, mixed aphasia; brain CT-scan shows: acute left temporo-parietal infarction, an old right cerebellar hemisphere infarction, left thalamic lacunae, cortical brain atrophy and leukoaraiosis.

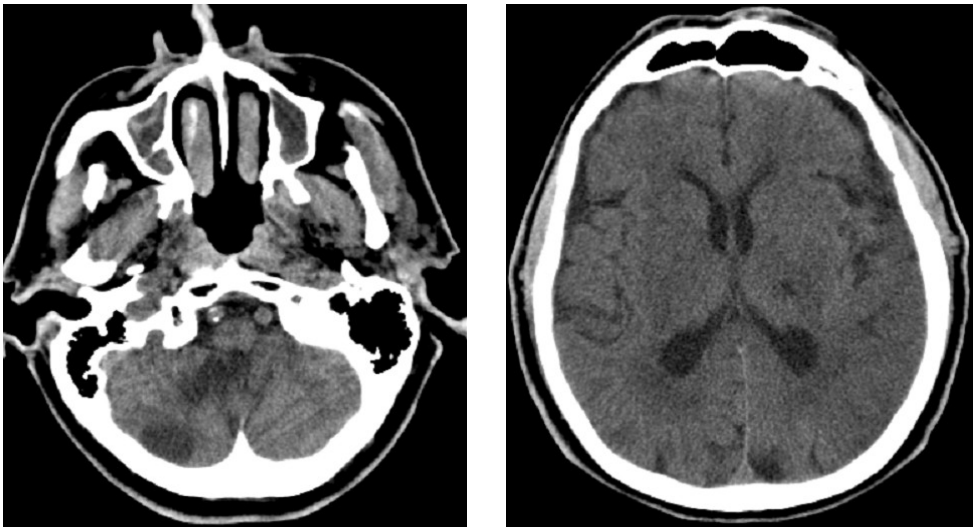

Fig.5. D.R., 65 years old, known with type 2 diabetes mellitus, arterial hypertension and hypercholesterolemia, admitted with left hemihypoesthesia. CT-scan shows mixed brain atrophy and right thalamic lacunae.

Fig.6. R.F., 67 years old, known with arterial hypertension, dyslipidemia, admitted for pseudobulbar syndrome, gait abnormalities, urinary incontinence, and memory disturbances with progressive evolution of about one year.

CT-scan shows: mixed brain atrophy, leukoaraiosis and cerebral lacunarism**.**

Conclusions:

The patients with vascular brain diseases were divided in four subgroups according to their diagnosis: first stroke, repeated stroke with neurologic sequelae, cerebral lacunarism and Binswanger's disease. They were diagnosed by CT-scan done in the first days from admission with diffuse brain atrophy.

There is dissociation between brain atrophy diagnosed by CT-scan and clinical examination of vascular patients. Presence of brain atrophy in the first days from acute stroke and the good status of patient some days ago is an example in this way.

In first two groups the principal risk factor was hypertension, age more than 61 years in 80% cases, brain atrophy was of cortical type in more than half of them.

In third group dyslipidemia was present in all cases, associated with diabetes mellitus in 8 cases and old myocardial infaction in 5 cases, most of the patients with age more than 61 years old.

Patients with brain atrophy associated with Binswanger's disease were presenting pseudobulbar syndrome associated or not with gait disturbances, with or without dementia, and leukoaraiosis on CT-scan. Arterial hypertension and dyslipidemia were most frequent risk factors founded in patients with age more than 61 years old.

Presence of brain atrophy in other diseases (rather than vascular brain diseases) was so reduced because our neurology department is settled in an emergency hospital.

Presence of diffuse brain atrophy associated with other diseases (neoplasms with different localization, chronic alcoholism, epilepsy and brain trauma) rather than cerebral vascular diseases was in correlation with oldness of underling disease.

The age is an important factor of risk.

Correct treatment of arterial hypertension, dyslipidemia, diabetes mellitus and other cerebral vascular risk factors delays development of brain atrophy.

Localized brain atrophy was only in correlation with brain trauma in all cases.

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THE EFFECT OF THE PARTICIPATION OF EDUCABLE MENTALLY RETARDED CHILDREN IN THE SPECIAL PHYSICAL EDUCATION CLASSES UPON THE ANXIETY LEVELS OF THE PARENTS OF THE CHILDREN

Levent İlhan
School of Physical Education and Sports, Ahi Evran University Kırşehir / TURKEY
E-mail: leventilhan@gazi.edu.tr / 04.02.2010 /14.02.2010

Abstract

Mentally retarded children live by depending on their parents in accordance with their level of disabilities. The parents may develop certain psychological disorders due to having a mentally retarded child. The situation may affect their way of life and cause high levels of anxiety. Whereas the special physical education classes give the mentally retarded children an opportunity to learn how to do several activities on their own while enjoying themselves; they also help alleviate the dependency of children upon other people.

The research is built around a hypothesis which suggests that the parents of the children who participate in the special physical education classes are going to have a decrease in their anxiety levels.

The purpose of this study is to determine the anxiety levels for the parents of the children who participate and do not participate in the special physical education classes.

The research group consists of 16 couples whose children are receiving physical education classes, which makes a total of 32 parent subjects.

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The children are within an age range of 6 to 11. A total of 16 (8 practice, 8 control).children have been divided into two groups. The research was figured by an experimental type with preliminary test-final test control group. As the contents, a special physical education program consisting of warm-up exercises, functional exercises (individual, paired, group staffed, station-racecourses) and sports games (paired, types of helping each other, group competitions and games with rules) was applied to the practice group, 2 days a week and 1 hour each day. Program was implemented 20 weeks. Parent are invited as spectators. Mothers were watching all the sessions. Fathers came at the weekend.

Spielberger Trait and State Anxiety Inventory was used as a data collecting instrument. Pretest was administered before the application. Posttest was administered after the final session.

The data collected at the beginning and final of the practice program as group based with the evaluations of the mothers and fathers of the children were compared. "Wilcoxon Test" was used for the dependent comparisons.

A decrease in the anxiety levels has been observed at the anxiety levels for the parents of the children at the practice group, compared to those of the parents whose children are at the control group. This decrease, however, is not found to be statistically meaningful. There has been no change at the constant anxiety levels of the control group.

Observing their children move independently has had an effect on the parents of disabled children that greatly helped them reduce their levels of anxiety. The continuity of this kind of special physical education programs and parent cooperation can help achieve more effective results.

Keywords: educable mentally retarded children, special physical education, anxiety, parents

Introduction and Research Objective

Families with handicapped children may have many problems. The requirements of the children with mentally retardation may lead to intensive intrafamily anxiety by influencing the life styles of the family members.(F. Abasiubong et al, 2006, W.P. Witt et al, 2003).

Spielberger; defined worry as emotional reactions consisting of the combination of stress feeling, fear, nervousness, bad thoughts and physiological changes (J.S. Raglin, 1992). Spielberg noted that worry is divided into two, as the momentous worry and the continuous worry. The momentous worry defines the actual emotional situation, characterized by fear, anxiety, and stress. At the momentous worry, as the actual situation, which cause stress and anxiety at the individual, is eliminated, also the negative feelings disappear. But continuous worry is a personality attribute. The person tends to percept definite environmental situations as being threatening and to react with an increasing momentous worry on these situations (R.H. Cox,1994).

In the literature, it is noted that the parents of handicapped children (especially mothers) are more under stress and have a higher level of anxiety, compared tp parents without handicapped children (L.M. Glidden et al, 2003, R.P. Hasting, 2003, S.A. Esdaile et al, 2003, K.S. Frey et al, 1989, M.M. Macias et al, 2003, D. Pelchat et al, 1999, B. Ryde-Brandt, 1990).

Existing research studies suggest that parenting a child with mental retardations can be a stressful experience. However, there are few data addressing the question of how parents might experience considerable anxiety, how they might cope with this anxiety, and how this anxiety in parents of children with a mental retardation affect parental attitude.

Parents with a handicapped child are in a different combat and development process (E. Akkök, 1997, M. Margalit, D. Ankonina, 1991). If we set off from the fact that life is a development and changing process, we observe that also our children and their families, having different attributes, run through the development and changing process.

As long as the families concentrate on that what their children are able to, their strong fields and on that what they achieved, rather than on the weaknesses of their children, what they are not capable to and what they could not achieve, these changes take a positive direction.

The more parents observe these developments, these changes, the more relieved they feel themselves (E. Akkök, 1997). This situation may constitute a positive effect on the worrying level of the parents.

The research is built around a hypothesis which suggests that the parents of the children who participate in the special physical education classes are going to have a decrease in their anxiety levels.

The purpose of the study is to determine the anxiety levels for the parents of the children who participate and do not participate in the special physical education classes.

Method and procedure

The research group consists of 16 couples whose children are receiving physical education classes, which makes a total of 32 parent subjects.

The children are within an age range of 6 to 11. A total of 16 (8 practice, 8 control).children have been divided into two groups. The research was figured by an experimental type with preliminary test-final test control group. As the contents, a special physical education program consisting of warm-up exercises, functional exercises (individual, paired, group staffed, station-racecourses) and sports games (paired, types of helping each other, group competitions and games with rules) was applied to the practice group, 2 days a week and 1 hour each day. Program was implemented 20

weeks. Parent are invited as spectators. Mothers were watching all the sessions. Fathers came at the weekend. This scale, developed by Spielberger et.al., is constituted by two sub-scales, as the continuous and the momentous, each of it consisting 20 questions (C.D. Spielberger, R.L. Gorsuch, R.E. Lushene, 1970). The momentous worry scale determines how the individual feels at a definite time and in definite conditions, and the continuous worry scale determines how the individual feels independent from the situation and conditions he/she is in. The obtained point value from the sub-scales varies between 20-80. The adoption of the scale on Turkey, its validity and reliability works

Spielberger Trait and State Anxiety Inventory was used as a data collecting instrument. are performed by Öner and Le Compte (N. Öner, A. Le Comte, 1985).

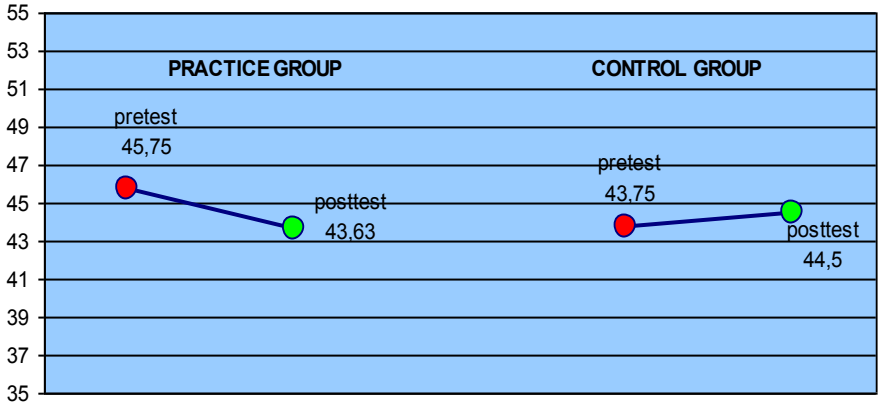
Pretest was administered before the practice. Posttest was administered after the final session.

The data collected at the beginning and final of the practice program as group based with the evaluations of the mothers and fathers of the children were compared. The data were analyzed by using SPSS 17.0 programme and "Wilcoxon Test" was used for the dependent comparisons.

Result

Figure 1:

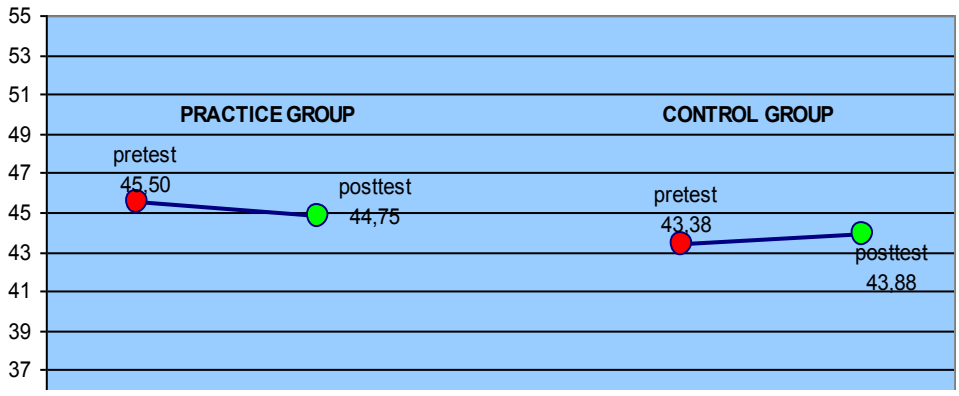
Comperation of pre-test and post-test trait anxiety average points of control and practice groups of mothers .



It was seen that the average points that practice group mothers got from Spielberger Trait Anxiety Scale that was applied to mothers before and after programme fell down from 45,75±6,71 to 43,63± 4,17. There was an increase in control group from 75±6,71 to 43,63± 4,17. These differences in practice and control group mothers were tested by wilcoxon signed rank test and it was seen that the differences were not significant statistically. (mothers in practice group z=1,73, p>0,05, mothers in control group z=1,24, p>0,05

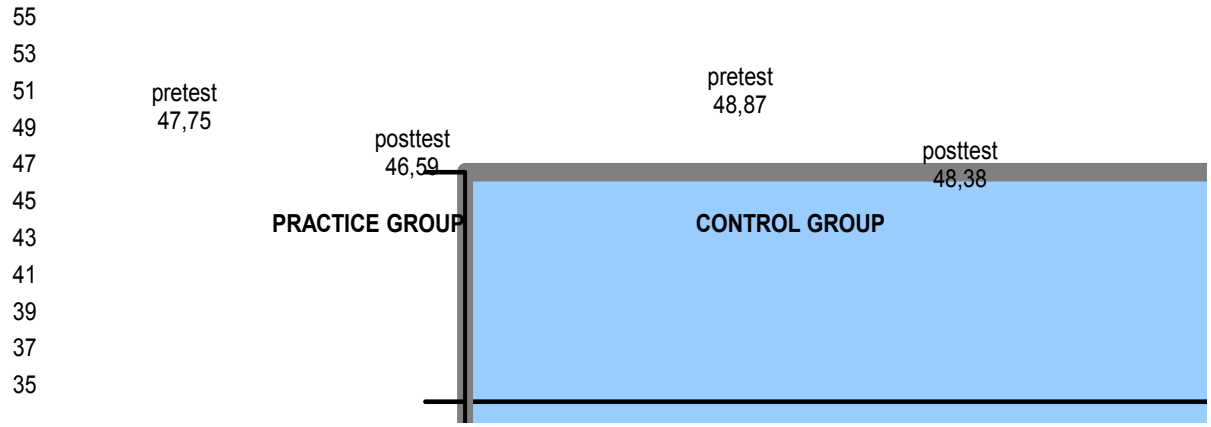
Figure 2:

Comperation of pre-test and post-test trait anxiety average points of control and practice groups of fathers .



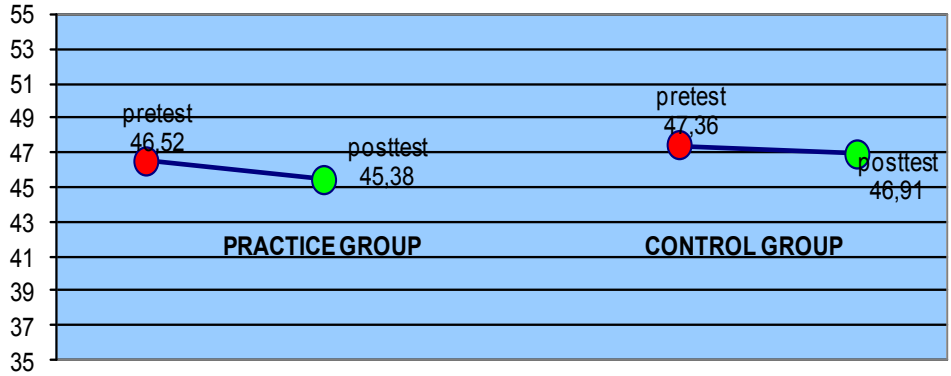
It was seen that the average points that practice group fathers got from Spielberger Trait Anxiety Scale that was applied to fathers before and after programme fell down from 45,50±3,80 to 44,75±4,27. There was an increase in control group from 43,38±5,92 to 43,88±7,83. These differences in practice and control group fathers according to pre-test and post-test were tested by wilcoxon signed rank test and it was seen that the differences were not significant statistically. (fathers in practice group z=1,33, p>0,05, fathers in control group z=0,947, p>0,05).

Figure 3:
Comperation of pre-test and post-test state anxiety average points of control and practice groups of mothers .



It was seen that the average points that practice group mothers got from Spielberger Trait Anxiety Scale that was applied to mothers before and after programme fell down from 47,75±4,01 to 46,59±4,12. There was a decrease in control group from 48,87±5,96 to 48,38± 7,12. These differences in practice and control group mothers according to pre-test and post-test were tested by wilcoxon signed rank test and it was seen that the differences were not significant statistically. (mothers in practice group z=1,82, p>0,05, mothers in control group z=0,89, p>0,05).

Figure 4:
Comperation of pre-test and post-test state anxiety average points of control and practice groups of fathers .



It was seen that the average points that practice group fathers got from Spielberger Trait Anxiety Scale that was applied to fathers before and after programme fell down from 46,52±5,27 to 45,38±4,85. There was an decrease in control group from 47,36±4,13 'to, 46,91± 5,21. These differences in practice and control group fathers according to pre-test and post-test were tested by wilcoxon signed rank test and it was seen that the differences were not significant statistically. (fathers in practice group z=1,41, p>0,05, fathers in control group z=0,66, p>0,05).

Discussion and conclusion

Families with handicapped children may have many problems. The requirements of the children with mentally retardation may lead to intensive intrafamily anxiety by influencing the life styles of the family members. Mentally retarded children live by depending on their parents in accordance with their level of disabilities. The parents may develop certain psychological disorders due to having a mentally retarded child. The situation may affect their way of life and cause high levels of anxiety. Whereas the special physical education classes give the mentally retarded children an opportunity to learn how to do several activities on their own while enjoying themselves; they also help alleviate the dependency of children upon other people.

Special physical education and sport activities are a mechanism that encloses the dynamics that can obviate many negative characteristics of the individuals and by means of this feature, it can be deemed as a rehabilitation instrument. It serves the community on a macro-scale, by serving all the development aspects of the individuals.

General development processes of the children with mental disabilities may be different in comparison with their coevals who have normal development processes. The scientists in this subject state that well planned physical education and sport activities that may support the developments of these children as one of the measurements can be taken to improve their living standards and may have important role to minimize the disadvantages which may arise from these differences.

That the families accept the responsibilities at the development of their children and assist at the implementation of the education program is an inevitable factor in order to achieve the targeted goals (G. Uyanık, 2003). During the last years, the attached importance regarding the participation of parents of handicapped children at the education programmes increased and the opinion, that this has a positive effect on the success of the education of the child, is widely accepted. That the parents are supported emotionally and educationally, the provision of the participation at the program planning and application may provide the reduction of their worries.

Though it is noted in most of the studies that mothers of handicapped children are more exposed to stress, some studies note that also fathers are affected at a similar ratio as the mothers (S. Goldberg et al,1990). Also the continuous and momentous worry point averages of the mothers and fathers, participated to our study, were rather close to each other.

It is seen that the participation of the parents to the educations caused changes at their behaviour against their children (B. Sucuoğlu, S. Küçüker, N. Kanık, 1992). And the result of our study serves this base. It is thought that parents, who watch the special physical education programmes, at which their children take part, are impressed by this program. This impression means; that they personally witness the developments at the children who take part at the special physical education program. As the dynamics in sports like competition, entertainment, fun, happiness, contest, friendship affect the children, they also affected the parents watching them. The parents have most times watched their children wondering and applauded at their successful acts. With other words, also the parents took part at the special physical education environment. This situation is crystallized both with the observations of the researcher and the data of the study.

A decrease in the anxiety levels has been observed at the anxiety levels for the parents of the children at the practice group, compared to those of the parents whose children are at the control group. This decrease, however, is not found to be statistically meaningful. There has been no change at the constant anxiety levels of the control group.

Observing their children move independently has had an effect on the parents of disabled children that greatly helped them reduce their levels of anxiety. The continuity of this kind of special physical education programs and parent cooperation can help achieve more effective results.

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THE ROLE OF PHYSICAL TRAINING REGARDING THE KINETICALLY IMPROVEMENT AND RECOVERY TO CHILDREN HAVING PHYSICAL DEFICIENCY, THE FLAT FOOT

Moldovan Elena, Cioroiu Silviu Gabriel, Enoiu Roxana, Enoiu Răzvan Sandu
Faculty of Physical Education and Sport, Transylvania University of Brasov, ROMANIA
E-mail: scioroiu@yahoo.ca / 03.03.2010 / 20.03.2010

Abstract

The present article describes the notion of the flat foot, the architecture of the foot, the influence of a model-programmer for its recuperation. A lot of attention is given to the analysis of the geometrical modification of the foot before and after the application of the model-programmer. By this analysis way we can observe the real progress registered by individual pupils. Only knowing the medical and biological data of every pupil, the physical education teacher can establish the integration possibilities of the pupil in the process of physical education can decide and apply the most adequate measure for preventing and correcting the physical deficiencies. We are suggesting the conduction of a study on improving the physical deficiency through physical exercises, which is the flat foot. In analyzing the flat foot, we have come to the conclusion that through the application of certain individualized programs, the fallowed parameters have evolved favourably bearing in mind the existence of all the articulate alterations which could have delayed or dragged out the success of the recovery treatment.

Key words: flat foot, recuperation, physical education, prevention, treatment.

Introduction

Knowing the harmonious growth and development of the child and of the young generation has been and still is one of the main concerns of specialists in the field of human and social science.

The changes concerning the body dimensions and proportions of certain corporal segments and height, the changes between the corporal segments in themselves, as well as the changes of figure, proportion and different components of the corporal mass, all of these represent the physical growth and development (E. Duma, 1997).. Since one of the main goals of physical education and sport is the stimulation and provision of a normal growth and a harmonious physical development, the physical education teacher must be truly aware of the essential traits of growth and development, of the factors which condition them, of the laws that govern them and, naturally, of the ways in which they can be influenced, for they are mainly working with one of the most important and determinant factors of the growth and development process, that is movement, respectively physical exercise (E. Duma, 1997).

The physical deficiency represents an alteration from the normal state to what the shape and the functions of the locomotive apparatus are concerned, shape and functions which exert negative influences on the organism and decrease its physical efficiency.

These deviation from the normal state can alter the body's shape and functions totally or just to the level of some regions and segments (C. Baciu, 1981).

N.A. Ionescu has given one of the most complete definitions to the notion of deficiency. Thus, the physical deficiency is considered as: "*any deviation form the normal to what the shape and functions of the organism are concerned, shape and functions which disturb the body's normal growth and harmonious development, alter the exterior aspect, reduce skills and adaptive strength to physical effort and the capacity to productive labour, as well*." These flaws get to remove the deficient from his familial and professional environment only in the most serious cases, creating o series of inferiority complexes towards his healthy and normal-built fellow creatures (N.A. Ionescu, 1964)..

The functional deficiencies are the result of some lack or a hyper function, the result of some imbalance or lack of coordination of the locomotive apparatus. The physical deficiencies of pathological nature are determined by the structural alterations of the elements which compose this apparatus in the first place. The causes for physical deficiencies are numerous and various, reason for which there is no unique criterion of adjustment. The issue of tracking, preventing and correcting the physical deficiencies known to children represents a permanent concern not only for parents but also for the entire faculty in charge with their education and development (N.A. Ionescu, 1971). Along with the medical exams performed in schools in order to establish the health condition and to appreciate the physical growth and development of pupils, it has been found that only a certain part of pupils present a correct body attitude. This is why we

cannot oversee the relatively big percentage of pupils who carry some functional and morphological flaws located at the level of the locomotive apparatus.

We would also like to stress the importance of these deficiencies to what the harmonious development of teenagers and young people is concerned. Noticed in time, correctly followed and guided, the easy and medium deficiencies can be improved. Denying their existence is as a big of a mistake as not correcting them or treating them with callousness. Only knowing the medical and biological data of every pupil, the physical education teacher can establish the integration possibilities of the pupil in the process of physical education can decide and apply the most adequate measure for preventing and correcting the physical deficiencies.

We are suggesting the conduction of a study on improving the physical deficiency through physical exercises, which is the flat foot.

The flat foot represents the most commonly known abnormality of the inferior extremities and is characterized through the collapse of the longitudinal and transversal arch; the disturbance of the sole's statically and dynamical function takes place which can also affect the functioning of some other links of the locomotive apparatus.

From the foot's architecture point of view, the main alterations which lead to the flat foot are:

- the Alcaeus's being deviated into the vague and twisted into the phonation;
- the astragals' head is being deviated down and inside;
- the posterior tars presents a deviation in the equine;
- the ante foot is being deviated in abduction, in supination;
- the plantar arch of the foot becomes more flatten.

This abnormality takes place due to the perpetration of the foot's sustaining forces (muscles, ligaments, and plantar apponevrosis). The alterations in the foot's architecture represent a direct consequence of a ligament hyper laxity, as well as of a hypotonic state, especially of the plant's muscularity. These phenomena can be produced by endocrine, infectious, viral factors. The generalized muscular hypotonic state (which generally accompanies the platypus) in children, can be treated through a protuberant abs, and in adults through the presence of a cifotic attitude (Robanescu, N., 1976).

One can observe this abnormality frequently in childhood, when the child's congenital and rachitic nature persists. When the child reaches his teen years, the growing pains signal the existence of this abnormality. The collapse of the plantar arch in adulthood is closely linked to the professions which particularly demand this region (barbers, shop assistants, and waiters) or to some diseases which need immobilization on the long term (N. Robanescu, 1976).

This paper intends to demonstrate the positive influence of the proposed recovery program which includes means and exercise complexes of correcting the flat foot. One has emphasized the geometrical parameters of the sole to the pupils engaged in the study, pupils having a physical deficiency, the flat foot, before and after implementing the exercise complex.

To stress the geometrical alterations of the sole to the pupils engaged in the study we have evaluated the following parameters: the length of the left sole (cm), the length of the right sole (cm), the left sole's index (cm), the right sole's index (cm), after Cighin's method as followed $I = \frac{dE}{Ei}$ with a precision up to 0,5cm.

The sole's index represents the proportion between the size of the support part of the sole DE to EI.

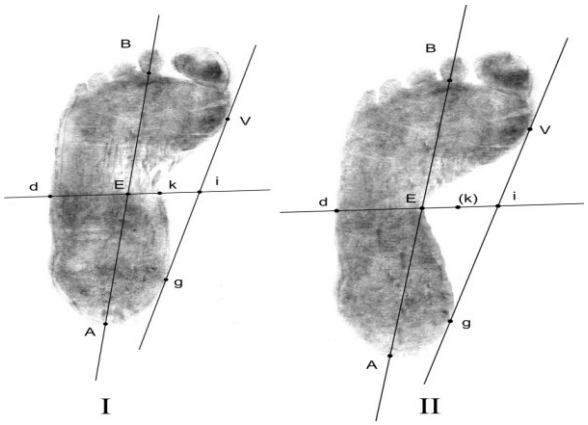
GV – the line that unites the protuberant points of the internal part of the sole;

AB – the line that unites the points from the base of the second toe and the middle of the heel (the longitudinal osia of the sole);

DI – the line that goes through the middle of the AB longitudinal osier.

One considers that:

1. the subject has a pronounced flat sole if the medium sole index is 2,45;
2. if the sole index differs from 0 to 1, then one can say we are in the presence of a normal sole;
3. from 1 to 2 – flat sole and index bigger than 2 – flat sole.



I. Initial testing II. Final testing

One has researched the effects of the therapeutically exercise program on correcting the flat foot to the pupils engaged in the study on a period of a school year with two sessions a week

The premises of the research

1. The pupils have had a heterogeneous component with different characteristics which have been distinguished at the physical education classes as well. During the school year, the pupils are in different stages of development, have different intellectual capacities and present signs of manifestation to the driven capacities and different recovery signs.
2. After the evaluation one has established the objectives and the programs which must be put to

use. The therapeutically exercise program has been elaborated and adapted to the different possibilities of the pupil, to each and one's personal rhythm.

The conjectures of the research

We have considered that the correct and systematic selection and application of the elaborated recovery program will have a positive effect and will determine the correction of the physical deficiency, the flat foot, to the pupils that are engaged in the study.

Organizing and developing the research

The research has been conducted at the "Godri Ferenc" General School from Sf. Gheroghe, to the gymnasium cycle, V-VI grades, and the sample consisting of 40 pupils (18 girls and 12 boys). The main research method was the longitudinal pedagogical experiment which has been conducted with the respective grades. The pupils of each grade have been divided into two groups: a boy one and a girl one. The groups have been made based on the evaluations done in the beginning of the school year.

The physical exercise program

Used methods:

1. Static exercises – are used as corrective and hyper corrective positions derived from just sitting, on your knees, sitting down and lying down. In the beginning one uses corrective exercises from the lying down, sitting down and on your knees – as the most stable and less tiring methods used – and only after one has gathered a sufficient force of the arch one can use exercises from just sitting and walking.

2. Dynamic exercises:

- Inferior extremities exercise executed symmetrical, simultaneously or alternatively – in which concentrically plantar flexion exercises will prevail executed even inside the contraction segment;
- applied exercises: walking on tip toes, walking on the external part, crawling, climbing;
- passive recovery exercises and especially active ones executed as self control through distributing the body weight along the external arch;

Exercise complex for correcting the flat foot

1. Backwards laying down against a wall – bending the knees – the top of the foot leaning on the wall – drawing circles on the wall with the top of the foot.
2. Backwards laying down – alternative bending and stretching of the knees – the top of the feet very well stretched.
3. Onwards laying down – legs on the vertical – the teacher opposing resistance on the sole – concentrically plantar flexion inside the contraction segment.
4. Sitting down with backwards support – spreading the legs, rolling a ball from one foot to the other.
5. Sitting down with backwards support – bending and stretching the knees while maintaining the ball between the soles.
6. Sitting on a chair with the soles leaning on a cane – rolling the cane.
7. Walking on tip toes while holding the arms up in the air – inhaling - recovering - exhaling.
8. Walking on the external part of the feet while holding the arms in the back of the head.
9. Walking on the narrow part of the gymnastics bench while holding a medicinal ball from the lateral.
10. Walking on tip toes with the legs crossed on a line drew on the floor.

The results of the research

The results of the measurements which present the evolution of the sole's geometrical alterations are displayed in the 1 and 2 tables.

Comparatively analyzing the initial and the final results of the sole's geometrical alterations to the pupils engaged in the study we have noticed positive results in correcting the physical deficiency, the flat foot.

Table 1

The comparative analysis on the sole's parameters to the pupils engaged in the study

Number of the group	Testing	Group I Initial Testing n=18	Group I Final Testing n=18	t	P
1.	The length of the left sole (cm)	22,74±0,15	22,48±0,14	1,86	>0,05
2.	The length of the right sole (cm)	23,03 ±0,16	22,30±0,15	0,56	>0,05
3.	The left sole index (cm)	2,41 ±0,36	2,38±0,31	0,42	>0,05
4.	The right sole index (cm)	2,49 ±0,38	2,47±0,33	0,48	>0,05

Table 2

The comparative analysis on the sole's parameters to the pupils engaged in the study

Nr. d/o	Testing	Group II Initial Testing n=12	Group II Final Testing n=12	t	P
1.	The length of the left sole (cm)	23,11±0,13	22,86±0,11	2,11	<0,05

2.	The length of the right sole (cm)	23,15±0,14	22,88±0,12	2,12	<0,05
3.	The left sole index (cm)	2,22±0,28	1,59±0,23	2,08	<0,05
4.	The right sole index (cm)	2,27±0,27	1,61±0,25	2,09	<0,05

Conclusion

The positive effects of the means and the exercise complexes conducted in the case study mentioned above allow the emphasis on the fallowing aspects:

- Fallowing the alteration results of the pupils' sole index from the first group, we have noticed that the pupils engaged in the study can be framed in the

The forming of normal sole at puberty age is not possible, but obtaining the attenuation of the sole index, at the 1,5 parameter, represents a considerable improvement of the foot's state and respectively the confirmation of the conjectures of the research.

The exercise program applied in collaboration with the school's kinetic therapist which has consisted of associating physical exercises with kinetic patterns have lead to a sure method of recovering the sole's parameters.

In analyzing the flat foot, we have come to the conclusion that through the application of certain individualized programs, the fallowed parameters have evolved favourably bearing in mind the existence of all the articulate alterations which could have delayed or dragged out the success of the recovery treatment.

The conclusions one has reached, as well as the confirmation of the research conjectures can become valid arguments in supporting the application of prophylactic, therapeutically and recovery programs to the inferior extremities level.

category of those with less pronounced bilateral flat foot.

- The pupils form the second group to whom the sole index has reached 1, 59+/-0, 23, respectively 1, 61+/-0, 25 can be framed in the category of those with flatten sole.

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LIMBS UTILIZATION PREFERENCE EFFECT ON TRUNK MUSCLES MAXIMAL ISOMETRIC STRENGTH PRODUCTION IN ROMANIAN SPORTSWOMEN

Straton Alexandru[1], Deliu Dan[2], Gidu Diana[1]
[1] Ovidius University of Constanta, Faculty of Physical Education and Sport, ROMANIA
[2] National University of Physical Education and Sport Bucharest, ROMANIA
Email: axelcorro@yahoo.com **/ 03.02.2010 / 20.03.2010**

Abstract

Straton Alexandru, Deliu Dan, Gidu Diana. Limbs utilization preference effect on trunk muscles maximal isometric strength production in Romanian sportswomen.

Background: Most problems encountered at the level of vertebral column in sportswomen is generated by asymetrical movements at the level of the trunk directly linked by preferential utilization of either superior or inferior limbs in sports training and competition.

Aims: The aim of this study is to determine the effect of limbs utilization preference on trunk muscles maximal isometric strength production in Romanian sportswomen.

Methods: This study used 15 Romanian sportswomen, white caucasian, divided in 5 handball players, 5 soccer players, 5 track and field athletes (triple jump). Body height was estimated with an error of 0,5cm. and body weight was evaluated with a calibrated digital scale (Exacta, Germany), with an error of 0.25 kilograms. The body fat percentage was estimate using a bioelectric impedance method (Omron BF-306). Maximal isometric strength of the lumbar/thoracic column was measured with special machines in all three planes – flexion with David F130 Lumbar/Thoracic Flexion at 30º angle and extension with David F110 Lumbar/Thoracic Extension at 30º angle, in sagittal plane – right lateral flexion and left lateral flexion with David F150 Lumbar/Thoracic Lateral Flexion at 0º angle, in frontal plane – right lateral rotation and left lateral rotation with David F120 Lumbar/Thoracic Rotation at -30º angle, in transversal plane.

Results: Handball players have a significantly higher maximal isometric strength for left lateral flexion then right lateral flexion (t=6,816) and track and field athletes have a significantly higher maximal isometric strength for right lateral rotation then left lateral rotation (t=5,662).
Conclusions: Sportswomen will develop the trunk strength according to preferential utilization of either superior and inferior limbs, but only in sports with strong asymetrical movements.
Keywords: maximal isometric strength, muscles, flexion, extension, lateral flexion, lateral rotation, sportswomen.

Introduction

Superior limbs preferential utilization have a higher impact, then inferior limbs preferential utilization, on trunk muscles strength development, in sedentary peoples. Is well known that, the most complex and vary movements is obtained with the help of superior limbs, then inferior limbs which presents, in general, simetrical movements with the exception of movements realised in some sports.

E. Andersson, L. Swärd, A. Thorstensson, (1988), have shown significantly differences of maximal isometric strength for flexion, extension and lateral flexion, between sports subjects (soccer players, wrestlers, tennis players and gimnasts) and sedentary subjects (all the subjects had the age between 18 and 22 years old). In flexion and right and left lateral flexion, tennis players and wrestlers have developed an isometric strength significantly higher in the same part of the trunk, with the non-dominant superior limb. Those differences recorded between sports subjects and sedentary subjects, can be related with the specificity of sports, and also, with the sistematic practice of trainning for long periods of time.

Biomechanics of tennis predispose the player in lumbar neuromuscular disbalances (significant differences between right and left side of the lumbar extensor muscles), fact correlated with the use in tennis of dominant superior limb. Therefore, those disbalances can be corrected with application of physical exercises at the level of lumbar muscles (T. Renkawitz, D. Boluki, O. Linhardt, J. Grifka, 2007; T. Renkawitz, O. Linhardt, J.Grifka, 2008).

S. Parkin, A.V. Nowicky, O.M. Rutherford, A.H. McGregor, (2001), in a study realised on 19 rowers and 20 controls (almost identical in age, height and weight), has shown that, asimetrical mioelectric activity between right extensor muscles and left extensor muscles, in extension movements, is correlating with the side in which the athlete is rowing. Even if the maximal isometric strength for trunk flexion and extension isn't significantly different between rowers and controls, mioelectric activity of muscles has been significantly higher for rowers then controls.

Hypothesis Sportswomen will develop the strength of trunk muscles according to limbs preferential utilization in sports.

Research Methods and Procedures

Participants The transversal study was conducted between July 2009 and September 2009, in Constanta. The aims and methods of the study were explained to the participants, who chose freely to participate in this study. The study was performed on 15 Romanian sportswomen divided in 5 handball players, 5 soccer players, 5 track and field athletes (triple jump), white Caucasian, with age between 16 and 43 years old, with no acute or chronic back pain. The mean age for handbal players was $24^{6} \pm 2^{10}$ (years ^{months}), for soccer players was $26^{9} \pm 9^{11}$ (years ^{months}) and for track and field athletes was $22^{1} \pm 6^{8}$ (years ^{months}).

Anthropometry

Body height was evaluated with an error of 0.5 centimeters and body weight was evaluated with a calibrated digital scale (Phillips HF-351, China), with an error of 0.05 kilograms. BMI was calculated to estimate the category of weight for each subject by using the Quetelet formula (G. Dumitru, 1997; G. Dumitru, A. Suciu, 1999). BF was estimated using bioelectrical impedance method, with Omron BF-306 (bodyfat analyser) (table 1). Omron BF-306 offers strong corelated results with DEXA (Dual-Energy X-ray Absorptiometry), for bodyfat estimation (M. Lintsi, H. Kaarma, I. Kull, 2004). Fat mass was calculated by dividing the product of body weight and BF at 100.

Table 1. Physical characteristics of sportswomen (n = 15)

	Handball (n = 5)		Soccer (n = 5)		Track and field (triple jump) (n = 5)	
Variables	**M ± SD**	**CV(%)**	**M ± SD**	**CV(%)**	**M ± SD**	**CV(%)**
Body height (cm.)	174,8 ± 7,43	10,316	166.8 ± 4,438	10,039	171,4 ± 1,949	1,137
Body weight (kg.)	71,1 ± 7,335	8,561	59,6 ± 5,983	2,661	55,1 ± 3,435	6,234
BMI (kg/m^2)	23,22 ±1,005	4,328	21,385 ± 1,394	6,519	18,751 ± 1,106	5,418
Body fat (%)	21,58 ±1,683	7,799	21,72 ± 1,574	7,247	15,92 ± 1,203	7,557
Fat mass (kg.)	12,909 ±2,07	16,035	15,489 ± 2,327	15,024	8,763 ± 0,737	8,41

BMI, body mass index; M, mean; SD, standard deviation; CV, coefficient of variability; n, number of subjects.

With one exception of one track and field athlete, which has an underweight BMI, the rest of the sportswomen have a normal weight BMI.

Preferential utilization estimation of superior and inferior limb

For the calculation of preferential utilization (dominance) of superior and inferior limb, was used Hildreth laterality index formula, which has two extremities for values: +1 for consequent right and -1 for consequent left. Also, the values between -1 and 0 is linked to left tendencies of preferential utilization, the values between +1 and 0 is linked to right tendencies of preferential utilization and 0 is linked to mixt preferential utilization. Zero value is obtained, only if the number of tests is paired. Hildreth laterality index formula is (R-L)/(R+L), where R represent the number of tests executed with the superior or inferior right limb and L represent the number of tests executed with the superior or inferior left limb (M. Dougas, 1965; D.V.M. Bishop, 2001).

As a fundamental condition, to realise the superior and inferior preferential utilization estimation, the subjects will not be informed about the tests aims, after the tests application, so that the data cannot be altered, as a consequence of physiologic influences of the subjects, regarding the final aims of these tests.

Tests for estimation of superior limb dominance

Test no. 1 Handclap.

Test no. 2 Cut with scissor a model (square) from the paper.

Test no. 3 Tennis ball throwing, form above the head, with one hand to a target.

Test no. 4 Write your name, surname, address, telephone number and e-mail on your paper sheet.

Tests for estimation of inferior limb dominance

Test no. 1 Kicking a tennis ball with the foot, between two landmarks.

Test no. 2 Executing a big step forward.

Test no. 3 Running and takeoff on a single leg to execute a high plyometric skipping (pop-up).

Test no. 4 Stair climbing.

Maximal isometric strength estimations and analysis for lumbar-thoracic column

Maximal isometric strength, at the level of lumbar-thoracic column, was estimated, for extension at 30 degrees, using F 110 Lumbar/Thoracic Extension device (Fig. 1) (David Fitness & Medical Ltd., Karitie 9, 01530 Vantaa, Finland), for flexion at 30 degrees, using David F 130 Lumbar/Thoracic Flexion device (Fig. 2), for lateral flexion at 0 degrees, using David F 150 Lumbar/Thoracic Lateral Flexion device (Fig. 3) and for lateral rotation (by moving the inferior limbs) at -30 degrees, using David F 120 Lumbar/Thoracic Rotation device (Fig. 4).

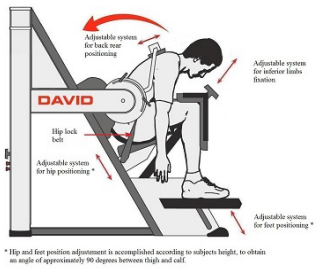

Figure 1. David F110 Lumbar/Thoracic Extension device

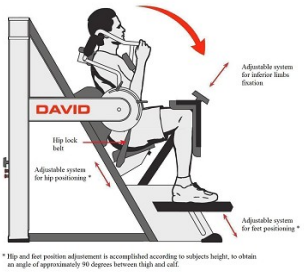

Figure 2. David F130 Lumbar/Thoracic Flexion device

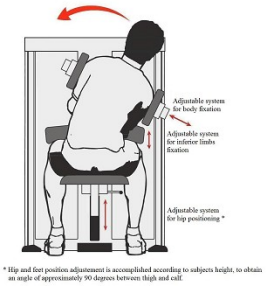

Figure 3. David F150 Lumbar/Thoracic Lateral Flexion device

Figure 4. David F120 Lumbar/Thoracic Rotation device

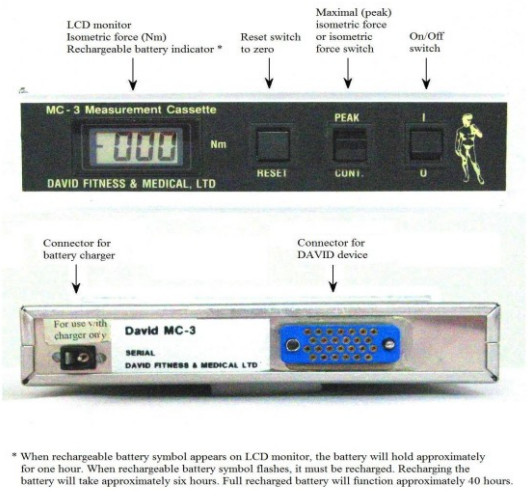

Figure 5. Digital test module MC-3

Maximal isometric strength results were recorded on MC-3 microcomputer (Fig. 5), which was connected on each DAVID device.

Maximal isometric strength estimation, for all DAVID devices, at the level of lumbar-thoracic column, was estimated with hip and inferior limbs locked in a sitting position. Subjects were instructed to execute all the movements (flexion, extension, lateral flexion and lateral rotation), at the level of lumbar-thoracic column, by developing a progresive isometric strength, avoiding sudden or uncontrollable movements (which could lead to eronated values of maximal isometric force), for 5 seconds, maximal isometric strength being recorded in the last second of the test.

Statistical analisys

Data are presented as the mean (M) ± standard deviation (SD). Dependent student t test was used to examine the differences of maximal isometric strength between flexion and extension at 30 degrees, between right lateral flexion and left lateral flexion at 0 degrees and between right lateral rotation and left lateral rotation at -30 degrees, for all sports. Independent student t test was used to examine the differences between all lateral movements strength ratios and strength ratio perfectly balanced (when all strength ratios are equals to 1).

Independent one-way ANOVA test and TUKEY HSD post independent one-way ANOVA test were used to examine the differences of maximal isometric strength between handbal players, soccer players and track and field (triple jump) athletes, for all movements. The same tests were used to examine the differences between handbal players, soccer players and track and field (triple jump) athletes, for all strength ratios (R. Lowry, 2000; R.J. Thomas, J.K. Nelson, 1996; D.J. Sheskin, 2004).

The significance level (α – alfa) was set at $p < 0.05$ (R.L. Lieber, 1990a; R.L. Lieber, 1990b; R.J. Thomas, J.K. Nelson, 1996).

Results

Table 2. Mean results of Hildreth laterality index for sportswomen (n=15)

Sports		Hildreth Laterality Index	
		Superior limb	Inferior limb
Handball (n = 5)	M ± SD	0,6 ± 0,894	0,2 ± 0,758
	CV(%)	149	379
Soccer (n = 5)	M ± SD	0,9 ± 0,224	0,6 ± 0,418
	CV(%)	24,889	69,667
Track and field (triple jump) (n = 5)	M ± SD	0,9 ± 0,224	0,8 ± 0,274
	CV(%)	24,889	34,25

M, mean; SD, standard deviation; CV, coefficient of variability; n, number of subjects.

Table 3. Means of maximal isometric strength results for flexion, extension, lateral flexion and lateral rotation for sportswomen (n=15)

Sports		F130 Flexion (Nm) 30º	F110 Extension (Nm) 30º
Handball (n = 5)	M ± SD	149,2 ± 20,117 [a d]	257,8 ± 44,724
	CV(%)	13,483	17,348
Soccer (n = 5)	M ± SD	110 ± 22,372 [b]	197,8 ± 30,866
	CV(%)	20,338	15,605
Track and field (triple jump) (n = 5)	M ± SD	137,8 ± 23,805 [c]	246,6 ± 52,828
	CV(%)	17,275	21,423

Sports		F150 Lateral flexion (Nm) Right 0º	F150 Lateral flexion (Nm) Left 0º
Handball (n = 5)	M ± SD	154,6 ± 17,271 [e]	182 ± 20,236 [g]
	CV(%)	11,171	11,119
Soccer (n = 5)	M ± SD	125,8 ± 30,499	133 ± 28,373
	CV(%)	24,244	21,333
Track and field (triple jump) (n = 5)	M ± SD	118,4 ± 16,622 [f]	128,8 ± 17,712
	CV(%)	14,039	13,752
Sports		**F120 Lateral rotation (Nm) Right -30º**	**F120 Lateral rotation (Nm) Left -30º**
Handball (n = 5)	M ± SD	103,6 ± 27,628 [i]	106 ± 25,05 [j]
	CV(%)	26,668	23,632
Soccer (n = 5)	M ± SD	52,8 ± 20,981	64,8 ± 21,933
	CV(%)	39,737	33,94
Track and field (triple jump) (n = 5)	M ± SD	93 ± 10,223 [h]	88,4 ± 9,343
	CV(%)	10,992	10,569

a – significantly different than F110 Extension, 30º, for handball players, t=5,857;
b – significantly different than F110 Extension, 30º, for soccer players, t=9,845;
c – significantly different than F110 Extension, 30º, for track and field (triple jump) athletes, t=7,649;
d – significantly different than F130 Flexion, 30º, for soccer players and track and field (triple jump) athletes, F(2, 12) = 4,143; critical value of Tukey HSD test is 37,345, p<0,05; significantly difference between handball players and soccer players for F130 Flexion, $t_{TukeyHSD}$ = 39,2.
e – significantly different than F150 Left lateral flexion, 0º, for handball players, t=6,816;
f – significantly different than F150 Left lateral flexion, 0º, for track and field (triple jump) athletes, t=5,674;
g – significantly different than F150 Left lateral flexion, 0º, for soccer players and track and field (triple jump) athletes, F(2, 12) = 8,587; critical value of Tukey HSD test is 38,053, p<0,05; significantly difference between handball players and soccer players for F150 Left lateral flexion, $t_{TukeyHSD}$ = 49; significantly difference between handball players and track and field (triple jump) athletes for F150 Left lateral flexion, $t_{TukeyHSD}$ = 53,2.
h – significantly different than F120 Left lateral rotation, -30º, for track and field (triple jump) athletes, t=5,662;
i – significantly different than F120 Right lateral rotation, -30º, for soccer players and track and field (triple jump) athletes, F(2, 12) = 8,236; critical value of Tukey HSD test is 35,205, p<0,05; significantly difference between handball players and soccer players for F120 Right lateral rotation, $t_{TukeyHSD}$ = 50,8; significantly difference between soccer players and track and field (triple jump) athletes for F120 Right lateral rotation, $t_{TukeyHSD}$ = 40,2.
j – significantly different than F120 Left lateral rotation, -30º, for soccer players and track and field (triple jump) athletes, F(2, 12) = 5,349; critical value of Tukey HSD test is 33,699, p<0,05; significantly difference between handball players and soccer players for F120 Left lateral rotation, $t_{TukeyHSD}$ = 41,2.

Significance level set at p<0,05.

M, mean; SD, standard deviation; CV, coefficient of variability; n, number of subjects; t, student t test; Nm, Newton*metre.

Table 4. Means of maximal isometric strength ratios results for sportswomen (n = 15)

Strength ratios		Handball (n = 5)	Soccer (n = 5)	Track and field (triple jump) (n = 5)
F130 Flexion/ F110 Extension (**30º**)	M ± SD	0,589 ± 0,109	0,556 ± 0,075	0,565 ± 0,05
	CV(%)	18,506	13,489	8,85
F150 Right lateral flexion/ F150 Left lateral flexion (**0º**)	M ± SD	0,851 ± 0,044 [a b]	0,942 ± 0,056 [c]	0,919 ± 0,03 [d]
	CV(%)	5,17	5,945	3,264
F120 Right lateral	M ± SD	0,972 ± 0,07	0,825 ± 0,227	1,052 ± 0,019 [e]

rotation/ F120 Left lateral rotation **(-30º)**	CV(%)	7,202	27,515	1,806

a – significantly different than strength ratios mean F150 Right lateral flexion/ F150 Left lateral flexion, 0º, for soccer players and track and field (triple jump) athletes, F(2, 12) = 5,5; critical value of Tukey HSD test is 0,075, p<0,05; significantly difference between handball players and soccer players for strength ratios mean F150 Right lateral flexion/ F150 Left lateral flexion, $t_{TukeyHSD}$ = 0,091.
b – significantly different than strength ratios mean F150 Right lateral flexion/ F150 Left lateral flexion perfectly balanced (when all strength ratios are equals to 1), 0º, t=7,572;
c – significantly different than strength ratios mean F150 Right lateral flexion/ F150 Left lateral flexion perfectly balanced (when all strength ratios are equals to 1), 0º, t=2,316;
d – significantly different than strength ratios mean F150 Right lateral flexion/ F150 Left lateral flexion perfectly balanced (when all strength ratios are equals to 1), 0º, t=6,037;
e – significantly different than strength ratios mean F120 Right lateral rotation/ F120 Left lateral rotation perfectly balanced (when all strength ratios are equals to 1), -30º, t=6,12;

Significance level set at p<0,05.

M, mean; SD, standard deviation; CV, coefficient of variability; n, number of subjects; t, student t test.

Discussion

Sportswomen had generated a maximal isometric strength significantly higher in extension, then flexion (table 3, a, b, c). In flexion handball players had generated a maximal isometric strength significantly higher then soccer players, fact generated by different specific and general training per sports.

Preferential utilization of superior and inferior limbs means (table 2), per sports, is showing a mjority orientation of sportswomen for right consequent and right allmost consequent preferential utilization (with two exceptions – one handball player who has left consequent preferential utilization of superior and inferior limbs and one soccer players who has mixt preferential utilization of inferior limbs).

Handball players and track and fields athletes had a maximal isometric strength for left lateral flexion significantly higher then maximal isometric strength for right lateral flexion (table 3, e, f; table 4, b, d). Soccer players had a slight disbalance for lateral flexion movements (table 4, c). The biggest disbalance of leteral flexion movements, was recorted in handball players, fact generated by right superior limb preferential utilization (a pronounced right superior limb preferential utilization) in training and competition. Also, maximal isometric strength for left lateral flexion in handball players is significantly higher then maximal isometric strength for left lateral flexion in soccer players and track and field athletes (table 3, g). The difference of lateral flexion strength ratios between handball players and soccer players and, respectively, track and field athletes, is strengthening the disbalance between right and left lateral flexion strengths in handball players (table 4, a).

For right lateral rotation, handball players and track and field athletes had generated a maximal isometric strength significantly higher then soccer players (table 3, i) and for left lateral rotation only handball players had generated a maximal isometric strength significantly higher then soccer players (table 3, j). Track and field athletes had generated a maximal isometric strength significantly higher for right lateral rotation then left lateral rotation (table 3, h), fact also sustained by the difference recorded between the right and left lateral rotation ratios and perfect right and left lateral rotation ratios (when all strength ratios are equals to 1) (table 4, e). The specificity of triple jump training can be the main reason for this asymetrical development of strength for lateral rotation.

Small levels of maximal isometric strength recorded in soccer players, is showing a weak general and specific physical preparation for strength. Even if there is a small level of strength generated by soccer players, the training in soccer, implies a development of strength at the level of lumbar-thoracic column, almost balanced. However, right and mixt preferential utilization of inferior limbs in soccer players, implies a typical development of strength for lateral rotation (a powerful development of strength for left lateral rotation).

Preferential utilization of right superior limb in almost all handball players, generates a major disbalance of strength for lateral rotation. Also, from all sportswomen, handball players had generated the most powerful strength in all movements, fact generated by general and specific training from handball.

Preferential utilization of superior and inferior limbs for track and field athletes, implies a generation of strength almost similar as sedentary subjects with right superior and inferior limbs pereferential utilization.

As a result of global analysis of these data recorded, preferential utilization of superior limbs, have the tedency to produce disbalances of antagonistic muscles at the level of vertebral column, much more accentuated, then preferential utilization of inferior limbs. Anyway, these facts are yet disputable, from which is resulting the necesity of doing more experimental studies on this topic.

Conclusion

Sportswomen will develop the trunk strength according to preferential utilization of either superior and inferior limbs, but only in sports with strong asymetrical movements.

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❖ MANAGEMENT

UN PROTECTIONNISME DANGEREUX : LA PROPOSITION DU 6+5 DE LA FIFA ET LA REGLE DU 6+2 APPLIQUEE EN TURQUIE, DEUX SOLUTIONS POUR LIMITER LE NOMBRE DE FOOTBALLEURS ETRANGERS DANS LES CHAMPIONNATS NATIONAUX

Cetin Cem
University Kocaely, TURKEY
Email: cemcetin6@gmail.com / 03.03.2010 / 19.03.2010

Abstract

Depuis la promulgation de la loi dite Bosman en 1995, le nombre de footballeurs étrangers a énormément progressé. Dans les cinq plus grands championnats européens, la place occupée par ceux-ci atteint de 33 à 60% des effectifs. Avec un taux de 59,6%, la Premier League anglaise occupe le sommet de ce classement, suivie par la Bundesliga allemande (46,5%), la Liga espagnole (36,9%), la Serie A italienne (36.4%) et la Ligue 1 française (33,4%). Le championnat turc, lui, se distingue avec un nombre très inférieur de joueurs étrangers (28%). L'explication est assez simple. Elle tient à la règlementation, appelée ''6+2''. Dans les faits, chaque équipe peut signer un maximum de huit joueurs étrangers pour construire son effectif, à la nuance près que six d'entre eux au maximum pourront être alignés dans le onze des titulaires. Cette règle appliquée en Turquie ressemble énormément à la formule du 6+5 proposée par la FIFA. L'objectif de nos travaux est d'analyser la pertinence du 6+2 en Turquie et de discuter si, vraiment, la formule du 6+5 estampillée FIFA, qui vise aussi à réduire le nombre de joueurs étrangers dans les ligues nationales, est la plus judicieuse. Car si l'intention de la Fédération Internationale peut sembler louable, ce genre de restriction détériore la concurrence, avec deux inconvénients majeurs à la clef. Le premier tient à la qualité des joueurs nationaux, généralement pas au niveau souhaité par les clubs. Le second, qui en découle, est lié aux exigences financières trop élevées des mêmes joueurs nationaux. Ainsi, la règle du 6+2 leur garantit cinq places dans le onze aligné au début du match. Comme le nombre de joueurs locaux formés au club ou ailleurs dans le pays n'est pas très élevé, ceux qui peuvent légitimement justifier leur place au sein de l'équipe ne se sentent pas une envie farouche de beaucoup travailler pour développer leur jeu. Conséquence directe de cette relative rareté de l'offre, les équipes se trouvent dans l'obligation de les rémunérer exagérément eu égard à leur valeur sportive. Cette politique salariale imposée détériore l'équilibre au sein de l'équipe. On arrive à une situation où c'est la règle du 6+2 qui détermine les salaires des joueurs turcs, et non pas la qualité de leur football. La grande majorité des joueurs étrangers se retrouvent ainsi sous-payés comparés aux joueurs nationaux. Cette triste et injuste réalité étant une évidence, doit-on en conclure que la proposition du 6+5 émanant de la FIFA, ou bien la règle du 6+2 actuellement en vigueur en Turquie, seront et sont la solution idéale pour le développement du football dans son ensemble, et l'avenir des clubs en particulier?

Key words: championnats nationaux, fifa, footballeurs.

Introduction

Parmi les 44 footballeurs des quatre équipes (M.United, Arsenal, Chelsea, Barcelona) présents sur les terrains de football lors des demi-finales aller de la Champions League 2007/08, 11 seulement étaient des joueurs locaux. Un quart très exactement ! Les 33 autres provenaient de 17 pays différents. Quand on regarde attentivement la répartition par continent, 20 sont issus de l'Europe, 7 de l'Afrique et 6 d'Amérique. Depuis la promulgation de la loi dite Bosman en 1995, le nombre de joueurs étrangers dans chaque équipe (que cela soit le football, le basket-ball, le volley-ball et le handball) a augmenté considérablement. Dans les cinq plus grands championnats européens (football), la place occupée par ceux-ci atteint 33 à 60% des effectifs. Avec un taux de 59,6%, la Premier League anglaise occupe le sommet de ce classement, suivie par la Bundesliga allemande (46,5%), la Liga espagnole (36,9%), la Serie A italienne (36.4%) et la Ligue 1 française (33,4%). Dix ans après l'ouverture des frontières, lors de la finale de la Champions's League 2005, Liverpool, vainqueur de l'épreuve, alignait %85 d'étrangers sur le terrain (P. Boniface, 2006, 42).

Ceux qui critiquent ce nouveau paysage prétendent que les équipes sont en train de perdre leur identité. Ceux qui n'acceptent pas cette critique accusent les premiers en utilisant l'argument de la xénophobie. Des associations comme la FIFA (Fédération Internationale de Football Association), dérangée par le nombre de joueurs étrangers, souhaitent apporter une limite à cette pratique. Face au souhait de la FIFA, l'UEFA (Union of European Football Associations) prétend que la proposition (celle de 6+5) de la FIFA n'est pas conforme aux règles européennes de libre circulation. La Commission européenne reste également hostile au dispositif de « 6+5 » qu'elle considère contraire aux principes du droit communautaire. Le 28 Mai 2008, le commissaire à l'Emploi de l'Union Européenne, Vladimir Spidla, a d'ailleurs symboliquement brandi un carton rouge à la règle de 6+5 (E. Besson, 2008,66). Pourtant, sur le continent, un championnat pratique la limitation des joueurs étrangers : la Turquie.

Objectifs et methode

Ce travail a été préparé en partant de l'hypothèse qu'en limitant le nombre de joueurs étrangers (la proposition de FIFA), on n'arrivera pas toujours à obtenir les résultats escomptés. L'idée la plus courante est qu'en limitant le nombre de joueurs étrangers, les clubs accorderont plus d'importance aux joueurs locaux. Le modèle utilisé dans ce travail est le championnat turc car celui-ci ressemble beaucoup à la proposition formulée (6+5) par la FIFA. Le 6+5 est un projet de la FIFA porté par son président, Sepp Blatter, et qui consiste à rendre obligatoire la présence au début de chaque match d'au moins six joueurs sélectionables dans l'équipe nationale du pays auquel appartient le club. L'objectif de la FIFA est d'appliquer cette règle dès la saison 2010/2011, en ménageant une phase de transition : 4+7 en 2010/2011, 5+6 en 2011/12, 6+5 en 2012/2013. En Turquie, il existe un règlement qui limite le nombre de joueurs étrangers. Dans ce cadre, de nombreuses données chiffrées, donc objectives, ont été utilisées pour démontrer les conséquences de cette mesure.

Resultats

Contrairement aux lois dites Bosman, la limitation du nombre de joueurs étrangers perdure en Turquie. Lors de la saison 1995/96, les clubs pouvaient utiliser trois joueurs étrangers. Deux ans plus tard, il était porté à 4. En 1999/00, chaque équipe avait le droit d'avoir 5 joueurs étrangers puis ce nombre est passé à 6 la saison suivante. Seule nuance, les équipes ne pouvaient utiliser simultanément que 5 de leurs 6 joueurs étrangers. Entre 2001 et 2004, la barre a été poussée jusqu'à 8 joueurs étrangers sauf que, là encore, 5 seulement pouvaient être alignés sur le terrain, un 6ème pouvant être sur le banc. Entre 2004 et 2006, la règle a permis 6 joueurs étrangers sur les pelouses. Un an plus tard, on passait à 6+1 sur le banc, puis la saison d'après à 6+2 (O. Sepik, 2007, 603-612). Cette règle est celle appliquée à l'heure actuelle. Le but de cette restriction est de protéger le football et les footballeurs turcs. Par contre, quand on regarde les dix dernières années du football turc, ce protectionnisme n'a pas vraiment répondu aux attentes et a causé pas mal de dégâts.

Plusieurs données tangibles et irréfutables situent la valeur sportive d'un pays sur l'échiquier du football. Parmi celles-ci, il y a la performance de ses équipes dans les différentes coupes d'Europe. La Champion's League est la compétition la plus importante de notre continent. Avec la distribution de retombées financières tres élevées, chaque équipe rêve d'y participer et d'y accrocher de bons résultats, primés par des gains importants. Par exemple, le vainqueur de l'édition 2008, Manchester United a ramassé 37.8 millions euros de gains. Le finaliste de cette même édition, Chelsea, s'est "contenté" de 30.5 millions euros. Pendant la période 1992-2008, Manchester United, 1er au classement des revenus glanés à l'occasion de la Champion's League, a récolté 264 millions euro dans ses caisses. Cette équipe a été suivie par Bayern Munih (235), Real Madrid (231), Arsenal (210) et Barcelona (197).

Dans une compétition si juteuse financièrement, les performances des équipes turques entre 2000-2010 ne sont pas vraiment brillantes. Représentée par trois équipes stambouliotes toutes régies sous le statut d'associations sportive, avec Galatasaray (5), Fenerbahçe (5) et Beşiktaş (4), la Turquie a disputé 102 matches en dix ans. Pour 28 rencontres gagnées et 54 perdues! Et 102 buts inscrits pour 175 encaissés. Sur cette même période qui nous intéresse, les équipes tuques ont atteint à deux reprises le stade des quarts de finale : Galatasaray en 2000/01 et Fenerbahçe en 2007/08. Si l'on excepte ces deux faits d'armes, les équipes turques n'ont jamais passé les premiers tours de leurs groupes respectifs. Si l'on scinde ces dix ans en deux parties égales, on constate que la première est bien plus positive que la seconde en termes de matches joués (62 contre 40) et de victoires obtenues (18 contres 10).

Relation de cause à effet, les mauvaises performances sportives des équipes turques ont généré des conséquences néfastes sur leurs budgets. Entre 1992 et 2008, les gains obtenus par Galatasaray se sont élevés à 67,5 millions euros, ceux de Fenerbahçe à 34,4 millions euros et ceux de Beşiktaş à 24,6 millions euros (Haberturk, 27/05/2009). Tout en haut de la pyramide de ces-dits clubs, seul le président de Fenerbahçe, Aziz Yildirim, a déclaré s'opposer à la limitation des joueurs étrangers, déclarant pour l'occasion : "Nos adversaires utilisent autant des joueurs étrangers qu'ils le souhaitent. Nous n'avons pas ce droit. Dans ces conditions, on ne peut pas rivaliser. Les bons joueurs étrangers aideront le football turc et donc les joueurs locaux pour qu'ils s'améliorent. Il faut laisser libre le nombre de joueurs étrangers" (Aksam, 8/2/2010). A l'opposé de cette prise de position, des gens défendent, eux, cette limitation. Parmi ceux-là, l'ex-président de la Fédération du Football Turc, Haluk Ulusoy, dit qu'il "trouve inutiles toutes ces discussions sur la limitation des joueurs étrangers". Il a carrément ajouté : "Si nous ouvrons davantage nos frontières, on trahira le football turc. Pensons à notre avenir. En concertation avec tous les entraîneurs, la décision a été prise de continuer avec les règles actuelles de limitation. Aujourd'hui, tous les clubs s'en félicitent" (www.haber7.com/haber/20060502/Haluk-UlusoyAziz-Yildirimi-sevmem.php).

Tableau No: 1) Les Performances (*) des Equipes Turques en Champion's League (2000/2010)

Saisons	Equipes	Round	MJ	V	E	D	GF	GA	%Vic	Cum %Vic
2000/01	Galatasaray (1)	Group 1st	6	2	2	2	10	13	35%	35%
	Galatasaray	Group 2nd	6	3	1	2	6	6		
	Galatasaray	Q.F	2	1	0	1	3	5		
	Beşiktaş (1)	Group 1st	6	1	1	4	4	17		

2001/02	Galatasaray (2)	Group 1st	6	3	1	2	5	4	16%	26%
	Galatasaray	Group 2nd	6	0	5	1	5	6		
	Fenerbahçe (1)	Group 1st	6	0	0	6	3	12		
2002/03	Galatasaray (3)	Group 1st	6	1	1	4	5	10	16%	25%
2003/04	Beşiktaş (2)	Group 1st	6	2	1	3	5	7	33%	26%
	Galatasaray (4)	Group 1st	6	2	1	3	6	8		
2004/05	Fenerbahçe (2)	Group 1st	6	3	0	3	10	13	50%	29%
2005/06	Fenerbahçe (3)	Group 1st	6	1	1	4	7	14	16%	28%
2006/07	Galatasaray (5)	Group 1st	6	1	1	4	7	12	16%	27%
2007/08	Beşiktaş (3)	Group 1st	6	2	0	4	4	15	44%	30%
	Fenerbahçe (4)	Group 1st	6	3	2	1	8	6		
	Fenerbahçe	2nd Round	2	1	0	1	5	5		
	Fenerbahçe	QF	2	1	0	1	2	3		
2008/09	Fenerbahçe (5)	Group 1st	6	0	2	4	4	11	0%	28%
2009/10	Beşiktaş (4)	Group 1st	6	1	1	4	3	8	16%	27%
			102	28	20	54	102	175	27%	
2000/05	Genel Toplam		62	18	13	31	62	101	%29	
2005/10	Genel Toplam		40	10	7	23	40	74	%25	

(*) Les matches de qualifications ne sont pas pris en considération.
Le chiffre entre parenthèse illustre le nombre de participations des trois équipes turques en Champion's League.

Les mauvaises performances sportives de ces trois équipes turques réduisent la chance des joueurs turcs de partir à l'étranger. Pour bien situer le désintéret international, la médaille de bronze obtenue lors de l'Euro 2008 n'a eu aucun écho favorable à l'export. Pas un seul international turc n'a reçu le moindre contrat, ni meme d'offre digne de ce nom, de la part des clubs européens. Sur ces dix dernières années, le nombre de joueurs locaux qui sont transférés aux clubs européens n'a été que de 21. Chronologiquement, ces joueurs ont pour nom Tugay Kerimoğlu *(G.Saray/G.Rangers/1999),* Hakan Şükür (*G.Saray/Inter/2000*), Alpay Özalan *(F.Bahçe/A.Villa/2000)*, Oktay Derelioğlu *(G.Antep/Las Palmas/2000)*, Arif Erdem *(G.Saray/R.Sociedad/2000),* Emre Belezoğlu *(G.Saray/Inter/2001),* Okan Buruk *(G.Saray/Inter/2001),* Fatih Akyel *(Galatasaray/Mallorca/2001, Fenerbahçe/Bochum 2004, PAOK 2005*), Nihat Kahveci *(Beşiktaş/R.Sociedad/2002),* Hakan Ünsal *(G.Saray/Blackburn/2002),* Rüştü Rençber *(F.Bahçe/Barcelona/2003),* Tolga Seyhan (*Trabzonspor-Shakthar Donetsk 2005*), Fatih Tekke *(Trabzonspor/Zenith/2006),* Tuncay Şanlı *(F.Bahçe/Middlesbrough/2007)*, Hasan Kabze *(G.Saray/Kazan/2007),* Ümit Özat *(Fenerbahçe/FC Köln/2007),* Caner Erkin *(Manisa/CSKA Moskova/2007*), İbrahim Kaş *(Beşiktaş/Getafe/2008*), Tümer Metin *(Fenerbahçe- Larissa/ 2008*), Gökdeniz Karadeniz *(Trabzonspor/Kazan/2008),* Sinan Kaloğlu *(Bursa/Bochum/2008),*Çağdaş Atan *(Trabzon/E.Cootbus/2008).*

Parmi ces joueurs locaux partis à l'étranger, très peu (Tugay, Nihat, Fatih, Gökdeniz) ont réussi. Tous les autres sont, soit retournés en Turquie (Rüştü, Oktay, Tolga, Fatih, Arif, Okan, Hakan, İbrahim ve Caner), soit changés de club européen (Alpay, Emre, Sinan, Tuncay, Çağdaş). Dans ce processus de départ, l'inconvénient majeur pour le football turc est que ces migrations n'ont généré aucune rentrée financière pour leurs clubs respectifs. Rüştü, Umit et Tuncay à Fenerbahçe, comme Hakan, Emre et Okan à Galatasaray sont tous les six partis libres, donc gratuitement, vers des clubs européens. Un rude coup car, à l'époque, ils étaient considérés comme les meilleurs du pays. Le seul club qui a su vendre ses éléments pour des sommes importantes est Trabzonspor : 20 millions euros ! Fatih a été transféré au Zenit Petersburg pour 7.5 millions euros, Gökdeniz à Kazan pour 8.7 millions euros et Tolga à Donetsk pour 3.75 millions euros. Les paroles prononcées par le footballeur Gokdeniz Karadeniz dépeignent avec justesse la réalité de ses semblables : "Si un footballeur turc reçoit une offre en provenance de l'étranger, il doit et devrait partir. Malheureusement, nous fermons les yeux sur l'extérieur. Nous tentons de trouver une solution à l'intérieur de notre pays et, pour cette raison, nous ne progressons pas (Hurriyet, 10/2/2010)."

Le faible nombre de joueurs locaux qui partent à l'étranger ne peut pas s'expliquer uniquement par les mauvaises performances des équipes turques dans les compétitions européennes. Il faut également y chercher la volonté des joueurs locaux déterminés à continuer leur carrière dans leur pays. La raison de ce choix est purement financière. Les joueurs locaux gagnent des sommes importantes (C. Cetin, 2007, 27). Mieux, ils font gagner leurs équipes. On peut donner certains exemples qui justifient cette théorie : Nihat Kahveci, joueur de Besiktaş, touche 3.5 millions euros par an. La rémunération est de 3 millions pour Emre Belözoğlu, de 2.2 millions pour Mehmet Topuz et Volkan Demirel, 1.7 million pour Gökhan Zan, 1.5 million pour Rüştü Rençber, 1.2 million pour Gökhan Ünal et Özer Hurmaci. Dans ces affaires de transferts, les clubs provinciaux récupèrent des sommes importantes. Fenerbahçe a ainsi payé 9 millions

d'indemnités à Kayserispor pour récuperer Mehmet Topuz. Le même club a dédommagé Ankaraspor de 4.5 millions pour Özer Hurmacı et Trazonspor de 3 millions pour Gökhan Ünal. Beşiktaş a réglé 5.5 millions euro à Gaziantepspor pour Ismail Köybaşı. Autre facteur matériel qui n'est pas neutre pour les joueurs locaux restés en Turquie: la fiscalité. Le taux d'imposition sur les revenus plafonne aux environs de seulement 15%. Et encore, payés par les clubs !

La limitation des joueurs étrangers influence négativement l'équipe nationale. Bien que la Turquie ait glané la médaille de bronze lors du Mondial 2002 et du Championnat d'Europe 2008, elle n'a pas pu obtenir sportivement le droit de participer à l'Euro 2004, au Mondial 2006 et au Mondial 2010. Pour bien analyser cette inconstance, il suffit de regarder les matches de l'équipe nationale lors des éliminatoires de 2008 et 2010. Entre 2006 et 2009, la Turquie a joué vingt-deux matches. Le nombre de joueurs sollicités à cette occasion s'est élevé à 50 (11 titulaires, avec les 3 remplaçants pour chaque rencontre). Sur ces 50 joueurs, 7 (Servet Çetin 19, Tuncay Şanli et Arda Turan 18, Aurelio 16, Volkan Demirel 15, Hamit Altintop 15 et Emre Belözoğlu 14) ont pu jouer au moins la moitié de ces rencontres éliminatoires. Et parmi ces 7, 4 (Servet, Arda, Volkan et Emre) disputent le championnat turc. Si l'on reprend les 50 joueurs cités auparavant, 21 ont joué un maximum de trois matches. Ces données démontrent que le vivier de joueurs à disposition est limité et que ceux qui ont trouvé l'opportunité de jouer n'ont pas su bien utiliser leur chance pour la suite.

Il existe aussi un autre facteur à ne pas négliger. Pour une raison qui ne peut s'expliquer que sur des critères sportifs, les joueurs qui ont débuté leur carrière à l'étranger ne trouvent pas grâce aux yeux des sélectionneurs (C. Cetin 2008, 27). Si l'on reprend les 50 joueurs du postulat de base, seuls 6 d'entre eux exerçaient leur activité hors des frontières nationales. Et encore doit-on mesurer leur impact en équipe nationale eu égard au peu de matches disputés... Hamit Altıntop (B.Munih-Allemagne)a joué dans 15 rencontres, son frère Halil (SchlakeAllemagne) dans 8, Nuri Şahin (Dortmund-Allemagne) dans 6 et Mevlut Erdinc (PSG-France) dans 4. Une faible sollicitation difficile à justifier quand on sait que de nombreux joueurs d'origine turque, enfants de familles immigrées, portent les maillots de l'Allemagne (Mesut Ozil et Serdar Tasci), de la Belgique (Onder Turaci), des Pays-Bas (Ugur Yildirim), de la Suisse (Eren Derdiyok, Hakan Yakin et Gökhan Inler) ou de l'Autriche (Ümit Korkmaz, Ramazan Özcan, Ekrem Dag et Veli Kavlak).

Un argument supplémentaire démontre que la limitation des joueurs étrangers ne génère pas une augmentation de la qualité des joueurs locaux : la performance sportive des joueurs étrangers dans le championnat turc. Sur les matches allers de l'actuelle saison, 359 buts ont été inscrits au total. Et 181, soit plus de 50% des réalisations, sont l'œuvre de 56 étrangers différents sur un total de 129 renforts extérieurs (C. Cetin, 2010, 28-29). Si l'on tient compte de l'usage cadré et donc très limité des étrangers dans leurs équipes, ce total, déjà conséquent dans l'absolu, devient des plus significatifs en relatif. Ce tableau démontre à quel point le football turc manque de buteurs. Le classement des meilleurs buteurs appuie la démonstration. Après 17 journées, un seul Turc figurait parmi les onze premiers: Mustafa Pektemek, 21 ans, joueur de Gençlerbirliği avec 6 buts. En détaillant équipe par équipe les meilleurs buteurs, on constate, sans surprise aucune, que 13 des 17 équipes ont pour buteur principal un... étranger. Et si cela ne suffisait pas pour démontrer l'inutilité de cette pratique protectionniste, 9 des 17 équipes (G.Saray:*Leo Franco*, Trabzonspor: *T. Sylva*; Ankaragücü: *Senecky*; Sivasspor: *Petkovic*; Kayserispor: *Hamidou*; Bursaspor: *Ivankov*; Diyarbakırspor: *Espinoza*; Eskişehirspor: *Ivesa;* IBBS:*Hasagic*) ont choisi des gardiens de but... étrangers.

Tableau No: 2) Le Nombre des Etrangers et Leur Pays au Championnat Turc 2009/2010

Pays	Total	Pays-Bas	Total	Pays	Total	Pays	Total	Pays	Total
Brézil	28	Slovaquie	3	Cote d''Ivoire	2	Pérou	1	Etats-Unis	1
Cameroun	10	France	2	Bulgarie	2	Equateur	1	Chilie	1
Argentine	9	Danemark	2	Serbie	2	Autriche	1	Trinidad	1
Nouvelle Guinée	6	Pays-Bas	2	Benin	2	Roumanie	1	Canada	1
Tcheque Rep.	6	Allemagne	2	Congo	2	Espagne	1	Libérie	1
Bosnie-Herze.	5	Angleterre	2	Gabon	2	İtalie	1	Afr.du Sud	1
Australie	4	Senegal	2	Pologne	1	Namibie	1	Uruguay	1
Suede	4	Portugal	2	Corée de Sud	1	Tunisie	1	Israel	1
Croatie	4	Egypte	2	Paraguay	1	Iraque	1		129

Tableau No: 3) Le classement des meilleurs buteurs
(Après les matches Aller)

Joueur	Pays	Equipes	Buts
1) Aziza Makukula	Portugal	Kayserispor	13
2) Harry Kewell	Australie	Galatasaray	9
J.C. De Silva de Souza	Brésil	Gaziantepspor	9
4) Andre Moritz	Brésil	Kasımpaşa	7
Shabani Nonda	Congo	Galatasaray	7

Alex	Brésil	Fenerbahçe	7
Gustavo Coleman	Argentine	Trabzonspor	7
Daniel Guiza	Espagne	Fenerbahçe	7
9) Kahe	Brésil	Gençlerbirliği	6
Mustafa Peklemek	Turquie	Gençlerbirliği	6
Bobo	Brésil	Beşiktaş	6

Tableau No: 4) Les Meilleurs Marqeurs de Chaque Equipe (Apres les matches Aller)

Equipes	Joueurs	Pays	Buts
Kayserispor	Aziza Makukula	Portugal	13
Galatasaray	Harry Kewell	Australie	9
Gaziantep	J.C. De Silva de Souza	Brésil	9
Kasımpaşa	Andre Moritz	Brésil	7
Fenerbahçe	Alex	Brésil	7
Trabzonspor	Gustavo Colman	Argentine	7
Gençlerbirliği	Kahe/**Mustafa Pektemek**	Brésil /**Turquie**	6
Beşiktaş	Bobo	Brésil	6
Antalyaspor	Michael Jedinak	Australie	6
Diyarbakırspor	Andres Mendoza	Pérou	5
Sivasspor	Yannick Kamanan	France	4
Bursaspor	Ergiç/Volkan Şen/Turgay	Serbie/ **Turquie**	4
İstanbul B.S.Spor	Herve Tum	Cameroun	4
Manisaspor	Isaac Promise	Nigéria	4
Eskişehirspor	**Mehmet Yılmaz**	**Turquie**	4
Ankaragücü	**Metin Akan**	**Turquie**	4
Denizlispor	Darryl Roberts	Trinidad	3

Tableau No: 5) Les buts des joueurs étrangers et leur taux de d'utilisation (Après les matches «Aller» de la Saison 2009/10)

Equipes	Buts Marqués par des Etrangers	Buts Totaux	Moyen	Le Taux d'Utilisation des Etrangers	Position au Classement
Gaziantepspor	16 (5)	20	%80	%67 (6+2)	11
Denizlispor	6 (3)	8	%75	%72 (6+2)	17
Kayserispor	18 (2)	25	%72	%73 (6+1)	4
Galatasaray	24 (5)	35	%69	%60 (6+1)	2
Manisaspor	9 (3)	13	%69	%46 (6)	13
Fenerbahçe	18 (5)	28	%65	%89 (6+2)	1
Beşiktaş	11 (5)	17	%65	%88 (6+2)	5
Diyarbakırspor	9 (2)	14	%64	%58 (6+2)	14
Bursaspor	14 (6)	31	%45	%58 (6+1)	3
Gençlerbirliği	9 (3)	21	%43	%60 (6+1)	7
Antalyaspor	9 (3)	21	%43	%50 (6)	10
Trabzonspor	10 (2)	27	%37	%74 (6+2)	6
İstanbul BSB	6 (3)	18	%33	%60 (6+1)	8
Kasımpaşa	7 (1)	23	%30	%42 (6+2)	12
Sivasspor	5 (2)	18	%28	%38 (4)	16
Eskişehirspor	4 (2)	18	%22	%76 (5)	9
Ankaragücü	4 (2)	19	%21	%60 (6+2)	15
Ankaraspor (*)	2 (2)	3			Relegué
Total	181 (56)	359	%50,41	%63	

(*) Apres avoir joué 4 matches de championnat, Ankaraspor a été relégué par la Fédération de Football en 2e division.
Les chiffres qui se trouvent entre parenthèses dans la 2e colonne illustrent le nombre de joueurs étrangers qui ont marqué des buts.

Discussion et conlusion

Plusieurs statistiques, à lire dans les différentes données fournies en annexes, montrent que la limitation des joueurs étrangers a une incidence négative sur les résultats. Cette pratique entrave le développement du football turc. L'inconvénient le plus important est que la règle du marché, qui devrait déterminer la valeur des joueurs locaux, est supplantée par celle de leur performance sportive. Thomas Doll, l'entraineur allemand de Genclerbirligi, dit que la plupart des joueurs locaux qui sont dans le championnat ont un niveau très moyen qui ne les empeche pas de réclamer des sommes astronomiques. Les dirigents acceptent de les payer en négligeant la situation des entraineurs qui souhaitent travailler avec les jeunes footballeurs. (Haberturk, 16.Avril.2010). Grâce à cet avantage lié aux conditions du marché, les joueurs locaux gagnent bien plus que les joueurs étrangers à valeur sportive égale. Une anomalie, une injustice même, si l'on considère que seule sa performance sur le terrain devrait déterminer la valeur financière d'un joueur. Si cette règle n'est pas respectée, l'équilibre au sein de l'équipe est en danger. La raison pour laquelle les joueurs locaux sont si chèrement rétribués s'explique par leur rareté.

Et aussi étonnant que cela puisse sembler, la limitation des joueurs étrangers ne privilégie même pas l'émergence des locaux dans les équipes de jeunes, pourtant peu soumises à la concurrence extérieure. Au demeurant, cet inconvénient touche davantage les équipes dites provinciales (anatoliennes), exsangues financièrement, donc condamnées à vendre précocement leurs meilleurs éléments. Ainsi les trois équipes stambouliotes que sont Besiktas, Galatasaray et Fenerbahce, en payant des sommes importantes, achètent les meilleurs locaux de ces équipes provinciales. L'effet est pervers. Certes, ces transferts permettent aux plus pauvres de renflouer leurs caisses mais, à contrario, ces saignées de joueurs prometteurs les empêchent de rivaliser avec les trois formations d'Istanbul. Cette concenration des valeurs dans les memes entités nuit gravement à la santé du championnat. La glorieuse incertitude du sport étant bafouée, les fans, médias et partenaires risquent, à la longue, de ne plus trouver d'intéret à suivre une compétition résérvée aux memes puissants d'année en année. A terme, c'est la valeur économique de tout le championnat qui sera en danger.

Sans trop se tromper sur les conséquences d'une telle mesure, il parait évident qu'une ouverture, sinon totale, au moins plus large aux étrangers, permettrait aux équipes anatoliennes de rivaliser avec les trois monstres sacrés d'Istanbul. Il suffit pour cela de jeter un œil sur l'évolution du championnat turc. On y constate l'hégémonie, sans partage ou presque, des mêmes superpuissances. Depuis la création en 1959, Fenerbahce et Galatasaray ont gagné 17 titres nationaux chacun. Besiktas arrive juste derrière avec 11 sacrés. Une seule équipe anatolienne a remporté la mise. Il s'agit de Trabzonspor, à six reprises, entre 1976 et 1984. Le tableau joint explique grandement pourquoi le football turc, trop irrégulier, ne réussit pas dans les compétitions internationales. Si la limitation des joueurs étrangers est supprimée, ou largement assouplie, le partage du gâteau à trois sera fini à moyenne ou longue échéance. La concurrence se développera entre les équipes et, de fil en aiguille, cette saine concurrence augmentera le nombre de bons joueurs locaux. Car en diminuant les salaires de ces derniers, les moins méritants seront obligés de travailler plus que maintenant. Leur place non garantie aura un effet bénéfique sur leur implication et sur leur volonté de se distinguer par le seul mérite de leur travail. Par un effet de ricochet, les performances des équipes turques et de l'équipe nationale dans les différentes compétitions européennes se bonifieront. In fine, les bons résultats du football turc dans son ensemble ouvriront automatiquement les portes des marchés européens aux footballeurs turcs qui, pour le coup, auront une forte envie d'exporter leur talent, et donc, de le vendre au juste prix. La très grande majorité des clubs, la fédération et les joueurs dignes de ce nom y trouveront leur compte. Spectateurs et téléspectateurs apprécieront la qualité du football fourni et des résultats acquis. Tout le monde en sortira grandi. Et gagnant.

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❖ SPORT AND HEALTH

THE EFFECT OF EDUCATIONAL GAME OVER ATTENTION IN CHILDREN

AKANDERE Mehibe [1], BAŞTUĞ Gülsüm [1] AŞAN Recep [2] , BAŞTUĞ Kahraman[3]
[1]Selcuk University, School of Physical Education and Sport, Konya, TURKEY
[2]Selçuk University, Institute of Health Sciences, TURKEY
[3]Bosna High School, Selçuklu, Konya, TURKEY
Email: gbastug@selcuk.edu.tr / 06.04.2010 / 19.04.2010

Abstract

The aim of this study is to examine the effect of educational game applications over the attention levels of children in physical education lesson. The sample of the study is consisted of 80 students from 9 -13 age group attending Marmaris Bayır village primary school. Bourdon attention test developed by B. Bourdon (1955) was applied to both control and experimental group before and after 8-week educational game program aiming to improve attention. The SPSS statistical program (version 16.0) was used for data analysis. Independent-samples t-tests were used to determine significant differences for independent variable. For all analyses, the criterion for significance was set at an alpha level of $p<0.05$.

To conclude, it has been found that 8-week educational game program applied to 9-13 age group students participated in the research affects the attention level and there is difference between groups. Attention values of experimental group to which educational game program was applied have been found to be higher than control groups.
Key words: child, educational game, attention

Introduction

Child firstly perceives his environment, then understands and after that learns and improves. While the natural development of the child changes with game activities, also forms completeness with physical education activities. Especially, the effect of the game over physical development of the child shows parallelism with the aims of physical education. (M. Hazar, 1996). Game is the environment encouraged by discovers and inventions without preventing the results. (D.A. Daubrova, 2005). Educational game has two aims: first, the game has an aim and the player aims to win the game and prevail through the attraction and enjoyment of the game. Second, the trainer aims to get individuals gain some skills by using players' winning desire and struggle wish (H. Arici, 1998). In physical education lessons, students should be aware of what they have achieved at the end of game activity. And awareness brings attention with it. Attention is to react prefentially to the related stimulus by eliminating the stimuli (M.H. Anshel et al. 1991). Attention may change depending on motivation level that child shows to the different duties, their interests and skills (H.A. Ruff and M.K. Rothbart, 1999). It has been reported that little children are weaker in paying attention to these stimuli by neglecting visual stimuli and pay less attention in stimuli in the environment than adults (V. Nougier and B. Rossi, 1999). From the many years, attention has been concerned with the factors that affect learning a motor skill. In motor- learning as a science, attention is defined as, in the human performance, the conscious or unconscious engagement in perceptual, cognitive and motor activities before, during and after performing skills; the human information- processing systems include limitation to the number of these activities that can be performed simultaneously. Attention has the limited capacity that effects the performance when done more than one activity at the sometime (R.A. Magill, 2004). In sports, individual should evaluate external clues quickly for attention and then one that is related to the duty is chosen (S.H. Boutcher, 1992, R.M. Nideffer, 1993). In this context, the importance of game, educational game concepts strengthens more for the child development. Considering these data, the aim of this study is to examine the effect of educational games that primary-school students apply in physical education lessons to improve attention.

Method

The study universe is Marmaris and the study sample is consisted of 80 students from 9-13 age group attending Bayır village primary school. The control and experimental group including male and female students were determined at random. To the experimental group, educational games to improve attention level were given for 8 weeks, one day in a week 30 minutes in a day. In this study, the applied program was done in students' physical education lessons. Test was applied to both experimental group and control group before and after 8-week period. In the research, the attention levels of the subjects and the difference between sports branches were examined. In order to determine the attention levels of the subjects in the research, "Bourdon Attention Test" developed by Benjamin Bourdon (1955) was used. Bourdon attention test is a test measuring attention, its density, the speed of mobility, concentration (Y.Y. Brunner, 2006). In this research, the letter form of Bourdon attention test was

used. Students were asked to find "b, d, g, and p" and mark them. In evaluation of the test, true-false answers of the children were taken into consideration. Each true answer was accepted one point. The maximum score that could be taken in the test was determined as 110. The individual's score's increasing meant the increasing of the attention level. Its reliability; the reliability of the test was done by the researcher. Test-retest reliability was calculated as reliability study and correlation coefficient was examined. This coefficient was found as 78. Its validity; at the end of criteria validity study, the correlation of Bourdon attention test was found as 63.

Statistical analysis; the SPSS statistical program (version 16.0) was used for data analysis. Standard statistical methods were used for the calculation of means and SD. The Kolmogorov-Smirnov test was used to determine if dependent variables were normally distributed. The Levene's test was used to determine if there was homogeneity of variance. Paired t-tests were used to determine significant differences over time for each dependent variable. Independent-samples t-tests were used to determine significant differences for independent variable. For all analyses, the criterion for significance was set at an alpha level of $p< 0,05$.

Educational game program applied in the research (Akandere, 2006)

name of the game	**level of the game**	**goal of the game**	**explanation of the game**
hand-crash game	8-14 age and over	to be able to improve attention and deciding	Teacher has a ball in his hand. When teacher drops the ball onto the floor he wants students crash hands together. When he drops, the student not crashing hand or doing it late is eliminated. Game continues till the last student.
snow-rain game	10-12 age and over	to be able to improve attention and deciding	A leader is chosen. *he* stands on a place where he can see everybody. As for the beginning, when "storm" is said ,the whole class beats their knees, when "snow" is said they claps hands in the air. The leader repeats that for many times. Then to make students confused he says these names in complicated way. The ones who confuse are eliminated, the last student is applauded. The leader should repeat the game and see everyone. This is a game improving attention.
grabbing handkerchief	10-12 age and over	to be able to improve attention, deciding and agility	Children are divided into two groups. They stand behind the line drawn 6-8 meters away from the game area. Each child has a number and they count from left and right beginnings. The child standing in the middle of two lines has a handkerchief and he tells a number .The ones having this number run and grab handkerchief take their places without being caught by the other one. The group of the child doing it successfully takes one point. if he is caught, other group takes the point. The game continues so.
jumping over turning rope	10-12 age and over	improving attention and following features	Players are placed side to side regularly in the circle. The player in the middle has a radius-long rope in his hand. A light weight is bound to the point of the rope such as rubber shoes, sand bag. The player in the middle turns around himself and tries to touch the feet of other players with the rope. The rope is 20-30 cm high above the floor. Other players jump and make the rope pass under their feet. The one whose foot the rope touches takes place of the player in the middle.
game of seasons	10-12 age and over	to be able to improve agility and deciding of players.	Players are divided into four equal groups by taking "spring, summer, winter, autumn" seasons. Each group goes to the corner which is for them and chooses a player and sends him to the middle. The duty of these chosen ones is to hit players from other groups during the change of groups and make them join their own groups. If teacher says "spring-winter", these two groups try to change place without being hit. While changing group, the players being hit take (-).The groups taking the least (-) are ordered as 1,2,3,4 or the players being hit go to the group of the player who hits them, and the group which takes the most players wins the game. Teacher can make two groups move at the same time by saying" winter-autumn, summer-spring".
to the beach-to the pool	10-14 age	to improve attention	A big circle is drawn in play area. Children stand out of the line with wide distances. When teacher says" to the pool" all children jump into the circle with double –foot .When he says " to the beach", they jump out of the pool. To make children confused, teacher says "to the pool, to the beach" words by changing, the one not paying attention is

			eliminated.
game of colorful rings	8-12 age	to improve attention	Children stand behind the line in a messy way.3 big circles are drawn in play area. The circles are called as "red, blue, and white."When teacher says "red" all children jump into the red circle. When he says "blue" they run into blue circle on one foot. When he says "white" they run into white circle on two feet. To make students confused teacher can say a different color. The child being out of the circle loses the game.
Hitting the rolling ball.	8-12 age	to improve attention	Class is divided into two equal groups and groups stand side to side with 8-10 meter long distance, and they have a handball in their hands. The children standing in the middle line mutually have a soccer ball. With the order "start" of teacher, the child having the soccer ball rolls it quickly to his opposite friend; meanwhile the children in two groups having a hand ball try to hit the soccer ball with the hand ball. The group which hits the soccer ball takes one point.
game of hot potato	8-12 age and over	to improve attention and coordination in players	Children make a wide circle. A player is chosen as it. A child ties a big knot to the handkerchief. This becomes the hot potato. Children throw the handkerchief to each other, but the chosen player tries to catch it. If he catches the handkerchief the child throwing the handkerchief becomes it.

Results

As seen in Table1,when pre-test and post-test values of the students participated in the research were examined, a significant difference has been found between experimental and control groups($p>0.05$). Attention values of the group playing educational games to improve attention have been found to be higher than control groups. As seen in Table 2,when attention levels of the students participated in the research were examined in terms of gender variable, a significant difference has been found between groups in female and male students' post-test true-wrong values($p>0.05$)Experimental group female students have been found to have higher attention average than males. As seen in Table 3,significant difference has been found in experimental group female and male students' pre-test and post-test values ($p>0.05$). It has been determined that educational games applied to the experimental group tp improve attention increase attention levels of female students more than males'.

As seen in Table 4, no significant difference has been found in control group male students in the research.($p<0.05$) When attention test true values of control group females students were examined, a significant difference has been found between pre-test and post-test values ($p>0.05$).

Discussion and conclusion

42 females and 38 males,80 students in all, participated in the research which was carried out with the aim of examining the effect of educational games applied in physical education lessons of primary school students over attention .When pre-test and post-test values of 8-week educational game program applied to improve attention level were examined, a significant difference has been found between experimental and control groups. Values of the group which played educational games to improve attention have been found to be higher than control group (table 1). These values show that 8-week educational program applied to improve attention increases the attention in children. At the end of 16-seance paying attention training which he applied to the nursery and primary school 1st and 2nd graders in Canada; D. Karaduman (2003) found an increase in paying attention levels of the students taking this training in comparison to the control group. These findings show similarity with the research findings and emphasize that paying attention level may be developed through a training that will be given in this field. When the attention levels of the students in the research were examined in terms of gender variable, female and males students' post-test values have been found to have significant difference according to experimental and control groups (table 2). Attention averages of female students in experimental group have been determined to be higher than males'. These values show significant difference between attention level and gender. According to the result of a research carried out about attention education in children, a development has been found in visual and audial attentions of the students in the group taking attention education (M.S. Clikeman et al. 1999). When the attention levels of the experimental group students in the research were examined, a significant difference has been found between pre-test and post-test values of female and male students and educational game practices to improve attention have been found to increase female students' average values more than males' (table 3). In a research about attention, it is reported that girls' attention skill is better than males' (J. Borchert, 1998).These research findings show similarity with the study. No significant difference has been found in control group males students' attention values in the research. A significant difference has been found between pre-test and post –test in control group females students' true values Attention test average values of control group male students have been determined to be higher than females (table 4). Some researches point out that attention skill may be

developed through education (U. Lauster 1999, B. Özdoğan, 2001).This result shows similarity with the results of the research. A positive development is thought to happen in attention skill at the end of education that will be given to the children. To conclude, it has been determined that 8-week educational game program applied to improve attention of 9-13 age group students affects students' attention level positively and improve it. It is thought that attention skill in children can be increased through educational game practices in schools.

Tables

Table 1: examining pre-test and post-test values of attention levels of students participated in the research.

variables	Group	N	avarage	Std. Dev.	t	p
Pre-test number of true ones	experimental	40	48,65	9,385	1,010	0,315
	control	40	46,65	8,285		
Pre-test number of wrong ones	experimental	40	,30	0,608	0,845	0,401
	control	40	,42	0,712		
Post-test number of true ones	experimental	40	64,70	10,493	6,853	0,000*
	control	40	49,82	8,852		
Post-test number of wrong ones	experimental	40	0,00	0,000	4,268	0,000*
	control	40	0,55	0,815		

Table 2: examining attention levels of students participated in the research in terms of gender variable.

variables		Group	N	avarage	Std. Dev.	t	P
female	Pre-test number of true ones	experimental	24	49,08	10,794	1,117	0,271
		control	18	45,67	8,296		
	Pre-test number of wrong ones	experimental	24	,33	0,637	-,242	0,810
		control	18	,39	0,850		
	Post-test number of true ones	experimental	24	68,96	7,658	7,862	0,000*
		control	18	50,33	7,515		
	Post-test number of wrong ones	experimental	24	0,00	0,000	-3,614	0,001*
		control	18	0,67	0,907		
male	Pre-test number of true ones	experimental	16	48,00	7,043	,211	0,834
		control	22	47,45	8,382		
	Pre-test number of wrong ones	experimental	16	,25	0,577	-1,058	0,297
		control	22	,45	0,596		
	Post-test number of true ones	experimental	16	58,31	11,128	2,589	0,014*
		control	22	49,41	9,970		
	Post-test number of wrong ones	experimental	16	,00	0,000	-2,453	0,019*
		control	22	,45	0,739		

Table 3: examining pre-test and post-test values of attention levels of experimental group students participated in the research.

variables			N	avarage	Std. Dev.	t	P
experimental	female	Pre-test number of true ones	24	49,08	10,794	-9,139	0,000*
		Post-test number of true ones	24	68,96	7,658		
	male	Pre-test number of true ones	16	48,00	7,043	-6,660	0,000*
		Post-test number of true ones	16	58,31	11,128		
	female	Pre-test number of wrong ones	24	0,33	0,637	2,563	0,017*
		Post-test number of wrong ones	24	0,00	0,000		
	male	Pre-test number of wrong ones	16	0,25	0,577	1,732	0,104
		Post-test number of wrong ones	16	0,00	0,000		

Table 4: examining pre-test and post-test values of attention levels of control group students participated in the research.

variables			N	avarage	Std. Dev.	t	P
control	female	Pre-test number of true ones	18	45,67	8,296	3,384	0,004*
		Post-test number of true ones	18	50,33	7,515		
	male	Pre-test number of true ones	22	47,45	8,382	1,870	0,076
		Post-test number of true ones	22	49,41	9,970		
	female	Pre-test number of wrong ones	18	,39	,850	0,960	0,350
		Post-test number of wrong ones	18	,67	,907		
	male	Pre-test number of wrong ones	22	,45	,596	0,000	1,000
		Post-test number of wrong ones	22	,45	,739		

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EFFECTS OF EXERCISE AT HIGH ALTITUDE ON MICRONUCLEUS FREQUENCY

Akpınar Neşe[1], Hamurcu Zuhal[2], Donmez-Altuntas Hamiyet[2], Çoksevim Bekir[1], Koca Feyzullah[1], Sungur Gönül[3]

[1]Collage of Physical Education and Sports, Erciyes University, **TURKEY**

[2]Medical Faculty, Department of Medical Biology, Erciyes University, **TURKEY**

[3]Atatürk Health School, Erciyes University, **TURKEY**

Email: nakpinar@erciyes.edu.tr / 02.03.2010 / 10.03.2010

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Abstract

Objective: The aim of this work is to study effects of acute hypoxia on micronucleus frequency during exercise.

Research methods and subjects: Study group was formed with students of Erciyes University Vocational School of Physical Education and Sports. Students were within similar age and fitness range, mean age 23.35 ± 1.66 year, mean height 168.20 ± 7.32 cm, mean body mass 60.05 ± 8.76 kg, body mass index 21.12 ± 2.17 kg/m^2 , 10 female and 10 male totally 20 students were included in the study. All students were stayed at Mount Erciyes (2200-2500m) and exercised ski, 3 hours a day for 5 days. 1st day and 5th day oxygen saturation, systolic and diastolic blood pressures, heart rate were measured and blood samples were collected. In order to analyze heart rate, systolic and diastolic blood pressures, oxygen saturation between male and female groups Independent Sample Test was used. Paired sample test was used to compare 1st and 5 th day data. Linear regression analyses were used to analyze micronucleus frequency between male and female students.

Results: In the first day and fifth day no significantly difference was observed before and after exercise in micronucleus frequency ($p>0.,05$). However after 5 days exercise at high altitude, micronucleus frequencies when compared to 1st day pre and post exercise micronucleus frequencies showed very significant increase ($p<0.001$). In the first day no statistically significant difference was observed before and after exercise in systolic and diastolic blood pressures between male and female groups ($p>0.05$), oxygen saturation decreased after exercise, heart rate increased after exercise ($p<0.,05$). In the fifth day between male and female groups systolic and diastolic blood pressures, heart rate and oxygen saturation showed no significant difference compared to 1st day ($p > 0.05$), after exercise in female group in 5th day systolic blood pressure and oxygen saturation increased compared to 1st day post exercise period ($p<0.05$), in male group 5th day systolic blood pressures and heart rate increased compared to 1st day post exercise period ($p<0.05$).

Discussion and conclusion: Results of our study clearly shows that high altitude causes DNA damage and may have mutagenic effects.

Keywords: High altitude, hypoxia, DNA damage, micronucleus.

Introduction

Intense and tiring sports like mountain and nature sports has important systemic and local acute effects on humans (P. Moller et al., 2005; J.A. Jefferson et al., 2004). Although due to lack of oxygen and low oxygen demand, production of reactive oxygen derivatives expected to be low, high altitude exposure (due to reactive oxygen derivatives production and changes in antioxidant activity) may cause oxidative damage. (P. Moller et al., 2005; J.A. Jefferson et al., 2004; Z. Radak et al., 2000). Although reactive oxygen derivatives have important role in regulating normal physical activities such as muscle contraction dramatic increase in their concentration may damage normal cell function, biomolecules (proteins and lipids) and celluler DNA (H. Orhan et al., 2000, R.J. Bloomer et al., 2006). Micronucleus formation is accepted as an indicator for DNA damage. Measurement of micronucleus frequency in peripheral blood lymphocytes is for evaluation genome instability and a common method testing mutagenicity (A. Harman et al., 1997; M. Fenech, 2006, Z. Hamurcu et al., 2005).

There is no study in scientific literature for effects of high altitude under hypoxic conditions on micronucleus frequency during exercise. Because of this reason, by analysing frequency of micronucleus at high altitude in mitogen induced lymphocytes, if high altitude hypoxia or exercise at high altitude have mutagenic effect or not is expected to come to conclusion.

Experimental Methods. Subjects: Our study was included volunteers from our school. Their mean age were 23,35±1,66, mean height 168,20±7,32 cm, mean body mass 60,05±8,76 kg, mean body mass index 21,12±2,17 kg/m^2, 10 female, 10 male students were included in the study. There were no significant difference were present between their age and physical condition.

Exercise Program. Volunteers involved in the study were moved from 1055m. to 2200m. at Mount Erciyes and stayed at the mountain hut for 5 days. Before exercise their blood samples were collected and they did basic interval ski exercise for 3 hours between 2200m. and 2500m. and kept their heart rthym between 140-160 beat/minute. After exercise also their blood samples were collected and same procedure was repeated during 5 days.

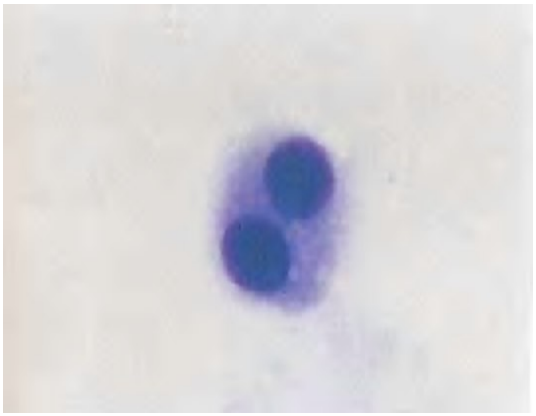
Whole-blood cultures for human lymphocytes

Heparinized 3 ml blood samples were taken after informed consent had been obtained from volunteers at 1st and 5th day before and after exercise. Approximately 0.4 ml of whole blood samples was cultured for 72 hours at 37 ºC in 5 ml of the Peripheral Blood Caryotyping Medium that was supplemented with 1.5 % phytohemagglutinin-M to stimulate the T-lymphocytes (all from Biological Industries, Kibutz Beit Haemek, Israel). To determine intra-individual differences, two parallel cultures of each person were made (M. Fenech, 2006; M. Fenech, 2008)

Micronucleus assay

At 44 hours of incubation, 3 µg/ml (final concentration) cytochalasin-B (Sigma-Aldrich Co, St. Lois, MO, USA) was added to cultures in order to block cytokinesis, according to the method of Fenech and Morley [20]. The cultures were stopped at 72 hours, treated with hypotonic solution (0.1 M KCl) for 4 minutes and fixed in two changes of methanol-acetic-acid (3:1) [21]. The fixed cells were spread onto glass slides and stained with 5% Giemsa for 10 minutes (M. Fenech, 2008; M. Fenech, A.A. Morley, 1985; M. Fenech, A.A. Morley, 1986; M. Fenech, 1980)

Published criteria for micronuclei determinations were followed [22] and for each subject at least 1000 binucleated cells were analyzed.



3.1. Binuclear Cell

3.2. A micronucleus in a Cytokinesis Inhibited Binuclear Cell

Statıstical Analysıs

Statistical analysis of micronucleus frequency from volunteers before and after exercise in 1st and 5th days were done using T-test.

Results

In high altitude at 1st day before and after 3 hours exercise there were no statistically significant difference in micronucleus frequency were found. ($p>0.05$, Table1). 5th day before and after 3 hours exercise there were no statistically significant difference in micronucleus frequency were found ($p>0.05$, Table 1). 5th day before and after exercise micronucleus frequency when compared to 1st day before and after exercise values were increased significantly ($p<0,001$, Table 1).

Table 1. Micronucleus Frequencies

n=20	1st Day	5th Day	p	t
Before Exercise Micronucleus (%) Mean ±SD	0.84±0.088	2.21±0.62	0.001*	7.029
After Exercise Micronucleus E.S. MN (%) Mean ±SD	0.99±0.11	2.07±0.60	0.001*	8.435

*$p<0.001$

Results and discussion

Due to deep respiration, increased heart rate, circulating red blood cells and hemoglobin concentration camping in high altitude is a training method for professional athletes. However, at high altitude due to hypoxia although reactive oxygen derivatives production expected would be low, recent studies have shown oxidative stress is related to high altitude and oxidative stress increases with high altitude (C. Lundby et al., 2003; J.A. Jefferson et al., 2004). Besides hypoxia at high altitude, intense UV light and environmental factors such as cold climate triggers oxidative stress and cellular macromolecules such as proteins, lipids and damage to DNA reported. (C. Lundby et al., 2003; J.A. Jefferson et al., 2004; M.C. Schmidt et al., 2002). Micronucleus is formed due to misrepaired or unrepaired DNA anomalies and defects of chromosomes during cell division (M.A. Kayani, J.M. Parry, 2008). Micronucleus formatin is triggered by oxidative stress, defects during cell cycle and defects of DNA repair genes. (S. Bonassi et al., 2006; C. Schiffl, C. Zieres, H. Zankl, 1997). We have observed an increase in micronucleus formation at moderate altitude (2200-2500m) during a ski training camp at 5th day when compared to 1st day. Effects of high altitude on DNA of various cells shown an increase in broken DNA strands. (C. Lundby et al., 2005; P. Moller et al., 2001). In our study we did not study breaks in DNA strands but at high altitude increase in micronucleus frequency may be due to increase in broken DNA strands. (M.C. Schmidt et al., 2002, C. Lundby et al., 2005; P. Moller et al., 2001).

We have observed an increase in micronucleus frequency after 5 days exercise at high altitude. Reason for this increase whether due to exercise or high altitude is not known. Further studies are encouraged in order to determine the reason for the increase

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EXAMINING THE BODY ATTRACTION OF SEDENTARY WOMEN IN TERMS OF PARTICIPATION IN ACTIVITY

BAŞTUĞ Gülsüm, LÖK Sefa
Selçuk University- School of Physical Education and Sport, Konya, TURKEY
Email: gbastug@selcuk.edu.tr / **02.03.2010 / 15.03.2010**

Abstract
It's known that women have traditionally applied several methods such as exercise, diet in order to be healthier and seem beautiful and attractive. The aim of this study is to examine the body attraction of sedentary women in terms of participation in activity. 100 sedentary women, whose age average is 37.31+7.506 year, height average is 162.13+5.832 cm and who don't apply a special nutrition diet and have no health problem, participated in the research voluntarily. A step-aerobic exercise program was applied for 45 minutes 3 days in a week to the experimental group for 8 weeks by the same trainer. In order to determine body attraction of the subjects in the research, Fox Physical Self-perception Inventory (PSPP)'s "Body Attraction" sub-scale was used (K.R. Fox and C.B. Corbin, 1989). In conclusion, significant difference has been found between pre-test and post-test values of body attraction feature of sedentary women participated in the research depending on 8-week step-aerobic exercise. The body attraction feature of the subjects has been determined to increase at the end of exercise.
Key Words: **Sedentary women, exercise, attraction.**

Introduction

Women have done many different exercises in order to seem healthy and beautiful from past to the present and slim, thin women have been shown as model in articles, televisions and films. Women compare their bodies to more beautiful, slimmer ones and make effort for an ideal body (B. Silverstein et al. 1986; M.A. Wiseman et al. 1992, M. Tiggeman, 2001). Not only how people see their own body but also how others see their bodies is important. People are motivated to create a positive effect on others (B.R. Schlenker and M.R. Leary, 1982) and therefore some people are anxious about how their physical appearance is perceived by others. The ones who are unsuccessful in creating suitable effect to the others may make negative inferences (C.D. Lantz and C.J. Hardy, 1997). If the body structure of individual is very different from the one in his mind, body dissatisfaction is seen. Body dissatisfaction increases as the difference between individual's present body structure, his perceived body structure and his imagined body structure increases (S. Skrzypek et al. 2001).

Beside increasing of the weight and excess weight cause many health problems, it is clear that they also cause psychological problems such as body dissatisfaction (P.E. By Matz et al. 2002). The strong relation between being fat and body dissatisfaction has been proved with the researches done. (I. Canpolat et al. 2005). Social pressures especially of the media are effective on women's seeing themselves fat (M. Tiggeman, 2002). Although the determined ideal body size in the media for women is certain, it isn't possible to say an ideal size for men. (K. Beth et al. 2004). Magazines and television programs always send messages about ideal body image. In the studies done over men, this social comparisons are seen in men generally as increase of the weight and works to increase muscular tissue through some unhealthy methods. As for women, these pressures are seen as diet practices to lose weight (T.G. Morrison et al. 2004). Regular exercise programs change body compositions. Cardio-respiratory trainings and weight trainings help body weight change. There are many studies on the determining effect of aerobic endurance trainings over body compositions (E.A. Galliven et al. 1997, K.B. Osei-Tutu and P.D. Campagna, 2005).

In the light of these data, the aim of this research is to examine body attraction of sedentary women in terms of participation in activity.

Method

100 sedentary women whose age average is (n=100) 37.31+7.506 year, height average is 162.13+5.832 cm and who don't apply a special diet and don't have any health problems took part in this research voluntarily.

Training program

Week	1	2	3	4	5	6	7	8
Training time-min.	45	45	45	45	45	45	45	45
Training intensity-%	40	45	45	50	50	55	55	60
The frequency of training week/day	3	3	3	3	3	3	3	3

Step-aerobic exercises were applied to the subjects in the research for 45 minutes and 3 days in non-successive week for 8 weeks. While the intensity of the exercise was %40 at the beginning of the program it was progressively increased to %60 in 8th week. The music used for step-aerobic exercises was chosen according to the rhythm of the exercise that subjects applied. All measurements and tests applied to

all the subjects in the research were done twice ,one week ago before 8-week training program(pre-test) and one week later after training program (post-test)

Determining the intensity of exercise; the target heart rate of the subjects was determined through Karvonen method (E.L. Fox et al. 1988). The applied training intensity was controlled by 15-second heart rate measured from carotid artery in the neck immediately after the exercise. Measuring height and body weight; the height of the subjects was measured with a metal rule having 0.1 cm sensitivity and being fixed in bascule, and as the subjects in upright position as feet attached, back of the head, back, hip and back of the foot heel touching the rule and subjects looking at the front in bare feet. The body weight of the subjects was measured with a bascule having 0.1 kg sensitivity as the subjects wearing light clothes in bare feet. The measurement that subjects themselves knew didn't evaluated.

As data collecting tool, Body Attractiveness Subscale of Physical Self-Perception Profile, PSPP was developed by K.R. Fox and C.B. Corbin (1989). Body attractiveness sub-scale consists of 6 items. In inventory, the expression of two different people for each item is presented to the person and this person is wanted to determine which of these different expressions and how much he resembles. After the person determines the nearest one of these two different expressions, he uses the expressions of "it is just for me" and "it is partly for me" in order to rank the similarity. The item scoring is between 1 and 4. "4" means high attractiveness and "1" means low attractiveness. Changing scores between 6 and 24 are received in body attractiveness sub-scale.

Result

As seen in Table 1, the age average of the subjects in the research was respectively found as 37.31+7.506 year, height average was found as 162.13+5.832 cm. The body weight average taken one week ago before 8-week step-aerobic exercise program (pre-test) of all the subjects in the research was found 77.44+10.971 kg and the body weight average taken one week later after training program (post-test) was found 72.44+9.736 kg. As seen in Table 2,when pre-test and post-test values of females in the research were examined, significant difference has been found in body weight and body attractiveness values at the beginning of the exercise and at the end of the exercise ($p<0.05$). A decrease in subjects' body weight values and an increase in their body attractiveness values have been determined.

Discussion and conclusion

In the study done with the aim of examining body attractiveness of women according to participation in activity variable;

As seen in Table 1, the age average of the subjects in the research was respectively found as 37.31+7.506 year, height average was found as 162.13+5.832 cm. The body weight average taken one week ago before 8-week step-aerobic exercise program (pre-test) of all the subjects in the research was found 77.44+10.971 kg. and the body weight average taken one week later after training program (post-test) was found 72.44+9.736 kg. The body weight values of the subjects before step-aerobic exercise have been determined to be significantly higher than the ones after exercise. There are many studies over body changes of women depending on exercise. In the study where the effects of 8-week aerobic exercise program over some physical, physiological and blood parameters of sedentary middle-aged women were examined, it has been reported that there is significant difference in body fat weight, body fat percentage and body mass index (F.F. Çolakoğlu, 2003).

As seen in Table 2, when pre-test and post-test values of females in the research were examined, significant difference has been found in body weight values at the beginning of the exercise and at the end of the exercise. It has been determined that the body weight of the subjects was high before exercise and decreased after the applied 8-week step-aerobic exercise. Decrease in body weight depending on exercise shows that females care about their nutrition habits beside exercise. Sedentary life and irregular diet habits are thought as effective factors over the body weight of females in the research. In a research by Dunkley and his friends desire of losing weight, the exposure rate from the media and magazine in the decision of going a diet has been found %63, 8; the rate of going a diet by friend effect has been found %44, 8. In the same research, the rate of going a diet by family effect has been found %32, 1(T.L. Dunkley et al. 2001).

When pre-test and post-test values of females in the research were examined significant difference has been found in body attractiveness values at the beginning of the exercise and at the end of the exercise. The body attractiveness scores of the subjects have been found to increase at the end of 8-week step-aerobic exercise. Beside the relation between participation in activity of females and decrease in body weight and increase in body attractiveness; it is thought that females' caring about their diets, positive reactions from the environment and the media are also effective. Participation in physical activity may create positive feelings such as self-confidence and finding themselves attractive in women. In the study about the role of media in women's body attractiveness, % 83 of girls and women has been found to follow media magazines and watch television for 4 hours in a day. It has been determined that women's being slim and beautiful shown in media creates body dissatisfaction in other women (M. Tiggeman, 2002). Self-perception of the adolescent females as aerobic dance and physically was examined in terms of several variables and the body attractiveness of females doing aerobic dance has been found to be higher than the ones not doing exercise (A.J. Daley and J. Buchanan, 1999). In the evaluation of individuals' bodies in the activity by others, it has been found that they feel less anxious than the ones not participating in the activity (C.M.

Sabiston et al. 2003). .In the study where self-perceptions about their bodies of fitness experts were examined, it has been found that participation in physical activity affects the person's attitudes towards his body, feelings and behaviours positively (A. Altintaş and F.F. Aşçı, 2005).The findings of that research show similarity with the study. In the study done with the aim of determining if women who do sports and don't do sports were pleased of their bodies or not, the body dissatisfaction of women not doing sports has been found to be higher than the ones doing sports. Dissatisfaction degree increases with the weight level (C.J. Davison et al. 2005). The findings of that research show similarity with the study.

In conclusion, a 8-week step-aerobic exercise program was applied to the sedentary women and a decrease has been seen in body weight values. A body attractiveness value has been determined to increase with the loss of weight depending on the exercise. Women cared about their nutrition habits and physical activity. It is thought that they feel more attractive and have more positive thoughts depending on the loss of weight.

Table 1: Age, height and body weight average values of the females in the research.

variables	N	avarage	Std. Deviation
age	100	37.31	7.506
height	100	162.13	5.832
weight 1	100	77.44	10.971
weight 2	100	72.96	9.736

Table 2: Pre-test and post-test values of females in the research

variables		N	avarage	Std. Deviation	t	p
body weight	pre-test	100	77.44	10.97	22.317	0.000
	post-test	100	72.96	9.74		
body attractiveness	pre-test	100	9.63	2.533	27.528	0.000
	post-test	100	17.61	2.470		

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THE OPPORTUNITY OF PROMOTING THE CONCEPT OF „BODY AUTOPLASTY USING PHYSICAL EXERCISE"

Mihăilescu Liliana, Enache Carmen
University of Piteşti, ROMANIA
Email: lilimih2003@yahoo.com / 02.03.2010 / 12.03.2010

Abstract

The work promotes a new concept in the context of „Contemporary world problems", which are also the threats to individual health plan by the proliferation of modern world diseases (obesity, heart disease, diabetes, inactivity and nutritional consequences), the concept of „body modelling through physical exercise". World Health Organization statistics show that 17% of the adult population of the world is completely inactive from physical point of view, and a rate of 41% of it is represented by adults who are not moving enough (B.W. Martin, 2006, p. 53-57).

Content, methods, means

Promoting the new concept is done in order to improve quality of life for adults and is a viable alternative to plastic surgery because of the advantages in multiple plans: health, economic, aesthetic, psychological, etc.

The paper proposes to identify and promote the new concept dimensions and its promotion will be done by stimulating psychological resources of the self-consciousness and self-image, in each individual's awareness of the need for body shaping actions to increase the quality of his life, by experimental means.

Debates, conclusions

Body autoplasty is a necessity for nowadays society and it must become a social reality. The concept of body autoplasty should be perceived as an alternative to plastic surgery methods, area that is nowadays an unprecedented development.

Key words: autoplasty, body modelling, plastic surgery.

Introduction

The work promotes a new concept in the context of „Contemporary world problems", which are also the threats to individual health plan by the proliferation of modern world diseases (obesity, heart disease, diabetes, inactivity and nutritional consequences), the concept of „body modelling through physical exercise**"**.

M. Epuran, (2001, p.3.) defines autoplasty as being **„***an action of modelling the self-being – particularly body modelling – using specific activities*". Autoplastic feature comes from the individual motivation, from the intention of achieving harmonious body growth and through this achieving a superior self-image". The term „autoplastic"– represents a „qualification of all reactions or adjustments that aim at modifying one's own body or aim at changing the environment." (P. Popescu-Neveanu, 1978, p. 80). For an individual to decide to shape his body so as to obtain a pleasant appearance there has to be the self-consciousness, self-image of themselves and the individual has to possess the means and methods that lead to achieving this goal.

The process of body shaping represents in fact one of the physical education goals with special physical, intellectual, psychological, aesthetical and social implications. In the process of body modelling (autoplasty) there are involved all systems, devices and functions of the body: shaping muscular profile, proper body attitude, ensuring optimal body weight is achieved by physical exercise and by the contribution of associated factors which exert profound influence on the whole body functions (physiological, mental and behaviour functions)." (P. Fiedler, 1996, p.10).

Goal, theory

The work suggests identifying the dimensions of the concept of „body modelling using physical exercise" and promoting the concept by stimulating psychological resources of self-consciousness and self-image at each individual's level having understood the necessity of body modelling actions that aim at increasing the quality of his life .

Promoting the concept of „body modelling using physical exercise" responds to the human being genetic need of movement, it induces an increase of his life quality and its dimensions are the same independent variables through which one could act in case of a method focused on body re-modelling, maintaining and/or increasing the health state of modern human being, through physical education and sport methods.

Content, methodology

1. Consequences of physical inactivity in the world. World Health Organization statistics show that 17 per cent of the adult population of the world is completely inactive from physical point of view, and a rate of 41 per cent of it is represented by adults who are not moving enough. (B.W., Martin, 2006, p. 53–57). Physical inactivity, sedentarism represents a real danger for individual and WHO estimates that it represents annually the cause of 1.9 million premature deaths all around the world, and approximately 600 000 of these deaths pertain to the Europeans. Obesity correlated with physical inactivitaty and irrational nourishment lead to a proportion of 25 per cent (men) and almost 38 per cent (women) in the European Union.(*3). Romania „tends" to be a European country in this case, because the statistics in 2007 have shown that there are 8 million overweight people from which 4.5 million people are obese.(*4).

Obesity is treated by the authorities in EU and U.S. as a public health problem: there are launched campaigns to inform people about the risks of illness caused by obesity, in Britain appeared special scales that show the calories of a product, there are promoted campaigns to make children stop eating fast-food type of food, and many other actions.

Table nr. 1 I. Q. scale given by WHO

I.Q.VALUE	WEIGHT EATURES
Below 18,5	Minimum weight
18,51-24,99	Normal weight

Erissman Index (E.I.) – is the index through which is expressed body harmony and represents the ratio between height and body thickness: *E.I. = PT - T/2*

Table nr. 2 E.I scale (Bârzu Maria Valentina, 2004, p.21)

QUALIFICATIVE	ERISSMAN INDEX
Insufficient developed	below- 10 cm

Medium values on girls - 3,5cm; on women 4cm.

Thin thorace	-10 cm la 0 cm
Normally developed	0 cm
Well developed	0-8 cm
Very well developed	Over 8 cm

Thoracic elasticity (T.E.) – represents the difference between thoracic perimeter in profound inspiration and thoracic perimeter in forced expiration. This index has to have minimum 6 cm on girls.

2. The opportunity of promoting the concept of body autoplasty using physical exercise in Romania. In Romania, although the population increased at a large scale in what concerns weight in the late two years, there isn't a coherent policy in order to promote social priorities to prevent or treat the effects of physical inactivity.

In order to find out the real fact concerning the health degree expressed at the level of body harmony signs we am initiated an ascertained research, in which the goal group was made of 252 adult subjects with ages between 19-35, students of University from Piteşti city, Faculty of Education Science from Slatina, Râmnicu Vâlcea and Câmpulung cities made of two groups: students with ages between 19-35 and students older than the age of 35.

Subjects were put to some anthropometric measurings through which there were found out the next somatic indicators: size, weight, abdominal perimeter in standing, lying dorsal abdominal perimeter, thoracic perimeter in resting, in deep inspiration, in forced expiration, right-left arm perimeter, right-left leg perimeter, right-left thigh perimeter, right arm fat tissue, back, flank, abdomen, right thigh. On the basis of these indicators there were discovered the body harmony index: *Quetelet Index, Erissman Index (tables 1, 2, 3, 4), thoracic elasticity, abdominal muscle tonicity index*.

Body mass Index – (Q.I), (Quetelet) - predicts potential health risks better than a simple weighing *I.Q. = Weight (kg)/waist^2 (m)*. The discovered values were compared with WHO scale in table 1.

25,00-29,9	overweight
30,00-34,9	Level I obesity
35,00-39,9	Level II obesity
over 40	(morbid) obesity or level III obesity

Index of abdominal muscle tonicity – is written *Ta.* And it is calculated by subtracting the two abdominal perimeters (abdominal perimeter in standing Pa, and abdominal perimeter in supine Pal.). The lower

becomes the difference between the two perimeters, the bigger becomes the tonicity of abdominal muscles. Specialists consider that the normal difference is 1-2 cm. This way it can be appreciated if the subjects have a thin abdominal belt, this with a direct effect in time on lumbar spinal cord, on different functions of abdominal organs and even on breathing function.

Table nr.3 Body harmony index on 19 – 35 group

Mathematical statistic index	Thoracic elasticity	Index of Abdominal muscle Tonicity Ta.	Quetelet Index Q.I.	Erissman Index E.I.
Arihtmetical mean	5.37	1.91	22.62	13.40
Mediane line	50	2	22.5	13.5
Standard digression	1.10	0.54	2.64	9.07
Variability coefficient	20.51	28.76	11.68	67.70

Table nr.4 Body harmony index on group over 35 years old

Mathematical statistic index	Thoracic elasticity	Index of Abdominal muscle tonicityTa	Quetelet Index Q.I.	Erissman Index E.I.
Arihtmetical mean	5.03	1.59	23.10	16.52
Mediane line	5	2	25	16
Standard digression	1.19	0.62	2.68	3.48
Variability coefficient	23.66	39.35	11.63	21.09

After applying measurings on 19-35 group, we conclude that the arithmetical mean of thoracic elasticity is 5.37 cm, is below the normal one (minimum 6cm) what means that subjects have got a weak thoracic elasticity and a poor- developed thorace muscle. The same thing is found on subjects with ages over 35 where the average of thorace elasticity index is 5,03cm. The variability coefficients 20.51 on the first group of subjects and 23.66 on the second group, these values show a weak omogenity of the group.

As concerns ***abdominal muscle tonicity index*** on both groups of subjects, we can see values that are normal and we can conclude that they have a good abdominal belt. Variability coefficient shows us this time, too that both groups have got a poor omogenity and on group with age over 35 we can see that the average is irrelevant (value over 35 per cen of Cv.).

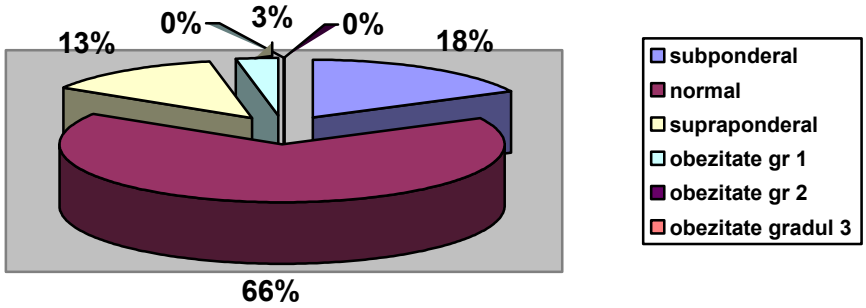

Diagram no. 1. Share of aspects found by calculating Quetelet Index (19-35 years)

Table nr. 5. Results obtained by calculating Quetelet Index (19-35years)

Indicele Quetelet (BMI)	no. subjects	Per cent %
underweight	35	18
normal	133	66
overweight	26	13
Level 1obesity	6	3
Level 2 obesity	0	0
Level 3 obesity	0	0

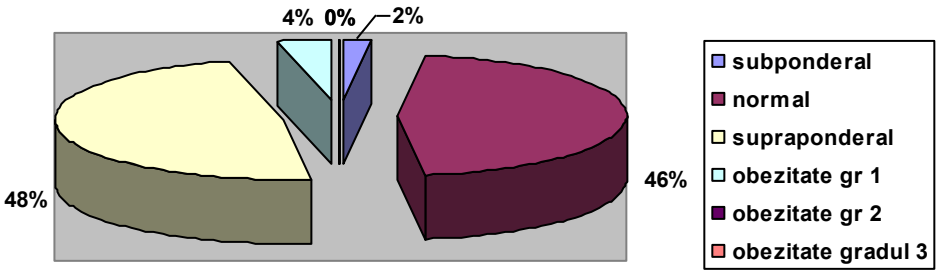

Diagram no. 2. Share of aspects found by calculating Quetelet Index (over 35 years)

Table no. 6. Results obtained by calculating Quetelet Index (over 35 years)

Quetelet index (BMI)	*No. subjects*	*Per cent %*
Underweight	1	2
Normal	24	46
Overweight	25	48
Level 1 obesity	2	4
Level 2obesity	0	0
Level 3 obesity	0	0

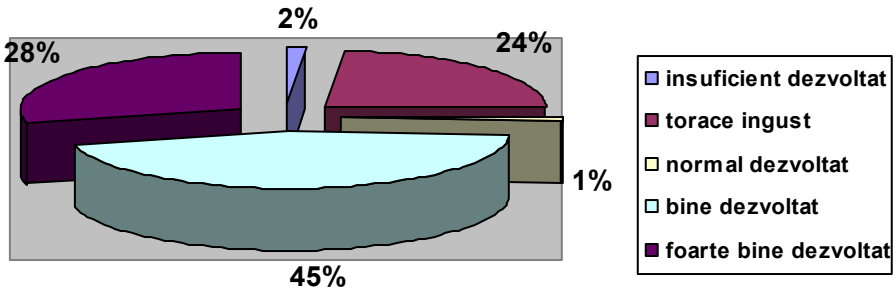

Diagram no. 3. Share of aspects found by calculating Erissman Index (19-35 years)

Table no. 7. Results obtained by calculating Erissman Index (19-35years)

Erissman index	*No. subjects*	*Per cent %*
Insufficient developed	3	2
Thin thorace	47	24
Normally developed	2	1
Well developed	91	45
Very well developed	57	28

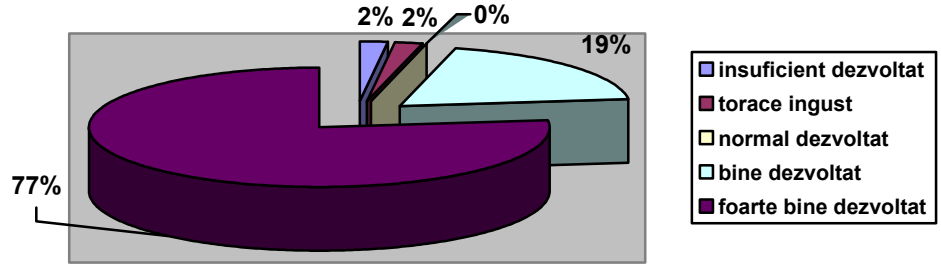

Diagram no. 4. Share of aspects found by calculating Erissman Index (over 35 years)

Table no. 8. Results obtained by calculating Erissman Index (over 35 years)

Erissman Index	No. subjects	Per cent %
Insufficient developed	1	2
Thin thorace	1	2
Normally developed	0	0
Well developed	10	19
Very well developed	40	77

On Quetelet Index we get an average of 22.62 in case of subjects with ages between 19 – 35 and an average of 23.10 in case of subjects with ages over 35. Relating to the evaluating scale we can see that the average of the group is satisfactory. Measurings on age groups show that in case of the subjects with ages between19–35, 66 per cent from them have a normal weight, 18 per cent are underweight, 13 per cent are overweight and 3 per cent have a level I obesity. (diagram no.1). We can say that these are good results comparing the results of subjects with ages over 35 years, where 46 per cent have a normal weight, 2 per cent are underweight, 48 per cent are overweight and 4per cent have level I obesity. (diagram no.2). Values of variability coefficient show that on both groups there is a medium omogenity.

Erissman Index. Results from measurements made an average index of 13.4 in subjects up to 35 years and 16.52 over 35 years, indicating that all subjects are not very good in terms of body harmony and in terms of proportionality of body segments. According to Erissman Index scale, values over 8 cm show the presence of some excessive fat tissues on trunk. On subjects with ages between 19–35 years, 45 per cent are well developed, 2 per cent are insufficiently developed, 24 per cent have a thin thorace, 28 per cent are very well developed. (diagram no.3). On subjects with ages over 35 years, 4 per cent are below the normal level of development (2 per cent are insufficiently developed, 2 per cent have a thin thorace) and 96 per cent are over the normal average; 19 per cent are well developed, 77 per cent are very well developed. (diagram no. 4). The variability coefficient has got the 67.70 value (on subjects up to 35 years) so there is not a omogenity in the group, arithmetical mediane does not reflect the group aspects and on subjects over 35 years Cv value is 21.09 that reflects a weak omogenity.

Discussions, conclusions

Promoting the new concept is made for the purpose of quality of adults life and this is a viable alternative towards plastic surgery, due to multiple advantages concerning: health, economy, aesthetics, psychology, etc (C. Enache, 2009, p.576.).

Life quality is represented by all life aspects of own life and society under influence of impartial, subjective and political factors. In the analysis and measurement of life quality there are identified the next independent variables*: health state, incomes, living and working conditions, family, group and relations between people, education quality, of medical assistance, social protection, access to services for people and to opportunities of a job, perception and conflict administration, trusting in people, in institutions, degree of participation on political and social life*. As concerns life quality, (V. Grigore, 2007, p.42.) Physical Education and Sport specialists say using specific researches that profilactic and curative schemes *optimize health state, help maintaining physical capacity, favourizes obtaining and maintaining physical condition, maintain and/or increase the level of self-trust, facilitate social integrity*, using methods specific to this area, that help to obtain a certain degree of satisfaction concerning life style and wellbeing. Wellbeing is an important indicator of life quality and it is the effectual of all changes, development and decisions made for one's own life, depending on goals, on level of aspiration and reasoning.

Effects of physical exercises on young body were emphasized by three well-bound categories: *morphogenetical, physiological and educational* (A.N. Ionescu, V. Mazilu, 1968, p.152). V. Grigore, (2007, p.8) divides the categories of effect that physical exercise have on health state on four levels: *somatically, functional, psychological and social.* On basis of these considerents we present in table.1 effects of motric activities on human body.

Body autoplasty is a necessity for nowadays societaty and it must become a social reality. Concept of body autoplasty should be perceived as an alternative of plastic surgery methods, under circumstances of the fact that this domain encounters nowadays an unprecedented development.

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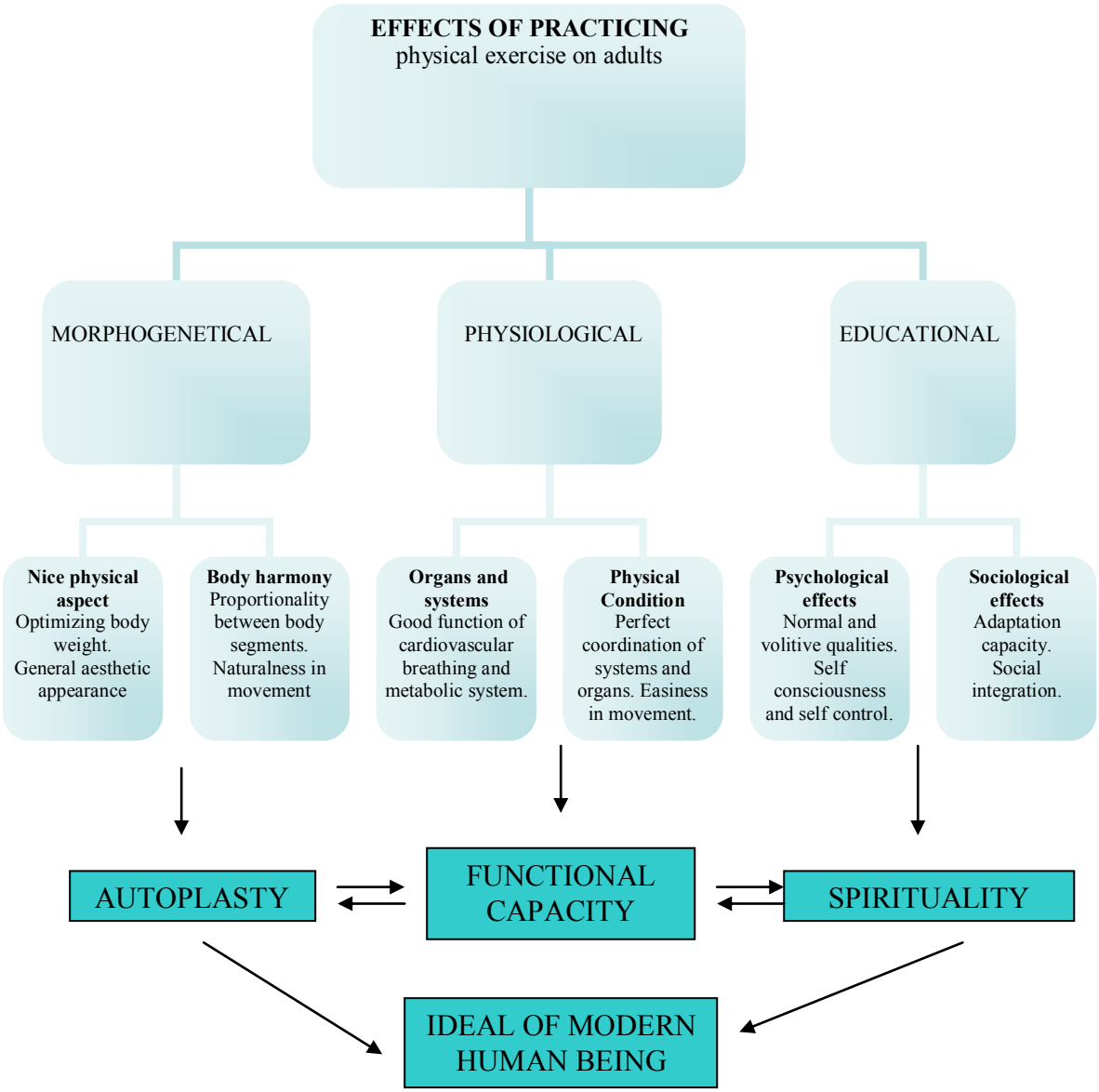

Fig. no. 1. ***Relation between the effects of practicing physical exercises on adults and ideal of modern human being***

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THE EFFECTIVENESS OF PHYSICAL EXERCISES ON BONE DENSITY AND SOME VARIABLES RELATED TO IT FOR GIRLS OF 18-20 YEAR

Naglaa Ibrahim Gabr, Khadra Eid Mohamed
Suez Canal University, EGYPT
02.03.2010 / 15.04.2010

Abstract

Aim: design a proposed physical exercises program for girls 18 – 20 in order to identify: The Effectiveness of the proposed physical exercises program on bone density and some of it`s associated variables include (Calcium - Phosphorus - Estrogen, Parathormone, Calcitonin Hormones- Alkaline phosphatase enzyme), the muscle strength and some physical fitness elements - and to identify the connectivity relationship among them.

Method: Experimental methodology with the experimental design with one group.

sample: 12 volunteers of the members of intentional Sports Club of Port Said in Port Said (not engaged in sport before).

Results: There are significant differences between pre and telemetric to the research group in bone density and some of the variables associated include (calcium - phosphorus - estrogen - hormone Al barratrmon - the hormone calcitonin - enzyme alkaline phosphate) in girls than in 18-20 years.

Conclusion Physical exercises have a positive effect on bone density and some variables associated with it, such improvement in bone density resulted from the impact of the proposed program to improve certain hormones and enzymes.

Key words: Bone density - Exercise - Girls – Osteoporosis.

Introduction

The exercise are a fertile for human development and prevention of diseases ، And regularity in the practice of sport leads to increase the efficiency of the heart muscle, circulatory system, lungs and blood, which is reflected on the health of bones, known as physiological adaptation, physiological changes, multiple, and is particularly associated with respiratory and circulatory system nervous system and the Great consists of bones of a substance protein loaded with metal, and most important of these materials racist calcium and phosphorus, a major mineral in bone formation where the union together to form the so-called nitrate, calcium, given this combination of the extraordinary strength of the bones compared to its weight, making it bear resistance and stress so that they carry the body and if there is that they are more likely to break the so-called disease (osteoporosis, osteoporosis). (Assessment of bone ,2002),(Jack. K,Vir,. 2003) accordingly the exercise of force and resistance is especially important for girls where they could increase bone mass. If the prevention of osteoporosis must exercise, so as to slow the progression of Disease, and doctors indicate that women who practice And is calcium as a chemical of the most important elements in the body where they combine with the phosphorus component of calcium phosphate, and needs some assistance such as exercise, to be implem-ented within the cells, and supports the metabolism of calcium on some basic elements especially vitamin (D) because of its role on the absorption of calcium especially during physical effort. (Melissa Kaplan,2002) .

The level of calcium intake and phosphorus in the presence of certain hormones, like estrogen, which maintains the strength of the bone, and hormone barrathormon calcitonin and who organize the contents of the body of calcium, phosphorus, and certain enzymes enzyme alkaline Vosfatyz, which works to regulate the metabolism of calcium in the bones, whole blood, as well as the level of physical activity practice represent the most important variables that affect bone mass and the degree of intensity, as the low level of physical activity practice, as well as the low level of calcium intake, phosphorus, lead to lower bone mass.(Recaltrol News.1996), (Fagienbaunm, A.D.,2000). And bone as a web district in need of food it receives the blood vessels are rich in blood and need to exercise, especially strength training and resistance to help in the process of growth is good, although the exercise is not related to the length of bone but an increase in the bid and bone density depositing more salt it, it which increases their strength, practice of sports dealing with osteoporosis and help to increase the strength of bones and tissues by activating blood circulation to the bone, And maintaining bone density through the formation of bone mass and maintain strength and in particular young people.(Pindel ,et al.1997). So it was necessary to prevent osteoporosis in old age Toviralspl for the growth and building bones represent during the early growth comes through increased physical activity in addition to the protection of food containing mineral salts and vitamins, and nutrition and mobility, which means it is a serious problem, a list of adult and youth and children as well, as statistics indicated for patients osteoporosis are women reached 20%, men 5%, and young people 2,5%sports at the age of adolescence is very important since the process Build bones and increase the intensity begins at puberty where at its

peak, Exercise encourages the body to resist pressure on the bones and increase the intensity by 2-8% per year(Witzke,K.A.,Sonow,C.M.2000,(Pediatrics.2001) Him and the researchers find that there is a close relationship between osteoporosis and adolescence, which is that building Bone proper and correct to be a teenager, If there is interest in the girl at this age in order to build bones healthy and strong, they will not suffer from osteoporosis in old age, nor of osteomalacia in pregnancy, which takes the baby needs calcium, which is also a catalyst for a fragile bones If built after the bone at this stage properly next to us girls and women are problems associated with bone strength and deviations, both in young adulthood or later, because the vast majority of people exposed to this disease are women.

The research problem and its importance:

In light of the above it is clear the role of bone in the body composition as well as their vulnerability and growth through strength training and resistance and its importance in the early stages of Sunni where there is a chance to prepare well balanced and lay the foundations of a strong underlying girls in the future, Through theoretical readings in this area, it became clear that osteoporosis or thinning of the bones is not linked to the elderly or postmenopausal female. But a complex disease is linked to several variables represented in the whole systems of life and behavior, **Research Objectives** : The research aims to design a program of physical exercise a proposal for girls 18-20 in order to identify the effectiveness of each of :

1- Bone density and some of the variables associated with it include (calcium - phosphorus - estrogen - the hormone Albarratrmon - the hormone calcitonin - alkaline Vosfatyz) 2- Muscle strength and some elements of physical fitness.
3- Correlation between bone density and between each of the (variables associated with it - muscle strength - some components of physical fitness

Research hypothesis:1. There are significant differences between pre and for the telemetric research group in bone density and some of the variables associated with it include (calcium - phosphorus - estrogen - Albarratrmon hormone - the hormone calcitonin - alkaline Vosfatyz) for girls from 18-20 years.2. There are significant differences between pre and post tests to measure the research group in muscle strength and some components of physical fitness for girls from 18-20 years.
3.There is a correlation between bone density and between each of the (variables associated with it - muscle strength - some elements of physical fitness) for girls from 18-20 years.

Search procedures • I used a much more extreme experimental method is the same group.
• **The research sample**: sample was chosen in the manner of intentional members of Club in Port Said Port Said sports volunteers, and their number (12) Member Age (18-20) in - did not engage in sports. And unlike the exploratory research sample and their number (4) members. Have been found homogeneity among members of the sample in the variables under discussion.

Table (1)
Mean, standard deviation and coefficient of torsion of the variables under consideration N = 16

NO	Statistical data / Variables	The unit of measure	Research Group		
			Mean	Deviation	Sprains
1	Heigh	CM	158.5	4.40	86.0 -
2	Weight	Kg	60.08	4.52	28. -
3	Age	Year	17.43	5.49	86. -
4	Estrogen	Pico gram / mL L	173.85	41.89	22. 1 -
5	Albarratrmon	Nano g / dL	23.25	4.81	40. 1 -
6	Calcitonin	Pico gram / mL L	48.27	5.25	476. 0
7	Calcium	Mg / dL	10.78	1.41	91. 0 -
8	Phosphorus	Mg / dL	4.89	1.92	38.0 -
9	Alkaline Vosfatyz	IU / liter of blood	47.6	0.521	656. 0
10	Bone density of the wrist join	G / cm 2	0.59	0.14	92. 0
11	Bone density of the hip joint	G / cm 2	0.62	0.12	. 002
12	Bone density of the spine	G / cm 2	0.81	0.09	28. 0 -
13	Power of arrest	Kg / lb	26.92	2.07	85. -
14	Strength of back muscles	Kg / lb	55.58	5.55	40. 0 -
15	Strong muscles and feet	Kg / lb	54	4.13	73. 0 -
16	Vital capacity	Cm 3 / s	1575.5	356.5	61. 1
17	Speed(30m)	Again	17.16	3.1	7. 0 -
18	Agility	Again	19.17	1.72	29. 0
19	Flexibility	CM	7.33	2.16	29. 0

Is clear from Table (1) the transactions of the torsion is limited to the $\pm$ 3 which indicates the homogeneity of the sample and experimental research in these exploratory variables

Data collection instruments: - **measurements and tests used: -**

1 - anthropometric measurements (height _ weight)

2 **- Analysis of blood: -** - calcium - phosphorus - not oestrogenic hormone - Albarratrmon hormone - the hormone calcitonin - enzyme alkaline Vosfatyz –
3**-Bone density measurements:** - detailed wrist hand - hip - the lumbar area of the spine.
4 - physical tests: - Force Grip - the power of the back muscles - the power of the two muscles
- Vital capacity: Using the device Alaspiromitr.
- Speed: Test the enemy in 30m to start higher education.
- Flexibility: Testing the flexibility of the spine by discouraging the bottom of the imam.
- Fitness: Test run winding in 10 m.

: The proposed design of the sports program: • content of the program: the program included the proposed number (96) exercise is divided into: (20) exercise flexibility and length, (20) Exercise of the Fund of step, (20) exercise stairs wall, (20) exercise multiple weights (16) weightlifting exercise using devices Resistors (Multi C)

• components of the program: the program included the proposed number (36) and a training module for (12) weeks The program began a time of (50 s) divided by (5 s) warm, (40 s) for a period of basic training, (5 s) to calm, and thenInclude the program to increase the period of basic training to become a total time of the unit (80 s) and the basic training period (70 s) at the end of the program.

Sequencing of the program.

Table (2)
Sequencing of the program

Stage	The number of units per week	Time Unit	Number of weeks	Number of units of phase
First	3	50 min	3	9
second	3	65 min	4	12
Third	3	80 min	5	15

This program has become in its final form, which included:-(12) Week number (36) modules.

Results and Discussion:-

Table (3)
" Wilcoxon " test of significant differences between post and pre indices Measurements of density and some of the variables associated with (n =12)

Statistical data / Variables	Measur-ements	Rank average	Difference n	Difference ±	Z	Sig
Estrogen	Post	5.7	3	-	17	N.S.
	pre	6.8	9	+		
			-	=		
Albarratrmon	Post	5.3	5	-	26.5	N.S.
	pre	6.6	6	+		
			1	=		
Calcitonin	Post	0	4	-	0	*
	pre	3.5	8	+		S
			-	=		
Calcium	Post	7	11	-	1	*
	pre	1	1	+		S
			-	=		
Phosphorus	Post	4	5	-	30	N.S.
	pre	4.1	7	+		
			-	=		
Alkaline Vosfatyz	Post	4	3	-	12	*
	pre	6.8	8	+		S
			1	=		
Bone density of the wrist join	Post	1.5	2	-	3	*
	pre	5.7	10	+		S
			-	=		
Bone density of the hip joint	Post	0	0	-	0	*
	pre	6	11	+		S
			1	=		
Bone density of the spine	Post	0	0	-	0	*
	pre	2.5	4	+		S
			8	=		

Indexed value of Z = 13 at the 0.05 level . Is clear from Table (3) the existence of significant differences at the 0.05 level in favor of the measure dimensional in some variables, which was to measure calcium, calcitonin and the enzyme alkaline Vosfatyz, while no significant differences in measurements of phosphorus, the hormone estrogen, Albarratrmon, and there are significant differences for telemetric study group's bone density in the wrist, hip, spine at the level of significance 0.05.

Table (4)
" Wilcox on " test of significant differences between post and pre indices Measurements of muscle strength and some elements of fitness (n = 12)

Statistical data / Variables	Measur-ements	Rank average	Difference		Z	Sig
			N	±		
Power of arrest	Post	0.0	0	-	3	*
	pre	6.5	12	+		S
			-	=		
Strength of back muscles	Post	1	0	-	1	*
	pre	7	11	+		S
			1	=		
Strong muscles and feet	Post	4	3	-	12	*
	pre	6.8	8	+		S
			1	=		
Vital capacity	Post	0	3	-	0	*
	pre	3.5	9	+		S
			-	=		
Speed(30m)	Post	0	0	-	0	*
	pre	3.5	11	+		S
			1	=		
Agility	Post	0	0	-	0	*
	pre	3.5	12	+		S
			-	=		
Flexibility	Post	0	5	-	0	*
	pre	3.5	7	+		S
			-	=		

Table (4) the existence of significant differences in favor of telemetric in all variables under consideration

Table (5)
Percentage growth rates of tribal dimensional measurement Measurements of intensity and some of the variables associated with (n = 12)

Variables	Measurement tribal	Telemetric	Growth rates
Estrogen	173.85	200.5	15.33%
Albarratrmon	23.25	24.08	3.57%
Calcitonin	48.27	61.33	27.06%
Calcium	10.78	9.21	14.56%
Phosphorus	4.39	4.85	10.48%
Alkaline Vosfatyz	47.6	58.3	22.48%
Bone density of the wrist join	0.59	0.82	38.98%
Bone density of the hip joint	0.62	0.87	40.32%
Bone density of the spine	0.81	0.86	6.17%

Table (5) that the percentages of the rates of growth measurements tribal dimensional measurements of bone density and some of the variables associated has been confined to between 57.3% and the hormone Albarratrmon, 32.40% were to measure the bone density of the hip.

Table (6)
Percentage growth rates measurements tribal dimensional measurements of Muscle strength of some components of physical fitness (n = 12)

Variables	Measurement tribal	Telemetric	Growth rates
Power of arrest	26.92	36.38	36.18%
Strength of back muscles	84	102.17	40.32%
Strong muscles and feet	95.85	109	6.17%
Vital capacity	1575.5	1968.2	24.9%
Speed(30m)	17.16	11.42	33.45%
Agility	7.33	12.13	92.77%
Flexibility	19.17	13.16	31.35%

Table (6) the percentage growth rates measurements tribal dimensional measurements of Muscle strength of some components of physical fitness may be limited to

Discussion : * An investigation of the imposition of the first, which states that: - There are significant differences between pre and telemetric to the research group in bone density and some of the variables associated include (calcium - phosphorus - estrogen - a hormone Albarratrmon - the hormone calcitonin - enzyme alkaline phosphate) in girls than in 18-20 years. Shown in table No. (3) it does not Tugod between 17.6% and was to measure the Muscle strength back, 77.92% and was to measure the flexibility of the spine.

significant differences at the 0.05 level in the hormone estrogen and Albarratrmon and phosphorus, while there are significant differences for each of the calcium salts, the hormone calcitonin, and the enzyme alkaline Vosfatyz which resulted in bone density, both area wrist or region hip or spinal column injuries where the table showed that there are significant differences to them, whereas the Table (5) and private rates of growth that there is a ratio, improved the increase in these variables to measure the dimensional despite not appear statistically significant, we find, for example estrogen, which ratio improves 33, 15%, as well as hormone Albarratrmon have not appeared statistically significant, the percentage of improvement was apparent to some extent, reaching 57.3%, and attributed the researchers to the impact of sports activity on the hormonal system, as the results indicate increased phosphorus where the ratio improves 48.10% It is clear from Table (5) that the growth rates for the element calcium was in favor of measurement tribal, reaching 56.14% and attributed much more extreme lack of calcium in the blood to increase the nitrogen in the bones as a result of the activity of sports, which helped to stimulate blood circulation in the bone tissue, leading to the supply of mineral elements for the constructive and the latest increase in the bid and bone density depositing more salt, which has also increased the strength The hormone calcitonin was the growth rate for the telemetric where the percentage of his recovery 06.27%, while the enzyme alkaline Vosfatyz, the ratio improves 48.22% and for measurement dimensional, and this means that the proposed program, which included exercises varied in addition to weight and resistance, which helped on the solidity of the bones due to pressure by increasing the flexibility of the joints and strengthen muscles and increase its size, flexibility, and thereby achieving a balanced growth of the body, as well as taking into account the basic principles of such quality programs as the continuity of performance stable and care to the development of muscle strength, making the exercise performance indicator in the speed of blood flow to various organs of the body, which was a contributing factor in improving the variables calcium metabolism and bone health. It also notes increased hormone Albartramn as the hormone responsible for maintaining the ratio of mineral elements (calcium - phosphorus) in the blood, where accompanied by increased secretion of the hormone Albarratrmon increase in the movement of calcium from stores bones where the hormone Albarratrmon and calcitonin together a strict mechanism to regulate calcium in the blood, is working The first release of calcium from bone excreted in the event of excessive andcontinuous, while the second helps to prevent the start of the bones together to contribute in the process of calcium metabolism and to maintain its percentage in the blood. In the opinion of the Mac et al (2000) that the device is affected by the structural activity in the sports growth and development and adaptation career where performed exercise at an early age to increase bone mass. This result agrees with the study of Albert(2000),Mc Clonahon, et.al (2003) believes that the regularity in the exercise training programs is to improve and revitalize the cells constituting the fabric of Great Britain, resulting in improved chemical processes for some of the hormones controlling enzymes of the Organization of the process of bone metabolism, where they control the process in how much the quantity of mineral salts, such as calcium, phosphorus, essential components of the bones, thus increasing the construction process within the bone.

Indicates Commander (1995) to the importance of physical training with intensity high in nutritional vessels of the bones, due to increased hormone Albarratrmon and vitamin (D) to strengthen the blood the required quantity of mineral salts and increasing the activity of cells constructive for bone health. This is consistent with what was noted by Jaffre et al (2001),Honda et al(2001), and Laing, et. Al (2003) that the practice of the activities of loading and exercise a high collision and training with weights have a positive effect in increasing muscle strength and increasing component of bone and therefore bone density. In the opinion of Fagienbaum (2000), Stephen (2003) that the practice of sport in general and the level of calcium intake prepare a composition factor of bone metabolism and increase the rate of bone mineral density to permit the renewal of better.

As shown in Table (3) the existence of significant differences in favor of telemetric measurements of bone density of the wrist, hip, spine, as well as from Table (5), which indicated that the percentage improvement ranged between (17.6%) of the bone density of the spine (98.38%) the density of the bones of the wrist, while the highest was improved to the bone density of the hip joint was (32.40%), indicating that the proposed training program has helped increase bone density in both the wrist joint, hip, spinal cord, attributable researchers note that the impact of proposed training program, which contains a set of exercises varied and the use of weights, resistors, and systematized scientifically as well as the inclusion program exercises varied by the upper and lower gradient intensity, which lasted (12) a week which led to increase the rate of bone density research sample, which helped the high rate of improvement occurring in the bone density , This finding corresponds with the results of a study Vicente (2003) where indicated to a clear improvement in bone mineral density as a result of attendance in training programs, especially strength training and high-collision, which led to an improvement in physical and mechanical properties of bone. And returns a much more extreme lack of statistical significant for some variables associated with intensive bone table No. (3) the short period of time for the program and Teriya that if the program continued for a longer period might have been to show statistical significance for the rest of the variables, and the research group do not have age Tdrebey, and so no

significant progress to be long period of time with ongoing training. Thus been achieved first hypothesis which states that: - There are significant differences between pre and telemetric to the research group in bone density and some of the variables associated with it include (calcium - phosphorus - estrogen - a hormone Albarratrmon - the hormone calcitonin - enzyme alkaline phosphate) in girls from 18-20 years.

*** In order to achieve the imposition of the second, which states that:** - There are significant differences between the two measures of pre and post research group in muscle strength and some components of physical fitness among girls 18-20 years.

Is clear from Table (4) the existence of significant differences between pre and post tests for telemetric to the research group in muscle strength and some components of physical fitness in question, as well as Azaraljdol (6) rates of growth rates ranged to measure the strength of back muscles by (04,14 %) of the muscles of the men (63.21%), while The highest rate of improvement of the strength of grip, amounting to (8.36%), attributable much more extreme to the effectiveness of the proposed program and its impact is vital for the age level as one of the factors that help to stimulate blood circulation and the acquisition of physical fitness, there must be change for the better in muscle strength and some components of physical fitness, even if to varying degrees And appeared on the statistical significance in all variables of research and power measurements Fist, the power of back muscles, muscle strength the two men, which resulted in some elements of fitness Other physical phenomenon under consideration in the form of vital capacity, speed, flexibility and agility, where rates are improving, respectively, 9.24%, 45.33%, 77.92%, 35.31%, in line with what he referred, Mac Kelive (2002) , where refers to the role played by the nervous system to improve muscle strength and by improving the functional ability of the neural hardware more than the increase in muscle size. And it can be argued that exercise in general is working to improve bone density and some of the variables associated with muscle strength, and some elements of fitness, thereby achieving a second premise which states that: - There are significant differences between the two measures pre and post of the research group in muscle strength and some elements of fitness among girls 18-20 year. The results show tables the former view, and a positive significant correlation coefficient between exercise and bone density (wrist, hip, spine) and some of the variables associated with it of the (calcium - phosphorus - estrogen - Albartramn - calcitonin - enzyme alkaline Vosfatyz) where the results indicated an increase in all measurements except for calcium where the lower the level of concentration in the blood and returns a much more extreme to the impact of the training program as the calcium has an important role in the process of defibrillation, which lead to the withdrawal of calcium from stores, when an arousal nerve enters the calcium in the end of the connection neuromuscular leading to increase secretion of the hormone acetylcholine, which works to increase the exchange of sodium and potassium within the muscle, causing a defibrillation, and notes through the presentation of the results and there is an inverse relationship between calcium and phosphorus, when low concentration of calcium largest concentration of phosphorus, and the results show a positive correlation between estrogen hormone Albarratrmon and calcitonin The enzyme alkaline Vosfatyz and phosphorus while the lower the level of concentration of calcium in the blood, and returns a much more extreme to an increase in calcium deposition in bones, which led to increased density as an increase in bone density means increased phosphorus and estrogen Albarratrmon and calcitonin and the enzyme alkaline Vosfatyz in the blood and therefore there is a direct correlation between hormone estrogen and bone density. I explained the tables and there is an inverse relationship between hormone Albartramn, calcium and phosphorus as an increase in hormone Albartramn as the hormone responsible for organizing and maintaining the ratio of calcium in the blood and thereby increase is accompanied by calcium and phosphorus in the bones and increase the nitrogen. The results showed a positive correlation between hormone Albarratrmon and calcitonin, where work on the organization of calcium in the blood, is working the first release of calcium from the bones in the case of excreted excessive and continuous, while helping the second to prevent the start of the bones to contribute together to the metabolism of calcium and to maintain its percentage in blood, and there is a direct correlation positive for the enzyme alkaline Vosfatyz with all the variables because of its Doraly increased calcification ofbones. returns a much more extreme to the effectiveness of the training program, which included the activities of the weights, resistors, and especially against gravity with exercise flexibility and strength and balance, which led to a significant increment in the intensity of an increase of bone calcium deposition.

A study Thorsen et al (1997) to young females showed signs of biochemical bone collagen to increase as a result of a positive calcium balance by increasing the hormone estrogen and Albarratrmon. Thus, The results of research and there is a relation direct correlation between bone density and some related variables and of (calcium, phosphorus, estrogen, Albartramn, calcitonin, and the enzyme alkaline Vosfatyz The result is something natural to the above results, which indicated an increase in some variables, which is an increase in density bone natural result of the variables increase the metabolism of calcium and thus bone density. This is consistent with a study of San Born (1995) Barbara Breham (2000) which indicated that good training an effective influence on health in general and on the bones, in particular, and therefore the bone density higher practices of sport activity compared to non-practice and weight training and resistance increase the concentration of salts in the

bones, and the size of muscle mass is directly proportional to the content of the bone salts. And through the presentation and discussion of results and a clear correlation between the high positive correlation between bone density, muscle strength showed the tables presented a correlation positive correlation between bone density of the wrist joint, hip, spine and muscle strength. And returns a much more extreme to the involvement of muscle groups of the Party of upper and lower in the proposed program and this confirms that the muscle groups working register link with a higher bone density, and is in line with the results of a study Taffe (2004), which indicated the presence of a link direct relationship between the strength of the chest muscles and mineral density bone arms, and the muscular power of the two men and bone mineral density and body the two men as a whole. also noted the tables previously presented and discussed the existence of a positive relationship represented by a connection between the direction of power between bone density and some components of physical fitness and the findings are consistent with the Study Cooke Kar et al (2000), Vicente, et.al(2003), Jake (2003) and came to the Jodalaqp positive correlation between the Enaasrallyakp physical .

In the view of researchers note that a review of the results reached them that there is a logical sequence in the search results between the measurements tribal-and-after all this leads to predictable results reached through the presentation of tables of results, which indicated that there is a correlation centrifugal strong bone density and some related variables and between muscle strength and some elements of physical fitness for girls in ** The above information indicates the researchers to the importance of exercise, Vamadaomp to exercise in adolescence often leads to obtain bone mass most appropriate for girls and although the intake of calcium required is an important factor to build bone but it alone is not enough and must exercise of 30:20 minutes, three times at least Osbuaiaaly As for the impact Vtl_khasaha in:

1 - Altmarenat sports working to find a physical pressure on the skeleton of the body.

2 - impact on increasing blood flow to the bone, which is loaded with food to the constructive and vitality

3 - be a small voltage in the tissues of bone, which works to stimulate bone growth.

4 - affects hormones and enzymes that control the body to rebuild bone cells.

5 - as well as benefits and Mwtherthaalokry in terms of physical energy and improve blood circulation and mental state and reduce pain and increase functionality and others. Is the most important benefit of exercise for the bones are Moving the body is strong and the weight of walking, running and weight-bearing and resistance exercises.

- And thereby achieving the third hypothesis which states that: there is a correlation between bone density and between each of the (variables associated with it - muscle strength - some components of physical fitness) in girls than in 18-20 year.

Conclusions:

1 - The positive impact of exercise on bone density and some of the variables associated with them.

2 - improvement of bone density as a result of the positive impact of calcium and phosphorus and the hormone estrogen, Albarratrmon, calcitonin and the enzyme alkaline Vosfatyz.

3 - the proposed program has led to improved levels of muscle strength and development of some components of physical fitness.

4 - There is a direct correlation between bone density and some of the variables associated between muscle strength and some elements of physical fitness.

Recommendations:

1 - Application of the proposed program of exercise clubs and sports programs use weights and resistance training for girls in the early stages of the Sunni and continuing in it.

2 - Diversity in training, weight training and resistance to the upper and lower, taking into account the gradient in the intensity and taking into account individual differences and motivation to each girl individually.

4 - Develop a standardized training programs for different stages of life commensurate with the other.

5 - the need for analysis Tabipokiesat Radiology and physiological tests periodically on girls and women to know the rates of bone density and some hormones to address any deficiencies that may arise on them.

6 - attention to the role media to disseminate the importance of sports for girls to keep the bones that

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THE NUTRITIONAL AND HEALTH PROFILE OF THE WEIGHTLIFTING TEAM'S STUDENTS AT THE ELEMENTARY SCHOOL: A PILOT STUDY

Ozdemir Gunay[1], Kir Alkan Nesrin[2], Ersoy Gulgun[3]
[1] Gazi University, Institute of Health Sciences, School of Physical Education and Sports, Ankara, TURKEY
[2] Basaksehir Hospital, Istanbul, TURKEY
[3] Hacettepe University, Faculty of Health Sciences, Department of Nutrition and Dietetic, Ankara, TURKEY
Email: dytgunay@hotmail.com / 02.02.2010 / 10.03.2010

Abstract

Purpose In this study, the effects of one-month nutrition education programme on the nutrition knowledge level were determined. For this reason, nutrition habits, food consumption, anthropometric measures and biochemical findings of the weightlifting team's students who were studying at the elementary school, were assessed.

Methods Ten male weightlifting team's students (between ages 11-15) who were studying at an elementary school in Ankara province participated in this study. The students' body composition analysis (Tanita BC-418) had been taken with some biochemical measures (complete blood count, urine tests), also knowledge about nutrition habits were collected through questionnaires and nutritional status were evaluated ($\leq$ 3 bad; 4-7 medium, $\geq$ 8 good) by the application of healthy eating index (KIDMED). Total energy, macro and micro nutrient consumption were evaluated by taking three days food consumption records and analyzing the nutrition knowledge programme (BEBIS). Changes in the level of nutrition knowledge were evaluated before and after the education programme by using nutrition knowledge test which consisted of 40 questions. The statistical evaluation of all obtained data was made with SPSS 15.0 statistical package programme, kruskal wallis, mann-whitney U testing, kikare tests were made by taking the mean and standard deviation values.

Results: The students' age, body height, body weight, body mass index (BMI), body fat percentage, body fat weight and body fat free weight averages were found respectively; 13.1±1.3 years, 1.52±0.1 m, 51.4±13.0 kg, 22.0±3.5 kg/m^2, 20.9%±4.6, 10.8±3.8 kg, 40.6±10.1 kg. It was identified that eight students' body weight were more than their competition weight (1.9±0.7 kg), two students' body weight were lower than their competition weight (1.7±0.7 kg). Also it was identified that their sport ages were 2.0±0.7 years, frequency of training was 5.8±0.4 days per week, 2.7±0.5 hours per day. All of the students reported that they did not receive any nutrition education before, their mothers were responsible from their diets at home and their coaches were responsible during training. According to evaluation of healthy eating index, 30% of students diet quality was poor, 50% of them were medium quality, 20% of them were good, and also it was identified, that the nutrition knowledge increased 58% as a result of the nutrition knowledge test evaluation which was made at the beginning (pre-test) and (last test) end of the education program. There were no significant relationship between the KIDMED values and fat percentages (x^2;2.56, $p>0.05$) and BMI values (x^2;1.14, $p>0.05$). Two students' hemoglobin values were determined as low, and as a result of the urine tests it was decided by physician, that the detailed kidney function analysis should be done for these two students. There were no significant relationship between the hemoglobin values and iron consumption ($p>0.05$). The daily energy, protein, carbohydrate and fat consumption averages of the students whose ages were between 11 and 13 were respectively; 1578.7±404.4 kcal, 1.3±0.2 g/kg (16%±2), 4.7±1.7 g/kg (53.3%±9.6), 1.1±0.5 g/kg (30.6%±10.5). However, the averages of the students whose ages were between 14 and 15 were respectively, 1832.7±319.9 kcal, 1.0±0.3 g/kg (14.5%±1), 4.1±1.7 g/kg (51.2%±6.7), and 1.1±0.4 g/kg (34.2%±6.0). Also it was determined that all the students did not consume calcium, potassium, folic acid and fiber sufficiently. There were no significant relationship between the students' energy, macro, and micro nutrient intake, and energy distribution percentages with KIDMED values ($p>0.05$).

Conclusions: In the end of this study, it was reported that all of the students did not consume energy, some macro and micro nutrient sufficiently although they did active sports. It was concluded that nutrition education program increased the level of nutrition knowledge but education needed to be done more frequently and consistently.

Key words: Weightlifting, nutrition, health

Introduction

As the World Health Organization (WHO) defines, adolescence is a special period that comprises the group at 10-19 ages in which quickest growth and development and developing from a child into an adult occur (E. Demirezen et al., 2005; E. Geçkil et al., 2004).In this period, adolescences are in a search of identity. They struggle to be independent and get accepted by the society. They are very interested in their appearance. They don't have regular meals, instead of this they prefer to consume fast food outside. These are their typical characteristics. These characteristics are usually influenced by the factors like friends, family and the media. (H. Demir, 2008; E. Demirezen et al., 2005). With an adequate and balanced nutrition, the expected growth and development of the children and adolescents are provided, and also their resistances against the diseases

increase, and increases in their cognitive abilities and school performances occur besides their bone and physical ability developments (E. Demirezen et al., 2005; G. Ersoy, 2006).

An increase is seen in the energy need of the adolescents who play sports as parallel to the sport played. However, it is not easy to determine the daily energy need because there are great personal differences among the adolescents. Especially the quick increase in growth speed and energy need is an important factor. The adolescent's age, height, weight, sex, body composition, intensity and duration of the physical exercise are important factors affecting their daily energy need (S.A.Yildiz, 2004).

Weightlifting is one of the most difficult sport activates and it is being known as a power sport, different from many branches of sport. It needs short time activity depending on power. Because of energy need and aims of exercise is different from endurance sports. For a successful weightlifting performance, a suitable nutrition is necessary (energy, macro, micro nutrients and adequate fluid intake) suitable physiology profile, power of muscle, endurance and flexibility of muscle (A.C. Fry et al., 2006).

In this study, the nutrition knowledge levels of the students, who were in growth period adolescent, do a sport branch like weightlifting that needed much energy and power, were determined. The health profiles of these students and the effects of one-month nutrition programme to the nutrition knowledge levels were also determined.

Method

Ten male weightlifting team's students (between ages 11-15) who were studying at the elementary school in Ankara province participated in this study. Nutrition questionare and anthropometric measures of students were analyzed by the dietician.

Measuring of height had been done with nonflexible plastic meter whose wideness and length were 1.5 cm and 150 cm, respectively. The students' body composition analysis (body weight, fat percentage, fat free mass) had been measured by digital scale balance (TANITA BC-418 Body Fat Monitor) to the nearest 100 g. Subjects were measured without shoes and wearing light-weight clothes. Students' BMI (Body Mass Index-kg/m^2) values had been calculated and they had been compared with standard BMI data of the same year groups (G. Figan et al., 2002).

After nearly 12 hours hunger student's blood had been taken by laboratory health employees and their blood (hemoglobin, hematocrit, MCH, MCV, and MCHC) and urea evaluations had been examined.

Three days food consumption records were taken to determine food consumption status of the students. Energy and nutrients were calculated by using "Nutrition Knowledge System (BEBIS)" programme after calculating the portion amounts of the eaten meals. The status of the nutrients to meet their requirements was evaluated by comparison with standard values (Dietary Reference Intakes- DRI) (P. Insel et al., 2004).

A questionnaire of 16 questions including personal characteristics in the technique of face off interview, nutrition applications, nutrition habits, healthy eating index (Mediterranean Diet Quality Index) (KIDMED) had been filled by the participants. According to the points obtained from the application of the healthy eating index (KIDMED), it is evaluated that point ≥ 8 corresponded to optimal diet quality, between 4-7 was medium quality, and a value of ≤ 3 was very low (L.S. Majem et al., 2003). Changes in the level of nutrition knowledge were evaluated before and after the education programmes by using nutrition knowledge test which consisted of 40 questions.

The statistical evaluation of all obtained data was made with SPPS 15.0 statistical package programme, kruskal wallis, mann-whitney U testing, kikare tests were made by taking the mean and standard deviation values.

Results and discussion

Student's ages and sport ages averages were determined as 13.1±1.3 and 2.0±0.7 years, respectively. Also exercise days and hours were found as 5.8±0.4 days/week and 2.7±0.5 hours/days, respectively. Their body height, body weight, body mass index, and body fat percentage averages were 1.52±0.1 m, 51.4±13.0, 22.0±3.5 kg/m^2, 20.9%±4.6, respectively (Table 1). According to the BMI classification, the rate of the students were divided into three main categories; underweight (10%), normal body weight (10%) and overweight groups (80%), respectively. In a different study, anthropometric measures of elite weightlifters (age averages; 14.8 ± 2.3 year) were determined by A.C. Fry et al (2006). Their body weight and body fat mass averages were 67.3±10.4 kg, 4.5±2.5 kg, respectively. A result of, it may be concluded that the students in this study are not professional athletes and their nutrition knowledge was insufficient.

There was no significant relationship between the rates of BMI and sport ages (x^2; 0.57, $p>0.05$). In another study, it was found significant relationship between playing sport ages and BMI values (E.S. Farias et al., 2009).

Table 1: Anthropometric measures of the students

Variables	Students (n=10)		
	Average (X) (the lowest- the highest)		Standard deviation (SD)
Age (year)	13.1	(11-15)	1.3
Sport age (year)	2.0	(1.0-3.0)	0.7
Exercise day/week	5.8	(5-6)	0.4
Exercise hour/day	2.7	(1.5-3.5)	0.5
Anthropometrics parameters			
Height (m)	1.52	(1.34-1.67)	0.1
Body weight (kg)	51.4	(37.1-82.7)	13.0
Body mass index (kg/m^2)	22.0	(17.2-29.7)	3.5
Body fat percentage (%)	20.9	(15.1-27.2)	4.6
Body fat mass (kg)	10.8	(6.3-19.5)	3.8
Body fat free mass (kg)	40.6	(29.7-63.2)	10.1

It was identified, that body weights of eight students were more than their competition weights (1.9±0.7 kg), two students' body weights were lower than their competition weight (1.7±0.7 kg).

70% of the students' mothers and 50% of the students' fathers were graduated from elementary school. 10% of the students' mothers and fathers were graduated from higher education institutes.

According to KIDMED assessment, 30% of students were poor diet quality, 50% of them were medium quality, 20% of them were good. There were no significant relationship between the KIDMED values and fat percentages (x^2;2.56, p>0.05), BMI values (x^2;1.14, p>0.05) and sport ages (x^2;0.31, p>0.05) (Table 2). In the other studies, it is determined that there was a reverse relationship between BMI and KIDMED values (E. Demirezen et al., 2005, G. Samur et al., 2008). In another study that was done on 785 male students (between 11-14 aged) who played basketball according to evaluation of healthy eating index, 55.7% of the participators are in poor diet quality. Although diet quality of the participators is in medium and good level (E. Erol et al., 2010). E. Köksal et al. study, at 624 children and adolescents (between ages 7-12), it is found that 15.1% of the participators has low, 59.3% of them has medium and 25.6% of them has good diet quality index according to KIDMED evaluation (E. Köksal et al., 2008). In another study, it is determined that only 16.9% of 225 individuals between 12-18 ages have adequate nutrition level (E. Köksal et al., 2008).

Table 2: Evaluation of healthy eating index (KIDMED) of the students

Healthy eating index (KIDMED)	n	%	BMI-KIDMED	Fat percentage-KIDMED	Sport ages-KIDMED
Poor (≤3)	3	30.0	x^2; 1.14 p>0.05	x^2; 2.56 p>0.05	x^2; 0.31 p>0.05
Medium (4-7)	5	50.0			
Good (≥8)	2	20.0			
Total	10	100.0			

There are some expressions on some nutritional ergogenic aids as "it increases performance, changes appearance, develops muscles" in order to attract attention of especially athletes and adolescents (K.M. Babu et al., 2005; A. Petróczi et al., 2007). In this study, it was determined that there was only one student who use ergogenic product. Also the results of urine tests showed that a detailed research related to the kidney should be done. While determining that the ergogenic product was the amino acid supplement, the used dosage could not be determined correctly. In another study, it was determined that 26% of 756 adolescents used ergogenic product and most of products were fish oil (14.8%) and multivitamin (5.2%) (E. Erol et al., 2010). In another study, 34% of 828 children and adolescents between 2-17 ages use vitamin and mineral supplements (U. Shaikh et al., 2009). If the person is not sure that his nutrition is adequate and if he has a nutrition deficiency, this deficiency should be first determined by experts (physician or dietician) and he should use supporter product according to their suggestions.

Average energy, macro and micro nutrients obtained from the result of data about nutrition intake of students intakes are given in Table 3. The energy, macro and some micro nutrient intake of students were inadequate. The daily energy, protein, carbohydrate and fat consumption averages of the students whose ages were between 11 and 13, were respectively; 1578.7±404.4 kcal, 1.3±0.2 g/kg (16%±2), 4.7±1.7 g/kg (53.3%±9.6), 1.1±0.5 g/kg (30.6%±10.5). However, the averages of the students whose ages were

between ages 14 and 15, were respectively, 1832.7±319.9 kcal, 1.0±0.3 g/kg (14.5%±1), 4.1±1.7 g/kg (51.2%±6.7), 1.1±0.4 g/kg (34.2%±6.0). It was determined that consumption of energy was not enough for both age groups and the protein was taken insufficiently. All the students did not consume calcium, potassium, folic acid and fiber sufficiently. There were no significant relationship between energy, macro, and micro nutrient intakes of the students, and the energy distribution percentages with KIDMED values ($p>0.05$). In another study results was found similar (İ. Pehlivan, 1990). In study which was made on wrestlers; energy inhibition was significantly decreasing the anaerobic performance on wrestlers and it has determined that performance was fixed with high carbohydrate diet (J.W. Rankin et al., 1996).

Table 3: Energy, macro and micro nutrient consumption of the students (n=7)

Energy and nutrients	11-13 year groups (n=3)		14-15 year groups (n=4)	
	X	SD	X	SD
Energy (kcal)	1578.7	404.4	1832.7	319.9
Proteins (g)	60.6	12.0	64.0	7.6
Protein intake with diet g/kg	1.3	0.2	1.0	0.3
Protein percentage (%)	16.0	2.0	14.5	1.0
Essential amino acid (g)	28.1	4.4	29.6	3.8
Nonessential amino acid (g)	30.8	7.3	32.4	4.3
Vegetable protein (g)	36.6	4.7	35.5	9.5
Fats (g)	51.1	16.7	69.0	12.3
Fat intake g/kg	1.1	0.5	1.1	0.4
Fat percentage (%)	30.6	10.5	34.2	6.0
Saturated fatty acid (g)	15.3	6.7	22.9	7.9
Monounsaturated fatty acid (g)	16.2	4.8	22.2	4.8
Polyunsaturated fatty acid (g)	15.5	8.9	18.2	1.9
Cholesterol (g)	280.6	34.6	335.3	103.0
Carbohydrates (g)	214.0	76.0	235.8	6.4
Carbohydrate intake g/kg	4.7	1.7	4.1	1.7
Carbohydrate percentage (%)	53.3	9.6	51.2	6.7
Fiber (g)	213	7.5	19.1	6.6
Vitamin A (µg)	997.0	1080,7	661.4	257.8
Vitamin E (mg)	12.1	7.6	11.4	5.8
Vitamin B_1 (mg)	0.8	0.1	0.9	0.3
Vitamin B_2 (mg)	0.9	0.3	0.9	0.2
Niacin (mg)	7.8	2.7	8.2	1.6
Pantothenic acid (mg)	3.6	0.8	3.3	0.4
Vitamin B6 (mg)	1.0	0.3	1.0	0.2
Biotin (µg)	29.8	0.4	27.4	5.0
Folic acid (µg)	101.9	27.9	85.3	11.9
Vitamin B_{12} (µg)	2.6	1.9	2.8	0.8
Vitamin C (mg)	56.4	42.4	51.1	16.0
Sodium (mg)	2413.6	878.2	3771.5	1565.6
Potassium (mg)	2044.6	1171.2	1712.9	232.0
Calcium (mg)	427.2	332.6	420.5	242.1
Magnesium (mg)	231.4	99.2	203.4	20.9
Phosphorus (mg)	1012.5	177.6	946.9	75.1
Iron (mg)	11.4	1.6	9.8	1.5
Zinc (mg)	9.5	1.4	9.0	1.1

Some blood parameters of student intakes are given in Table 4. Two students' hemoglobin values were determined as low, and as result of the urine tests it was decided by physician, that the detailed kidney function analysis should be done for these two students. There weren't significant relationship between the hemoglobin ($U=1.0$, $p>0.05$) and hematocrit values ($U=0.0$, $p>0.05$) and iron consumption. Despite there is no relationship with the consumption of iron, it was determined that two students had low rates of hemoglobin. A more detailed measure should be done. In another study about 45 male wrestlers whose ages were 17-25 years, the found 54.6% percent of the wrestlers' hemoglobin level was low (G. Kasap, 1979).

Table 4: Some blood value of the students

Variables	Average (X) (the lowest-the highest)	Standard deviation (SD)
Hemoglobin (12.8-15.2 g/dl)	13.2 (12.4-13.9)	0.5
Hematocrit (38-42 %)	37.6 (34.1-39.5)	1.6
MCV (90-105 fL)	80.0 (73.2-93)	8.2
MCH (25-31 pg)	27.4 (25.5-30.2)	1.5
MCHC (33-35 g/dl)	34.9 (34.0-36.5)	0.6

According to the results of pre and last tests, the average rate of the students' points was showed on the Table 5. After nutritional education there were increase on both nutrition and sport nutrition knowledge of the students. While 37% of the participators' nutrition habits is inadequate level in a study on 532 adolescents whose average age is 15 (G. Turconi et al., 2008), nutrition habits are inadequate in another study (AR. Burrows et al., 2008). In another study resuts, 369 adolescents aged 12-18 years about health information.Large percentage of adolescents, especially boys, are insufficiently informed on major health issues (C.I. Vardavas et al., 2009)

Table 5: Nutrition and sports nutrition knowledge levels of the students (pre-test and last test point)

Test results	Nutrition knowledge level	Sports nutrition knowledge level
Pre-test (point)	53	44
Last test (point)	84	86
Success rise (point)	31	42
(%)	58	95

Conclusions

It was determined that the students who did weightlifting which is a high active sport branch and needs a quite high energy, macro and micro nutrients, did not consume macro and micro nutrient sufficiently although they were in the period of the growth and development period. In the KIDMED assessment, it was also found that the rate of the students, who had a balanced and adequate nutrition habit, was not enough. As a result of nutrition education program, it was concluded that the level of nutrition knowledge increased, but education needed to be done more frequently and consistently, parents and coaches who played an important role in the students' nutritional habits, should attend the education program.

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❖ RECREATION

THE STUDY OF EFFECTIVE FACTORS ON THE MOTIVATION OF TOURISTS PARTICIPATING IN SPORT EVENTS

Mehr Ali Hemmatinezhad [1], Farhad Rahmani Nia[1], Akbar Mirzaei Kalar[1]
[1]Guilan University, IRAN
Email: ma_hemati@yahoo.com / 10.03.2010 / 20.04.2010

Abstract
Purpose: The aim of this study was to investigate the effective factors on tourist participators' motivation in sport events.
Method: The research method was descriptive and survey. The sample of the study includes 638 tourists (529 from national team and 109 from super league) participating in the national and super league football teams. The data was collected using the Wimbledon questionnaire. Which the validity of this questionnaire approved by 10 professors of Guilan university and Allame Tabatabaei university and 10 experts tourist and had a previously proven reliability of 86% using the Chronbach's Alpha.
Results: the research data were analyzed by Binomial tests ($P \leq 0.05$). the findings of this study indicate that from the tourist of the view of fans, socialization, entertainment, relaxation(push factors); fan motives, destination, (pull factors) and personal problems, risks (Deterrent factors) are the most effective factors on the motivation of the tourists attendance in sport event.
Conclusions: The results indicate that the fan motives, destination (pull factors) socialization, relaxation, and entertainment (push factors) are the most effective factors on sport events. Also, risks, personal problems, and competition are the most important Deterrent factors. Finally, it is suggested that to enhance the participation of the tourists' motivations to attend the sport events, their motivational factors must be identified thoroughly and there must be a good informing system on attraction of event and destination, and financial costs, safety problems, and health problems must be minimized.
Keywords: Sport tourism, motivation, effective factors, sport event, tourist

Introduction

One of the events that attracts' tourists attention is sport events held through participating various sport teams from different regions of the country. Now, one of the disturbances of sport event's marketers and organizers are the increase the rate of visitors' and participants ovation through identifying factors which affect their attendance. There are different factors affect tourists' intent and desire to attend a sport event, and their choice. In most research related to the factors affect tourists' attendance, push factors (factors related to source) and pull factors (factors related to destination) have been distinguished from each other (N. Kim, L. Chalip, 2003; M. Kozak, 2002). Also many studies have shown that deterrents and barriers exist on tourists' way and how they perceive limitations affect their desire to travel and attend a sport event (J. Braz, 2002; D. Gilbert, S. Hudson, 2000; N. Kim, L. Chalip, 2003 B. Thapa et al 2002). So, the problem of sport events marketers is to identify methods through which they can invest in to increase the rate of events attraction (which requires to determine pull factors) and also to decrease the rate of current limitations for attending tourists (which requires to determine deterrents) and finally they can change the interest in event to traveling for it and attending it (which requires to identify push factors).

With respect to being unknown effective factors for attracting tourists' attention to sport events – for the present problem in regard to programming and marketing for attracting tourists' attention in general and sport tourists' in particular is to study these factors for attending them. Studies done by researchers are shown that there are many diversities in effective factors for going tourists' to sport events (such as event attractiveness and security, health and financial limitations, knowledge, personality, socialization, relaxation, novelty and interesting) and in different research (C. Graham, H. Ian, 2001; C. Kynneth et al 2001; Y. Yamaguchi, 2002). In the case of sport events, many studies have been done in aspect of sponsorship and events organization and etc, but little attention has been paid to the role of tourists and spectators. Therefore, with respect to plan for attracting tourists' attention to any events is based on satisfying different needs of tourists, so it is important that push factors of tourists are recognized and planning event is done based on them. The recognition of tourists' push factors is important prerequisite to marketing for attracting their attention to events (J.L. Crompton, S.L. Mckay, 1997). On the other hand, researchers have found that more research should be completed about people who have more limitations for participating in an event. To determine which motivators of certain sport events participators are useful and to identify their motives and also, which factors play a role in them, there is no doubt that owners, company

their consumers' motives (H.J. Ottevanger et al 2007). Which factors affect spectators behavior, is an important issue for sport spectators marketing, because the income associated to spectators attendance in events is an important source of revenue for professional sports. Sport marketers will be able to determine more effective strategies for their targeted market if factors which affect spectators' behavior are identified. Studying different ways, effective factors for sport events tourists' motivation, the degree of importance and the priority order of each of them, is a first necessary step to begin scientific actions to increase the rate of sport tourists attendance in sport events. Research findings will help national and international sport events programmers and organizers to identify effective factors for attracting tourists' and spectators attention and to try for increasing in number of them. The significant growth of sport tourism in recent years has been attributed to both factors of demand growth and increase in the rate of business activities. As the focus of this research is on event sport tourism, the development of kind of tourism provides many opportunities. The number of tourists for watching a sport event is a primary reason to increase traveling very quickly. From a destination point of view, event sport tourism is developing and marketing sport events to obtain economical and social benefits .for Consumers, aim watching or participating in a sport event. In the eye of event organizers, it is possible that tourism is only one of several market ends to attract tourists' attention during an event.

H.J. Ottevanger et al (2007) declared the most effective factors for participators' motivation to attend in Wimbledon tennis events with respect to the degree of importance and priority; fan motives, entertainment, host-destination, relaxation, experience, socialization, escapism, novelty, self-development and self-exploration. Also security, health and financial issues mentioned as deterrent factors for participating in an event (H.J. Ottevanger et al 2007). T. Brietbath (2006) studied motivations and interests of fan for coming from New Zealand to attend events and reached to these results; their importance and order of priority is as follow: positive level of arousal, diversion from everyday life, a need for affiliation, family ties, show national identify, supporting favorite team or self esteem enhancement, destination attractiveness and event attractiveness. He also called deterrent (limitation) as security, health and financial limitation that were most important factors fan found them as barrier for traveling to out of new Zealand (T. Brietbath, 2006). A.C.T. Smit (2007) states that individual sports fan such as tennis and rally are motivated by issue depended on aesthetics, while fans of teem sport such as football and volleyball are motivated by issue depended on aesthetics, they are motivated more by eustress and self-esteem. He also states that motivational differences can result from environment where events are held. For example, it is possible that football events are held in a professional environment or in an unprofessional one.

Researchers like A. Eastgate and D. Funk (2005), J.L. Crompton (1979), R.J. Gitelson and D.L. Kerstetter (1990), L.E. Looker and R. Perdue (1992), S. Cha et al (1995) found that event tourists seek specific motives to do such as escapism, excitement, knowledge, socialization, prestige, kinship, adventure, relaxation, novelty and exploration (S. Cha et al 1995; J.L. Crompton, 1979; A. Eastgate, D. Funk, 2005; R.J. Gitelson, D.L. Kerstetter, 1990; L.E. Loker, R. Perdue, 1992). J.B. Hong et al. (2005) studied Japanese baseball team fans' interest for following baseball events in major league. They determined three primary motives spectators (overall interest in baseball, interest in players and quality of games) as Japanese favor for major league baseball. In research for WKBL (woman Korean baseball league), N.L. Lough and A.R. Kim (2004) reported that the most effective social motivation for attending WKBL spectators has been for entertainment. Study about participating in competitive sports is uncompetitive sports indicated that enhancing external motives and compete against others is very important for competitive athlete (T. Robinson, S. Gammon, 2004), while uncompetitive athlete have shown social and participating motives (S. Croft et al 1999). Studies have shown that sport events participating and tourism is not incited only by a special motive, and it is more likely that there are a large number of motivational factors affect the decision for traveling and participating in sport events. One or more motivational factors have more effect. In addition to this, few experimental studies in regard to event sport tourism have done in a small scale; particularly when events are held in local regions and more studies done are related to hallmark events such as Olympic Games and world cup. Therefore, developing studies about event sport tourism (supper league and national football team events for going to world cup) will cause the present knowledge to develop in this aspect and a new partnership is established among organizations related to tourism and also will cause more relationship between them and sport events organizations so the relationship with sport tourists will be understand better.

Methodology

The present research is the descriptive research which is completed in the field. A researcher describe effective factors of tourist motivation participate in sport events from tourist's point of view who participate in football events. Statistical community for this study includes all tourists participate in national football team events – which are held for going to south Africa world cup in the year of 2010 – and main football league events in semi session of the year 87 – 88 that guilan damash team hosts them. The sample of this research consisted of 638 tourists (529 tourists for national team and 109 for supper league) who participated in national football team events and super league plays. Collect information for

this research, Wimbledon Questionnaire was used and its reliability was recognized by ten professors of Guilan University and Allame Tabatabaei and ten tourists expert, its validity was evaluated by the method of %86 chronbach's alpha. Aforementioned questionnaire was distributed randomly among tourists but is was goal oriented and necessary data where collected and analyzed. The descriptive statistics method was used of describing data and to study effective factors of tourists' motivation after data distribution was studied for being normal using smirnov colmugraph test, a nonparametric binominal test in a meaningful level ($p \leq 0.05$) was used. Statistical operation was performed by SPSS 16 software.

Results

Result of the present research show that more subjects of this research were in a range of 15- 25 years old (60.2) and about %40 subjects traveled to the location where sport events were held from central rejoins of the country, 64 percent of the subject were single. More than 50 % of tourists had diploma academic paper and only less than 5 % of tourists had an academic paper which was bachelor, more tourists monthly income was in two groups, without any income (30.6) and less than 3000000 Rials (32.6). Also, findings of the present research in the aspect of studying effective factors of tourist's motivation participate in sport events, had been presented in tables 1, 2 and 3.

Table1. Push factors

title		category	N	Observed prop.	Test prop	Sig. (2-tailed)
escapism	Group 1	effected	456	0/71	0/5	0/001
	Group 2	non-effected	182	0/29		
	Total		638	1		
relaxation	Group 1	effected	564	0/88	0/5	0/001
	Group 2	non-effected	74	0/12		
	Total		638	1		
Self-exploration	Group 1	effected	431	0/67	0/5	0/001
	Group 2	non-effected	207	0/33		
	Total		638	1		
entertainment	Group 1	effected	531	0/83	0/5	0/001
	Group 2	non-effected	107	0/17		
	Total		638	1		
socialization	Group 1	effected	580	0/90	0/5	0/001
	Group 2	non-effected	58	0/10		
	Total		638	1		

Table2. Pull factors

title		category	N	Observed prop.	Test prop	Sig. (2-tailed)
novelty	Group 1	effected	491	0/77	0/5	0/001
	Group 2	non-effected	147	0/23		
	Total		638	1		
Fan motives	Group 1	effected	590	0/92	0/5	0/001
	Group 2	non-effected	48	0/08		
	Total		638	1		
Self-development	Group 1	effected	442	0/69	0/5	0/001
	Group 2	non-effected	196	0/31		
	Total		638	1		
destination	Group 1	effected	558	0/87	0/5	0/001
	Group 2	non-effected	80	0/13		
	Total		638	1		

Table3. Deterrent factors

title		category	N	Observed prop.	Test prop	Sig.(2-tailed)
risks	Group 1	effected	517	0/81	0/5	0/001
	Group 2	non-effected	121	0/19		
	Total		638	1		
competition	Group 1	effected	379	0/60	0/5	0/001
	Group 2	non-effected	259	0/40		
	Total		1	1		
Personal problems	Group 1	effected	474	0/74	0/5	0/001
	Group 2	non-effected	164	0/26		
	Total		638	1		

Discussion and conclusion

An important aim of this research is to study effective factors of tourists' motivation participate in sport events. At the early part of this chapter, effective factors of tourists' motivation participate in sport events have been shown in figure 1.

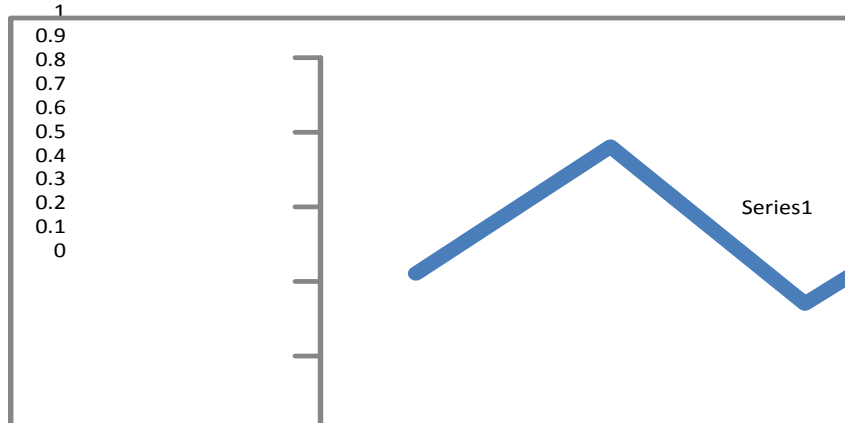

Figure1. Effective factors of tourists' motivation participate in sport events.The result of the research showed that in the eye of tourists participate in sport events, fan's motives are the most important factors for attending sport events. N. Kim and L. Chalip (2004) defined fan's motives as very important factors for event sports tourists participate in a special sport event. It is adjusted to pervious studies of N. Kim and L. Chalip (2004), B. Green and L. Chalip (1998) who stated that among all variables; national team support is most powerful variable. J.B. Hong and et al. (2005) studied Japanese baseball fan's motivation in major league baseball. They recognized three primary motives of the spectator (overall interest in baseball, interest in players and quality of games) as the favor of Japanese people for major league baseball.

The second effective factor for attending tourists who participate in sport events, in this research was the factor socialization. Results of the research showed that the factor of socialization was an important effective factor of tourists' motivation who participate in sport events and they were adjusted to the results of studies done by H.J. Ottevanger (2007), A. Eastagate and D. Funk (2005). Aforementioned statements present different ideas about socialization as this factor was not shown in N. Kim and L. Chalip's study (2003). Unlike their study, people who take part in sport events, feel that socialization is a primary reason for attending sport events. Also, M. Weed and C. Bull (2004) have described the opportunity of enjoying watching favorite sport events with others as a main motivation. The third effective factor of tourists' motivation that participates in sport events is a relaxation factor. It corresponds to H.J. Ottevanger (2007) stated that although there is much crowd, noise, alignment and soon in a sport event, participators who attend it, mention the relaxation existed in a sport event as their main reason for attending it. L. Philip and et al. (2005), A. Williams (2008), D.C. Funk and et al. (2000). Also mentioned the relaxation factors in their study as one of effective factors of tourists' motivation participate in sport events. The fourth effective factor of tourists' motivation take part in sport events is a destination (host) factor. Tourists who participate in sport events have also usually other reason for taking part in them included visiting other places located in the host region for sport events. Sport tourists also desire to get information about the culture of the host region and its other places, it is adjusted to H. Nogowa (1996) and H. Gibson (2006) study in which they stated when sport tourists spend time and money to attend a sport event, they like to get some information

about the host region and destination culture as well (9,20). T. Breitbath (2006) in his study investigated motivations and factors of football fans for traveling to attend events held out of New Zealand concluded that the destination attractiveness and event attractiveness is one of main reasons football fans travel to out of New Zealand. The next important effective factor of tourists' motivation participates in sport events is an entertainment factor. H.J. Ottevanger (2007) stated that parties held besides sport events are even more important than event space. Also, B. Green (1998) has mentioned that the reason for parties held besides sport events to be important is that it provides an opportunity for them to take pleasure in space around sport events and to be more familiar with the culture of host region. N.L. Luch and A.R. Kim (2004) stated also in their study that the most important social effective motivation of spectators for attending WKBL has been an entertainment factor.

Factors such as novelty, escapism, self-development and self-exploration were also factors that tourists mentioned them for attending sport events, but they were less important than above mentioned factors.

The last parts of effective factors of tourists' motivation that participate in sport events are deterrent factors which include three factors itself as risks, competition and personal problems. Although it is possible that there is a strong attention to sport events, but it is not an assurance for attending events, specially when deterrents can affect attendance at events. As the results of study shows risks, competition and personal problems are not serious limitations for attending sport events. Also N. Kim and L. Chalip (2004) stated in their study high expenditures as an important deterrent which has negative effect an attendance at sport events. The next deterrent in this part was that participators were not familiar with destination-host region. Specially, bad weather of the region where events are held, can be a limitation for attending sport events so if weather of the region where events are held is predicted un favorable on even day, then the number of people who participate in sport events is decreased. As predicted, Beijing air pollution caused a decreased in the number of participators in Beijing 2008 Olympic Games. Another deterrent in this part was a competition factor. Here, a competition factor is interpreted through media broadcast in comparison closely the competition. Participators said in response to the question that attending the place where events are held is more pleasing than watching it through H.J. Ottevanger (2007) also stated in their study that people take part in sport events believe that watching events through TV is not comparable with attending it and also remarked that experiencing event actually is better than watching it through TV at home. The last deterrent referred to personal problems. The lack of travel facility, favorite friends and fellow traveler is negative, effective factors and deterrents that cause a decrease in potential of attending events. N. Kim (2003), D. Gilbert and S. Hudson (2000), and J. Braz (2002) have remarked that security, health and financial limitations, deterrents and barriers exist on the way of tourists as well as how they perceive limitations affect their desire for traveling and attending events. T. Breibath (2006) also defined deterrents in his study as security, health and financial problems that were important factors fans found them as barriers for participating in sport events.

Therefore, concluded that push factors (socialization, relaxation and entertainment) in comparison with pull factors (destination and fan's motives) and more important for tourists to attend sport events; it means that are more attracted to sport events through keeping out of current space (factors which are related to source) rather than by event attractiveness and destination attractiveness (factors which are related to destination). Also it should be mentioned that a single motivation is rarely known as a unique reason for traveling; however, a number of motivations for traveling may be preferable than other motivations (T. Robinson, S. Gammon, 2004). Most people go to vacations with a max of motivational factors, where mainly a motivation becomes preferable (J. Swarbrooke, S. Horner, 1999). In addition, T. Robinson and S. Gamma (2004) remark that motivations can't function independently, in fact they do in combination. But some motivations are specific to sport such as competition, desire others and enjoy a special interest (M. Weed, C. Bull, 2004). At the end, it is suggested that to increase tourist's motivation in order to attend sport events, their motives should recognized very well, and it should be given accurate information about destination and events attractiveness; also, financial expenditures, security and health problems should minimized. Organizers and people who hold sport events, are suggested that hold parties besides sport events relative to the culture of city hosts for events and finally officials of tourism organization should have a good relationship and interaction with sport federations and organizations in order to participate more sport tourists in sport events when these events are held.

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❖ **VARIA**

MEASURING CONSTRAINTS TO LEISURE ACTIVITIES: DEMOGRAPHIC DIFFERENCES

GÜRBÜZ BÜLENT [1], YENEL İ. FATIH[2], AKGÜL M. BEYZA[2], KARAKÜÇÜK SUAT [2]
[1]School of Physical Education and Sports, Ahi Evran University, Kırşehir, **TURKEY**
[2]School of Physical Education and Sports, Gazi University, Ankara, **TURKEY**
Email: bulentgurbuz@gmail.com / 22.02.2010 / 15.03.2010

Abstract

Objective: The aim of the study was to measure the constraints to leisure activities participation.

Method: 270 (53.9 %) male and 231 (46.1 %) female, a total of 501 individuals aged between 18-54 ≥ voluntarily participated to this study. "Leisure Constraints Questionaire" (LCQ) consists of 29 items as limiting factors in recreational activities as reasons for nonparticipants (Alexandris K., Carroll B., 1997). The Turkish form of the LCQ (T-LCQ) (Karaküçük S., Gürbüz B., 2006) includes 27 statements and 6 subscales: (a) facilities/services and accessibility, (b) social environment and lack of knowledge, (c) individual psychological, (d) lack of partners, (e) time and (f) lack of interests. The internal consistency for 501 adults were ranged from .73 (time) to .88 (individual psychological). Independent samples t-test and one way analysis of variance (ANOVA) were used to test the mean differences with respect to some demographic variables.

Results and Conclusion: Independent samples t-test were revealed that there was a significant difference in individual psychological [$t_{(498)} = 2.97$; $p<0.05$], facilities/services and accessibility [$t_{(497)} = -3.16$; $p<.05$], and time subscale [$t_{(494)} = -2.35$; $p<.05$] according to gender. There was also statistically mean differences according to the marital status in facilities/services and accessibility [$t_{(498)} = 4.58$; $p<.05$] and time subscale [$t_{(494)} = 4.32$; $p<.05$]. ANOVA analysis specified a significant mean differences in the individual psychological [$F_{(3-496)} = 8.62$; $p< .05$], social environment [$F_{(3-495)} = 8.50$; $p< .05$], facilities/services and accessibility [$F_{(3-481)} = 6.46$; $p< .05$] and time subscale [$F_{(3-492)} = 4.15$; $p< .05$], with regard to educational level. However no significant differences was found in the two other subscales ($p>.05$). As a results, the participants rated "facilities/services and accessibility" as the most important constraints on their recreational activities participation.

Key Words: Leisure, recreation, constraints, participation.

Introduction

Over the past two decades the practical value of research in leisure constraints has been well documented (Alexandris K., Carrol, B., 1997). One of the most important reason to study leisure constraints is because it potentially exert a big impact on leisure experineces. It was also declared that to define the constraints on leisure participation helps to produce more effective plans and managing sport and such leisure time organizations in a good quality (Jackson E L., 1988).

General definition of the constraint as word means that "the factors that inhibit individuals to participate in leisure activities". Jackson E., (1997) defines the concept as the perceived or experiences reasons why an individual can not participate leisure activity participation. There are number of theories and models that put effort to explain the contraints on leisure participation (Crawford D., Jackson E., Godbey, G., 1991; Jackson E., Crawford D., Godbey, G., 1993). For instance, Jackson et al. model argued that constraints on leisure activities participation can be classified in three categories. First one is, intrapersonel constraints, second one is interpersonel contraints and the last one is structural constraints (Hawkins, B. A., Peng, J., Hsieh, C., Eklund S. J., 1999).

There has been very limited research in many populations especially in Turkey, even if the recognition of the theoratical and practical values of studying this concept (Liechty T., Freeman P. A., Zabriskie R. B., 2006; Little D. E., 2007; Stemerding M., Oppewall H., Timmermans H., 1999). Because of this reason, the main purpose of this study was to measure the constraints to leisure activities participation.

Methods. Sample.

Both samples were drawn from the population over the age of 18 years. All subjects were asked for some demographic variables (gender, age, marital status, education level etc.). The participants of this study included a total of 501 individuals aged between 18-54 ≥, 270 (53.9 %) male and 231 (46.1 %) female.

Instrumentation

"Leisure Constraints Questionaire" (LCQ) consists of 29 items as limiting factors in recreational activities as reasons for nonparticipants (Alexandris K., Carroll B., 1997). The Turkish form of the LCQ (T-LCQ) (Karaküçük S., Gürbüz B., 2006) includes 27 statements and 6 subscales. The subscales in the T-

LCQ named as: (a) facilities/services and accessibility, (b) social environment and lack of knowledge, (c) individual psychological, (d) lack of partners, (e) time and (f) lack of interests. The internal consistency for 501 adults were ranged from .73 (time) to .88 (individual psychological).

Data Collection and Analysis

The data were collected by the researchers in the house of the participants in capital city of Turkey in Ankara. Simple random sampling method was preffered to select the participants in this study.

Independent samples t-test and one way analysis of variance (ANOVA) were used to test the mean differences with respect to some demographic variables such as gender, marital status and also education level.

Results

Descriptive statistics of T-LCQ subscales for all participants pesented in Table 1. The overall findings indicated that while "facilities/services and accessibility" (= 2.98) factor as the most important constraints for the participants to leisure participation, "lack of interests" (= 2.49) was the least important factors that inhibit participants to participate leisure activities.

Table 1. Descriptive statistics of T-LCQ subscales for all participants

Subscales	N	Mean	SD
Individual psychological	500	2.85	.72
Social environment	499	2.96	.67
Facilities/services and accessibility	485	2.98	.56
Lack of partners	498	2.65	.75
Time	496	2.88	.61
Lack of interests	501	2.49	.70

Table 2. T-test results of the T-LCQ subscales for males and females

Subscales	Gender	n	X	sd	t	p
Individual psychological	Male	270	2.76	.71	2.97	.03
	Female	230	2.95	.71		
Social environment	Male	268	2.94	.65	.71	.47
	Female	231	2.98	.70		
Facilities/ services and accessibility	Male	259	2.90	.54	3.16	.02
	Female	226	3.06	.57		
Lack of partners	Male	269	2.63	.68	.77	.44
	Female	229	2.68	.82		
Time	Male	268	2.82	.59	2.35	.01
	Female	228	2.95	.82		
Lack of interests	Male	270	2.52	.73	.80	.43
	Female	231	2.47	.66		

Independent samples t-test were revealed that there were significant mean difference between male and female members in three subscales: "individual psychological" $t_{(498)} = 2.97$; $p<.05$], "facilities/services and accessibility" [$t_{(483)} = 3.16$; $p<.05$], and "time" subscale [$t_{(494)} = 2.35$; $p<.05$].

Table 3. T-test results of the T-LCQ subscales with respect to marital status

Subscales	Marital Status	n	X	sd	t	p
Individual psychological	Married	250	2.89	.68	1.19	.23
	Single	250	2.81	.75		
Social environment	Married	248	3.02	.64	1.81	.07
	Single	251	2.91	.70		
Facilities/ services and accessibility	Married	241	3.09	.53	4.58	.00
	Single	244	2.87	.57		
Lack of partners	Married	248	2.69	.74	1.25	.21
	Single	250	2.61	.76		
Time	Married	247	3.00	.59	4.32	.00
	Single	249	2.76	.61		
Lack of interests	Married	250	2.51	.64	.44	.66
	Single	251	2.48	.75		

Descriptive statistics and mean scores for all the six T-LCQ subscales with respect to marital staus of the participants were shown in Table 3.When compared the marital status among participants, it was found that married members had higher mean scores than single members in all T-LCQ subscales. Nevertheless, results of the t-test analyses demonstrated that there were significant ($p < .05$) differences between married and single participants mean scores both in facilities/ services and accessibility [$t_{(483)} = 4.58$; $p<.05$] and time subscale [$t_{(494)} = 4.32$; $p<.05$]. ANOVA analyses as well as post hoc multiple comparisons indicated that there were statistically mean differences (Table 4) in the individual psychological [$F_{(3-496)} = 8.62$; $p< .05$], social environment [$F_{(3-495)} = 8.50$; $p< .05$], facilities/services and accessibility [$F_{(3-481)} = 6.47$; $p< .05$] and time subscale [$F_{(3-492)} = 4.15$; $p< .05$], with regard to educational level. However no significant differences was found in the two other subscales ($p>.05$).

Table 4. T-test results of the T-LCQ subscales with respect to marital status

Subscales	Education Level	n	X	sd	f	p
Individual psychological	Primary School	82	3.13	.68	8.62	.00
	Secondary School	47	2.94	.65		
	High School	193	2.88	.70		
	University	178	2.67	.72		
Social environment	Primary School	80	3.16	.70	8.50	.00
	Secondary School	48	3.07	.59		

	High School	193	3.03	.63		
	University	178	2.77	.68		
Facilities/ services and accessibility	Primary School	80	3.20	.60	6.46	.00
	Secondary School	47	3.08	.57		
	High School	187	2.94	.51		
	University	171	2.89	.56		
Lack of partners	Primary School	82	2.78	.81	2.37	.07
	Secondary School	48	2.65	.70		
	High School	192	2.69	.74		
	University	176	2.54	.74		
Time	Primary School	79	3.05	.59	4.15	.00
	Secondary School	48	2.85	.67		
	High School	193	2.90	.57		
	University	176	2.77	.63		
Lack of interests	Primary School	82	2.54	.63	.59	.62
	Secondary School	48	2.59	.77		
	High School	193	2.48	.69		
	University	178	2.46	.72		

Discussion and Conclusion

The purpose of this study was to measure the constraints to leisure activities participation. The leisure constraints in this study mainly tried to determine by using Turkish version of the Leisure Constraints Questionnaire (T-LCQ) which includes six different subscales. Analsis revealed that "facilities/services and accessibility" is the most effective factors that contraints participants to participate leisure activities and also "social environment" is the second factor that effect contraints participants. This findings were dissimilar with results of the study (Gürbüz B., 2006) which reported that "time" was the main factor that constraints individuals to participate this activities.

T-test analysis indicated that female participants had higher scores than the males participants in five sub-scales of the T-LCQ. However, this study found that married participants were more constrained than the single participants in all six sub-scales. This was consistent with the previous study done by Gürbüz B., (2006). In addition to, the results of ANOVA analysis indicated that While the mean scores of the participants graduated from primary school were higher than the other groups in all five subscales of T-LCQ: facilities/services and accessibility, social environment and lack of knowledge, individual psychological, lack of partners, time. The participants graduted from secondary school however, had the highest mean scores in "lack of interests" subscales than the others. This findings is parallel to study in the literature (Karaküçük, S., Gürbüz, B., 2007).

As a conclusion, the findings of present study suggest that organizers of leisure activities should take into consider the all groups preferences and the factors that constrained individuals to participate these activities.

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SPORTS PREFERENCE OF PARENTS WITH DIFFERENT SOCIO-ECONOMIC AND CULTURAL LEVEL FOR CHILDREN

KALEMOĞLU YAPRAK [1], HÜSEYIN ÜNLÜ[2]
[1]Gazi University, School of Physical Education and Sports, Ankara / **TURKEY**
[2]Aksaray University, School of Physical Education and Sports, Aksaray / **TURKEY**
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ABSTRACT

In this study, it is aimed to determine the sports preference of parents with different socio-economic and cultural level for children. To achieve this aim, the questionnaire was distributed to 212 parents of student athletes at a special sports school in Balıkesir. The questionnaire developed by the researcher was administered to the whole universe and 202 questionnaire forms were analyzed. The resulting data of arithmetic average, frequencies and percentage distribution combined with chi-square analysis was done to determine whether the parents' cultural and socio-economic level had an effect on the parents' choice of sport branches for their children. Consequently; it was found that most of all parents send their children to sports schools, have degrees of university/college education. Besides, most of parents have a good income level, more than half of the parents have its own house, and also most of them have own car. Parents with good socio-economic status have preferred primarily basketball and then tennis for their children. In families with low income levels have been seen that soccer is the first preference for their children. Parents with university/college education level have still preferred primarily basketball and tennis, whereas parents with low education level have preferred volleyball and football for their children.

Key Words: *Parent, Preference, Cultural and Socioeconomic Level*

Introduction

Social classes are an important fact of public life. Although all people are considered equal in the face of the law, they have different life forms in terms of economic, social, political and cultural aspects. In all societies, social class and class relations influence who plays, who watches, who consumes information about sports (Coakley 2004: 333). Also lifetime experiences and life styles of individuals shaped with their cultural and economic level, affects how and at what level they can participate to which sports branch. For instance, it is people in high-income, high-education, and high status occupational groups that have the highest rates of active sports participation, attendance at sports events, and even watching of sports on television.

Individuals with different forms of life have naturally different forms of behaviour, interests and desires. As the expression of Coakley (2004: 333); people in lower-income groups may do physical labour, but they don't run, bicycle, or swim as often as their high-income counterparts. Also the long-term impact of economic inequality on people's lives has led to connections between certain sports and the lifestyles of people with differing amounts of wealth and power. For example, wealthy people have lifestyles that routinely include participation in golf, tennis, skiing, sailing, and other sports that are self-funded and played at exclusive clubs and resorts. These sports often involve the use of expensive facilities, equipment, and/or clothing, and they have come to be associated with class as people with money and power define it. In another example, all national and international champion athletes in Japan were seen to be college graduates (Takenoshita 1967: 12). In 1972, Pavio (1973: 17) analyzed social class background of the 174 men and women from the Austrian Olympic team. He revealed that 60% of these athletes belong to the three-upper social class.

Therefore, the purpose of this study was to determine the connection between the parents who send their children to sports schools, socio-economic levels and cultural aspects of these parents and their preferred sports branches for their children.

Material and Methods

Group of the Survey: The universe of the research is consisted of 212 parents of student athletes at a special sports school in Balıkesir. As the whole universe was reached, the researcher did not take samples. The number of the questionnaire forms analyzed at the end of the study is 202.

Data Collection Method: In this research, a questionnaire was used to collect data from all parents of student athletes at a special sports school in Balıkesir.

Data analysis: The data collected in the study were analyzed with SPSS program. The

analyses results were evaluated by means of %, frequency and q-square. The significance level in the survey has been accepted as 0.5.

Results: In this part, the data related to the parents sport preference with different socio-economic and cultural level for children which were obtained as a result of the analysis of the questionnaires administered to the parents at a special sports school in Balıkesir.

Table 1: Education percentage of parents send their children to sport schools

Education Levels of Parent	Education Level of Mothers		Education Level of Fathers	
	N	%	N	%
Uneducated	3	1,5	-	-
Primary School	32	15,8	13	6,4
Secondary School	17	8,4	13	6,4
High School	70	34,7	42	20,8
University/College	**68**	**33,7**	**122**	**60,4**
Post Graduate	12	5,9	12	5,9
Total	**202**	**100,0**	**202**	**100,0**

In this research, in terms of education level high percentage of parents (33,% mothers, fathers 60,4%) send their children to sports schools, have degrees of university/college education. Also it has seen that 1,5% percent of mothers are uneducated and 5,9% percent of parents have post graduate degrees.

Table 2: Job groups of parents send their children to sport schools

	Mother's Occupation		Father's Occupation	
	N	%	N	%
Housewife	**98**	**48,5**	-	-
Civil Servant	15	7,4	32	15,8
Teacher	38	18,8	40	19,8
Laborer	5	2,5	10	5,0
Self Employed	14	6,9	**47**	**23,3**
Military Personnel	4	2,0	24	11,9
Doctor	11	5,4	7	3,5
Engineer	5	2,5	18	8,9
Retired	12	5,9	15	7,4
Academician	-	-	6	3,0
Lawyer	-	-	3	1,5
Total	202	100,0	202	100,0

When we check the job groups of the parents, it has seen that 48,5% of mothers are housewife and 23,3% of the fathers are self employed. We also see that only 2 percent of mothers are military personnel and 1,5 percent of fathers are lawyer.

Table 3: The frequency of families reading newspapers and books

The frequency of reading newspapers and books	The frequency of reading newspapers		The frequency of reading books	
	N	%	N	%
Regularly	95	47,0	59	29,2
Occasionally	99	49,0	128	63,4
Never	8	4,0	15	7,4
Total	**202**	**100,0**	**202**	**100,0**

In Table 3, It was found that 47% of parents are regularly reading newspapers and also 29,2% of them regularly reading book. Besides, nearly half of the parents (49%) are occasionally reading newspaper and 63,4% of parents occasionally reading books.

Table 4: The frequency of the parents go to the theatre and movies

Frequency of going to the movies and theatre	Frequency of going to the movies		Frequency of going to the theatre	
	N	%	N	%
Regularly	21	10,4	5	**2,5**
Occasionally	158	**78,2**	89	44,1
Never	23	11,4	108	**53,5**
Total	**202**	**100,0**	**202**	**100,0**

About participation in cultural activities, it is seen that only 2,5% of parents regularly go to the theatre, 53,5% of them never participate in this activity and 78,2% of them occasionally go to the movies.

Table 5: Monthly income levels of families

Monthly Income Levels	N	%
Very Low	6	3,0
Low	15	7,4
Middle	73	36,1
Good	**77**	**38,1**
Very Good	31	15,3
Total	**202**	**100,0**

When we looked Table 5, it is seen that 38,1% of the parents have a good income level. Only 3% of parents have very low income level, on the other hand 15,3% of them very good income level.

Table 6: The status of family's residence ownership

	N	%
Our own	117	57,9
Rental	85	42,1
Total	**202**	**100,0**

When looked at the data given in Table 6, it is seen that more than half of the parents (57,9%) have its own house while 42,1% of them live in rental house.

Table 7: The status of family's car ownership

	N	%
Available	164	81,2
Not available	38	18,8
Total	**202**	**100,0**

When we looked Table 7, it has also seen that most of parent (81,2%) have own car. Only 18,8 percent of families do not have a car.

Table 8: Preferred sport branches by parents for children and gender relations

Sport Branches		Gender		Total
		Female	Male	
Swimming	**N**	9	11	20
	%	4,5	5,4	9,9
Tennis	**N**	26	14	40
	%	12,9	6,9	19,8
Basketball	**N**	**11**	**41**	**52**
	%	**5,4**	**20,3**	**25,7**
Volleyball	**N**	22	15	37
	%	10,9	7,4	18,3
Track and Fields	**N**	7	8	15
	%	3,5	4,0	7,4
Football	**N**	**6**	**32**	**38**

	%	**3,0**	**15,8**	**18,8**
Total	**N**	81	121	202
	%	40,1	59,9	100,0

$\mathbf{x^2}$=33,688, **sd**=5, **p**=0.00<0.05

When we look at the Table 8, it is seen that statistically significant difference in a confidence interval of 95% (P< 0,05). Children who prefer football and basketball constitute the majority of men, on the other hand it has seen that the majority of girls prefer tennis and volleyball.

Table 9: Parents sport preference according to the socio economic level

	Sport Branches												**Total**	
	Swimming		**Tennis**		**Basketball**		**Volleyball**		**Track and Fields**		**Football**			
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Very Low	-	-	-	-	-	-	-	-	-	-	6	3,0	**6**	**3.0**
Low	-	-	-	-	-	-	2	1,0	1	0,5	12	5,9	**15**	**7.4**
Middle	8	4,0	5	2,5	17	8,4	15	7,4	9	4,5	19	9,4	**73**	**36,1**
Good	8	4,0	22	10,9	29	14,4	12	5,9	5	2,5	1	0,5	**77**	**38,1**
Very Good	4	2,0	13	6,4	6	30,	8	4,0	-	-	-	-	**31**	**15,3**
Total	**20**	**9,9**	**40**	**19,8**	**52**	**25,7**	**37**	**18,3**	**15**	**7,4**	**38**	**18,8**	**202**	**100,0**

$\mathbf{x^2}$=11,043, **sd**= 10, **p**=0.00<0.05

In Table 9, it is seen that parents with good socio-economic status (38,1%) have preferred primarily basketball (14,4%) and then tennis (10,9%) for their children. In families with low income levels have been seen that soccer is the first preference for their children. When we looked at the Table 8, it is seen that statistically significant difference in a confidence interval of 95% (P< 0,05). Parents with university/college education level have still preferred primarily basketball and tennis, whereas parents with low education level have preferred volleyball and football for their children.

Discussion and Conclusion

Individuals interested in sports at which level, are closely related to their social structure characteristic. People with lower socio economic level constitute a small portion of those who participate actively in sports events (McPherson, 1989: 181). Our research has shown that 90,3 percent of parents who send their children to sports school are families of middle and upper class. In the study conducted by Mc Kay and Pearson (1988: 302) has shown that most of the Australian sportsmen are belong to upper socio-economic class and also most of all are men. This research is parallel with the consequences of our research. Income differences between families in terms of sports participation bring about differences and also families belonging to different income groups tend to different sports (Serarslan, 1990: 106). Our research has also revealed that families with different socio-economic level choose different sports branches for their children. Renson (1976: 435) stated that adults between the pursuits of sports are directly related to the country's class structure. Individuals who related to skiing, golf, tennis and fencing comprise of individuals who belong to higher social strata and also Renson Stated that such as gymnastics, athletics, judo, boxing, football and handball branches are more popular in the lower social strata. Also according to Jarvie (2006: 301) golf, sailing, tennis, skiing and gliding are high status sports while boxing, wrestling, angling, cycle-cross and archery are more frequently participated in by low socio-professional status groups. For instance, in the context of British society, involvement in a polo match in grounds of Windsor Castle, participation in Henley's boating regatta or playing golf convey messages about the social location of the participants (Sugden and Tomlinson, 2000: 309). And also in a study conducted by Nowak (1969: 142) showed that 70% of the elite boxers consist of working class in Poland.

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INVESTIGATION OF BEIJING 2008 OLYMPIC GAMES PHOTOS IN THE TURKISH SPORTS MEDIA IN TERMS OF GENDER DISCRIMINATION

Özsoy Selami
Abant İzzet Baysal University, TURKEY
Email: selamio@gmail.com / 21.03.2010 / 28.03.2010

Abstract

Purpose: The research aims to investigate the Beijing 2008 Olympic Games photos published in Turkish sports media in terms of gender discrimination.

Method: The photos published in 5 daily newspapers in Turkey during the Beijing Olympic Games were analyzed with the help of an assessment form developed by the researcher. The researcher and an academician implemented the form. The data was analyzed by utilizing frequency distributions and Independent Samples *t*-test.

Results: Out of the 554 photos related to sports in the investigated newspapers, 37.8% (203) belonged to women whereas 62.2% (334) belonged to men. No meaningful relationship was found among the photos of the 5 newspapers in the sample in terms of variables such as presentation of the photos according to gender, the size of photos, distribution according to newspaper type, the lay out of the photos and the page that the photo appeared ($p<,05$). The analysis according to gender showed that the photos of Turkish sportswomen appeared in the papers more than the photos of sportswomen of other nationalities ($p<,05$). Frequency distributions showed that the ratio of close-up shots were higher. 8 photos of sportswomen that were classified as erotic were published during that term. The newspaper Zaman, known as a conservative newspaper, was found to have carried the least number of photos of sportswomen.

Conclusions: It can be said that sports media in Turkey did not exhibit gender discrimination in the presentation of photos of sportswomen during the Olympics. However, the number of photos of sportswomen was less than those of sportsmen. The media in Turkey prioritize the news about successful sports persons as is the case in the world. When we consider that fact that 4 of the 8 medals that the Turkish team won belonged to sportswomen, we can argue that the photos of Turkish sportswomen were not given enough representation in the Turkish sports media.

Key words: Sports, media, gender, newspaper, Olympic Games.

Purpose

The presence of women in the sports is not dated very late in history. The conservative approach of Coubertin, the founder of the modern Olympic Games, that discriminates against women goes back as far as the Olympics of the Ancient Greeks that punished the women who attended the Games even as a spectator (L. Fuller, 2006; A. Gutmann, 1991). Centuries had to pass before the elimination of the sports branches from the Games that were not considered as branches that women could not perform.

In the past decade, several national and international actions have fostered gender mainstreaming in society. This is also mirrored in sport (e.g. Title IX, 1972 and IOC works) where gender-equal democracy has been developed to recognize women's sport, reduce existing economic, social, and cultural inequities between male and female athletes, and change attitudes of those who decide what others should see, hear, and read in the media. While the 1972 Title IX laws as enforced by the US Department of Education's Office of Civil Rights mandates of resources in athletic programs at educational

institutions receiving federal funding, actual institutional practices and cultural changes have come slowly (M.J. Kane, H.J. Lenskyj, 2003: 187). In spite of those changes, the male dominant structure still continues. Another field that is male dominant like sports is the media. Sports and media are two fields that need and complement each other. As emphasized by I.Y. Chang, J. Crossman (2009), the media is using sports to make profit. To run a newspaper successfully as a big business it needs to sell to as large a readership as possible. As a result sport sells newspapers and newspapers sell sport. TV as well as newspapers is a very important financer of various organizations such as world and European Olympics and football cups. The two interdependent fields of media and sports are under male domination more than most of the other fields in life. Gender discrimination in the sports media which is a branch of media in general is the subject of a great deal of research in the present day. It is observed that news related to sports in newspapers or TVs usually portray male athletes. Up until the 1970s, women had virtually no presence in the sports media. Sports were considered a male domain: played, coached, watched, and reported on by men. The few female sports reporters were considered rarities that covered obscure women's sports or wrote fluff stories. Sports journalism was considered an exclusive male club, in which writers covered games by day and then hung out in bars with the ballplayers at night (B. Shultz, 2005: 229). Over the last two decades sport sociologists have convincingly demonstrated that media representations of women's identities in sport link their athleticism to deeply held values regarding femininity and sexuality (M.J. Kane, H.J. Lenskyj, 2003: 186). The fact that football is a sports branch that is favored more and it has certain male characteristics create less coverage of news related to women in sports newspapers and TVs. The time allocated to women sports in an Australian TV channel in 1992 only amounted to 1.2% of the total coverage of sports. It was also found out that in Australia women sports were covered in sports sections in 4.5% ratio (D. Rowe, 2004: 221). News editors believe sports news is of interest to male readers. Sports sections of newspapers may be more likely to neglect the concerns of women than other sections. According to research results about the reasons for less coverage of women sports in the media obtained through discussions with 285 sports editors in America revealed that most of the editors were not successful in analyzing reader interests and most of them believed that the sports potential of women was lower than those of men (M. Hardin, 2005). The same research also showed that 27% of the women newspapers readers in America read the sports sections regularly whereas the number for male readers who regularly followed sports sections was 58%. The characters that the sports media present to its readers in the news and commentaries are mostly males. The content analysis about gender discrimination of the news related to Winter Olympic Games from 1934 to 1992 in published in *Globe* and *Mail* of USA showed that sportswomen were presented less than sportsmen (J. Urquhart, J. Crossmann, 1999). In the scope of the same research, analysis regarding the size and type of photos, sports branches, location and resources of the news revealed that news about male athletes appeared 4 times more (647 compared to 144) and photos of sportsmen were used 3 times more than those of sportswomen (346 compared to 131). It was also interesting to note that news were written by male journalists compared to female journalists with a 6:1 ratio (341 compared to 75). Majority of workers in the field of TV also is comprised of males. That's one of the many things that make the job of a female sports journalist so difficult. While recent research indicates that women make up about 40% of the television news workforce, the number of female sportscasters and sports writers is still only about 10% (B. Shultz, 2005: 229). The percentage of journalists who are women increased from 20 to 34% between 1971 and 1982 (I. Clarginbould et al., 2004). Sport photographic coverage also is dominated by male athletes. In an examination of four of the top-10 sports sections in the country, found that photographs of male athletes outnumbered photograph of female athletes by a 13:1 ratio. Stories about male athletes outnumbered those of female athletes by an even larger margin 23:1. M. Hardin, J. Chance, J.E. Dodd and B. Hardin (2002) examined sexual difference during 2000 Olympic Games in news photographs. This content analysis of four Florida dailies and one national newspaper shows that newspapers editors included fair numbers of women in Olympic photos and chose photos that depicted female athletes in a realistic manner. They found that images of 1425 athletes appeared in photographs. Of those images 48 percent were women, and 52 percent were men. Research in the same topic also reveals that when the sportswomen are given place in the media; their sexuality is featured more than their sports characteristics, they are made passive and their femininity is highly emphasized whereas sportsmen are emphasized as being athletic and strong. D. Jones (2006) *examined* the representation of female athletes in online images of successive 2004 Olympic Games. This content analysis of 2004 Olympic Games coverage on the website of Australia's national public broadcaster, ABC News Online, shows that images of female athletes outnumbered those of male athletes. However, in line with results from analysis of 2000 Olympics coverage on News Online, women competing in team sports received little recognition and females were frequently depicted as passive subjects rather than active competitors. Such under-representation for team players and stereotypical portrayals of sportswomen on News Online may instill in its news audiences the belief that women's sports are less powerful, less interesting and thus separate and different from men's sports.

In an another study found that bias in newspaper coverage of the 1996 Olympic games was related to frequent mention of marital status, attractiveness from a male gaze, emotionality of female athletes, and the assignment of stories along gender lines. L. Capranica et. al. (2005) researched the representation of women in the print media in the Summer Olympic Games by comparing the news in the papers in Belgium, Denmark, France and Italy. They examined the news in terms of number and size of the news, the page lay-out, the photos that were used and the size of the photos. The results showed that sportswomen were given more coverage in the media in the 2000 Olympic Games compared to 1996 Atlanta Games. The writers believe that the reason for this increase was related to the actions undertaken by the International Committee of Olympics that aimed to increase women participation in the Games and to have their successes published in the media. W. Wanta and D. Leggett (1989) examined the emotionality of male and female tennis players in news wire photographs. Their findings revealed that male and female tennis players were equally emotional (or unemotional). However, sports content may translate visually to emotional reactions such as happiness (victory) or sadness (defeat) that may be difficult to detect within gender. Contrary to predictions, male tennis players were depicted showing emotion more often than female players in wire photos, while newspaper photographs showed no difference between genders on emotion. Newspaper photos, male players were shown dominating opponents, while female players were shown being dominated in newspaper photos. Wire photos did not differ. The research undertaken in Turkey reveals that the news related to sportswomen are less than those of sportsmen. Research (B. Arslan & C. Koca, 2006) on three newspapers published in Turkey showed that only 8.56% of the news represented sportswomen whereas 79.98% of the news was about sportsmen with a 11.46% of mixed news coverage and these news were presented in the light of gender mainstreaming. The present study aims to identify whether there is gender discrimination in the presentation of sports news in the Turkish daily newspapers and to determine the style of presentation regarding the sports photos related to women sports branches. In order to accomplish this task, sample was chosen as the period of Olympic Games where women sports branches are the subject of the media extensively. The Olympic Games held every 4 years is the most important sports event along with football. Turkey won 1 gold, 4 silver and 3 bronze medals with 68 sports persons in the Summer Olympics in Beijing in 8-24 August 2008. During the Olympics that lasted for 16 days, the news covered the Turkish Olympic Team and the successful sports persons from the other countries in the place of football news. Turkey competed in athleticism, wrestling, weight lifting, tae kwon do, boxing, swimming, sailing, table tennis, archery, marksmanship, judo and cycling. Beijing Games is the Olympic Games in which Turkey competed with the highest number of sportswomen in the Turkish Olympic Games history after the 2004 Athens Olympics (21). Turkey competing in Beijing with 48 male and 20 female sports persons won 4 of the 8 medals with the help of the sportswomen. The research is based on the premise that the fact that an equal number of medals won by male and female sports persons would reflect on the news thereby would create an equal representation of the sports persons in the number of photos that were published.

The answers to these questions were sought in the scope of the research:

1. Are there any differences in the presentation of the photos of sportswomen according to gender?
2. Are there any differences in the distribution of the photos of sportswomen according to newspaper?
3. What types of photos do the newspapers present of the sportswomen?
4. Are the photos of sportswomen distributed evenly according to lay-out?
5. Are the photos of sportswomen larger in size?
6. Are the photos of foreign sportswomen more in number?
7. Do the photos show the face or the bodies of the sportswomen?
8. Are the photos evenly distributed in different sections of the papers according to gender?

Method:

The newspapers with the highest circulation rates such as Posta, Zaman, Hürriyet, Sabah and the sports paper Fotomaç were examined for 16 days regarding the presentation of photos about the Olympics. The paper Posta with the highest circulation rate is sold at a cheaper price and addresses a somewhat lower profile of readers in socio-economic terms. The sports paper Fotomaç is sports based paper like the other sports papers. As is the case with the other sports papers that addresses the male reader groups, target reader group of Fotomaç is comprised of young male readers. The paper Zaman is has a conservative publishing policy. Hürriyet and Sabah addresses the average reader. The daily newspapers allocate 2-4 pages on average for sports news.

Table 1 – Types and circulation of the daily papers that are analyzed

Type	Name of the paper	Circulation (August 2008)
Political	Posta	670.000
Political	Zaman	660.000
Political	Hürriyet	530.000
Political	Sabah	390.000
Sports	Fotomaç	308.000

The assessment form was created by the researcher by the help of a literature review and the implementation was undertaken by the researcher and an academician. The academician was informed of the assessment form and a pilot study utilizing two daily papers was undertaken. The form was finalized after the pilot study and the implementation was carried out.

Page location included four possibilities: 1) the front page of the newspaper, 2) the front page of the sport section, 3) the remainder of the pages of the sport section or 4) the inside pages of the newspaper other than the sport section. Gender of athlete included 1) male, 2) female. If the photo contained content regarding both a male and female athlete, it was coded one. If the photo portrayed a nonhuman (e.g. ceremony or facility), it was not coded. Nationality of athlete was classified into 1) domestic athlete 2) international athlete 3) both or 4) unspecified. The field of view was categorized into 1) head shot, 2) upper-body shot, or 3) full-body shot. Photographs were categorized by four type (modified from J. Fink and L.J. Kensincki, 2002): Athletic action: Persons actively engaging in a sport and dressed in athletic apparel (e.g. photograph of athlete in game action). Dressed but poised: Person(s) dressed in athletic apparel but posed for the photograph. Person(s) is not engaged in athletic activity (e.g., group shot of team). Non-sporting setting: Person(s) dressed in non athletic apparel and photographed in a non athletic setting (e.g., photograph of athlete at home with family). Pornographic/sexually suggestive: Person(s) dressed provocatively or photographed in such a way as to focus solely on sexual attributes. The photos smaller than 5 square centimeters were classified as 'small', the ones between 5-15 square centimeters were classified as 'medium' and the ones that were larger were classified as 'large'. The pages of the papers were classified as 'the first page', 'sports papers- first page', 'sections related to sports', 'sections unrelated to sports/other pages' and 'supplements independent of the main body of the paper'. When the photos were reviewed in the papers, the titles and captions related to gender discrimination were also taken into consideration and were commented on. Obtained data was analyzed through frequency distributions and Independent Samples *t*-test.

Results

Of the 554 sports photos in the 5 papers investigated in the scope of the 2008 Beijing Olympic Games, 37.8% (203) belonged to sportswomen whereas 62.2% (334) belonged to sportsmen. According to the Independent Samples *t*-test results undertaken for gender among the photos published in the 5 newspapers in the sample, a meaningful difference of .05 was found only for photos of Turkish sportswomen and sportswomen of other nationalities ($p < .05$). Other analysis undertaken with variables according to gender did not show a meaningful difference.

Are there differences in the distribution of the photos of the sportswomen according to newspaper?

The results showed that the highest number of photos of sportswomen (26%) was published in the paper Hürriyet. The sports paper Fotomaç was found to be the paper with the least amount of photos in its news related to the Olympic Games. The paper Zaman with its conservative nature was found to be the newspaper which published the least amount of photos of sportswomen (22%) (Table 3).

Table 2- Photos of the Olympics in the papers according to gender

	Female	Male	Total
Posta	41	61	102
%	40,2	59,8	100,0
Zaman	18	64	82
%	22,0	78,0	100,0
Hürriyet	50	90	140
%	35,7	64,3	100,0
Sabah	64	74	138
%	46,4	53,6	100,0
Fotomaç	30	45	75
%	40,0	60,0	100,0
Total	203	334	537
%	37,8	62,2	100,0

Are there differences in the presentations of the photos of sportswomen according to the nationalities?

It was seen in the papers that were investigated that the photos of Turkish sportswomen appeared more often than those of international sportswomen. In the analysis among the photos of Turkish sports persons, the ratio of sportswomen was found to be 44.2% whereas the ratio for sportsmen was 55.8%. The photos depicting other nationalities reflected photos of sportswomen (29.1%) and sportsmen (70.9%) (Table 2).

Table 3 – Nationalities of the sportsmen in the papers according to gender

	Female	Male	Total
Domestic	134	169	303
%	44,2	55,8	100,0
International	69	165	234
%	29,1	70,9	100,0
Total	203	334	537
%	37,8	62,2	100,0

What type of photos do the newspapers present of the sportswomen?

53.4% of the photos in the papers that were under investigation consisted of event photos. 30.7% of these belonged to women sports. 35.7% of all photos consisted of sports persons dressed in their sports attire. Of these, 49.5% belonged to women.32.6% of the photos of the sports persons that were not directly related to sports belonged to sportswomen. The

investigation revealed 8 photos that included pornography or were sexually suggestive. Most of these belonged to German sportswomen who posed for Playboy. The news presented with erotic photos was found in the pages other than sport pages of the papers (Table 4).

Table 4 – Types of photos in the papers according to gender

	Female	Male	Total
Athletic action	88	199	287
%	30,7	69,3	100,0
Dressed but poised	94	96	190
%	49,5	50,5	100,0
Non-sporting setting	14	29	43
%	32,6	67,4	100,0
Pornographic/sexually suggestive	8	-	8
%	100	0	100,0
Indefinite		9	9
%		100,0	100,0
Total	203	334	537
%	37,8	62,2	100,0

Are the photos of the sportswomen evenly distributed in the papers according to the shot lay-outs?

It was seen that the close-up shots were used more often for sportsmen than sportswomen. The papers used 42% of close-ups compared to 57% of distance shots. 58.4% of the close-up shots were of sportsmen whereas this ratio was 42.6% for sportswomen. The distance shot ratios were 64% for males and 35.2% for females (Table 5).

Table 5 – Lay out of the photos in the papers according to gender

	Female	Male	Total
Close up	94	132	226
%	41,6	58,4	100,0
Distance shot	109	202	310
%	35,2	64,8	100,0
Total	203	334	537
%	37,8	62,2	100,0

Are the photos of the sportswomen bigger in size?

When the photos of sportswomen were examined in size, it was seen that there was no meaningful relationship between gender and the size of the photos. 64.4% of the photos coded as large belonged to males and 35.65 belonged to females. 60.7% of the medium sized photos belonged to males whereas 39.3% belonged to females. Of the small sized photos, 62,2% was of males and 37,8% was of females. It is interesting to note that 41.6% of close-ups belonged to sportswomen where only 37.8% of all photos belonged to them (Table 6)

Table 6 –Size of the photos in the papers according to gender

	Female	Male	Total
Big	42	76	118
%	35,6	64,4	100,0
Medium	66	102	168
%	39,3	60,7	100,0
Small	95	156	251
%	37,8	62,2	100,0
Total	203	334	537
%	37,8	62,2	100,0

Are the photos of the foreign sportswomen more than the domestic ones?

It was seen in the investigated papers that photos of domestic sportswomen appeared in the papers more often compared to the photos of international sportswomen ($p<,05$). The analysis among the photos of Turkish sports persons showed that the ratio of sportswomen was 44.2% whereas the ratio for sportsmen was 55.8%. the photos in the paper depicted less females (29.1%) than males (70.9%) from other nationalities (Table 7).

Table 7 - Nationalities of the sportsmen in the papers according to gender

	Female	Male	Total
Domestic	134	169	303
%	44,2	55,8	100,0
International	69	165	234
%	29,1	70,9	100,0
Total	203	334	537
%	37,8	62,2	100,0

Do the photos show the faces or bodies of the sportswomen?

When the lay-out of the photos was evaluated, it was seen that the close-up shots of sportswomen were more common than those of sportsmen. Upper body shots were common in the photos of the sportswomen (51%). Head shots of sportswomen were on the ratio of 40.3% whereas the ration for head shots was found to be 59.7% for males. Full body shots for the sportswomen was found to be 35% and 65% for the sportsmen (Table 8).

Table 8 – Shot types of the photos in the papers according to gender

	Female	Male	Total
Head shot	29	43	72
%	40,3	59,7	100,0
Upper-body shot	104	161	265
%	39,2	60,8	100,0
Full-body shot	70	130	200
%	35	65	100,0
Total	203	334	537
%	37,8	62,2	100,0

Are the photos evenly distributed in different sections of the newspapers?

Majority of the news related to the Beijing Olympics was located in the sections of the papers

related to sports. The records and the medals won by the Turkish sports persons were announced to the readers from the first pages of the papers. News related to the Olympics was also included in other sections of the papers such as economy and political sections. It is interesting to note that the majority of the photos (83.3%) used in the other sections of the papers were of sportswomen. Only 29% of the photos that were published in the weekends supplements of the papers belonged to sportswomen (Table 9).

Table 9 – Pages that the photos appear in the papers according to gender

	Female	Male	Total
First page	30	35	65
%	46,2	53,8	100,0
Sports paper- First page	64	86	150
%	42,7	57,3	100,0
Pages that are related to sports	90	189	269
%	33,4	70,2	100,0
Other pages	10	2	12
%	83,3	16,7	100,0
Supplements	9	22	31
%	29,0	71,0	100,0
Total	203	334	537
%	37,8	62,2	100,0

Athleticism is the sports branch that involved the majority of the photos (32,5%). It was followed by swimming (14%), wrestling (13%), weight lifting (12.2%), tae kwon do (0.6%) and boxing (0.6%). Majority of the photos in athleticism (56.9%), wrestling (63.6) and tae kwon do (59.5) belonged to sportswomen. When we consider the fact that news and photos of the successful athletes are commonly used, the relationship between the results of events and the number of photos will be clearer (Table 10). Michael Phelps in swimming and Usain Bolt and Yelena Isinbeyeva in athleticism were the names that were prominent in the Beijing Games. For Turkey, Ramazan Şahin won a gold medal in free style wrestling, Sibel Özkan won a gold medal in weight lifting, Elvan Abeylegesse won two gold medals in athleticism and Azize Tanrıkulu won a silver medal in tae kwon do. The bronze medals were won by Nazmi Avluca in groco-roman style wrestling, Servet Tazegül in tae kwon do and Yakup Kılıç in boxing.

Table 10 – Sports branches in the Olympic Games photos according to gender*

	Female	Male	Total
Athletics	99	75	174
%	56,9	43,1	100,0
Swimming	9	71	80
%	11,3	88,8	100,0
Wrestling	0	73	73
%	0	100	100,0
Weight lifting	42	24	66
%	63,6	36,4	100,0
Tae kwon do	22	15	37
%	59,5	40,5	100,0
Boxing	1	36	37
%	2,7	97,3	100,0

* other branches: Sailing (3), Table tennis (3), Archery (2), Marksmanship (2), Judo (4), Cycling (5), Mixed (8), Tennis (5), Football (10), Beach Volleyball (4), Basketball (9), Gymnastics (2), Canoeing (2), Hockey (2), Water polo (2), Baseball (1).

Conclusions

The quantitative analysis of the sports photos samples from 5 newspapers in Turkey regarding the Olympic Games in Beijing, capital of China revealed that the sports media does not discriminate against the sportswomen in their representation of their photos however they use more photos from male sports branches. Majority of the photos of the Turkish Olympic Team of 68 were of sportsmen although 4 of the 8 medals were won by the 20 sportswomen in the team. Out of the 554 photos related to sports in the investigated newspapers, 37.8% (203) belonged to women whereas 62.2% (334) belonged to men. Although the obtained ratio (37.8%) is lower than the ratio of 48% obtained by M. Hardin, J. Chance, J.E. Dodd & B. Hardin (2002) in a similar research in the USA, it might still be found high when we consider that ratio of Turkish sportswomen in the Olympic games compared to the ratio of sportsmen (29%). The ratio of photos of sportswomen might be analyzed as considerably high according to the ratio of sportswomen to sportsmen who were in the Beijing Games but it can also be thought of less than it should have been when we thought of the number of medals that they won. However, when the historical development and the fact that there is an increase in the number of sportswomen in Olympic Games are taken into consideration, it will be seen that the effectiveness of Turkish sportswomen are reflected in the media. The analysis undertaken in the scope of the research did not specify a meaningful difference in the distribution of the photos according to type of papers. Frequency distribution of the photos revealed that photos of sportswomen were mostly taken in event ceremonies posing for the ceremony compared to the photos of events themselves. This results shows that sportswomen are regarded as a visual image in the newspapers.

When the distribution of photos according to paper type is examined, it was noted with interest that the least amount t of photos were found in the sport paper that was included in the sample. The newspapers that were classified as sports papers in Turkey normally publish news related to football.

During the Olympic Games, news related to the Games did not extend one page in a 12 page newspapers. This finding can be explained with the extreme interest of public in football in Turkey.

The paper Zaman known with its conservative structure was found to be the paper with the least amount of photos that depicted the sportswomen.

The ratio of sexually explicit photos in the investigated papers is very little and they were found in sections of the paper other than the sports section. When the Olympic photos were examined it was seen that there was no difference between the lay out of male and female photos. When the photo sizes were examined, there was still no meaningful difference between male and female photos.

The photos of international sportswomen are more in number than the photos of Turkish sportswomen in a .05 level of significance. There was no meaningful difference among the photos in terms of shot types (head shots versus full body shots). There was no indication of gender discrimination in terms of the page the photos are displayed.

As is the case in the world, Turkish sports media also gives priority to domestic sports persons with a nationalistic approach. The developments other than the medals that are earned usually do not carry news value. With this understanding, the developments and news other than Michael Phelps of USA with 8 gold medals and the world record owner Usain Bolt with 9.69 level in 100 meters were not given enough place in the papers.

It is an expected result to have more photos of sportsmen in the obtained data since international sportsmen are more prominent in the Olympic Games. However, when the fact that 4 out of 8 medals were won by the sportswomen in the Turkish team was considered, it was expected to see more photos of sportswomen than that was the case (44.2%).

In addition to the quantitative data, the news and comments were also examined in the papers that were included in the sample. Although rare, it was seen that some comments or expressions reflected gender discrimination or gender mainstreaming. One paper used the title of 'The medals went to the beauties' when describing the Russian athletes and a woman journalist described the successful male swimmers as 'the ugly ducklings of the Olympics' (Sabah, 17 August, 2008).

Hürriyet (22 August, 2008) announced the selection of 'beautiful sportswomen' citing Italian Il Giornale paper with the title of 'The 5 beautiful rings of the Olympic'.

Tabloid Posta included the sexually explicit photos of German sportswomen Katharina Scholt, Petra Niemann and Nicole Reinhardt who previously posed for Playboy with the title of 'Beauties of the Olympics'.

In addition to these, the photos of sportswomen covered in Islamic garb were included in pages other than the sports section. The photo depicting the prostration of female athlete Rukiye El Ghasra from Bahrain who took part in the event with her Islamic garb after her success in the 200-meter race was displayed in detail in Sabah, Hürriyet and Zaman. The papers published the photo with the title 'The athlete in Islamic garb celebrated her victory by prostrating' and mentioned her words to the effect that 'I have shown that Islamic garb does not prevent success'.

It was also seen that the sports events were used along with political developments during the period of the Olympics. During the first days of the Olympics, when the ardent conflict between Russia and Georgia erupted, the Russian and Georgian sportswomen sent messages from the first pages of the newspapers by hugging each other (Hürriyet, 11 August).

Further research in the field related to the topic of examination in the present research may involve a more detailed analysis of the gender discrimination of the media by including news and commentaries along with the photos.

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THE IMPORTANCE OF PSYCHOMOTRICITY IN THE APPARITION AND DEVELOPMENT OF LANGUAGE IN CHILDREN

Tobolcea Iolanda [1]
Dumitriu Constanța [2]
[1]Faculty of Psychology and Educational Sciences „AL.I.Cuza" University Iaşi, ROMANIA
[2]Universitity of Bacău, ROMANIA
Email: **itobolcea@yahoo.com / 28.02.2010 / 15.04.2010**

Abstract

An important role in the development of personality is held by the development of language and the psychomotor structures. This constitutes a fundamental requirement in the children education process, which aims at developing the psychomotor abilities and structures, in forming and developing both the oral and the written language. Our research aims at identifying some characteristic aspects of the relationship between the psychomotor development and the language disorders (dyslalia and dysgraphia) in children.

Research. The research sample consisted of 120 subjects (60 preschool age children and 60 young children); 60 children were selected for every language disorder (dyslalia and dysgraphia): 30 children with speech disorders for the experimental group and 30 subjects without speech disorders, for the control group. From a methodological point of view, we applied three psychological tests: the "Oseretzki" development motor scale, the Bender-Lauretta Test and the Raven coloured progressive matrices. For the interpretation of the data obtained and for the verification of the hypotheses, we used the *Student Test* (t) – for independent samples and the *linear correlation coefficient* – Pearson. We also used the data statistical processing program SPSS 10.0. The hypotheses advanced in this research were confirmed for the language disorders analysed (dyslalia and dysgraphia), by the differences between the level of visual-motor maturity, the motor age, as well as the connection between the intelligence coefficient and the motor age in the dyslalic and dysgraphic subjects, compared to the subjects with a normally developed language.

Conclusions. The conclusions of the study highlight the interdependence between language development and the psychomotor development, an important aspect in the early education of the children, in preventing the apparition of language and psychomotor disorders. By the results obtained, this research fundaments the necessity of the psychomotor recovery therapy within speech therapy.

Keywords: psychomotricity, dyslalia, dysgraphia, therapy, child

Introduction

The psychomotor conducts evolve depending on the degree of psychophysical development and the educational influences exerted throughout childhood. Psychomotricity determines the control of the human behaviour and includes the participation of the various processes and psychic functions ensuring the adequate reception and execution of the response acts (E. Aubert, J.M. Albaret, 2001). Through its basic components, psychomoricity realises the pragmatic adjustment (acquisition of the professional, manual, intellectual techniques), social adaptation (methods of interpersonal communication), aesthetic adaptation (body expression techniques) and educational adaptation. C. Păunescu and I. Muşu (1990) consider that psychomotricity constitutes a complex direction in personal development, resulting from the interaction and interconnection of the neuropsychological devices (especially at cortical and peripheral level) ensuring the elaboration and execution of the movement, among the mental and affective processes, coordinated by consciousness. The more developed is the hand kinaesthesia, the more precise are the coordinations in executing the graphemes, the drawing, the manual activities and, generally, the fatigue phenomenon is not installed so quickly.

It is considered that by educating motricity, the child learns gestures, and becomes is prepared for

professional tasks, while the physical and mental equilibrium and the harmonious relationships within community are improved (C. Albu, A. Albu, T.L. Vlad, I. Iacob, 2006). Speech acquisition means the acquisition of the capacity to articulate and coordinate the speech flow, differentiating between the phonemes and understanding their significance. In language learning, it is necessary to communicate, to integrate the coordinating function of the spoken material, to realise the laringo-faringo-velar function and the breathing movements. In addition, in written language realisation, an important place is played by the delicate movements of the hand and fingers. Therefore, the delicate motor development evolves during childhood, between the ages 3 to 7, recording special progress, especially at the level of the hands and feet. More advanced motricity is accompanied by a varied verbal plan, and, generally, by an evolution of the action and verbal conduct allowing for a better relationning and integration in the community. It is considered that at the age of 6, the child is sufficiently developed from a biological and intellectual point of view, so as to acquire writing and reading. Intellect and general motricity development, the development of hand kinaesthesia, especially vocabulary and verbal conduct, as well as the motivational nucleus for the future school activity, all these constitute the guarantee for forming the reading-writing skills, activity specific to the school period. If we add here the evolution of the physiologic process of small bones ossification (hand phalange), the increase in the muscular precision and strength ensuring the speed of the movement, it can be considered as a real basis constituted for the complex action for forming the writing skills. The more developed the hand kinaesthesia is, the more precise will be the coordination in executing the graphemes, the drawing, and the manual activity, and the fatigue is not installed so quickly.

As far as the pronunciation disorders are concerned, they are relatively frequent in children, consisting in deforming, substituting, omitting, inversing some sounds in spontaneous or reproduced speech, this disorder being called *dyslalia*. Generally, dyslalia is the inability to utter certain phonemes, permanently manifested, in any circumstances, both in spontaneous and repeated speech, in words, syllables or in trying to utter the isolated phoneme. In correcting dyslalia, in all therapeutic stages, various gymnastic and myogymnastic exercises are used for the body and the organs participating in the realisation of pronunciation (I. Tobolcea, 2002). These exercises aim at relaxing or straining the organism and the muscles of the uttering apparatus during sound pronunciation. The more frequent the speech disorder is, the more it determines negative effects in forming the graphic-lexical act. If such a disorder was installed during the writing-reading acquisition, the formation of the correct skills is carried out much harder since there is a tendency for the speech disorders to be transposed in the writing/reading. In order to prevent the written language disorders, the preparatory stage is necessary (6 years), when the family and the kindergarten are in charge of the child's education, in the adequate acquisition of the written language. Progress in the motor development influences the correct formation of the writing abilities, by developing the delicate movement of the fingers and hand, by involving some muscle groups and ligaments in the correct and prompt realisation of movements. Therefore, the development of psychomotricity is related to the evolution of the nervous system and it reflects the general mental maturity involved in the entire system of the oral and written speech.

Therefore, the treatment of dysgraphia includes a series of interventions including:

- psychomotor re-education focused on motricity, body scheme and laterality, temporal-spatial organisation, movement – aspects involved in the realisation of the graphical act;
- graphic-motor training comprises the development of general motricity, the dominant hand training, the sensorial-motor integration;
- the visual-motor training involves the formation of visual-motor, auditory abilities, structures, as important elements determining the various dysgraphic disorders. Therefore, the movements of the hand must be practised until the elimination of synkinesies, that burden both the execution and reproduction but also the possibility to copy a model. Writing also presupposes a certain affective maturity, self-confidence and motivation to overcome the difficulties, aspects realised by the children during speech therapy.

Experimental design

Starting from the premise that between the children with speech disorders (dyslalia, dysgraphia) and the children with a normally developed language there are differences in the psychomotor sphere, we tried during our research to highlight the relationship between some aspects of psychomotricity and speech disorders (dyslalia, dysgraphia).

Aim of the research: IThe identification of some characteristic aspects of the connection between psychomotricity and speech disorders in children.

Research hypotheses:

a. General hypotheses:

Pre-school age children present retardation in the psychomotor development compared to pre-school age children with a normally developed language.

Deficient psychomotor development influences the apparition and manifestation of language disorders.

b. Specific hypotheses:

1. The level of visual-motor maturity is lower in the pre-school dyslalic children compared to the normally developed children.

2. Motor age is smaller in the pre-school dyslalic children compared to the normally developed pre-school age children.

3. There is a connection between the intelligence coefficient (QI) and the motor age, respectively the level of visual-motor maturity.

4. The psychomotor development is deficient in the dysgraphic pupils, compared to the normally developed ones.

Research methodology and the instruments used. We used as instruments for data collection the psychological tests: Bender-Lauretta test, the Oseretzki motor development scale, the Raven coloured progressive matrices, and for the verification of the hypotheses, the Student (t) test – for independent samples, and the linear correlation coefficient-Pearson. We also used the statistical data processing program SPSS 10.0, statistical program designed for research in the field of social sciences.

The research subjects. The research was carried out in educational institutions in the city of Iasi, and it included pre-school age children and young school-age children.

The research group consisted of 120 subjects (60 pre-school children, and 60 children in the early school years; for each language disorder: dyslalia and disgraphia, 60 children were selected: 30 subjects with speech disorders for the experimental group and 30 subjects without speech disorders, for the control group.

The group was formed according to the following factors:

Speech disorder

–the children in the experimental group present language disorders (dyslalia, dysgraphia)

–the children in the control group present a normally developed language

c) The age – the selected children were 6 years old (60 pre-school children: 30 dyslalic and 30 with a normal speech) and 9 years old (60 pupils in the 2nd grade: 30 dyslalic and 30 with normal speech).

Results and discussions

Hypothesis 1. The visual-motor maturity level is not lower in the pre-school dyslalic children compared to the normally developed pre-school children. In order to verify this hypothesis, we used the Bender-Lauretta test, applied to the two groups of subjects (pre-school children with a normally developed speech and dyslalic pre-school children). The results obtained were introduced in the database, processed with the help of the SPSS 10.0 program. The t test was computed for the independent samples (Independent Samples T Test) in order to establish the difference between the visual-motor maturity level in the children with normally developed speech and the visual-motor maturity level in the dyslalic children.

Table 1: The mean of the visual-motor maturity in the experimental and the control groups

	Mean of each group
Normally developed children (without dyslalia)	4,27
Dyslalic children	1,00

Table 2 : T Test (Independent Samples Test) for the level of visual-motor maturity

Level of the visual-motor maturity	T	Degree of freedom	Significance threshold
	12,891	58	0,0001

The statistical analysis identified significant differences between the visual-motor maturity level in the normal and dyslalic children; thus, the visual-motor maturity level influences the language development. The t test for independent samples $t\ (58) = 12.891$ for $p<0.01$ confirms the hypothesis, that is the level of language development differs according to the level of visual-motor maturity. Moreover, the positive value t shows that the mean of the results obtained by the normally developed pupils (4.27) is higher than the mean of the results obtained by the dyslalic children (1.00). Therefore, the visual-motor maturity level in the dyslalic 6 years old pre-school children is significantly lower compared to the visual-motor maturity level in the 6 years old pre-school children with a normally developed language.

These differences are given in figure 1:

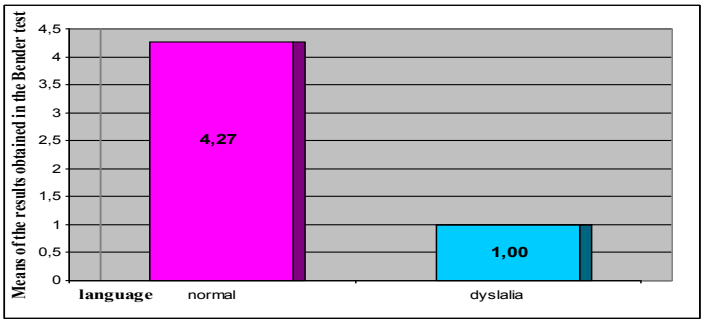

Figure 1: Difference of the means of the two groups (Bender-Lauretta test)

The differences between the advanced level of the visual-motor maturity in the two groups of children is justified by the retardation in the motricity development in dyslalic children compared to the

normally developed children, these retardations also involving visual-motor aspects. Thus, the higher the progress in motor development, the faster the verbal and graphic abilities are acquired, a very important role belonging to the development of the phono-articulatory apparatus motricity, as well as the delicate movements of the fingers and hands.. In the drawings made by dyslalic children, we notice big distortions, integration failures or overlaps, disproportions, lacking angles, distortions of the squares and circles, etc. In these circumstances, we notice that the dyslalic children present a low level of visual-motor maturity, which also determines retardations in the development of speech, implicitly in the pronunciation and correct articulation of the Romanian phonemes. E. Verza (2009) notices that verbal evolution is correlated with the development of motricity, the children with an advanced motor development presenting normally developed verbal possibilities, since the development of psycho-motricity is related to the evolution of the nervous system and it reflects the general psychic maturity involved in the entire verbal and written language. In the speech therapy of dyslalia, in order to improve the general motricity and the phono-articulatory movements, exercises are used not only for language development, but also for the well-being of the organism. We distinguish two important categories of exercises, namely: exercises aiming to relax the organism and the muscles of the emission apparatus, useful exercises in the pronunciation of the majority of the Romanian sounds, and other strained ones, used especially during the pronunciation of the deaf sounds. Therefore, for the development of phono-articulatory organs, a series of exercises are recommended, referring to the development of the movements of the facial, lingual, mandibular, labial expressivity, etc (I. Mititiuc, T. Purle, 2005).

Hypothesis 2. The motor age is smaller in the dyslalic preschool children with a normally developed language. In order to verify this hypothesis, we used the Oseretzki motor development scale, applied to the two groups of pre-school subjects. The t test was estimated for independent samples (Independent Samples T Test) in order to distinguish between the motor age of the children with a normally developed language and the motor age of the dyslalic children.

Table 3 : The mean of the motor age for the experimental group and the control group

	Mean of each group
Normally developed children (without dyslalia)	6,23
Dyslalic children	4,40

Table 4 *:* T Test (Independent Samples Test) for establishing the motor age

	T	Degree of freedom	Significance threshold
Motor age	7,320	58	0,0001

The statistical analysis allowed for the identification of some significant differences between the motor age of the normal children and the motor age of the dyslalic children, by evidencing the differences between language and motor age; the t test for independent samples $t\ (58) = 7.32$, $p<0.01$ confirms the hypothesis; that is, language development differs according to motor age. The positive t value also shows that the mean of the results obtained by the dyslalic children (4.40) in the test is lower than the mean of the results obtained by the normal children (6.23). We can thus say that the motor age in the 6 years old pre-school dyslalic children is significantly lower than the motor age of the 6 years old pre-school normal children. Differences are also noticeable at the level of general, dynamic and static motricity, dyslalic children presenting developmental retardations compared to the children with a normally developed language.

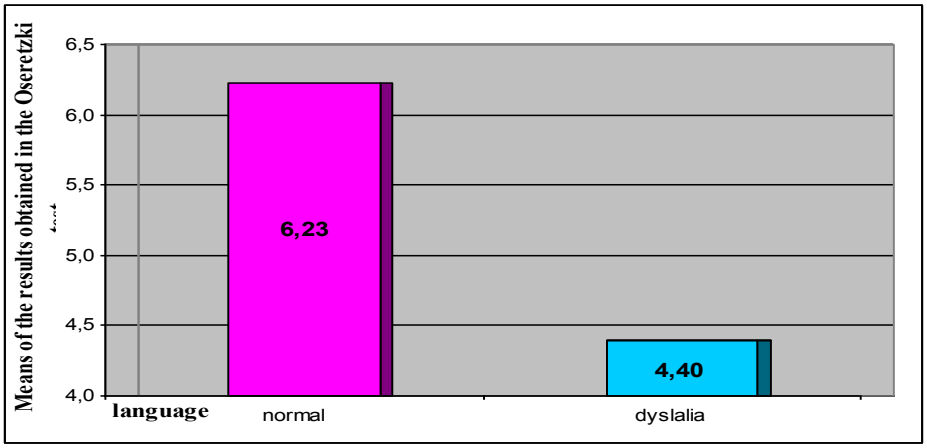

Figure 2. Difference of the means of the two groups (Oseretzki test)

Hypothesis 3. There is a connection between the intelligence coefficient (QI) and the motor age, respectively the level of visual-motor maturity, in the absence of other disorders influencing motricity, that is, the smaller the intelligence coefficient is, the lower the motor age and the visual-motor maturity level are.

In order to verify this hypothesis, we applied the Raven Coloured Progressive Matrices, in order to establish the intellectual level of the children in the two groups. In order to verify the validity of the hypothesis, we computed the Pearson linear correlation for two variables: in a first analysis, we considered the intelligence coefficient as a first variable, and the motor age a second variable; in the second statistical analysis, we considered the intelligence coefficient the first variable and the level of visual-motor maturity, a second variable. Having thus the two variables, we computed the Pearson linear correlation coefficients for each group.

Table 5: Pearson correlations (r) between the intellectual level and the motor age of normally developed children

		Intelligence coefficient	Motor age
Intelligence coefficient	Pearson correlation	1.000	0,543
	Significance threshold	,	0,002
	N	30	30
Motor age	Pearson correlation	0,543	1.000
	Significance threshold	0,002	,
	N	30	30

At the intersection between the variables we obtained: the correlation coefficient r=0.543,, the significance threshold p= 0.002 for the number of subjects N=30. The significance threshold below 0.05 ($p<0.05$), indicates a relationship between the two variables, that is, there is a connection between the intelligence coefficient of the children with a normally developed language and their motor age, specifying that this connection exists in the absence of other disorders negatively influencing motricity.

The positive correlation ($r>0.50$) indicates an inversely proportional connection between the normal intelligence coefficient and the motor age corresponding to the chronological age in the children with a normally developed language. The relationship between the intelligence coefficient and the level of visual-motor maturity is given in the following table:

Table 6: Correlations between the intellectual level and the level of the visual-motor maturity in children with a normally developed language

		Intelligence coefficient	Level of visual-motor maturity
Intelligence coefficient	Pearson correlation	1.000	0,609
	Significance threshold	,	0,0001
	N	30	30
Level of visual-motor maturity	Pearson correlation	0,609	1.000
	Significance threshold	0,0001	,
	N	30	30

At the intersection between the variables, we obtained: the correlation coefficient r=0.609, the significance threshold p= 0.000, and the number of subjects N=30. The significance threshold lower than 0.05 ($p<0.05$) indicates the relationship between the two variables, that is the connection between the intelligence coefficient of the children with a normally developed language and the level of their visual-motor maturity. The positive correlation signifies ($r >0.50$), a direct proportional connection between the normal intelligence coefficient and the level of visual-motor maturity corresponding to the chronological age.

Table 7*:* Correlations between the intellectual level and the motor age of dyslalic children

		Intelligence coefficient	Motor age
Intelligence coefficient	Pearson correlation	1.000	0,540
	Significance threshold	,	0,002
	N	30	30
Motor age	Pearson correlation	0,540	1.000
	Significance threshold	0,002	,
	N	30	30

Table 8 *:* Correlations between the intellectual level and the level of visual-motor maturity in dyslalic children

		Intelligence coefficient	Level of visual-motor maturity
Intelligence coefficient	Pearson correlation	1.000	0,446
	Significance threshold	,	0,013
	N	30	30
Level of visual-motor maturity	Pearson correlation	0,446	1.000
	Significance threshold	0,013	,
	N	30	30

We notice the strong, direct proportional connection (r=0.540) between the intellectual level and the motor age, the 6 years old pre-school dyslalic children presenting a lower intellectual level in accordance with their motor age. Thus, one of the factors that determine a low general motricity is also the intellectual level, but in the absence of other disorders that can influence motricity. There are also other factors determining low motricity, for example affectivity disorders, cerebral traumatisms, etc, this factor being of particular interest for our study (J. Maillet, 1997).

Pearson linear correlation coefficient (r=0.446) resulting after the correlation between the intelligence coefficient of dyslalic children and the level of visual-motor maturity, shows an average direct proportional connection. As R.J. Sternberg (2000) states in his research, one of the factors determining the low level of visual-motor correlation is the intellectual level, with the mention that there are also other factors influencing the low level of visual-motor maturity.

Hypothesis 4. Psychomotor development is deficient in the dysgraphic pupils, compared to the pupils with a normally developed language.

Table 9: Mean, Mean of the standard differences and Mean of the standard errors for the group of dysgraphic children and the group of normally developed children

			Mean Difference (I-J)	Std. Error	Sig.	95 % Confidence Interval	
Dependent Variable						Lower Bound	Upper Bound
Bender	Without language disorders	Dysgraphia	-8,7556	1,5514	0,000	-12,9989	-4,5122
Oseretzki	Without language disorders	Dysgraphia	2,8311	0,5144	0,000	1,4242	4,238

By analysing the results obtained in the Bender test, we can say that there are significant differences as far as the number of errors made by the normally developed children compared to the dyslexic-dysgraphic children is concerned. The significance threshold is p=0.000(p<0.05), and the errors made by the dysgraphic children are more numerous compared to the errors made by the subjects without speech disorders. In addition, the level of visual-motor development is higher in the pupils with a normally developed language compared to the dysgraphic children. Therefore, the significant differences obtained

between the normally developped subjects and the dysgraphic subjects confirm the hypothesis that the visual-motor development in dysgraphic children is deficient compared to the children with a normally developed language. In his research, J. Konczak (2003), states that any perturbation in the visual-motor development determines the apparition of the dysgraphic syndrome.

The acquisition of graphic skills is based on perceptive, audio, visual and kinaesthetic mechanisms, and therefore, the visual-motor disorders affect the acquisition of the graphic skills (V. Bâlbâe, 2002). The high results obtained in the children without speech disorders reveal the fact that they realise normally the perception of the shape, size, and colour, compared to the dysgraphic pupils. The speech therapy of dysgraphia uses exercises with a great importance for the formation of the delicate movement of the fingers and hand, which contributes to a better usage of the writing tool, avoiding fatigue and facilitating writing, having thus as a result, the increase in the speed of action and the adoption of a correct writing (J. Richard, L. Rubio, 1995).. All the exercises have to contribute to the synchronisation of the groups of muscles involved in writing, which leads to the realisation of the adequate movements for writing. Moreover, the general physical exercises are important for the general fortification of the organism, but also for the realisation of the spatial-temporal organisation and for the development of the delicate and synchronised movements.

Conclusions

The conclusions of the research highlight the relationship between language development and psychomotor development, an important aspect in the early education of children, in preventing the apparition of speech and psychomotor disorders. By the results obtained, this research fundaments the necessity of the psychomotor recovery therapy within speech therapy.

There is interdependence between the existence of speech disorders and the psychomotor development, especially for the disorders affecting the language verbal-motor apparatus, the somatic-psychological and kinaesthetic development in all its forms.

In the case of children with pronunciation disorders, the psychomotor development is definitive, phenomenon explained by the affectation of the verbal-motor side of dyslalic children by the difficulties in the analysis and synthesis of the perception of shape, colour, size, etc.

It is difficult for dysgraphic children to achieve psychomotor maturity, the formation of the graphic dexterity being determined by the development of the perceptive-motor, audio, and kinaesthetic functions.

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❖ RECREATION

❖ VARIA

❖ Alphabetical author index

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Requirements for the elaboration of the scientific papers (2009-2012)

Structure of the experiment type paper:

- the title of the paper will be written with Majuscules, Times New Roman, Size 12, Bold, Align Left;

-the names of the author or authors of the research will be written with Times New Roman, Size 10, Bold, Majuscules, Align Left, one line under the title of the paper;

-under the author's name, the department /departments and institution / institutions it is e-mail address for the corresponding author;

-the source of the material support in the form of the GRANTS not more than 40 characters including spaces if need be, with Times New Roman, Size 10, Align Left;

-the Department name, institution name, contact address email *can be* as footnote;

-Abstract, Key words, Introduction, Methods, Results, Discussion, Conclusions, References.

Abstract

The structured abstract and 3-5 key words will be written with Times New Roman, Size 10, Justified.

The abstract must not contain more than 150 words for unstructured abstracts essay type and 200-400 words for structured abstracts experiment type. The abstract must be elaborated in English language. In the abstract there will be no abbreviations used.

The structured abstract for **the experiment type paper** must contain:

- the aim / purpose / object of the research;
- the procedures and methods of research subjects, applied tests;
- the results / main results;

-discussions and conclusions;

- key words between 3 and 5 key words, which punctuates the interest areas of the article;

The aim, purpose, object, methods, results, discussions, conclusions and key words have to be written bold and minuscule.

I**ntroduction**
Procedures and methods of research (subjects, applied tests)
Results
Discussion
Conclusions
All of its will be written Times New Roman, Size 10, Justified, two columns;
Bibliography
It will be written with Times New Roman, Size 10, two columns, First Line Indent 0 cm, Hanging Indent 1cm, Left Indent 1cm. The names of the articles / book will be written in italics.
Author's name has to be written with bold and majuscule (eg.**SMITHOSCKY, M.,2011**)

Structure of the essay type paper:

- the title of the paper will be written with Majuscules, Times New Roman, Size 12, Bold, Align Left;

-the names of the author or authors of the research will be written with Times New Roman, Size 10, Bold, Majuscules, Align Left, one line under the title of the paper.

-under the author's name, the department /departments) and institution / institutions) it is e-mail address for the corresponding author.

-the source of the material support in the form of the GRANTS not more than 40 characters including spaces if need be, with Times New Roman, Size 10, Align Left.

-the Department name, institution name, contact address email *can be* as footnote.

- **the unstructured abstract and 3-5 key words** will be written with Times New Roman, Size 10, Justified;
- **the introduction and the object of the research, the content, the conclusions** will be written with Times New Roman, Size 10, Justified, two columns;
- the **bibliography** will be written with Times New Roman, Size 10, two columns, First Line Indent 0cm, Hanging Indent 1cm, Left Indent 1cm. **The names of the papers/ articles will be written in italics.**

For the abstract - essay type paper

- the aim/object of the research;
- the content of the research hort summary);
- conclusions main conclusion);
- key words between 3 and 5 key words, which punctuates the interest areas of the article);

Details:

Introduction

The introduction will only contain strict and pertinent references pro and cons) on the studies that have as a common subject the object of the research.

Research methods and procedures

Subjects

The subjects involved in the experiment are described, their distribution in groups, identifying the age, the sex and other important characteristics. The experiments on human subjects are produced in accordance with the national legislation for the human protection and the Helsinki Declaration of 1975, revised in 2004. The names and the surnames of the subjects are not used, especially in the illustrative materials.

The work methods are identified, the apparatus on which the experiment takes place presenting the name of the producer and the address between parentheses) and the statistic methods in detail. The new or considerably modified methods are described, motivating their choice and evaluating their limits. The hypotheses of the paper must be clear and concise.

Statistical analysis

The statistical methods are described with sufficient details, in order to understand and to check the results obtained. The names of the computer programs used for the statistical processing of the data are specified.

Results

The results are presented in a logical sequence, through tables and diagrams. The results expressed through text should not be found in the tables and/or diagrams and the other way around.

Tables

The tables cannot be introduced in the text as photographs. The tables must be numbered in the upper part, in succession in the order of the first text quoting, followed by a conclusive and succinct title.

Table 1. Physical characteristics of the subjects

	Feminine subjects n=21	
Variables	M±DS	CV %
Body height cm)	166,143±5,597	3,369
Body weight kg)	61,524±8,364	13,595
IMC kg/m^2)	22,338±3,282	14,692
Body fat percentage %)	25,329±3,074	12,136
Fat mass kg)	15,182±4,066	25,715

*significant correlated with IMC, r=0,875.
Established significance level at p<0,05.
IMC, body mass index; M, average; DS, standard deviation; CV, variability coefficient; n, number of subjects.

In the lower part of the table the following symbols will be used, in order to emphasize the differences or the significant correlations statistically, in the ,¶**, ††, ‡‡, etc. Also in the lower part of the following order: *, †,‡,§, tables the significance level established by the researcher will be presented and the unusual abbreviations used in the table will be explained.

Each table must be quoted in the text. The tables from other publications must be used with the permission of the author authors), indicating the bibliographical source from where it was assumed.

Diagrams illustrations)

The diagrams must be numbered in the lower part, in succession in the order of the first text quoting, followed by a conclusive and succinct title, preceded by the unusual abbreviations used in the diagram or other observations.

Measurement units

Measuring the length, height, weight and volume must be expressed in metric units meter-m, kilogram- kg, liter- l, second- s, or decimal multiples). The temperature must be measured in Celsius grades ºC), and the arterial pressure in mmHg. Other measurement units must be expressed in the International Units System SI).

Discussions
In the chapter Discussions the new and important aspects are emphasized, which result from the data processing. The data of other similar studies presented in the introduction chapter cannot repeat in detail. Also, the implications of the results found must be discussed, their limitations and the implications of these results, for the future studies. The observations found must be reported to other similar studies.

Conclusions
The conclusions must be reported directly to the hypotheses of the paper and derive directly from the chapter Discussions. The conclusions that are not fully backed-up by the data found or that are based on unjustified affirmations must be avoided. New hypotheses can be concluded or attach some recommendations, if the case be.

Thanks
In the section Thanks when the case appears) there can appear:
- the contribution of the people that are not co-authors;
- the name and surname of the people that have contributed intellectually to the accomplishment of the paper with their agreement), but that are not co-authors- scientific counselor, data collector etc.;
- the financial help and the material support, specifying the nature of the support;
- the technical help in a separate paragraph called "Other contributions");

Bibliography/References
Bibliography and text quoting
The bibliography must be arranged in alphabetical order, the unpublished papers being quoted, but that are registered for publishing. In the bibliography all the authors quoted in the text are written. In the text all the authors are written if there are 6 or less. If there are 7 or more authors, the first three authors are written, followed by "et al." it comes from the latin "et alia" which means "and others"). If in the bibliography there are at least 2 papers that have an identical author authors) and the publishing year, in the text, but in the bibliography as well, immediately after the publishing year, a letter will be written in alphabetical order), in order to distinguish the papers in the bibliography 1998a), 1998b)). The name of the author / authors) must be followed by the initials of the surname.

In the text, the quotations will have the following structure:
a) for one and/or two authors
- at the end of the phrase T.S. Keller, and A.L. Roy, 2002);
- in the phrase T.S. Keller and A.L. Roy 2002), T.T. Gomez, 2003 found significant differences of isometric force...
b) up to including) 6 authors
- at the end of the phrase T.S. Keller, A.L. Roy, Carpenter G, 2002)
- in the phrase "Also, .S. Keller, A.L. Roy, G. Carpenter, 2002) found significant differences of isometric force..."
c) more than 6 authors
- at the end of the phrase T.S. Keller, A.L. Roy, G. Carpenter et al 2002);
- in the phrase "Also, T.S. Keller, A.L. Roy, G. Carpenter et al 2002) found significant differences of isometric force..."

Generally, for magazines, the bibliography will have the following structure:
NAME OF THE AUTHOR- AUTHORS year of publication), *Title of the article*, Magazine, number of the volume yearly number the number of the supplement part): number of pages.
a) standard magazine article
b) organization as an author
c) no author
d) volume with a supplement
e) number with supplement
f) volume with part
g) number with part
h) number without volume
i) no volume and number
j) pages in roman numbers
k) indicating the type of article if it is necessary

DEURENBERG, P., WESTSTRATE, J.A., SEIDELL, J.C., 1991, *Body mass index as a measure of body fatness: age- and sex-specific prediction formulas.* British Journal of Nutrition. 65(2):105-114.
For **books** the bibliography will have the following structure:
a) personal author s)

b) editor s) as author s)
c) organization as author or the one that publishes
d) chapter in a book
e) license degree paper, dissertation or PhD. Thesis.

RISTARU, M., 2005, *The influence of pliometry on the muscular development at the lower limbs level* [dissertation]. Constanta, The Faculty of Physical Education and Sport.

For **unpublished materials but in the course of publication),** the bibliography will have the following structure:
For the **electronic materials,** the bibliography will have the following structure:
a) article in electronic format
b) computer program

Sending the manuscripts in electronic format
For the review of a research paper or a better organization of the research papers volume by the scientific board, the author authors) will have to send a copy in electronic format ASCII) in the format Word Microsoft Office. The papers in Romanian will be written with diacritical signs in the format Romanian Legacy) of the computer keyboard. Also, the operating system used Microsoft Windows XP, Microsoft Vista) and the processing program of the text Microsoft Office XP, Microsoft Office 2003, Microsoft Office 2007) will be mentioned.

The evaluating/self-evaluating grid for the quality of the research paper by the reviewer/author s)

The evaluating/self-evaluating grid for the quality of the research paper by the reviewer/author s)		
1	The originality of the research theme	15 points
2	The quality of the research paper structure	5 points
3	The clarity and quality of the research hypotheses elaboration	10 points
4	The quality of the registration of the results and their presentation	10 points
5	The clarity and quality of the discussions directly linked to the results with reference to similar studies	10 points
6	The clarity and quality of the elaboration of the conclusions in accordance with the hypotheses of the paper	10 points
7	The applicability of the results found in the practical and scientific practice	10 points
8	The accuracy of the in text and bibliography quoting	10 points
9	The clarity and quality of the expression in the text	10 points
10	Strictly respecting the elaboration technical requirements	5 points
	Total	**100 points**

Based on these reasons, the article will receive from the reviewers' board a number of points. A number lower than 60 will lead to the rejection of the article, between 60 and 90 points the article will suffer certain changes from the point of view of the structure, expression in the text, etc. in order to receive the accept for publication, and over 90 points the article will receive the accept for publication, after small changes in the elaboration if the case may be).
The review of the article will be objective, clear and strictly formulated, in accordance with the **technical and scientific request for the elaboration of the scientific papers**, without discrediting the author s) of the article manuscript).

The review process
Step 1
The article must be send in electronic format or on any media format CD_ROM, etc), in English Abstract in English), through electronic mail at the address contact@analefefs.ro, alternative adress: gevatcecilia@yahoo.com, or at the mailing address: Cpt. Av. Al. Serbanescu, no.1, Constanta, Romania, RO-900470 Tel./ Fax. +40 241 640 443 or 004 077 136 1179
Step 2
The article deposited for publishing must be accompanied by a short personal presentation and a professional CV, no more than 120 words, that must contain the detailed contact address, including phone number, fax number if it exists) and the e-mail.
Step 3

At least two members of the Editorial Collective and of the Scientific Board will initially analyze the article and will nominate at least two reviewers to analyze the article in detail.

Step 4

The article will be officially analyzed by at least two reviewers with expertise in the thematics of the article deposited for publication. The article will receive a number of points from the reviewers' board.

Step 5

The articles that follow over 90 points) the scientific and technical standards for elaboration will be included into the waiting list for publication. The articles that need certain modifications between 60 and 90 points) will be returned with the reviewers' observations, for their modification by the author s). The articles that do not accomplish the minimum scientific and technical requests for elaboration 60 points) will be rejected by the reviewers' board.

Step 6

The articles will be included on the waiting approval) list for publication.

Step 7

After the approval, the article will be published in the magazine, and the author s) will receive a free copy of the magazine.

Deadlines for handing in the articles

Two numbers of the journal will be published per year and a supplement for number 2 of the journal in that year.

The deadline for handing in the articles for the first number of the magazine is 6th January, for the second number of the magazine is 15th of June and for the supplement of the magazine is 30 September. Based on the number of articles handed in, the Editorial Collective and the Scientific Board will be able to postpone the publishing of an article in a future number of the journal.

Publishing / subscription taxes

The publishing fee is 10 euros just for online journal)

For purchase a number of the journal the fee is 15 euros for 2009, 2010, 2011 year)

For purchase a number of the journal the tax is 5 euros 2001-2010)

For subscription 3 annual numbers of journal 2011) the fee is 25 euros