NEW METHODS OF DATA AQUISITION AND WALKING ANALYSIS IN MULTIPLE SCLEROSIS AFTER FUNCTIONAL ELECTRICAL STIMULATION

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ABSTRACT
In multiple sclerosis the difficulty in walking represents one of the main patients concerns. This difficulty is due to the instability of the muscles of the foot to lift it up during the swing phase of walking, known as dropped foot. Different alternatives in the rehabilitation treatment try to improve the walking, but at the present moment, in clinical medicine, scientific quantification and analysis of human walking mechanism is not highly accurate due to the lack of an objective analysis. Progress quantification in walking is essential in evaluation of the efficiency of rehabilitation procedures, improvement of these procedures or elaboration of individual models for each patient.

Purpose
The purpose of the present research is represented by both the completion of a prospective study regarding efficiency of functional electrical stimulation in walking rehabilitation at patients with multiple sclerosis and the use of last generation non-invasive methods in analyzing and quantifying the results.

Methods
The present paper is a case report regarding the results obtained after application of functional electrical stimulation to a patient with multiple sclerosis. Functional electrical stimulation was applied in order to stimulate muscular groups involved in walking by the use of a 2 channel neurostimulator (O2CHS II). The trigger points choosed for stimulation permitted to obtain dorsiflexion and eversion of the foot, associated with knee flexion. Acquisition and analysis of the data specific to walking (contact pressure, forces, moments) were made by using a pressure plate for static and dynamic measurements (RSSSCAN) before and during stimulation.

Results
Registered by the pressure plate allowed identification and quantification of improvements of the patient’s walking problems by the use of electrical functional stimulation.

Conclusions
Functional electrical stimulation offers an alternative within the rehabilitation treatment in multiple sclerosis, by encouraging active movement of the food and by constantly taking the foot through the full range of movement with walking and avoiding stiffening up of the ankle. Identification of certain analysis models in walking, will offer a viable instrument in evaluation and treatment of multiple sclerosis and sustainable results on national and international level.

Key words: multiple sclerosis, functional electrical stimulation, walking evaluation, plantar pressure

Introduction
Multiple sclerosis (MS) is a chronic neurological disease of unknown etiology which affects central nervous system, especially the brain, spine and optic nerves (A. Achiron and Y. Barak, 2000) and is characterised by demyelination of nerve fibers. Among clinical MS symptoms a common one is represented by motor and balance disorders: spasticity, muscular weakness and ataxia, decreased mobility (A.J. Lenman, F.M. Tulley, G. Vrbova et al, 1989). MS evolution is extremely variable and unforeseeable. In the absence of specific treatment, a percent of over 30% of MS patients will develop significant physical disability within 20-25 years since the onset of the disease. After 25 years only 1/3 of the patients are capable of working and 2/3 can walk (K.J. Aronson, 1996). But this prognosis is permanently changing due to the new therapies. Approaches nowadays focus on the idea that MS treatment does not mean only drug administration, but also kinetotherapy, ergotherapy, consultance and psychological therapy.

MS rehabilitation treatment should focus on encouraging normal movements and functional activities, such as walking, which will facilitate and stimulate balance mechanisms. Unfortunately, as mentioned before, walking is affected in most of MS cases. Consequently, any procedure to improve motor activity and walking is of high benefit. Functional electrical stimulation (FES) involves applying low level electrical current to the neuromuscular system for either functional or therapeutical purposes.
Therapeutical applications of FES aim to impede or reverse the progression of a disabling condition, and are typically used to strengthen weak muscles, but also the patient can benefit of muscular activity maintenance and spasticity reduction. In most countries FES is a common treatment for the patients who suffered a stroke, but FES as treatment in multiple sclerosis is rare due to the lack of clinical documentation. The benefits of using electrical stimulation through FES in therapeutic purpose can be summarized as follows: improvement in muscular tone, preventing of muscular atrophy, increasing in muscular force (T.A. Fredriksen, S. Bergman, J.P. Hesselberg et al., 1986; M. Javidan, J. Elek, A. Prochazak., 1992). By sequence activation of lower limb muscle groups a complex movement can be produced, similar to voluntary activities performed by the patient previous to demyelination in the nervous central system (J.H. Burridge. P. Taylor, S Hagan et al., 1997; J. H. Burridge, I.D. Swain, P.N. Taylor., 1998). At present, walking analysis is not highly accurate in clinical medicine due to the lack of an objective walking analysis (Bogey, 2004), including functional analysis of anatomic segments involved in walking activity. For the purpose of data collection and biomechanical modelling of human movement is highly necessary to measure the contact force (reaction) at the level of distal segment and the plantar pressures.

The research hypotheses
The efficiency of functional electrical stimulation within the rehabilitation treatment in MS will be shown by improvement of walking parameters, the most affected function in this disease. In order to obtain a correct scientific evaluation it is highly necessary to implement clinically methods in generation, standardization, data acquisition and analysis (walking analysis). Operational motivation in application of proposed non-invasive methods such as measurements of plantar pressures by pressure plates is given by the fact that the newest systems of measuring and scanning plantar pressures are capable not only of recording and analysing accurately plantar charge but also to predict the characteristics of rapid movements of the limb and shank.

Methods
As mentioned before, the purpose of the present research is the completion of a prospective study regarding efficiency of functional electrical stimulation in walking rehabilitation at patients with MS. The initial extended study includes 20 patients with MS, but the is not yet finished, so we choose to present some intermediary results regarding only one of the patients. So the present article represents a case report regarding the results obtained after application of FES to a patient with multiple sclerosis within the framework of previous mentioned study.

We mention that the study had obtained the written consent of the patients or of their families in the individual evaluation files. The Ethics Commissions of the University of Medicine and Pharmacy and of the other clinical units involved approved the studies in the project conform to the Order of the Ministry of Education and Research no. 400/22.02.2007. The patients were introduced in the study after the request and written consent of them or their families. They were informed of the study motivation, data used and respect of their confidentiality.

Subject. The patient data are summarised.: General data: Patient B.V. male; residence: urban; educational level: university; social status: married; family support: adequate; diagnosed in 2001 with MS, age at the disease onset: 35 years old; onset symptomatology: neuro-muscular fatigue; hereditary history: insignificant; physiological history: insignificant; pathological history: insignificant; disability level: incapacity to adapt 90%; remaining work capacity 10%.

Clinical neurological examination indicates motor disabilities represented by inexplicable fatigue, misunderstood by his family and friends, decrease of muscular force, especially at the level of lower limbs, pyramidal signs (spasticity, abnormal reflexes), walking disorders. Among sensitive findings there were recorded paresthesia and sensitive ataxia (a spastic ataxic walking).

Walking examination indicated disorders in walking, respectively crural motor bilateral deficiency, orthostatism and spastic/ paraparetic walking, crural pyramidal bilateral hypertonia, lower limbs clonoidia, RCA abolished, RCP-bilateral extension.

Paraclinical examinations indicated: glycemia 105 mg/dl; urea 29 mg/dl, cholesterol 208 mg/dl, triglycerides 45 mg/dl, HDLC 45 mg/dl, LDLC 154 mg/dl, GPT 18 U/L, VSH (1 h) 8 mm, VSH (2 h) 16 mm, WBC 13400, NeSe% = 67%, LY % =25%, MO% =5%, EO% =3%, Hb 13,8 g/100ml.

In 2003 and 2004 the patient was evaluated by magnetic resonance imaging (MRI). In 2003: MRI of head showed a hyperintensity centimetre lesion visible only in sagittal FLAIR sequence, (im.9.sc.5) deep in the white matter which may correspond to a focal degenerative lesion. There were no abnormalities of focal type in favour of MS diagnosis; ventricular system on medial line, cranial nerves, normally visible vascular structures. Investigations at the spine level were recommended.

In 2004: MRI of thoracic spine was performed, showing: vertebral bodies with homogenous signal without focal abnormalities or degenerating corporeal or disk processes. Thoracic spinal duct with normal dimensions (35 mm) without any symptom of extrinsic compression. Homogenous medullary thoracic parenchyma with AP diameter of 7 mm, without any abnormalities of focal signal or pathologic point of contrast substance.

Electrical functional stimulation
A 2 channel neurostimulator (O2CHS II) produced by the department of Medical Physics and Medical Engineering Salisbury was used for bilateral correction in walking. This is a neural prosthesis designed to improve walking, with 2 channels associated with a switch off device placed at the heel.
level to obtain dorsiflexion and foot eversion by stimulating extern sciatic popliteal nerve (SPE). The shank flexion could be performed depending on the electrodes placement. Electrical stimulation was realized by impulses of rectangular shape, using surface electrodes. In the case of muscles with intact motor neuron, stimulated by surface electrodes, the electric signal is a train of rectangular impulses of a frequency between 20 Hz and 40 Hz and a pulse duration between 5µs and 350 µs. Intensity of stimulation varied between 20 mA and 40 mA. Despite the fact that there was the possibility of using a current of a frequency up to 100 MA, it was taken into account the rapid fatigue of the stimulated muscle caused by the regulation of the parameters of current intensity and rectangular impulse duration.

Data acquisition and analysis using pressure plates in static and dynamic regime

In our study we used a footscan plate scientific version, RSSCAN International, Olen, Belgium to record plantar pressure distribution and pressure values. In our experiment we used a plate of surface of 0,5m x 0,4m, with a total of 4096 sensitive pressure sensors (4 sensors per cm²) which allows the measurement of vertical pressure. Data were recorded at a frequency of 50 Hz. The patient was asked to walk along the platform as natural as possible. The platform recorded forces and pressures along z axe in the above-mentioned areas in a file type Working Sheet Microsoft Excel. The measurements were made in the Centre of Research in Human Movement at the Faculty of Physical Education and Sport, University of Craiova.

As the sensor size is known (0,27cm) pressure is determined automatically. It is very important to perform the current measurement in a natural way. Therefore, the plate was placed in a normal route long enough to allow a normal walking, covered by a thin layer of EVA material. This material does not influence or alter the measurement, the route is comfortable for the patient and they do not “target” the plate as it is invisible. The system permits automatic detection of left and right limb, static (at rest) or dynamic measurements (walking, running).

The studied parameters included:
- image of pressure distribution on both soles for each movement moment (each frame). These images were stocked in bmp format for each walking moment of the patient (each frame); dynamic pressures and center of pressure line; pressure/time for each foot zone.
- force values for each time unit for the 10 specific zones: halluxes (1), phalange (1), metacarpals (5), mediane zone (1), the two medial and lateral zone of calcaneus (2);
- mean pressure values for the 10 zones depending on time; surface of the 10 contact zones for each frame;
- specific angles (hallux valgus, open-close foot, etc) for each frame (depending on time).

- movement analysis: heel rotation, foot balance, medial forefoot balance, foot rotation, footec balance, meta loading, center of pressure line, center of pressure line of rearfoot, inversion – eversion, flexion – extension, hallux activity, hallux stiffness

The system allows visualization in different colours depending on the value of applied pressures; the graph force/time for each limb whenever necessary or desired; calculations such as: determination of foot dimension, comparison of two measurements sets, graph pressure/time for each limb zone, comparison of contact percentages or rear- mid- fore foot with the impulse of the respective foot parts, calculation of average in several measurements.

Data stocking: data obtained directly from the measurements and those processed by specific RSSCAN software for walking and balance are in Excel, depending on time and stocked in the computer in an integrated data basis.

Results
We could appreciate plantar pressure distribution in static and dynamic measurements for walking in a patient with MS, before and during FES (patient: V.B., age: 43 years old, 70 kg, foot size 42).

Recorded data were obtained directly from measurements or by processing of initial data by a specific RSSCAN software for the analysed movement. The data were automatically converted in Excel format, and mean values of recorded parameters were performed. The evolution of contact pressure depending on timing parameters and its distribution on characteristic anatomic plantar zones when the patient supported himself unilaterally and bilaterally during walking were also analysed.

Static measurements. Each foot was split into ten anatomical zones: medial and lateral zone under the rear foot, the midfoot, the five metatarsals, the hallux and the other toes. With this feature, the pressure under the foot can be linked to the relevant anatomical zones. In fig 1 is represented the distribution of contact pressures in stance phase for both lower limbs at ground contact, center of pressure and walking axis (red) towards walking direction (pink). In fig 2 is represented the normal distribution of plantar pressures in ratio with the 10 anatomic zones above-mentioned. The magnitude of pressure distribution is shown based on a colour scale, blue representing the lowest pressure, red representing the highest pressure. Black represents absence of pressure. In comparation

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The dynamic image of the pressure during roll-off of the foot can be observed. The view loops continuously through all frames. The software calculates the values of contact pressure $N/cm^2$ during one step, on each characteristic zone of the foot (the load rate). The load rate represents the speed of loading under the anatomical zones, in $N/cm^2$ and can also be graphically presented in different points on the sole for both lower limbs. In our study we noticed the maximal pressure values for metatarsal zone M2 at the left foot, in comparison with the right foot, where contact pressure values are the highest, reaching 24N/cm². We can also notice the positive influence of stimulation which leads to the decrease of maximal pressures to the value of 19N/cm², which means that a greater surface of the foot is on ground contact; that means also a decrease of the stress in the foot.

The evolution of contact surface for both feet at 5 successive time moments from a step duration, without stimulation (a) and with stimulation (b) is presented in fig. 4 (timing parameters of significant events - a sequence of images from the roll-off of the foot, the timing for each image is indicated in milliseconds). We can notice the zones of maximum contact pressure which is in hallux and metatarsal zone 1 for the right limb and in metatarsal zone 3 without stressed pressure in the hallux or calcaneus for the left limb. We can also notice a correction in the distribution in both limbs but especially in the left one after stimulation, with the formation of plantar arch (disappearance of the contact in this zone). We can notice (in the case without stimulation) the great tendency of avoiding complete support on the left limb, and so there is not any zone with high pressure contact values (red); we can also observe the fact that the patient has ground contact with his calcaneus and metatarsal zones, the contact extending to plantar arch. When the left foot leaves the ground, the contact remains on metatarsal and phalangeal zones. At the right foot, the contact begins on the hallux, metatarsal 1 and calcaneus, completing on metatarsal and phalange, at its maximum on hallux/metatarsal. In case of stimulation, we can notice the rehabilitation of plantar arch at the left foot, correct distribution of pressures on anterior side and calcaneus. The system memorized to print inadequate times and that is why the results for the left foot seems incomplete.

![Image of pressure distribution](image-url)

### Foot Regions

- **HL**: Heel Lateral
- **HM**: Heel Medial
- **MF**: Midfoot
- **M5**: Metatarsal 5
- **M4**: Metatarsal 4
- **T2-T5**: Toe 2 to toe 5
- **M3**: Metatarsal 3
- **M2**: Metatarsal 2
- **M1**: Metatarsal 1
- **T1**: Hallux

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**Fig. 1.** Static picture of the pressure distribution under the patient’s feet, while the patient is standing on the plate. Maximum pressure measured under the foot during stance phase can be observed (a) without FES; (b) with FES

**Fig. 2.** Normal distribution of plantar pressure for the 10 anatomical regions (static measurement)

**Fig. 3.** Record of a single step in dynamics (a) without FES; (b) with FES

**Fig. 4.** Dynamic distribution of contact pressure during roll-off of the foot.
Fig. 4. The graph of plantar contact surface in different walking moments (a) without FES; (b) with FES

For each representation of the measured pressures there can be shown the measured forces as well (fig. 5 a,b). The force curves show the vertical force in time during stance phase. The X-axis shows the time in ms (milliseconds), the Y-axis shows the force in N (Newton).

When the forces are shown the graph represents total force of the calculated zone. If the pressures are shown, then the force shown is divided on the surface in which it is applied. When the forces are shown we can click to see the calculated force.

The percentages in which total contact is divided on the sole, among anterior, medial and posterior zones of the foot represents the usage degree during the step (impulse) and it can be used to identify plantar zones of high charge.

Fig. 5. Graph: Force/time for each foot zone (a) without FES; (b) with FES associated with the forces graph. The graphs of the force (N) for each zone during foot contact can be observed. The graph of forces distribution is similar to that of pressures with maximal values of 514 N for M1 zone of the right foot.

In fig. 7 are also represented the representative moments and zones such as anterior zone, calcaneous or first/last contact, as well as the foot axes. The inappropriate negative values of the left foot show that the patient’s first contact is insecure, he cannot make the contact at first, but finally he can touch the ground with anterior side of his sole.

In the last figure we can notice that the last patient’s contact with the left foot does not fit to pressure centers; thus, we can conclude that the patient is insecure and after lifting his foot he reaches back in ground contact for another second due to lifting of foot to an insufficient height. This problem is corrected by stimulation (b), pressure center line is improving and the patient does not hesitate to lift his left foot any longer.
This way of time measuring allows concentration on spatial and temporal parameters of and among different steps is called *multi-steps pattern*.

The screen offers detailed information of different time parameters, both in milli-seconds and in percentages for the contact phase with calcaneous, initial contact with anterior part, complete contact or balance, propulsion. We can notice the exceed of normal values at the left foot in comparison with the right one, where the zones in which the values are higher are metatarsal 1-4. While stimulation, at the left foot the normal values are higher at the movement initiation as the patient has the tendency to keep ground contact with his left foot owing to muscular contraction following stimulation.

Subsequently, there was drawn a table with time standard values (table 1). The *timing table* lists the timing values according to the zones and the significant events during gait, compared to reference timing values.

Three colors are used to indicate the relation between the measured values and reference values:

- **Blue**: the timing parameter is early in time compared to the reference timing value.
- **Green**: the timing parameter is within the range of the reference timing value.
- **Red**: the timing parameter is late in time compared to the reference value.

This table evaluates (in comparison with normal values) the contact duration for the zones medial/lateral calcaneous, metatarsal 1/5 as well as the phases during walking and contact phase:

- **Heelstrike (%)**: defined as the instant the heel region (HM-HL) first contacts the footscan® plate until one of the metatarsal heads contacts the footscan® plate.
- **Pre-Midstance (%)**: defined as the instant when one of the metatarsal heads contacts the footscan® plate until all the metatarsal heads made contact with the footscan® plate.
Midstance (%): defined as the first instant all the metatarsal heads made contact with the footscan® plate until the heel region lost contact with the footscan® plate.

Propulsion (%): defined as the instant the heel region lost contact with the footscan® plate until last contact of the foot on the footscan® plate.

Table 1. Timing values according to the zones and the significant events during gait, compared to reference timing values

(a) without FES; (b) with FES

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<tr>
<td>M2</td>
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</tbody>
</table>
Discussions and conclusions

Most research studies analyse the clinical pathology retrospectively using clinic and para-clinic parameters in an advanced evolitional stage of the disease. The modalities of approaching and evaluation presented in literature are usually chosen individually, without a common tendency based on trans-disciplinary research which will surely lead to better and faster results. That is why a complete research, associated with experimental studies based on corroboration of clinical data, characteristic for each specialty involved in functional rehabilitation program of the patient with MS, using computerized programs of movement analysis, will permit the creation of a complex system of data acquisition and analysis with direct application on human motility. Such a system (which can be standardized) will facilitate health cost reduction and social integration of patients with MS (economic and social effects).

In our study the records made using a pressure plate RSSCAN allowed identification of walking deficiencies such as: crural bilateral motor deficiency, orthostatism and para-plexic spastic walking. Credibility and validity of this method results from previous studies: R. Darmana, M. Schandella, S. Salmeron et al., 2001; F. Hagman, 2003.

The obtained data based on pressure measurements in the absence or presence of functional electrical stimulation lead us to the following conclusions:

- Functional electrical stimulation offers an alternative within the rehabilitation treatment in multiple sclerosis, encouraging active movement of the food and by constantly taking the foot through the full range of movement with walking, avoids stiffening up of the ankle.

- The study shows that clinical implementation of the 2 channel neuromuscular stimulator (O2CHS II) can improve walking in MS patients. The benefits of ES through FES in therapeutic purpose can be defined as improvement in muscular tonicity and a decrease in spasticity. Stimulation of the muscles in a certain succession can realize walking movements. In MS case, voluntary command of movement and tune is affected by the lesions of central motor neuron, without being affected motor peripheral neuron, neural and muscular junction or other muscular cells. FES used with sequence activation of muscular groups in order of natural contraction can correct walking. Therefore, FES can be used to correct walking in the rehabilitation process of the patients with MS.

As this research is presenting intermediary results from a wider study, we must say that at this moment the patients with MS do not show a "carry over" effect without using the stimulator. Further studies will be carried on.

- Evaluation of walking by biomechanical parameters as pressure and forces in lower limbs offers a complex method.

So far, in all research studies which refer to FES use in neurologic rehabilitation, performances regarding walking improvement were quantified through two parameters: the speed of walking a distance of 10 m and PCI – physiologic cost index. These evaluations are relatively subjective, without offering a quantifying data system. Moreover, there are other aspects of walking which can not be mirrored by these evaluations. Identification of certain analysis model for the patients with MS that can be used before and after FES will represent a viable instrument to evaluate and treat this disease, with results at international level.

Correct evaluation of walking during therapeutic operation and establishing the objectives of rehabilitation program starting from clear data and clinic and para-clinic parameters will assure a better feed-back of therapeutic efficiency.

Thanks

Special thanks are addressed to specialist that helped us by offering valuable informations and sharing previous experience: - professor Maria Iancau, PhD, Heard of Department of Physiology, University of Medicine and Pharmacy, Craiova
- associate professor M. Poboroniuc, PhD, Technical University Gh. Asachi, Iasi, as coordinator in the project PN II- D11-068/18.09. “Incorporated systems type neuroprotesis for rehabilitation in neuromotor disabilities (SINPHA)”
- associate professor. Gruionu Lucian, PhD, University of Craiova, as coordinator in the project CNCSIS 33547-2003 „Virtual biomechanical model for investigating, kinematic study and optimisation of prosthesis used in correction of locomotory disabilities”

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THE EFFECT OF INJECTING ACUTE L-CARNITINE ON ENDURANCE TIME IN RATS EXPOSED TO DIFFERENT WATER TEMPERATURE

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1Atatürk University, College of Physical Education and Sports, TR-25240-Erzurum-TURKEY

ABSTRACT

Purpose: Carnitine plays an important role in lipid metabolism by transporting long-chain fatty acids into the mitochondria for beta-oxidation. The effect of carnitine on exercise capacity is not clear. The aim of this study was to explain effect of injecting acute L-Carnitine on endurance time in rats exposed to different water temperature.

Material and Methods: Six groups (E18°C, E28°C and E38°C groups made exhaustive swimming CE18°C, CE28°C and CE38°C groups given L-Carnitine and made exhaustive swimming exercises) were formed and a total of 36 Spraque Dawley male rats, weighing 250-300 g were used in this study. In the study, the L-Carnitine was given to the groups 1-1.5 hours before the exercises in the doses of 100 mg/kg by intraperitoneal (I.P.) way. Exhaustive swimming tests were made in a rectangle shaped glass water tank that was 80x60x60 cm³. The uncoordinated movements and staying under the water for 10 seconds without swimming at the surface were accepted as the exhaustion criteria of the rats.

Results: In the rats of CE18°C group the endurance time increased significantly comparing with the E18°C (P < 0.01). There was not significantly different among other groups.

Conclusion: This result suggests that carnitine may especially enhance the physical performance doing cold ambient. Carnitine might generate that effect by regulation lipid metabolism and mitochondrial functions.

Keywords: L-Carnitine; endurance time; Exercise; Rat; water temperature.

Introduction

Fat and carbohydrates are the primary metabolic fuels utilised by contracting skeletal muscles during exercise and resting (M.J. Watt, J.F. George, D.J. Heigenhauser, Dyck And L.S. Lawrence, 2002). Thus, it is not suprising that a variety of metabolic and biochemical markers is related to exercise performance and training. Manipulations of bioenergetics have frequently been proposed as strategies to enhance exercise endurance or capacity. The functions of carnitine in skeletal muscle are critical to sustaining normal bioenergetics during exercise (P.E. Brass, W.R. Hiatt, 1998).

L-carnitine (4-N-trimethylammonium-3-hydroxybutyric acid), stored within skeletal muscle tissue as either free or acyl carnitine (F.B. Stephens, D.C. Teodosiu, D. Laithwaite, E.J. Simpson, And L. Paul, P.L. Greenhaff, 2006), is an endogeneous molecule well-established roles in metabolism (E.P. Brass, 2000), and plays important physiological roles shuffling the long-chain fatty acids across the inner mitochondrial membrane for ATP production and β-oxidation in peripheral tissues (I. Gülçin, 2006). For health and performance the importance of mitochondrial function has been highlighted during the last few years (D. Hood, A. Joseph, 2005). It is well known that oxidation of fatty acids (FA) is augmented and lactate formation is reduced during exercise after endurance training. This is explained by an increased mitochondrial density in skeletal muscle and a concomitant increased activity of oxidative enzymes (J. Holloszy, E. Coyle, 1984).

Impairment of muscle contractility due to fatigue may play a role in determining human performance. Through unclear mechanisms, high carnitine concentrations were shown to delay muscle fatigue and permit improved maintenance of contractile force in studies using in vitro animal systems (M. Dubelaar, C. Lucas, W. Hulsmann, 1991; E. Brass, A. Scarrow, L. Ruff, K. Masterson, Van Lunteren, 1993). The relevance of these observations to human exercise is unknown. Although some researchers declared that L-carnitine supplement, have beneficial effects on exercise performance (F.B. Stephens, D.C. Teodosiu, And P.L., Greenhaff, 2007; J.S. Volek, W.J. Kraemer, M.R.
In this study, 36 healthy Spraque Dawley male rats, weighing 250–300 g, 4–6 months of age, provided from Fırat University Experimental Animal Research Center (FUDDAM). The study was carried out in Atatürk University Research Center of Experiment Animals and the study was approved by the Ethical Committee of the Atatürk University (AUHADYEK, Ethical Committee Report No: 2008-51). Protocols used here were in accordance with Guidelines for Ethical Care of Atatürk University Research Center of Experiment Animals.

The rats were kept under special conditions and were sheltered in cages, each with 6 rats, at the room temperature (25°C), supplying with food (Bayramoğlu Yem Sanayi, Erzurum, Turkey) and water for 12 hours under special conditions and were sheltered in cages, each with 6 rats, at the room temperature (25°C), supplying with food (Bayramoğlu Yem Sanayi, Erzurum, Turkey) and water for 12 hours day and night cycles. The rats were divided into six equal groups. Group 1: The ones that made exhaustive swimming exercises at the temperature of 18°C (E18, n=6). Group 2: Group 2: The ones that made exhaustive swimming exercises at the temperature of 18°C (E18, n=6). Group 3: The ones that performed exhaustive swimming exercises at the temperature of 38°C (E38, n=6), Group 4: The ones that were given L-Carnitine and made exhaustive swimming exercises at the temperature of 38°C (CE38, n=6), Group 5: The ones that are given L-Carnitine and made exhaustive swimming exercises at the temperature of 38°C (E38, n=6), Group 6: The ones that are given L-Carnitine and made exhaustive swimming exercises at the temperature of 38°C (E38, n=6).

Material and methods

Animals and Groups

In this study, 36 healthy Spraque Dawley male rats, weighing 250–300 g, 4–6 months of age, provided from Fırat University Experimental Animal Research Center (FUDDAM). The study was carried out in Atatürk University Research Center of Experiment Animals and the study was approved by the Ethical Committee of the Atatürk University (AUHADYEK, Ethical Committee Report No: 2008-51). Protocols used here were in accordance with Guidelines for Ethical Care of Atatürk University Research Center of Experiment Animals.

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Chemicals

L-carnitine was obtained from Sigma (Sigma-Aldrich GmbH, Sternheim, Germany). In the study, the L-Carnitine was given to the groups 1-1.5 hours before the exercises in the doses of 100 mg/kg by intraperitoneal (I.P.) way (U. Panjwani, L. Thakur, S. Singh, B. Amita, S. Singh, P. Banerjee, 2007).

Exercise Protocol

Maximal intensely tired swimming exercises were applied to exercise and L-Carnitine exercise groups in test group (n: 36).

Adaptation Training.

For the rats to have adaptation, they were first made to have swimming exercise in a pool, 80 x 60 x 60 cm³ for 5 minutes during 5 days in water temperature at 26-28°C (This temperature is the most appropriate for rat metabolism). A resistance of 2200 V and a digital thermometer (GEMO, micro software and PID thermo controlled device) was used to warm up the pool. After swimming exercise, the rats were dried with towels, made to rest for 30 minutes at a warm place and taken to cages.

Exhausted Swimming Exercise.

All the rats in exercise group were made swimming at 18°C, 28°C and 38°C respectively until they felt tired. The uncoordinated movements and staying under the water for 10 seconds without swimming at the surface were accepted as the exhaustion criteria of the rats (R. Osorio, J. Christofani, V. Almeida, I. Picasso 2003).

Determination of temperatures

American Health Assembly (AHA), approved of normal body temperature as 36.5–37.2°C. The body temperature of rats is the same as those of humans. A naked person can keep body inner temperature fixed between 12.5°C and 55°C in dry weather (20). For the body to feel the heat depends on the temperature of the weather, moisture rate and wind rate. 26–30°C is the optimal temperature for performance in water sports (21).

In this study the temperature was determined 10°C more or less than average temperature 28°C as optimal temperature for performance, under 10°C hypothermic (18°C), over 10°C hypertermic (38°C). In present study to determine temperature values of water, under 16°C and over 38°C posed risk for rats. The rats made to swim at 14 and 39°C died and had severe complications in 5-10 minutes (three out of six).

Statistical Analysis

The experimental results were performed in triplicate. The data were recorded as mean ± standard deviation and analyzed by SPSS (version 11.5 for Windows 2000, SPSS Inc.). Differences between exercise and carnitine-exercise group was made using by Mann-Whitney U test. Analysis inside of Group was made using by Kruskal -Wallis test and p<0.05 was regarded as significant.

Results

Endurance time (minute) between exercise and carnitine-exercise groups, taking place in equal water temperature was indicated in Table 1. With reference to, endurance time of CE18 group was significant.
higher than E18 group (P<0.01). When compared E28 group and CE28 group, CE28 group was obtained a increased, but it is wasn’t significantly. Additionally, endurance time wasn’t significantly between CE38 group and E38 group.

### Table 1. Comparison of endurance time (min.) between exercise and carnitine-exercise groups, taking place in equal water temperature.

<table>
<thead>
<tr>
<th>Groups</th>
<th>n</th>
<th>mean±sd</th>
<th>Z</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>E18</td>
<td>6</td>
<td>92.00 ± 21.72</td>
<td>2.722</td>
<td></td>
</tr>
<tr>
<td>CE18</td>
<td>6</td>
<td>139.00 ± 31.37*</td>
<td></td>
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<tr>
<td>E28</td>
<td>6</td>
<td>249.00 ± 42.46</td>
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<td></td>
</tr>
<tr>
<td>CE28</td>
<td>6</td>
<td>291.00 ± 35.16</td>
<td>0.078</td>
<td></td>
</tr>
<tr>
<td>E38</td>
<td>6</td>
<td>97.00 ± 39.57</td>
<td>0.962</td>
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</tr>
<tr>
<td>CE38</td>
<td>6</td>
<td>75.00 ± 39.14</td>
<td>0.336</td>
<td></td>
</tr>
</tbody>
</table>

(* )P<0.01

Endurance time (min.) among them exercise and carnitine-exercise groups was presented in Table 2. With reference to, endurance time of among exercise groups E28 group veiwed significantly a increase in accordance with E18 group and E38 group (P<0.05). If endurance time of among carnitine-exercise groups CE28 group was significant higher than CE18 group and CE38 group (P<0.05). Also, CE38 group was significantly lower than CE18 group(P<0.05).

### Table 2. Comparison of endurance time (min.) among them exercise and carnitine-exercise groups .

<table>
<thead>
<tr>
<th>Groups</th>
<th>Z</th>
<th>P</th>
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<tbody>
<tr>
<td>E28* - E18</td>
<td>-2.201</td>
<td>.028*</td>
</tr>
<tr>
<td>E38 - E18</td>
<td>-.420</td>
<td>.674</td>
</tr>
<tr>
<td>E38 - E28*</td>
<td>-2.201</td>
<td>.028*</td>
</tr>
<tr>
<td>CE28* - CE18</td>
<td>-2.201</td>
<td>.028*</td>
</tr>
<tr>
<td>CE38* - CE18</td>
<td>-2.201</td>
<td>.028*</td>
</tr>
</tbody>
</table>

(* )P<0.05

### Discussion

Carnitine is an endogenous compound with well-established functions in cellular metabolism that are clearly important in muscle during exercise (S. Ahmad, H. Robertson, T. Golper, Et Al., 1990). An obligate for optimal mitochondrial fatty acid oxidation, it is a critical source of energy and also protects the cell from acyl-CoA accretion through the generation of acylcarnitines (E.P. Brass, 2000). Therefore, It is not surprising that the use of supplementary carnitine to improve physical performance has become widespread in recent years.

In this study, in rats given L- Carnitine was evaluate endurance time in exhaustive swimming exercise in different water temperature. According to obtained data, L- Carnitine stimulated endurance time at 18°C of water temperature, although there wasn’t significantly in favour of L- Carnitine groups on endurance time between exercise and L-Carnitine exercise groups at 28°C and 38°C (Table 1). Also, Comparison of among them exercise groups and L-Carnitine exercise groups was determined effect of L-Carnitine at 18°C (Table 2).

In the literature, there were different views with respect to the relationship between exercise performance and L-carnitine. Although there are some theoretical points favouring potential ergogenic effects of carnitine supplementation (O. Heinonen, J. Takala, 1994; H. Karlic, A. Lohninger, 1996), there is currently no scientific basis for healthy individuals or athletes to use carnitine supplementation to improve exercise performance. (O. Heinonen, 1996, C. Greigh, K. Finch D. Jones, M. Cooper, A. Sargeant, C. Forte, 1987; Christoph Stuessi Æ Pierre Hofer Æ Christian Meier Urs Boutellier. L., 2005).

Slipandi (N. Slipranda, D. Dlisa, G. Peralisi, P. Ripari, F. Maccari, R. Menabo, Ma. Giamberardino, 1990), and Vecchiet(L. Vecchiet, F. Di Lisa, G. Peralisi, P. Ripari, R. Menabo, Ma. Giamberardino, N. Slipranda, 1990) noted that ingested 2 g. L-Carnitine before 60 min. exercise decreased blood lactat and increased performance and strenght. Greig et al.(C. Greigh, K. Finch D. Jones, M. Cooper, A. Sargeant, C. Forte, 1987) declared that carnitine supplementation wasn’t beneficial effect to exercise performance since the observed effects were small and inconsistent.

The reserches relevant to effect of L-Carnitine on endurance time in the literature are limited number. Likewise, Trappe et. al. (S. Trappe, D. Costill, B. Goodpaster, M. Vukovich, W. Fink, 1994), notified that L-carnitine supplementation does not provide an ergogenic benefit in performance times in highly trained swimmers. Another study making on thirty-two male rats was pointed out that in exercise endurance time were no changes by supplementation in untrained animals, however endurance times were longer in long-trained supplemented animals than in long-trained non-supplemented.(E. Kim, H. Park, Y. Cha, 2004).

The thermoregulatory mechanisms play important roles in maintaining physiological homeostasis during rest and physical exercise. Physical exertion poses a challenge to thermoregulation by causing a substantial increase in metabolic heat production. However, within a non-thermolytic range, the thermoregulatory mechanisms are capable of adapting to sustain physiological functions under these conditions (L. Chin Leong, C. Byrne, J. Lee, 2008).

has decreased in exercising pigeons after L-carnitine supplementation.

Skeleton muscles have used free fatty acids both at rest and during exercise. For this reason, L- Carnitine deficiency may cause to decrease in skeleton muscle functions and in exercise capacity. In humans, cold-induced thermogenesis is attributable to skeletal muscle contractile activity (U. Chu, M. Larsson, T. Moen, S. Rennard And L. Bjørmer). Humans initiate this thermogenesis through involuntary shivering or by voluntarily modifying behavior, i.e., increasing physical activity. While certain animals exhibit an increased metabolic heat production by noncontracting tissue (brown adipose tissue) in response to cold exposure. In cold ambient, in skeleton muscles increase using free fatty acids both at rest and during exercise (A. Strup, 1986; B. Cannon And J. Nedergaard, 2004). For this reason, L- Carnitine deficiency may cause to decrease in skeleton muscle functions and in exercise capacity (S. Gültük, A. Demirkazik, S. Erdal, T. Demir 2007). Exercise intolerance, carnitine palmitoyl-transferase enzyme deficiency (CPT II) has been postulated to depend on low - carbohitrate-high - fat diet, exhaustive exercise, fasting, hypothermia and insomni (M. Orngreen, R. Ejstrup, J. Vissing, 2003), and especially, it created skeletal muscle damage (A. Gentili, E. Lannella, F. Masciopinto, L. Latrofa, L. Giuntoli, S. Baroncini, 2008). Little is known about energy substrate metabolism and energy utilization in hibernating species under conditions of hypothermia and reawarming. Belke et al (D. Belke, L. Wang, G. Lopaschuk, 1997), reported that total energy substrate metabolic rates were greater in rat than ground squirrel hearts during hypothermia, despite a lower level of work being performed by the rat hearts, indicating that rat hearts are less efficient than ground squirrel hearts during hypothermia. Because of this reasons, in cold water - in view of improved heat production and energy metabolism- increased using fatty acids. This study may say that L- Carnitine supplement helped to energy output at 18°C water temperature.

Conclusions

In conclusion, according to this study carnitine may especially enhance the physical performance doing cold ambient. Carnitine might generate that effect by regulation lipid metabolism and mitochondrial functions. Effect of this study Carnitine will inform useful that to be supported by molecular trial and advanced researches

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SOME DIFFERENCES IN PARAMETERS OF BONE MINERAL METABOLISM IN VARIOUS SPORT BRANCHES

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²Gazi University, Ankara, TURKEY

ABSTRACT

Objective
This study was carried out in order to compare the differences of laboratory parameters related to bone metabolism such as alkaline phosphatase (ALP), serum calcium (Ca), magnesium (Mg) and phosphorus (P), in various sport branches.

Material and Method
Serum alkaline phosphatase, calcium and phosphorus, and magnesium levels were measured in 23 skiers, 21 runners, 24 wrestlers, 20 handball, 21 soccers and 30 sedentary living healthy individual.

Results
The groups were matched according to age and sex. As expected, there were no significant differences according to age or the female-male ratio between the athletes and controls subjects (p>0.05).

Serum alkaline phosphatase (ALP), serum calcium (Ca), magnesium (Mg) and phosphorus (P) were determined in the athletes and the healthy control subjects. In all the athletes and controls, routine biochemical parameters including alkaline phosphatase (ALP), serum calcium (Ca), magnesium (Mg) and phosphorus (P) were within normal limits (Table 1). The wrestlers had lower levels of calcium compared to control subjects (p<0.05). The runners and handball had higher levels of phosphatase compared to control subjects (P<0.05). Other parameters had no significant difference between athletes and controls (Table 2).

Conclusion
When compared with control group, it has been found that wrestlers have low level of CA while runners and handball players have high level of P.

Key words: Serum alkaline phosphatase, calcium, magnesium, phosphorus and athletes.
The athletes and controls, routine and a, Mg and Phosphorus were especially those 20), 3 subjects were females and 17, C. Eisenberg, E. Shane, T. Clemons, et al., 1986).

This study was carried out in order to compare the differences of laboratory parameters related to bone metabolism such as alkaline phosphatase (ALP), serum calcium (Ca), magnesium (Mg) and phosphorus (P), in various sport branches.

Material and Methods

Serum alkaline phosphatase, calcium and phosphorus, and magnesium levels were measured in 23 skiers, 21 runners, 24 wrestlers, 20 handball, 21 soccers and 30 sedentary living healthy individual.

In the skiers (n=23), 5 subjects were females and 18 male (mean age: 22.3 ± 9.4, range: 19 – 25 years). In the runners (n=21), 4 subjects were females and 17 male (mean age: 25.1 ± 8.4, range: 18 – 26 years). In the wrestlers (n=24), 4 subjects were females and 20 male (mean age: 23.7± 9.1, range: 17 – 26 years). In the handball (n=20), 3 subjects were females and 17 male (mean age: 21.9 ± 7.4, range: 16 – 27 years). In the soccer group (n=21), 5 subjects were females and 16 male (mean age: 21.9 ± 8.9, range: 20–24 years).

We also studied 22 healthy volunteers personnel (5 females and 17 males; mean age: 29.1 ± 11.8, range: 21 – 29 years).

The athletes and controls volunteered to participate in the study and gave their informed consent. None of the athletes and controls were under the treatment of whatever drugs. None of the patients were had any other chronic disease. All the controls were sedentary living healthy individual. Subjects were excluded if they had used any drug such as corticosteroid, methotrexate, etc., or had any disease or condition known to affect bone; had taken corticosteroid medications during the previous 6 months, had a history of chronic renal, hepatic, or gastrointestinal disease or traumatic lumbar compression fracture. Exclusion criteria included liver and kidney diseases, renal stones, diabetes, alcoholism, thyroid and parathyroid diseases hematological, lymph proliferative and other malignant diseases and drugs affecting bone mineral density such as anticonvulsants, corticosteroids, disease-modifying anti-rheumatic drugs (DMARDs), hormone replacement therapy (HRT), bisphosphonates, vitamin D, fluoride, calcitonin, calcium or thiazid group diuretics. Fasting blood samples of the study and control subjects were taken from the cubital vein and the parameters were examined by routine laboratory techniques. Serum ALP, Ca, Mg and Phosphorus were determined by using commercial autoanalyser.

Data were processed using the SPSS 11.0 package programme. Laboratory results were given as mean ± standard deviation (SD). Differences between groups were analyzed using the Mann-Whitney U test. The Wilcoxon rank test was used to compare paired populations. Statistical significance level was set to 0.05 for all calculations.

Results

The groups were matched according to age and sex. As expected, there were no significant differences according to age or the female-male ratio between the athletes and controls subjects (p>0.05).

Serum alkaline phosphatase (ALP), serum calcium (Ca), magnesium (Mg) and phosphorus (P) were determined in the athletes and the healthy control subjects. In all the athletes and controls, routine biochemical parameters including alkaline phosphatase (ALP), serum calcium (Ca), magnesium (Mg) and phosphorus (P) were within normal limits (Table 1). The wrestlers had lower levels of calcium compared to control subjects (p<0.05). The runners and handball had higher levels of phosphatase compared to control subjects (P<0.05). Other parameters had no significant difference between athletes and controls (Table 2).

Discussion

Serum alkaline phosphatase is a mixture of isoenzymes contributed primarily by bone, liver, and intestine. Most data indicate that the elevation of serum ALP occurs because of the accelerated de novo synthesis of the enzyme and subsequent regurgitation into the serum (J. Reichling, M. Kaplan, 1967). Because of these contributions, serum alkaline phosphatase determination has been used to help distinguish between normal and disease states of these organs (G. Szasz, T. Hausamen, R. Helger, W. Rick and W. Gross, 1967). Age-and sex-related effects relative to serum alkaline phosphatase have been demonstrated by several investigators (SI. Silverberg, 1997). There are non-significant differences in serum ALP concentrations between with all the different athletes and the control group. Because athlete groups aren’t different from control group in respect of age and gender. However no body, who participated in this study including control group, has any disease which affects level of serum ALP. Calcium metabolism is complex, and other factors such as impaired liver and kidney function, poor nutritional status, and medications may act as confounding variables lowering calcium. The present investigation reveals the net effect of these sport branches except for wrestlers group on serum calcium levels. In our study, serum levels of calcium were significantly lower only in the wrestlers group than the control group. The differences of the level or amount of daily diet may lead to low calcium level in wrestlers. Magnesium is an essential ion for many enzymatic reactions, especially those using high energy phosphate bounds (E. Ford, 1999). The low serum magnesium levels are associated with coronary heart disease (J. Ma, A. Folson, S. Melnick, J. Eckfeldt, A. Sharrett, A. Nabusi, R. Hutchinson, P. Metcalf, 1995), atherosclerosis- (PA Marken, CW. Weart, DS. Carson, JG. Gums, MF. Lopes-Virella, 1989) dyslipidemia (PA. Deuster and A. Singh, 1993.) As a metabolic cofactor, Mg is important in energy metabolism and glucose homeostasis. The findings on serum magnesium concentration in these groups of
patients were completely normal. In our study, there was not a significant rise in serum magnesium levels between in the athletes groups compared with the controls. The results are in total agreement with some previously published reports. Accumulating evidence has shown a direct relationship between magnesium and exercise performance. Some studies have reported that serum or plasma magnesium concentration was decreased after exercise (M. Laires and F. Alves, 1991; M. Levi, RE. Cronin, JP. Knochel,1992). No abnormal serum magnesium level has been found in any group including control group may be because they did not get exercise before the survey. The physiologic concentration of serum phosphorus (phosphate) in normal adults ranges from 2.5 to 4.5 mg/dL (0.80–1.44 mmol/L). A diurnal variation occurs in serum phosphorus of 0.6 to 1.0 mg/dL, the lowest concentration occurring between 8 AM and 11 AM. A seasonal variation also occurs; the highest serum phosphorus concentration is in the summer and the lowest in the winter. Major determinants of serum phosphorus concentration are dietary intake and gastrointestinal absorption of phosphorus, urinary excretion of phosphorus, and shifts between the intracellular and extracellular spaces. Abnormalities in any of these steps can result either in hypophosphatemia or hyperphosphatemia (K. Hruska, A. Gupta, 1998; JP. Knochel , R. Agarwal ,1996). In our study, there was also an alteration in serum phosphorus concentration in the groups with runners and handball. Potassium, the level of diurnal, has been measured as normal especially in healthy sedentary athletes. This can be explained by the fact that it was winter afternoon when the blood samples were received.

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PREVENTION OF MUSCULO-SKELETAL TRAUMAS IN COMPETITIVE SPORTSMEN  
(Aspects regarding trauma incidence in volleyball and basketball teams)

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ANTON MARGARETA, FEFS University Ecological Bucuresti

ABSTRACT
Traumas occur frequently in the competitive sportsman’s life. The causes and the mechanisms of musculo-skeletal traumas vary with every sport.

Objectives
1. To identify the factors that favour/determine traumas caused by overstress.
2. To determine the trauma incidence in the studied sportsmen.
3. To develop and implement prophylactic training protocols.
4. To detect musculo-skeletal traumas early, using modern investigation methods: musculo-skeletal ultrasound scan, MRI, CT.
5. To determine the main musculo-skeletal traumas occurring in sports practising.
6. The functional rehabilitation of the injured segment so that the sportsman can resume his/her competitive activity at best possible parameters and without the risk of relapse.
7. To create (clinical, imagistic and prevention) algorithms to monitor the sportsmen.
8. To keep trauma-affected sportsmen under a three-year monitorisation period and to draw the conclusions.

Material and methods: the study batch included 107 sportsmen of the volley, basketball, handball and football teams, league A1 and A2, from Timisoara and Lugoj, in the competition period 2006 -2009.

Research methods: bibliographic study, observation, inquiry, questionnaire, the statistical-mathematical method, the graphic method, radio-imagery methods (CT, MRI) of investigating sportsmen with musculo-skeletal traumas.

Treatment and prevention:
The rehabilitation therapy is complex and intensive. It should be correlated with the sportsman’s training level, his/her performance level at the time the trauma occurred, and the functional level the sportsman should reach in order to resume his competitive activity.
Relaxation, cryotherapy, anti-inflammatory and myorelaxing drugs, compressions, adjuvants are the first means to apply as soon as trauma has occurred.

Means of rehabilitation: massage, kinetotherapy, electrotherapy, thermotherapy, balneotherapy.
This paper brings forward several complex physical exercises focusing on groups of muscles and joints involved in specific types of motility required by different sports. The exercises were chosen so as to increase articular mobility and improve muscle and ligament flexibility.
In theory, all traumas can be prevented through training that is initiated and performed correctly, proper physical and psychical training and preventive imagistic monitorisation.

Key words: sportsmen, musculo-skeletal traumas, prevention, radio-imagery diagnosis, rehabilitation

Introduction
Injuries are a common fact in the competitive sportsman’s life. They are caused by too short warm-up periods, faulty training, improper equipment, specific trauma, aggression on the court etc. The detection and treatment of the preclinical forms, the therapeutic conduct and the sportsman’s rehabilitation are only a few of the directions to pursue in finding viable solutions to sport performance related problems.

Prevention includes specific exercises as part of the training programme. Such exercises are meant to increase articular and periarticular structure flexibility, ligament resistance and muscular elasticity. They provide biomechanical joint consolidation, stability and maximum use of joint movement limit.

In addition to the above, massage and self-massage may be applied corresponding to the effort, the training period, and the protection of the trauma-exposed articular areas through taping and stretching (primary prevention) and proper treatment and rehabilitation (secondary prevention).

Objectives
1. To identify the factors that favour/determine traumas caused by overstress.
2. To develop and implement prophylactic training protocols.
3. To determine the trauma incidence in the studied sportsmen.
4. To detect musculo-skeletal traumas early, using modern investigation methods: musculo-skeletal ultrasound scan, MRI, CT.
5. To determine the main musculo-skeletal traumas varying with every sport, longevity in sport practising, the anatomical and clinical...
condition, the uni/bilateral location of the affection, the number of days of partial/total rest required by the diagnosed clinical condition.

6. To establish clinical, imagistic and prevention algorithms to monitor the sportsmen.

7. To keep trauma-affected sportsmen under a three-year monitoring period and to draw conclusions.

**Working hypotheses**

This paper starts from the premise that high trauma incidence among the studied competitive sportsmen is caused by controllable factors. A distinction is made between extrinsic factors that are unrelated to the sportsman (improper state of the field, training errors, risk of sport-specific traumas, inadequate equipment) and intrinsic factors (the sportsman’s anatomic and biomechanic characteristics, previous traumas treated improperly, Ca and Mg deficits, etc.). Primary and secondary prevention will lead to a decrease in the incidence of trauma.

**Material and methods**

The study batch included 107 sportsmen of the volleyball, basketball, handball and football teams in Timisoara and Lugoj, league A1 and A2, in the 2006-2009 competition period.

Given the necessity of cases that should benefit from an investigation protocol including CT, MRI, treatment and rehabilitation, we cooperated with the Radiology and Medical Imagistics Clinic of the Victor Babes University of Medicine and Pharmacy Timisoara, the Sanotim CT scan centre and a kinetic therapy and medical rehabilitation centre.

The sportsmen were monitored both while training and during games, with the help of medical sportsmen and kinetic therapy experts, and the medical staff representative for training camps and away games. The incidence of trauma was reported for all training stages.

Research methods: bibliographic study, observation, inquiry, questionnaire, statistical-mathematical methods, graphic methods and radio-imagery methods (CT, MRI) for investigating sportsmen with musculo-skeletal traumas.

**Registered data, results and interpretations**

**The distribution of the study subjects on sports**

<table>
<thead>
<tr>
<th>No</th>
<th>Sport</th>
<th>Trauma</th>
<th>Number of questions</th>
<th>Total of subjects with trauma</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Volleyball</td>
<td>Lega A1</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>Football</td>
<td>Lega A1</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>Handball</td>
<td>Lega A1</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>Basketball</td>
<td>Lega A1</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>Handball</td>
<td>Lega A2</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

Injury prevention involves the identification of the first signs that can be noticed and analysed by the coach, the doctor and the sportsman.

Causes of injuries:
- lack of energy or torpidity that does not disappear after the first minutes of warming-up, indicating an overstress of the muscle-bone system structures
- the thought of giving-up and unexplainable poor performance
- chronic fatigue
- a 10 beats/minute increase of the heart rate
- lack of appetite, irascibility and/or depression, indicating overtraining
- too short
- wrong training methods
- movements not reaching the maximum movement amplitude
- tendon or joint overtraining
- articular imbalances
- weight gain
- insufficient rest
- lack of concentration
- tendon and ligament overstretching
- ignoring acute and localised pain

### Results - Volleyball - Women - League A1

<table>
<thead>
<tr>
<th>No</th>
<th>Name</th>
<th>Degree</th>
<th>Year</th>
<th>Office</th>
<th>Type of competition</th>
<th>Sportsmen with trauma</th>
<th>Type of trauma</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B. S.</td>
<td>2008</td>
<td>1998</td>
<td>Lega A1</td>
<td>volley</td>
<td>130</td>
<td>Tennis</td>
</tr>
<tr>
<td>2</td>
<td>C. L.</td>
<td>2009</td>
<td>2002</td>
<td>Lega A1</td>
<td>volleyball</td>
<td>198</td>
<td>Tennis</td>
</tr>
<tr>
<td>3</td>
<td>T. A.</td>
<td>2009</td>
<td>1998</td>
<td>Lega A1</td>
<td>volley</td>
<td>174</td>
<td>Tennis</td>
</tr>
<tr>
<td>4</td>
<td>R. D.</td>
<td>2008</td>
<td>1998</td>
<td>Lega A1</td>
<td>volley</td>
<td>170</td>
<td>Tennis</td>
</tr>
<tr>
<td>5</td>
<td>C. L.</td>
<td>2008</td>
<td>1998</td>
<td>Lega A1</td>
<td>volley</td>
<td>177</td>
<td>Tennis</td>
</tr>
<tr>
<td>6</td>
<td>M. C. B.</td>
<td>1997</td>
<td>1998</td>
<td>Lega A1</td>
<td>volley</td>
<td>175</td>
<td>Tennis</td>
</tr>
<tr>
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<td>M. I.</td>
<td>1997</td>
<td>2000</td>
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<td>volley</td>
<td>191</td>
<td>Tennis</td>
</tr>
<tr>
<td>11</td>
<td>R. A. M.</td>
<td>1997</td>
<td>1997</td>
<td>Lega A1</td>
<td>volley</td>
<td>185</td>
<td>Tennis</td>
</tr>
<tr>
<td>13</td>
<td>C. G.</td>
<td>1995</td>
<td>1993</td>
<td>Lega A1</td>
<td>volley</td>
<td>181</td>
<td>Tennis</td>
</tr>
<tr>
<td>14</td>
<td>C. A.</td>
<td>1998</td>
<td>1990</td>
<td>Lega A1</td>
<td>volley</td>
<td>189</td>
<td>Tennis</td>
</tr>
</tbody>
</table>

### Distribution of traumas based on the affected area Volleyball (a team of 14 sportswomen)

<table>
<thead>
<tr>
<th>No</th>
<th>Area affected by trauma</th>
<th>Musculo-skeletal traumas</th>
<th>Sportsmen with trauma</th>
<th>TYPE OF TRAUMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Knee</td>
<td>11</td>
<td>Medical, tennis, sports, muscle, collateral and cruciate ligament rupture</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ankle</td>
<td>2</td>
<td>Tennis, rotator cuff tear</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Shoulder</td>
<td>2</td>
<td>Tennis, rotator cuff tear</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Spine</td>
<td>6</td>
<td>General, spinous, lumbar, coccyx</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Neck</td>
<td>2</td>
<td>Tennis, rotator cuff tear</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Thigh</td>
<td>6</td>
<td>Muscle injuries</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Forearm</td>
<td>2</td>
<td>Practice</td>
<td></td>
</tr>
</tbody>
</table>
Result interpretation: volleyball

The most frequent traumas within the volleyball team were knee injuries: 11 cases (78.57% of the players). Among these, meniscal injuries were the most common (degeneration, fissure, tear). One sportswoman underwent meniscal tear surgery.

The musculo-skeletal trauma distribution within the volleyball team was as follows:

- ≥ 3 traumas - 10 players
- < 3 traumas - 4 players.

A number of 46 musculo-skeletal traumas were registered in the CSM Lugoj volleyball team of League A1 in September 2006 - April 2009. Most injuries were caused by falls and ball hits.

The injuries are associated with blocking and attacking, as both involve jumping. Both the upper and the lower part of the locomotor system are permanently strained. Injuries of the superior part account for over 50% of the traumas. Overstress injuries account for 80% of the traumas, while 20% are accidental lesions. Example: in the volleyball team, C.L. suffered from ankle sprain relapse and S.A. had right knee sprain and cruciate ligament injury.

The pathology in the volleyball team included the following affected regions:

- shoulder joint complex (impingement syndrome, rotator cuff pathology, acute or chronic instability)
- back (effort-related lumbar pain and paravertebral muscle contraction)
- knee joint (sprains, strains, collateral ligament injuries and meniscal tears)
- tibio-tarsal joint (sprains by inversion or eversion, strains, acute or chronic instability);
- hand phalangeal sprains and overstress traumas
- frequent tendinitis, tenosynovitis, enthesitis of Achilles tendon, kneecap tendon, shoulder, muscle ruptures and myositis.

Other injuries in the volleyball team were contusions (which occur most frequently, but most of them are minor) and effort-related lumbar pains that cause pain and paravertebral muscle contraction.

ELBA Timisoara Municipal Basket Club

Result interpretation: basketball

In the basketball team, knee injuries were also the most frequent: 6 cases (50% of the players). Of these, the most common were ligament injuries (collateral and cruciate ligament affections).

The musculo-skeletal trauma distribution among the twelve basketball players was the following:

- ≥ 3 traumas - 6 players
- < 3 traumas - 6 players.

A number of 40 musculo-skeletal traumas were registered in the Elba Timisoara basketball team in September 2006 - April 2009. Most lesions were...
caused by direct contact with the opponent, unreasonable violence and aggression on the basketball court and ball contact and hits.

The pathological aspects concern mainly the ligaments and the joint system.

The most common injuries are sprains of the ankle (tibio-tarsal sprains), knee and phalange, overstress traumas, tendinitis, tenosynovitis, enthesitis (Achilles and kneecap tendons, elbow and shoulder), muscle ruptures and myositis.

Other injuries were contusions (which occur frequently, though most of them are minor) and effort-related lumbar pains that cause pain and paravertebral muscle contraction.

The results of our study have revealed a larger number of traumas in the players than the literature of the field. The high trauma incidence is caused by an association of controllable factors:
- insufficient effort capacity
- hypocalcemia
- kyphosis, lordosis
- improperly treated previous traumas
- errors in the training methods
- inadequate basketball court

Given the importance of primary and secondary prevention, this paper brings forward a coherent programme of complex exercises focusing on the groups of muscles and joints involved in specific types of motility required by different sports.

The exercises were chosen so as to increase muscular balance, articular mobility and improve muscle and ligament flexibility (major factors in trauma prevention).

A complex of exercises

- **Warming-up** - 10 minutes’ running (cross-over steps, backward running)
- **Stretching** (for the cervical region, the body, the arm and forearm muscles, the shoulder muscles, the inferior limb muscles and joints; they can be done individually or with a partner).
  1. Bend your head forward, backward, to the right, to the left. Turn your head to the right, to the left (3 x 7-10 seconds, 2-4 seconds break).
  2. Stand with your legs apart and stretch your right arm to the left. Place your right arm across your body at shoulder height and gently pull it toward your body with your left hand, holding your left forearm at the right elbow level. (3 x 7-10 seconds, 4 seconds break). Repeat for the left arm.
  3. Stand with your legs apart and hands behind your back. Clasp your right wrist with your left hand and pull it downwards while bending your head to the left (2 x 10-15 seconds, 4 seconds break). Switch arms and repeat.
  4. Stand with your legs apart and raise your right arm. Clasp your hands at shoulder blade level. (2 x 10-15 seconds, 2-4 seconds break). Then raise your left arm and do the same.
  5. Stand with your legs apart; bend your trunk with arms raised and palms on the stall bar. Keep your back straight. Then bend your trunk with hands on your hips. (2 x 15 seconds, 4 seconds break).
  6. Stand with your legs apart, bend your trunk and touch the ground with your palms. Keep your back straight (2 x 15 seconds, 2-4 seconds break).
  7. Stand with your legs apart. Bend your trunk to the left, raise your right arm, keep your left arm relaxed on the ground (2 x 15-25 seconds, 2-4 seconds break). Then bend your trunk to the right.
  8. Sit down, bend your left knee and cross it over your right knee, with your sole on the ground. Turn your trunk to the left while touching your left knee with your right elbow and leaning your left arm behind on the ground (2 x 15-25 sec, p 2-4 sec). Then bend your right knee and repeat.
  9. Lie down on your abdomen and raise your arms.

Do trunk extensions (3 x 10-15 seconds, 2-4 seconds break).
  10. Forward lunges alternating right and left foot (3 x 15-25 seconds, 2-4 seconds break).
  11. Stand and take a step to the right, flexing your right leg and stretching the left one. (3 x 15-25 seconds, p 2-4 seconds). Switch sides and repeat.
  12. Lunge forward, stretch your leg behind, and turn your trunk to the right with your right hand on your right knee and your left hand on the ground. Switch legs and repeat.

- **Non-specific fitness exercises**:
  - Running and jumping (pawing drill, high knees drill, heel kicks, skipping), 2 x 30 m, 30 seconds break.
  - Standing with your legs apart, jump with your hands over your head, bend your trunk laterally, and rotate your trunk, 2 x 8 times, 10-15 seconds break.
  - Sit-up jumps for lower limb extension and contracting abdominal muscles, 2 x 8 times, 10-15 seconds break.

- **Warm-up exercises typical of every sport following general warm-up.** They warm-up those parts of the body that are used mostly while practising a certain sport.
  - Volleyball: shoulder rolls (headers), passing, shooting etc

- **Weight lifting and resistance exercises.** This programme takes place weekly and involves isotonic and isometric exercises.

- **Taping and strapping**

The following rules will be obeyed:
- exercise to be repeated 3-4 times only
- slow speed
- for weight lifting, 80% maximum lifting load

**OBSERVATIONS**

The stretching exercises became part of the training sessions to prepare the body for effort. They have a positive effect on the amplitude of the movements (make movements easier) and the muscle groups that are involved in common warm-up (intervertebral, intercostal, scapulo-humeral and abdominal oblique muscles).

These exercises have both an immediate effect and a cumulative effect in time, improving articular mobility and muscle and ligament elasticity – major factors in trauma prevention.
Conclusions and suggestions

Sport games are a chain of individual and collective movements involving high speed, force and precision. Body stress is variable: short periods of maximum stress followed by reduced effort, using a metabolic model of aerobic and anaerobic exercises.

The locomotor system (the knees, the ankles, the upper limbs, the scapulo-humeral and interphalangeal joints, the spine, especially the lumbar region) is subjected to overstress.

In addition to specific training, basketball and volleyball players need strong, mobile joints and well-developed muscles that allow a high level of quality movements both for performance and injury prevention.

The final conclusion will be drawn by monitoring the trauma incidence of the study teams after the suggested programmes have been applied.

The results of our study underline the importance of both primary prevention that eliminates factors causing injuries and secondary prevention, in the case of injury relapse (elastic contention, proper and total trauma rehabilitation and gradual training resume).

Suggestions

Given the importance of primary and secondary prevention, this paper brings forward a coherent programme of complex physical exercises focusing on the groups of muscles and joints involved in specific types of motility required by different sports. The exercises were chosen so as to increase muscular balance, articular mobility and improve muscle and ligament flexibility (major factors in trauma prevention).

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CHANGE OF BLOOD SE LEVELS AFTER HIGH LEVEL AEROBIC EXERCISE

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² Gazi University, Faculty of Education, Department of Chemistry, Education Ankara/TURKEY

ABSTRACT
Aim: This study was carried out to determine the effect of high level aerobic exercise upon the antioxidant Se levels. Method: the study was participated by 16 healthy male university students with an average age of 20.09 ± 1.22 years. The participants were given a selenium free diet for a week before the start of the study. Results and discussions: There were 5 cc venous blood samples taken from the participants before and after they were subjected to 20 m exhaustive shuttle runs after a resting period of 15 minutes. The selenium determinations were carried out by ICP. The results showed that the selenium levels showed statistically significant decrease between pre and post exercise values (p<0.01). The maximal aerobic exercise was observed to decrease the Se levels in blood. Key words: blood, level, selenium.

Introduction
Selenium is an essential micronutrient for the human body when taken in appropriate doses. Selenium attaches the proteins to form anti oxidant selenoproteins. During physical activity, the oxidative stress due to excessive oxygen consumption is compensated by higher levels of free radical scavengers and by an increase in the activities of antioxidant enzymes such as glutathione peroxidase enzyme containing Se (PM. Clarkson, HS, Thompson, 2000, R.R. Jenkins. 1993). In association with vitamin E and glutathione, Se is anticarcinogenic and delays aging and degenerative neurological diseases. It protects the muscles, heart and arteries and helps combat inflammatory and allergic diseases (C. Mates, JM. Perez-Gomez, M.Blanca, 2000, R.J.Shephard, P.N.Shek, 1998). Few results are available concerning Se concentration during or following physical activity, and the levels of glutathione peroxidase reported in athletes are divergent (R.J.Maughan, 1999, GD.Brites, PA.Avelson, MG. Christiansen, et al,1999). Endurance training may induce heterogeneous effects on oxidative and antioxidant adaptation independently of Se supplementation (GD.Brites, PA.Avelson, MG. Christiansen et al,1999). The daily Se need is estimated to be 55 micrograms [http://www.food-info.] However, athletes are generally not affected by Se deficiencies (R.J.Maughan, 1999). It is known that high level aerobic exercises trigger oxidative stress and amount of Se needed. This study was carried out to determine this effect.

Material And The Method
Selection of the participants
The study was carried out on 16 male participants studying in various faculties of Ankara Bilkent University who did regular sports at fitness level. All the participants were volunteered to participate the study and they were briefed about the importance of the study and rules they had to obey. The participants were given a selenium free diet for a week.

The physical and physiological test
Age, height and weight of the participants
The ages of the participants were recorded in years, and the heights were determined with bare feet in meters. The weights were measured with bare feet and wearing a short only in kg with an accuracy of 0.01 kg. All the measurements were taken one day prior to the start of the test.

Collection of the blood samples
After the determination of the anthropometric features of the participants there were 5cc of blood was collected from each participant at rest. The participants were subjected to 20 m shuttle runs to test their aerobic limits after 30 minutes of rest. There were 5 cc bloods collected after these runs.

20 Meter shuttle runs and the determination of max VO2
The maxVO2 values of the participants which show the cardiovascular aerobic capacity were determined in ml.g/min with shuttle runs. The results were evaluated from the related tables. The hearth beat rates of the participants were taken after the runs in order to determine their exhaustion levels.

Statistical analyses of the data
The analysis of the data obtained was carried out by the use of SPSS 10.0 statistical software. The comparison of the pre and post training measures was made by paired simple t-test.

Experimental method
ICP-OES Protocol microwave digestion procedure
On the 1 mL blood samples was added 2.0 mL HNO₃ and the samples were digested in Berghof / Microwave Digestion system MWS-3 microwave apparatus. The microwave were kept at 160 °C for five minutes and at 190 °C, 100 °C and 80 °C for ten minutes each. The totally digested samples were diluted to 10 mL with the addition of deionized water 18.3 mohm cm⁻¹.

Selenium analysis with the use of ICP-OES apparatus
Se analyses were carried out in the laboratories of Science Faculty of Gazi University. There were 100,250,500 and 750 ug/L standard Se
solutions were prepared from its 1000 ppm standard solutions and a calibration curve was plotted. Then selenium analyses of each sample was performed by making at least five readings. The results are tabulated in Table 2 Selenium was converted to its hydride before the analyses. 1 mL of 10% HCL was added onto 1 mL of digested blood samples and kept at 90 °C for 20 minutes. The samples were analyzed with the use of Perkin Elmer Optima 5300 DV model ICP-OES after they were cooled down.

Results

Table 1: Physical parameters of the participants.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mean values (X)</th>
<th>SD</th>
<th>Minimal</th>
<th>Maximal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (year)</td>
<td>22.69</td>
<td>1.92</td>
<td>20.00</td>
<td>26.00</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>181.50</td>
<td>4.00</td>
<td>174.00</td>
<td>190.00</td>
</tr>
<tr>
<td>Body weight (kg)</td>
<td>80.69</td>
<td>2.89</td>
<td>76.00</td>
<td>87.00</td>
</tr>
<tr>
<td>MaxVO2 (ml. kg/dk)</td>
<td>50.01</td>
<td>3.07</td>
<td>42.4</td>
<td>53.7</td>
</tr>
</tbody>
</table>

Table 2: The statistical analysis revealed that there is a significant difference between the pre and post-training Se values of the participants p< 0.01

<table>
<thead>
<tr>
<th>Element</th>
<th>N</th>
<th>Pre training mean value</th>
<th>SD</th>
<th>Post training mean value</th>
<th>SD</th>
<th>X₁−X₂</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selenium (μg/L)</td>
<td>16</td>
<td>339.71</td>
<td>86.41</td>
<td>274.95</td>
<td>41.22</td>
<td>64.76</td>
<td>.000</td>
</tr>
</tbody>
</table>

Discussion

Although the results in literature are contradictory it was clearly visible that there was an important decrease in the blood selenium levels of the participants after the test. This was attributed the increased oxidative stress induced upon them as a result of aerobic exercise. It can be concluded that the athletes should be supplemented with appropriate doses of selenium before aerobic exercises.

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The education in every country admits to educate the human force in the qualification in order to operate the systems which are vital for the society as a task. In order that the education completes this task, the educational institutions’ functions, operations and educational programs are arranged so that they meet the needs of individuals and social requirements. The physical education is the integral part of the common education. Both educations, which there is a parallelism between their objectives, bear a qualification which is complement to each other. It has been discussed to arrange the educational programs according to the today’s needs in our country, and the primary and secondary educational programs have been changed based on the developments in the world and Turkey. The views of the physical education teachers, who will apply this program, about the new program are very important. Therefore, whether the views of the physical education teachers about the dimension of the material and measurement evaluation of the new educational program show difference based on the sexes and seniorities of the teachers is a subject which must be examined.

Methods
Survey included total 110 physical education teachers (65 males, 45 females). A scale in the Likert type in five has been prepared in order to determine the views of the physical education teachers about the dimension of material and measurement evaluation of the new educational program of the physical education course of primary school. In the scale, 12 cases have been presented to the teachers about the material and measurement evaluation dimension of the program, and it has been requested that the teachers have stated their views about those cases. It has been found that the scores of the permanent variables did not show meaningful difference between the groups, and two groups have been tested with t-test, three groups with single direction variance analysis, and in order to determine the difference between the groups, Scheffe-Dunnett C Multiple Comparison Test has been used. The significance level in the survey has been accepted as 0.5.

Results
As a result, the male teachers think that they experience lesser problems than the female teachers in the measurement evaluation dimension of the primary school’s new physical education course program. The teachers, who have the 11–15 years of seniority, find the measurement evaluation dimension more positive than the teachers who have the seniority between 1–5 years and 6–10 years, and the views of the teachers about the material dimension of the primary school’s new physical education course program did not change much based on their seniorities. And it has been determined that the male teachers have experienced lesser problems than the female teachers in the measurement evaluation dimension of the primary school’s new physical education course program.

Discussion
According to the study by Yaşar et al. (2005), the teachers need the education about the measurement evaluation dimension of the program. According to the study by Gözütok et al. (2005), it has been stated that the teachers found themselves more unqualified about the measurement evaluation subject than about other dimensions of the program. According to the study by Yaşar et al. (2005), it has been found that the teachers needed the education about the educational technologies of the program and material development dimension, and according to the study by Özşaker
Introduction

The education in every country admits to educate the human force in the qualification in order to operate the systems which are vital for the society as a task. In order that the education completes this task, the educational institutions’ functions, operations and educational programs are arranged so that they meet the needs of individuals and social requirements. The physical education is the integral part of the common education. Both educations, which there is a parallelism between their objectives, bear a qualification which is complement to each other. It has been discussed to arrange the educational programs according to the today’s needs in our country, and the primary and secondary educational programs have been changed based on the developments in the world and Turkey. The views of the physical education teachers, who will apply this program, about the new program are very important. Therefore, whether the views of the physical education teachers about the dimension of the material and measurement evaluation of the new educational program show difference based on the sexes and seniorities of the teachers is a subject which must be examined.

Material and Method

110(65 male,45 female) physical education teachers participated the research. A scale of five Likert type was prepared to determine the Physical Education teachers views on the new teaching programme of material and testing/measurement & evaluation in primary schools Physical Education lessons. In the scale, 12 situations at the material and testing/measurement & evaluation level were given and the teachers were asked to give their views about these situations. Whether the results of the continuous variables have a meaningful difference between the groups was tested by T test for two groups, one way variance analysis for three groups. To find the difference between the groups, Scheffe-Dunnet C Multiple Comparison Test was used. The level of significance was regarded as .05. The research environment consists of physical education teachers teaching at 89 official primary schools in Keçiören, the district of Ankara in 2007-2008 Education year. This research is about the programme which has been in use for two years. To determine the Physical Education teachers’ views on the new Primary Schools Physical education Teaching Programme, a scale has been developed. The scale is shown in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Material and Measurement Evaluation</th>
<th>I don’t agree at all</th>
<th>I don’t agree</th>
<th>I am not sure</th>
<th>I agree</th>
<th>I absolutely agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I think that the technological hardware is enough to carry out the new education program of the physical education course for primary schools.</td>
<td>39 35.5</td>
<td>52 47.3</td>
<td>7 6.4</td>
<td>12 10.9</td>
<td></td>
</tr>
<tr>
<td>2. I think I can benefit from technological tools adequately.</td>
<td>19 17.3</td>
<td>39 35.5</td>
<td>9 8.2</td>
<td>41 37.3</td>
<td>2 1.8</td>
</tr>
<tr>
<td>3. I think that my students can benefit from technological tools adequately.</td>
<td>25 22.7</td>
<td>52 47.3</td>
<td>13 11.8</td>
<td>20 18.2</td>
<td></td>
</tr>
<tr>
<td>4. I think the sources are enough for the preparation of the needed material.</td>
<td>18 16.4</td>
<td>41 37.3</td>
<td>29 26.4</td>
<td>19 17.3</td>
<td>3 2.7</td>
</tr>
<tr>
<td>5. I have financial problems when it comes to making copies of the measurement and evaluation forms.</td>
<td>4 3.6</td>
<td>20 18.2</td>
<td>17 15.5</td>
<td>54 49.1</td>
<td>15 13.6</td>
</tr>
<tr>
<td>6. I think the existence of many measurements and evaluations creates a problem.</td>
<td>11 10.0</td>
<td>55 50.0</td>
<td>31 28.2</td>
<td>8 7.3</td>
<td>5 4.5</td>
</tr>
</tbody>
</table>
7. I’m able to use observation forms, performance tests and scales adequately. 6 5.5 28 25.5 48 43.6 28 25.5
8. I have problems in pursuing the classifying of the students product files. 12 10.9 56 50.9 19 17.3 21 19.1 2 1.8
9. I have problems reflecting the measurement results that are gotten from different measurement tools to grades. 6 5.5 52 47.3 26 23.6 24 21.8 2 1.8
10. I think that the measurement and evaluation system is complex. 17 15.5 36 32.7 14 12.7 37 33.6 6 5.5
11. I have problems in performance exercises. 6 5.5 64 58.2 15 13.6 22 20.0 3 2.7
12. I think that it is a problem that performance exercises are done by families. 31 28.2 59 53.6 14 12.7 6 5.5

The material dimension of this scale has been assessed as the first sub problem and the measurement and evaluation dimension has been assessed as the second sub problem.

1. Findings about the first sub problem
The first sub problem is “the views of the physical education teachers about the material dimension of the physical education course of the new education program of primary schools.”
The material dimension of the study was expressed as follows:

Table 2
The differences of the views of teachers about the material dimension of the program according to their genders

<table>
<thead>
<tr>
<th>Material</th>
<th>Sex</th>
<th>N</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>65</td>
<td>13,17</td>
<td>3,54</td>
<td>.873</td>
<td>.385</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>45</td>
<td>12,58</td>
<td>3,43</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In table 2 views of teachers about the material dimension don’t show a statistically meaningful difference according to their genders.

b. The question; “does the material dimension of the physical education course of the new education program of primary schools show differences according to the seniority of the teachers?” was analyzed with statistical processes and a one-way variance analysis (Anova). According to the test the following findings were gotten and shown in table 3:

Table 3
The differences of the views of teachers about the material dimension of the program according to their seniority

<table>
<thead>
<tr>
<th>The source of the variance</th>
<th>KT</th>
<th>sd</th>
<th>KO</th>
<th>f</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>In groups</td>
<td>86.533</td>
<td>4</td>
<td>21.633</td>
<td>1.831</td>
<td>.128</td>
</tr>
<tr>
<td>Inside groups</td>
<td>1240.885</td>
<td>105</td>
<td>11.818</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1327.418</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>seniority</th>
<th>N</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 1-5 Years</td>
<td>11</td>
<td>11.64</td>
<td>2.97</td>
</tr>
</tbody>
</table>
In table 3 views of teachers about the material dimension don’t show a statistically meaningful difference according to their seniority.

2. Findings about the second sub problem

The second sub problem is “the views of the physical education teachers about the measurement and evaluation dimension of the physical education course of the new education program of primary schools.”

The testing/measurement and evaluation dimension of the study has been expressed as follows:

a. Does it show differences according to the gender of the teachers?

b. Does it show differences according to the seniorities of the teachers?

a. The question; “does the testing/measurement and evaluation dimension of the physical education course of the new education program of primary schools show differences according to the gender of the teachers?” was analyzed with an independent t test. According to the test the following findings were gotten and shown in table 4:

Table 4
The differences of the views of teachers about the material dimension of the program according to their genders

<table>
<thead>
<tr>
<th>Material</th>
<th>2. 6-10 Years</th>
<th>4. 16-20 Years</th>
<th>5. 21 and more</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.11-15 Years</td>
<td>18</td>
<td>13.55</td>
</tr>
<tr>
<td></td>
<td>4. 16-20 Years</td>
<td>7</td>
<td>15.57</td>
</tr>
<tr>
<td></td>
<td>5. 21 and more</td>
<td>16</td>
<td>13.37</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>12.93</td>
<td>3.49</td>
</tr>
</tbody>
</table>

p<.05

In table 5 views of teachers about the dimension of the measurement and evaluation doesn’t show a statistically meaningful difference according to their seniority.

Results

1.a) The question which is under the scope of the first sub problem; “does the material dimension of the physical education course of the new education program of primary schools show differences according to the gender of the teachers?” was analyzed with an independent t test. According to the test the following findings were gotten and shown in table 2:

Table:2 After analyzing the question in a .05 significance level with a t test, it was found that there isn’t a meaningful difference between the material dimension and the gender variables (t= .873; p> .05).

If we look at the data that were gotten we see that the arithmetical average of the male teachers is $\bar{x}_m$ = 13.17 and that their standard variance is $S_m$=3.54, whereas the arithmetical average of the female teachers is $\bar{x}_f$ = 12.58 and their standard variance is $S_f$=3.43. According to this result it is seen that the average and standard variance distribution values between the male and female teachers are comparable and despite the fact that the average of the male teachers is higher than the female teachers, the difference between these averages doesn’t express statistically a meaningful difference.
study of Özsaker (2001) in which the views of the teachers are given, it is stated that the most important reasons why the physical education course doesn’t reach its goal in official schools is that the course hours are inadequate- % 46 percent- and there aren’t sufficient tools and devices- % 23 percent. In the study of Köksal (1995) it was found out that the teachers don’t use course tools and devices in an adequate level and that this problem stems from the inadequacy of materials.

2. a) The question which is under the scope of the second sub problem; “does the views of the teachers about the measurement and evaluation dimension of the physical education course of the new education program of primary schools show differences according to the gender of the teachers?” was analyzed with an independent t test. According to the test the following findings were gotten and shown in table 4.

After analyzing table 4 we see a t test that was made with a .05 significance level about the views of the teachers on the measuremant and evaluation dimension of the physical education course program, it was found that there isn’t a meaningful difference between the measurement-evaluation dimension and the gender variable. This difference is in favour of the male teachers ($t= 5.657; p< .05$). If we look at the data that were gotten we see that the arithmetical average of male teachers is $\bar{x} = 19.48$ and that the arithmetical average of female teachers is $\bar{x} = 15.51$. In other words the average proportion of male teachers is higher than the average of female teachers. According to this result it is seen that there is a meaningful difference in the averages in favor of the male teachers. Average and standard variance distribution values between the male and female teachers are comparable and despite the fact that the average of the male teachers is higher than the female teachers, the difference between these averages doesn’t express statistically a meaningful difference. According to these data it can be said that the male teachers have fewer problems than the female teachers related with the measurement and evaluation dimension of the new first school physical education course program.

b) The question which is under the scope of the second sub problem; “does the views of the teachers about the measurement and evaluation dimension of the physical education course of the new education program of first schools show differences according to the seniority of the teachers?” was analyzed with statistical processes and a one way variance analysis (Anova). According to the test the following findings were gotten and shown in table 5:

After analyzing table 5 in an Anova test that was made with a .05 significance level about views of the teachers about the measuremant and evaluation dimension of the new primary school physical education course program, because of the formula $[f_{1, 105}] = 8.475$, $p< .05$ it is found that there isn’t a
meaningful difference between the measurement-evaluation dimension and the seniority variable. According to these results it can be said that the views of the physical education teachers about the material dimension of the physical education course of the new education program of primary schools and the difference between the seniorities of the teachers are significant.

The Scheffe – Dunnett C multiple comparison tests were made to see between which groups the meaningful differences are found. According to the test results the difference lies between 1–3 and 2–3. According to this result the points of the measurement and evaluation dimension of teachers with an experience of 1-5 years is ($\bar{X} =$17.09), the points of the measurement and evaluation dimension of teachers with an experience of 11-15 years is ($\bar{X} =$21.67), the points of the measurement and evaluation dimension of teachers with an experience of 6-10 years is ($\bar{X} =$16.33); so there is a meaningful difference between the views of teachers with an experience of 11-15 years is more positive than the dimension of teachers with experiences of 1–5 years and of 6–10 years.

According to the study of Yaşar and his friends (2005) teachers need to be educated about the measurement and evaluation dimension of the program and that they also definitely need to be educated in subjects like observation, work file, discussion, experiments, projects, study papers, students product file (portfolio) and performance evaluation which are all related with the dimension of the measurement and evaluation. According to the works of Gözütok and his friends (2005), teachers found themselves more inadequate in the subject of measurement and evaluation than in the other dimensions of the program. According to works of Yaşar and his friends (2005), it came out that the teachers need to be educated about the measurement and evaluation dimension of the program and that they also need to be educated in order to use the tools and devices for the measurement and evaluation dimension.

Suggestions

The student observation and measurement-evaluation forms should be arranged and their number should be less than before, the number of students in classes should be reduced, the assessment of homework and forms of students should be moved to an internet environment and the application period of the physical education course should be increased.

REFERENCES


THE EFFECT OF EIGHT-WEEK PROPRIOCEPTION TRAINING PROGRAM ON DYNAMIC POSTURAL CONTROL IN TAEKWONDO ATHLETES

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ABSTRACT
Objective: The purpose of this study was to examine the effects of 8-week training proprioception program on dynamic postural control in active taekwondo athletes.

Procedures and Methods: In this study, training group consisted of 13 male and 13 female taekwondo athletes whereas control group consisted of 8 male and 8 female taekwondo athletes, 42 taekwondo athletes in all. The subjects of dynamic postural control performances were analyzed by Biodex marked device (Biodex, Inc., Shirley, and NewYork 950-302). The measurements were taken twice as before and after proprioception training program applied three times in a week and per week of 8. Package program SPSS for Windows 15.0 was used in the evaluation of data statistically. The results were evaluated at the significance level of 0.05.

Results: At the end of training program, while female taekwondo athletes of experimental group were observed to have more performance in dominant, non-dominant leg dynamic postural control test (p<0.05), no difference was determined in double –leg (p>0.05).

It was seen that there was no performance difference in post-test double leg, dominant and non-dominant leg dynamic postural control scores of female taekwondo athletes of control group (p>0.05). Whereas a significant difference was observed in double-leg, dominant and non-dominant leg dynamic postural control scores gotten at the end of training program applied to the experimental group of male taekwondo athletes (p<0.05), no significant difference was found in dynamic postural control test scores of control group (p>0.05).

Conclusion: In conclusion, it was thought that proprioception training program improves of female and male taekwondo athletes dynamic postural control performances.

Key Words: Proprioception, Dynamic Postural Control, Taekwondo.

INTRODUCTION
Two aims of postural control including the control of body position in space are accommodation and balance. Postural accommodation is described as the ability of maintain the suitable relation between body and body parts, the conditions in special tasks (DA. Winter, et all., 1998). Balance is a general term expressing to the dynamic preventing falling into place of body mass (T. Aydin, et all., 2002). It means individuals’ continuing their body positions in stable and different conditions related to the environment. In rest and activity times, it is the postural accommodation for displacement in the centre of gravity affecting body (K.N. Clark, 2004).

In sports, balance requires a complicated accommodation of inner and exterior inputs. Generally balance is controlled by sensory inputs, central process, neuromuscular answers, vestibular, visual and proprioceptive system (E. Aydog, et all., 2006). Each of the sports techniques includes balance in some way. Balance plays an important role in keeping body composition that is necessary for the successful performance in sports (M.A. Sandrey, 2006).

Postural control and proprioception are two dependent variables examined under balance training. It has been determined that postural control and proprioception are often developed through neuromuscular and proprioceptive training programs (A.S. Kemerley, 2001). The aim of proprioceptive training is to improve neuromuscular system for complicated activities. While static and dynamic activities are being applied, nervous system enables body to keep its balanced position and makes information from periferal receptors through efferent ways possible (S.G.T. Balter et all., 2004, J.L. Huston, et all., 2005, S.S. Salaj, D. Milanovic And I. Jukic, 2007).

Taekwondo is a movement sports and the balance which is important for athletes is the dynamic balance. Dynamic balance is required for giving a kick. Here, body is exposed to an exterior load, the centre of gravity always changes and generally increases. The feet are used as the most important factor in keeping balance (Kemerley A.S., 2001, Stefanek, K.,1998).

Stefanek says that dynamic postural control and balance are quite important for a taekwondo athlete and effective factors in applying techniques. He claims that the athlete should stand on support leg still in order to apply an effective technique to the target area. He

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also points out that many taekwondo techniques are rather difficult and they potentially include both flexion and extension and dynamic postural control has an important role to apply true kick techniques in taekwondo sports (K. Stefanek, 1998).

The aim of this study is to examine the effect of eight-week proprioception training on dynamic postural control in active taekwondo athletes.

**MATERIAL AND METHOD**

**Subjects**

21 males and 21 females actively doing sports, 42 healthy athletes in all, participated in the study. The training group consisted of 13 male and 13 female taekwondo athletes and the control group consisted of 8 male and 8 female taekwondo athletes.

The subjects were chosen from the athletes who didn’t have neurological, vestibular-visual illness in last one year and a serious lower extremity injury in last 6 months. Before application, subjects were told about the tests in the study and they were made to sign a document showing their volunteering. Ethical committee approval no 2009/186 was taken from Seljuk University Meram Medicine Faculty.

**Postural control measurements**

Biodex marked postural control system (Biodex, Inc., Shirley, New York 950-302) was used for dynamic postural control measurements. The measurements were done twice as before and after proprioception training program applied three times in a week and for 8 weeks. Subjects participated with suitable sports clothes for balance tests and as barefoot. Subjects were allowed to do enough practises to minimize the effect of learning before test.

The foot coordinates of subjects were determined and the same coordinates were used in all tests. Subjects applied the test as the knees were in a slight flexion 45, on dominant and non-dominant leg, the other leg was in 90° flexion from knee and arms were crossed on chest. During the test, the screen was closed and the subjects were told to look at a fixed point at eye level and one meter away. Dynamic control test was applied as at 3rd level , with open eyes and on double leg, dominant and non-dominant leg. 3 repetitions for 20 seconds were done for each balance parameter. Breaks for 30 seconds were given between tests.

**Proprioception Training Program**


8 – week process consisted of 5 –minute warming up, 20 –minute proprioception training program and 5-minute cooling parts and was for 30 minutes in all and applied 3 times in a week. Training sets were started with 10 seconds,6 repetitions and 10-second breaks between sets. After second week, repetitions numbers were slightly decreased, the time of standing on wobble board and break-time were increased 5 seconds and in last week ,the subjects applied each exercise on wobble board with 35 seconds,1 repetition and 35-second break. The subjects applied training in first 4 weeks as open-eyed and closed-eyed on smooth surface and wobble board. After 5 th week, subjects went on the training only on wobble board.

**Statistical analysis**

SPSS for Windows packet program was used in evaluating and calculating the acquired data. The measured variables were summarised by giving the average and standard deviation. The normality distribution of measured parameters was determined through Shapiro-Wilks test. Since data didn’t have normal distribution, non-parametric tests were preferred in comparisons between groups. In pre-exercise and post-exercise, Mann-Whitney U test was used in
al control was

tural controls were measured

J.A. ores

stural control. In the research, the control results of the subjects were gotten

e found to have higher performance in

retraining program increased the

ificant difference

e these findings show parallelism with

2001). These adaptations happen through ankle, knee

centre on support surface or main

proprioception training program on dynamic postural

scores (p>0.05).

In Table 3, the comparison of pre-test, post-
dynamic postural control scores of female
taekwondo athletes is seen. It has been found that
double-leg, dominant leg, non-dominant leg dynamic
postural control scores between experimental and
control group have no significant difference (p>0.05).

The comparison of dynamic postural control
scores before and after training program of
experimental and control group of female taekwondo
athletes is seen in Table 4. Whereas no significant
difference is seen in double-leg dynamic postural
control scores (p>0.05), a significant difference has been
found between dominant and non-dominant leg
pre-test and post-test dynamic postural control scores
(p<0.05).

In table 5, the comparison of pre-test, post-
test dynamic postural control scores of experimental
and control group of male taekwondo athletes is seen.
No significant difference has been found in double-leg
and dominant leg pre-test dynamic postural control
scores between experimental and control group
(p>0.05). As for post-test dynamic postural control
scores, whereas a significant difference has been found in
double-leg and dominant leg between experimental
and control group (p<0.05), no significant difference has been
determined in non-dominant leg dynamic
postural control scores (p>0.05).

In table 6, the comparison of before and after
training program dynamic postural control scores of
experimental and control groups of male taekwondo
athletes is seen. Whereas a significant difference is seen in
all dynamic postural scores of experimental
group (p<0.05), no significant difference has been found in control group (p>0.05).

DISCUSSION and CONCLUSION

In this study, examining the effects of 8-week
proprioception training program on dynamic postural
control in active taekwondo athletes has been aimed.

Postural control and balance are described as the
ability of making adaptations to keep body’s gravity
centre on support surface or maintain these adaptations
(M.A. Hoffman, V.G. Payne, 1995, A.S. Kemerley,
2001). These adaptations happen through ankle, knee
and hip’s movements and may be destroyed when
gravity centre and support surface are damaged (Kean
C.O., 2006). In researches, postural control was
examined with the aim of applying various training
programs in individual and team sports, preventing its
effect and injuries (R. M. Bert, et all., 2005, R.K.
Chong et all., 2001, M. V. Paterno, Et all. 2004, K.
Söderman, et all., 2000, E. Verhagen, 2004). In these
studies, it was reported that at the end of balance
trainings carried out, force improved and muscular
imbalance decreased (J.A. Balogun, et all. 1992, H.C.
Heikamp, et all. 2001).

In this study, when the dynamic postural control
scores measured after training program were examined, it
has been found that experimental group taekwondo
athletes have higher dynamic postural control
performance than control group and they are
statistically significant. Although taekwondo naturally
requires basic posture and techniques improving
dynamic postural control, it has been determined that
the proprioception training program applied to the
experimental group improves taekwondo athletes’
dynamic postural control performances.

In their studies where they investigated the
effect of proprioception training program on healthy
people, Hoffman and Payne (1995) applied a training
program being for 10 weeks and 3 days in a week to the
experimental group. Pre-test, post-test dynamic
postural control results of the subjects were gotten
through Kistler Force Platform. They found that
dominant leg dynamic postural control scores of
experimental group significantly improved when
compared to the control group. Also, they reported that
proprioception training program increased the
dynamic postural controls of subjects and could be
useful for person movement (Hoffman and Payne,
1995).

In their studies on figure skaters, Kovacs and
his friends researched the effect of neuromuscular
training program on postural control. In the research,
whereas experimental group (n=22) applied
neuromuscular program for 4 weeks and 4 days in a
week, the control group (n=22) applied basic training
program only for figure skating. Before and after
training, the subjects’ postural controls were measured
on a force platform and in the light of the acquired
results; experimental group was found to have rather
improved their dynamic postural control performances
when compared to the control group (E.J. Kovacs, et
all. 2004). Beside these findings show parallelism with
the acquired results, they also support proprioception
training program in addition to the athletes’ training
programs that are peculiar to their own branches.

Whereas experimental group female takwondo
athletes were found to have higher performance in
dominant, non-dominant leg dynamic postural control
test after training program, no difference was found in
double-leg.

In their studies, Paterno and his friends (2004)
examined the effect of 6-week neuromuscular training
program on female handballers’ postural controls. 41
female handballers studying in high school participated
in research and a 6-week and 20-minute
proprioception training program was applied to the athletes 3 days in a week. The postural controls of all athletes were measured by Biodex Stability System. After training program, they found that there were important improvements statistically about handballers’ double-leg, dominant and non-dominant leg postural controls. Also, they described balance training as the exercises that could be included in planned and various trainings that were focussed on maintain the balance without change on support surface and postural awareness (M.V. Paterno, et all., 2004).

In a research carried out by Holm and his friends (2004), 35 Elite female handballers participated and proprioception training program was applied to the players. The handballers’ dynamic postural controls were measured by KAT (Kinesthetic Ability Trainer) 2000 device before and after the training. At the end of pre-test, post-test comparison, they reported that the applied training program improved female handballers’ dynamic postural controls and prevented possible injuries (I. Holm et all., 2004). These results of the research show parallelism with the findings of our study.

Lephart and his friends (1997) reported that regular training increased the development in neuro-sensory and motor ways and decreased the risk of injury by affecting proprioception sense positively (S.M. Lephart, et all., 1997).

A significant difference was found in double-leg, dominant and non-dominant leg dynamic postural control scores acquired at the end of the training program applied to the experimental group of male taekwondo athletes. Also, whereas a significant difference was found in double-leg and dominant leg in the comparison of post-test dynamic postural control scores of experimental and control groups, no difference was seen in non-dominant leg. In taekwondo trainings, generally dominant leg and fists are effectively used. Whereas dominant leg techniques are hard and effective, non-dominant leg techniques are weaker and away from necessary technical level. In our study, at the end of comparison of experimental and control groups’ dynamic postural control scores after proprioception training program; the reason why no significant difference was found in non-dominant leg dynamic postural control scores is thought to result from athletes’ using their bodies unilaterally.

Gioftsidou and his friends (2006) examined the effect of balance program on upper-level tennis players, while control group only applied tennis training, one of the experimental groups applied balance program before tennis training and other applied after tennis program. The balance performances of all tennis players participated in the study were measured by Biodex Stability System and they reported an important development in dynamic balance performances of experimental group (V.J. Maliou, et all. 2008).

In a research where the effect of proprioception training program was examined on dynamic postural control, while proprioception training program was being applied to the football experimental group 2 days in a week and for 20 minutes during the competition season, the control group only continued the football training. Also, dynamic postural control tests of footballers were measured by Biodex Stability System. At the end of the research, it was determined that proprioception training program improved footballers’ dynamic postural control performances and the rate of injury decreased (C. Hrysomallis, 2008). It is seen that the results of the research show parallelism with our study and support the findings of our study.

The limitedness of this research is that the athletes did the training in two different halls and with two different groups of athletes and training numbers were the same. It is thought that taekwondo athletes’ were being trained by only one trainer in later studies will reflect the possible changes on postural control performance better.

To conclude, it has been observed that proprioception training program improves the dynamic postural controls of male and female taekwondo athletes. Giving place to the studies that can improve proprioceptive features in Taekwondo trainings may help the athletes increase their postural controls to the maximum level. As a result of this, it is thought that the performances about technical applications of taekwondo athletes in trainings and competitions may increase and possible disabilities may be prevented.

**Table 1: Female and Male of Taekwondo Athletes Demographic Characteristics (Mean ± SD)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Groups</th>
<th>N</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Year)</td>
<td>Experiment</td>
<td>13</td>
<td>20.92 ± 1.55</td>
<td>20.23 ± 2.80</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>8</td>
<td>20.75 ± 1.66</td>
<td>19.87 ± 2.29</td>
</tr>
</tbody>
</table>
Table 2: All of Taekwondo Athletes Comparison Pre-Test And Post-Test of Dynamic Postural Control Scores

<table>
<thead>
<tr>
<th>Dynamic Postural Control</th>
<th>Groups</th>
<th>Female</th>
<th>Male</th>
<th>U</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>Experiment</td>
<td>1.91 ± 0.56</td>
<td>1.98 ± 0.31</td>
<td>175.50</td>
<td>0.398</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1.85 ± 0.50</td>
<td>2.34 ± 0.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experiment</td>
<td>2.20 ± 0.56</td>
<td>2.57 ± 0.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.45 ± 0.48</td>
<td>3.06 ± 0.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experiment</td>
<td>2.37 ± 0.89</td>
<td>2.83 ± 1.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.86 ± 0.82</td>
<td>3.22 ± 0.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Test</td>
<td>Experiment</td>
<td>1.65 ± 0.55</td>
<td>1.69 ± 0.34</td>
<td>107.00</td>
<td>0.009*</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1.92 ± 0.71</td>
<td>2.46 ± 0.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experiment</td>
<td>1.90 ± 0.66</td>
<td>1.90 ± 0.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.45 ± 0.74</td>
<td>3.33 ± 0.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experiment</td>
<td>1.88 ± 0.70</td>
<td>1.90 ± 0.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.30 ± 0.49</td>
<td>2.55 ± 0.72</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** P<0.01 * P<0.05

Table 3: Experiment and Control Group of Female Taekwondo Athletes Dynamic Postural Control Scores Comparison of pretest-posttest Values

<table>
<thead>
<tr>
<th>Dynamic Postural Control</th>
<th>Groups</th>
<th>Means</th>
<th>U</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>Experiment</td>
<td>1.91 ± 0.56</td>
<td>49.00</td>
<td>0.828</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1.85 ± 0.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experiment</td>
<td>2.20 ± 0.56</td>
<td>38.00</td>
<td>0.309</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.45 ± 0.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experiment</td>
<td>2.37 ± 0.89</td>
<td>37.00</td>
<td>0.276</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.86 ± 0.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Test</td>
<td>Experiment</td>
<td>1.65 ± 0.55</td>
<td>39.50</td>
<td>0.364</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1.92 ± 0.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experiment</td>
<td>1.90 ± 0.66</td>
<td>26.00</td>
<td>0.059</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.45 ± 0.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experiment</td>
<td>1.88 ± 0.70</td>
<td>31.50</td>
<td>0.137</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.30 ± 0.49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Experiment and Control Group of Female Taekwondo Athletes Dynamic Postural Control Scores Comparison of pretest-posttest Values

<table>
<thead>
<tr>
<th>Variables</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment Groups</td>
<td>Double Leg</td>
<td>-1.170</td>
</tr>
<tr>
<td></td>
<td>Dominant Leg</td>
<td>-1.992</td>
</tr>
<tr>
<td></td>
<td>Nondominant Leg</td>
<td>-2.503</td>
</tr>
</tbody>
</table>
Table 5: Experiment and Control Group of Male Taekwondo Athletes Comparison Pre-Test And Post-Test of Dynamic Postural Control Scores

<table>
<thead>
<tr>
<th>Groups</th>
<th>Experiment Mean ± SD</th>
<th>Control Mean ± SD</th>
<th>U</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double Leg</td>
<td>1.98 ± 0.31</td>
<td>2.34 ± 0.54</td>
<td>28.500</td>
<td>0.089</td>
</tr>
<tr>
<td>Dominant Leg</td>
<td>2.57 ± 0.58</td>
<td>3.06 ± 0.58</td>
<td>25.000</td>
<td>0.053</td>
</tr>
<tr>
<td>Nondominant Leg</td>
<td>3.22 ± 0.93</td>
<td>3.40 ± 0.73</td>
<td>34.000</td>
<td>0.190</td>
</tr>
<tr>
<td>Double Leg</td>
<td>1.69 ± 0.34</td>
<td>2.46 ± 0.42</td>
<td>5.000</td>
<td>0.001**</td>
</tr>
<tr>
<td>Dominant Leg</td>
<td>1.90 ± 0.48</td>
<td>3.33 ± 0.95</td>
<td>2.500</td>
<td>0.000**</td>
</tr>
<tr>
<td>Nondominant Leg</td>
<td>1.90 ± 0.54</td>
<td>2.55 ± 0.72</td>
<td>26.000</td>
<td>0.058</td>
</tr>
</tbody>
</table>

** P<0.01

Table 6: Experiment and Control Group of Male Taekwondo Athletes Comparison Pre-Test And Post-Test of Dynamic Postural Control Scores

<table>
<thead>
<tr>
<th>Variables</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment Groups</td>
<td>Double Leg</td>
<td>-2.251</td>
</tr>
<tr>
<td></td>
<td>Dominant Leg</td>
<td>-2.719</td>
</tr>
<tr>
<td></td>
<td>Nondominant Leg</td>
<td>-3.102</td>
</tr>
<tr>
<td>Control Groups</td>
<td>Double Leg</td>
<td>-0.562</td>
</tr>
<tr>
<td></td>
<td>Dominant Leg</td>
<td>-1.051</td>
</tr>
<tr>
<td></td>
<td>Nondominant Leg</td>
<td>-1.549</td>
</tr>
</tbody>
</table>

** P<0.01

REFERENCES


**PHILOSOPHICAL CONCEPTS OF SOME OF THE MODERN SUMMER OLYMPIC SYMBOLS**

**DHURGHAM JASIM, ZAID KAZI GASIM, HADEEL DAHI ABDULLAH**
College of Sport Education /University of Mousal/Iraq

**ABSTRACT**

The Olympic Games is extremely serious, this is not the product of coincidence, as they deserve to study scientific study of not less than the specialized areas of analytical studies, such as religious sects or political, economic or natural phenomena and psychological symptoms. That any group is holding humanity so much and take them all this time and care, investment and deserves debate and understand that we understand its causes and characteristics in order to understand ourselves and the way human nature is deeper. Greek Olympics for example docked with the senses and values were not just a sport practiced even docked Palmtheologia * ancient Greek. The Olympic movement work is rare in human society because they reflect the multiple functions of the movement beyond the power of sports and influential within the framework of the sport, and led to a series of significant impacts in the political, economic, philosophical, educational, cultural, artistic and media and many other areas. Because the Olympic movement did not constitute the cultural landscape of sports in modern society and you will be happy people of their own cultural, but also drive people to progress continuously humanitarian spirit. True that the first session of the modern Olympic Games were held in Athens in 1896... But also true that these games known as the culmination of years of evolution over the twentieth century, and decrees adopted by the flame and the Olympic flag into the opening and closing ceremonies large and impressive even turning to organized competition between States and boasted of the area between the cities, became the summer Olympic games biggest sporting event in Earth, but the biggest humanitarian activity in the history of mankind, has become a major festival which mixes art and sport technology, and product mix is impressive. In spite of the twentieth century was the century of wars and ideologies and major conflicts, but it was also the century of technical revolution, a century sport, which reached its practice and take care of it, and major events of the Olympics and world cups to the peak. Hence the importance of research to identify some of the concepts of symbols Olympic Games of the modern summer.

**Methods**

Curriculum research: the historical approach was used to dictate the nature of the current study. "Interested in this method to collect facts and information through the study of documents, records and effects, and is used in the study of phenomena, events and attitudes which has a long or short time. And the sense that this method of research is to study the past, events And thus can not control the variables as is the case in empirical research. Frenkle & Wallen: 1993, 316))

**Results:**

Whatever the symbol takes place in contemporary studies of cash, and almost did not find the philosophical study does not include a chapter or more on the symbols. The reason for that is - primarily due to increased Dalai symbols, language and objectives of the modern era. And privileged to attend it. In order to determine the significance of the terminology code (signal a banner) we say: Symbol word, or phrase, or image, or personal, or the name of the place contains within more than one sign, including the polar linking major. The first is the apparent dimension of the symbol, which is received directly from the senses, is the second dimension subcontractors or dimension beyond understanding exegesis only through symbol. There is a strong relationship between the visible symbol and the subsoil. Linked to levels of use of the symbol, and deal with him, as well as to suggest strength and representation, the development of creative awareness, and its ability to abstract. The allegation that the symbol in its infancy did not refer to anything beyond (what), whether expressed by suggesting or sound or movement or any other form. These first attempts to shed some light on the world of Olympic symbols and sports also shown us will see in parts of this research, new indications regarding the nature of the world of symbols and thus human nature itself. King human being symbolic of the stock to cover the enormous human nature.

1 - Philosophical concepts of the Olympic flag:

The choice of flags and symbols Spars are striking for all, a unique combination of elegance and strength and simplicity. And because human beings dwell in venerating these symbols, the flags and Spars focused mostly in the most beautiful locations where the sight of the largest possible number of people.

"I saw first, regardless of the color of cloth and endured images, symbols and slogans, they serve as an umbrella symbol revolves around his friends, who are often the owners of one case in particular in the battle” (Thames &Hudson; 1972,19). The five rings of different colors reflects the continents of the planet is composed of expression in workshops or services without other geometric shapes, perhaps for connections first, then the depth of expression and potential written diverse. It is for the Chamber geometric form that knows no end, because everything else with the angles The sharp angles or sharp ridges end. Revolving if the best expression of continuity, survival and longevity, completeness and containment, without bias to a point on the ocean, or in the dimension of the Centre from any side of the Pacific is
the symbol of Kony to get the words reflect the synchronization and harmony and unity College, and supplements. And advice and eternal Interminableness.

2 - The philosophical concepts of the Olympic opening:
Olympic life seeking to exchange and integrate different cultures, and the fact that the Olympic Games and the Olympics both Festival activity aimed at achieving the exchange and integration of cultures in the world of sports. At the same time is suitable joint benchmark for real dialogue and exchange between different nations of the world. Inaugural manufactured succeeding generations in every city. In a world cultural heritage bears the personal stamp of their city, which show the effects of belief, culture, customs and traditions, whether such a purely intellectual heritage bid; literature, philosophy and other humanities, or tender material produced by science and action; such as architecture, appliances and machinery, tools and means of livelihood war, and So.

3 - Philosophical concepts of the Olympic postage stamps:
Olympic stamps that tell how civilized development witnessed in the Olympics, and these stamps - Telling the era of Olympic history, and really reflect on the sense of cultural and literary enjoyed by the perpetrators of such idea, and telling about the history of the Olympic Games. The researcher believed that the wealth of Olympic stamps deserve great civilization preserved and documented in specialized centers, as recorded Olympic history, and explains a lot of shifts and changes undergone by the Olympic Games in the march of peoples lives.

The importance of postage stamps is that they link between peoples of different countries, therefore, whatever helped distances, including the means of communication with them has become easier through providing postal services between these countries and less expensive than other means of communication available.

-Discussion / Conclusion:
1 - invested Olympic Games uses modern technology in communications, economic, political and cultural between the peoples of the world significantly.
2 - The Olympic Games are not a major festival for athletes but also for volunteers and volunteer corps of vital activity, competence and qualifications of the conditions of the success of hosting the Olympics.
3 - Achieved a global philosophy of the Olympic Games and circulated in full dimensions did not object to it one has been questioned by anyone. And former world governments and peoples wish to enter the Olympic Games in its entirety without modification suits local nature.

Key words: economic, Olympic Games, political, religious.

Introducere1 - Definition research:
1-1 provided and the importance of research:

The Olympic Games is extremely serious, this is not the product of coincidence, as they deserve to study scientific study of not less than the specialized areas of analytical studies, such as religious sects or political, economic or natural phenomena and psychological symptoms. That any group is holding humanity so much and take them all this time and care, investment and deserves debate and understand that we understand its causes and characteristics in order to understand ourselves and the way human nature is deeper.

Greek Olympics for example docked with the senses and values were not just a sport practiced even docked Palmtheologia * ancient Greek.

The Olympic movement work is rare in human society because they reflect the multiple functions of the movement beyond the power of sports and influential within the framework of the sport, and led to a series of significant impacts in the political, economic, philosophical, educational, cultural, artistic and media and many other areas. Because the Olympic movement did not constitute the cultural landscape of sports in modern society and you will be happy people of their own cultural, but also drive people to progress continuously humanitarian spirit. True that the first session of the modern Olympic Games were held in Athens in 1896. But also true that these games known as the culmination of years of evolution over the twentieth century, and decrees adopted by the flame and the Olympic flag into the opening and closing ceremonies large and impressive even turning to organized competition between States and boasted of the area between the cities, became the summer Olympic games biggest sporting event in Earth, but the biggest humanitarian activity in the history of mankind, has become a major festival which mixes art and sport technology, and product mix is impressive. In spite of the twentieth century was the century of wars and ideologies and major conflicts, but it was also the century of technical revolution, a century sport, which reached its practice and take care of it, and major events of the Olympics and world cups to the peak. Hence the importance of research to identify some of the concepts of symbols Of the modern summer Olympic Games.

1-2 research problem:
Themes of philosophy evolved through successive historical periods, this is not the result today, because the word philosophy calls often are popular to refer to any form of knowledge absorption, it may also refer to a personal perspective on life. As for the historical philosophical concepts, which aim to provide the rights to enable it to understand the meaning of the events of present or future in the light of past experience! And the meaning of the Olympic symbols and what are aimed symbols that have evolved significantly in the courses of modern summer
Olympic Games. Given the variety of phenomena, things have diversified mutual ties and their implications are diverse in turn, all that is of the utmost importance from the perspective of scientific analysis revealed that the concrete reality of these linkages and their effect is to detect the substantive laws of the world as a binding condition for the activity of people's practical and scientific. So we say that the task of science is certainly Knowledge of laws and armaments in the application, which makes us inclined to question the future, what are the philosophical concepts of the modern summer Olympic symbols? To answer this question we must highlight the dimensions of the concepts and philosophies of modern summer Olympic and study and analyses in depth.

1-3 objective research:

**Research aims to identify:**

1-3-1 philosophical concepts of some of the symbols of the modern summer Olympic Games.

1-4 frontiers of research:

1-4-1 temporal: in 1896 until in 2004.

1-4-2 spatial: College of Physical Education / University of Mosul.

1-5 define terms:

1-5-1 concepts: the meanings of ideas is not the meanings of words, the link between words and ideas is that the meanings of words came to the delivery of those meanings. The concepts actually consists of linking information or to link information from reality, it means that much reality in the arena and not merely an explanation of things which imposes mere existence of reason, human beings could put his finger on what meanings. (Network of Arab horsemen / http://www.forsan.net / index.htm) and procedurally researcher agrees with this definition. Abdul Salaam Mesdoua. Linguistics and cognitive foundations (Tunisia: Tunisian House Publishing, 1986) p. 11 20 1-5-1 philosophical concepts: the meanings that have realized our reality in our minds whether or tangible reality for granted and otherwise of the meanings of words and strings are called concept but merely information, consisting of philosophical concepts linking the reality of linking information or information Reality, and perceptions have meant that much reality in the arena and not merely an explanation of things which imposes reason mere existence, and man can put his finger to it. (The definition of a procedural)

1-5-2 philosophy and big eye defined as a tool consciences and machine thoughts and the outcome of the mind and a tool to learn races and the elements and informed the symptoms and gems and ills of people and different ethics and character, qualities and instincts. (Gabri, 1985: 26) and the researcher agrees with the definition of big eye procedural.

1-5-2 Olympic symbols: the signs and symbols and abbreviations used in multiple Olympic Games to refer to the attributes and relationships and symbols of the host country for the Olympics, aimed at facilitating the country's definition, because the Olympic symbols were still since time immemorial reflect on the history of the country (sports, and economic), And political and many others. And write or paint or symbols are printed in full or referred to by abbreviations symbolism.

2 - Theoretical studies and previous studies:

2-1 theoretical studies:

2-1-1 Elements of the modern Olympic Games

2-1-1 Olympic anthem: The first pay tribute delivered at the first Olympic "the Athens in 1896", to quote a song from the old Greek sports, inaugurated the first Olympic Games of the modern era. The poet wrote "Costas Tamas *" What a genius foot rule, the father of right and good and beautiful, down to the ground and under the sky, a witness to Your glory, Anrna radiation. "The French Baron" Coubertin "think that accompany sporting competitions, the dumping of poetic couplets in Unifying vision of human potential. The International Olympic Committee Olympic anthem at its No. (55) in the city of Tokyo in 1958, and deposited the music of this anthem at the headquarters of the International Olympic Committee.

2-1-2 Olympic section: In 1906, a French Baron "Coubertin," the official part played by athletes. And introduced formally to take part the Olympics in 1920, in the "Anfrs" Belgium. The one section of athletes on behalf of his colleagues, and it must be costing the sports section Olympic hurred at the opening of the Olympic athletes. The first section of the delivered in 1920, the player is "Victor Point", who have won several gold medals, silver, bronze, in the arms competitions, water polo, and reportedly in Section player raising his right hand and catching his left hand Olympic flag carried by another athlete: "On behalf of all Competitors, I swear that share these Olympics, and we respect and abide all the laws that govern these games, and pledge to practice sport clean building on the requirements of true sportsmanship and to preserve the glory of sport and respect for the reputation Fguena." (Reaih and forward, 1987: 44) In (the Sydney Olympics in 2000), included a new section for the first time in the history of the Olympics says: "We pledge not to the world athlete of fraud", and also included another paragraph says: "We pledge to exercise a clean sport free of stimulants." And dropped this section of the Australian hockey player, "Rachel Hawks (ranked first world hockey for five years)" on behalf of all athletes participating in the session. (http://ar.wikipedia.org/ 2004) The Department of rulers who shall rule (from the host State), on behalf of all the rulers echoing Section rulers. On behalf of all athletes, referees and officials swear that we arbitration games in this Olympic Games the most neutral and respect all laws and regulations governing these games governors on sportsmanship exclusive there. (Winds and forward, 1987: 44)

2-1-3 Olympic Charter "Action is the Constitution of the Olympic movement, organizing the Olympics, which combined provisions and laws, approved by the International Olympic Committee. In the case of a dispute or disagreement over the interpretation or application of these resolutions, which are separated by the Executive Office of the
International Olympic Committee? In some cases through arbitration before the sports tribunal which was established in 1993, consists of twenty Court judge, is a supreme body independent of the International Olympic Committee.

2-1-4 Language "The official languages of the International Olympic Committee is French and English ... We must provide all the meetings of the International Olympic Committee simultaneous interpretation equipment to conduct meetings in Spanish, Russian, German and Arabic with the exception of extraordinary meetings, when a dispute erupted between French and English text taken... Meaning the French text." (Badawi, 1996, 154)

2-1-5 Olympic motto: "Citius Altius Fortius" These words have been translated into several languages and meanings.

A. Translated by the order in the sense: speed, the lifting force.

B. Translated by the order meaning: foot, nobility, strength.

C. Translated by the order in the sense: "Be prepared", "Be quick." "Be High." Following a Greek, tongues were covered in Utopia. It is intended to express the aspirations of the Olympic sports, has emerged this logo for the first time in a "cycle Anfrs" in 1920, in Belgian and formulated this logo is a Dominican priest "Father Byron" for university students. This was a monk friend Baron de Coubertin. (Abdul-Hamid and others, 2001: 96 http://www2.lhric.org/pocantico/olympics/olympics.htm/2006/p6)

2-1-6 Olympic symbol: "Is to design a coherent, which overlaps the Olympic five episodes, with another element; must provide all Olympic symbol, to the Executive Office of the International Olympic Committee, for adoption.

2-1-7 Slogan formal session: We must take every Olympics slogan distinguishes them from other courses, and printed publications each session, and the means of propaganda for the session. The difference between the Olympic symbols, the Olympic motto, is the five rings, the Olympic symbol to be there when the five rings, either emblem private courses, the city the right to merge these seminars with other elements or dispersed with. (http://www.britannica.com/eb/article-9108519/Olympic-Games))

2-1-8 Olympic flag: "Olympic flag is a flag without the edges are made of white silk, and five workshops in their overlapping, three workshops in the first level also comes colors: blue for a first and be near the force, and the color symbolizes the continent of Europe, the blackness of a second and symbolizes the continent of Africa. And red for a third symbol for the Americas. The second level, the first link is close to the force, and the yellow color symbolizes the continent of Asia, and the second and final color green symbolizes the continent of Australia. The idea of the Olympic flag at the International Conference for the Olympics in 1910, and established a special committee to prepare him. The Olympic flag created in 1913, when it began Coubertin, is thinking of making a special flag for the Olympic courses. Baron wrote in the "Olympic Magazine", published in August 1913, saying: "These five rings represent the five continents in the world, starting from this moment, and reflect the five rings on the acceptance of fruitful and constructive competition, as well as the six colors, including the Ground white, representing the colors of all nations without exception. The "Coubertin," always connect between the old and modern, linking between the "sacred truce" at the Olympics old, who was a symbol of peace in the past, and the flag of the white flag; symbol of peace in the present, and five rings, which codified the Convention on the sacred truce, making them A symbol of solidarity and brotherhood five continents between peoples. The Olympic flag appeared for the first time officially in 1914, in the cities "Paris" French and the City "Alexandria" the Egyptian; in the same time celebrate the twentieth anniversary of the Olympic courses. The flag was raised in Alexandria, within the African Games in the fifth of April. When the Greek deliberately "Angelo Bolannaki" resident in Egypt, the first representative of the International Olympic Committee in Egypt and the Arab world, the call to contribute in building sports stadium in Alexandria. And by Baron to the International Olympic Committee in 1914 at Sorbonne University in Paris, where it was ratified in 1914. The flag was raised in 1915, in San Francisco, and decides a shelf in the course of science in 1916 for the first time in Berlin, however, by World War I prevented that. The lift in the Swiss city of Lausanne permanent headquarters of the International Olympic Committee in 1919. In 1920, the Belgian government informed the design of Olympic great, and dedicated the Belgian government of the Belgian Olympic Committee, which in turn donated to the President of the International Olympic Committee "Coubertin," he agreed it was lifted at the seventh "cycle Anfrs" Belgium. Since that session, this has become the Olympic flag is the flag even in 1984 In in 1984, the city "Seoul" South Korea's new Olympia note of the International Olympic Committee, raising the flag this time in the first session of Seoul in 1988, and there is informed by another Olympic city "Oslo" Norwegian in 1952, was used at the Olympics Winter. Article No. (24) of the basic principles of the Olympic movement, to raise the Olympic flag in the Olympic Village, beside the other flags of teams participating, whether in the stadium opening, or in the surrounding areas, with the flags of States participating in the session. They should fly the flag at the Olympic large force installed in a prominent place stadium, and begins lifting the Olympic flag, with the announcement of the opening of the Olympic record, and get them when officially declared the conclusion of the Olympics, and after that recognizes the official city held by the next session. Linux and the Olympic flag during the session, for reasons it deems the International Olympic Committee. The Olympic flag in the housing cycle "Sydney 2000", when the death of
wife, “Samaranch,” the International Olympic Committee President then. (Copyright © Jelsoft Enterprises Limited 2000)

2-1-9 modern Olympic flame: “IGAD is a moment of the Olympic flame, raising moments at the ceremony, the Olympic Games start immediately after the IGAD, and the origin of this tradition, as the German researcher says” No “, is the urgent need for new lighting and illuminator sacred, “and the torch in the past sent a symbol of,” And power dynamics and vitality of the universe, and then became a slogan for the permanency of the spirit gods, and in the modern era Olympic torch become a symbol of peace and appeal to the world that departs from the war and join hands and fraternity. The president said the fifth of the International Olympic Committee “EVRY Brandeg,” When I got the torch from Olympia to Munich (1972 m), “The torch carried the message to Munich from Olympia, a message of equal opportunities for all and non-discrimination, friendship and international cooperation.” And fuelled the torch for the first time officially in a “cycle Berlin in 1936” after the Germans made a request to the International Olympic Committee, to formally introduce the tradition of the torch at the Olympics, and transfer to the city of Olympia “Berlin”, the German proposal in the “Oslo” in 1935. He succeeded Dr. “Carl Daym” in organizing the first flight of the torch from Olympia to Berlin, and the hostile campaign of all States that have passed the torch, the first of her pregnancy from Olympia Greek hostility “Constantine Bondesson” remained the torch burning for days in session until the closing ceremony extinguishing. (Wins and forward, 1987: 45) It means IGAD flame in Olympia, and then transferred to the city hosting the session, Olympia waived its right to establish the Olympic Games, the city’s hosting of the session. The Olympic flame fired at the foot of Mount “Alaolmbos” in Greece, from the sun with concave Women Runners then carried out sequentially, until you reach the venue for each session and hostility of those special Shaalan, fuelled by his colleague from the torch, which was preceded by the enemy, so they reach the city. That will be raised by the session, one day before the start of the session, other national runner stoking the flame alive remain standing for the duration of the session and Runners representing Greece and the countries located between Greece and the host city, and in some cases involving ships and aircraft to carry the torch across the sea and mountains. The torch shall be material combustion does not emit smoke which pollute the environment, in order to preserve the environment, exclude the cities with a high rate of environmental pollution from candidature to organize the Olympics. In the “Sydney 2000”, passed the torch underwater in northern Australia, for the first time in modern Olympic history courses. And Olympic officials said: “The torch was passing through the area of tropical coral reefs are rubbish, and used a special chemical for a period of two minutes and 40 seconds, before the "Wendy Craig," a Marine, a pick-up were still burning. " Olympic officials said: “The resurgence of the flame of the torch underwater three meters was strong to the extent that prevented the entry of water into the tube and extinguish the flame. In in 2004 Olympic course was held in the city of Athens, Greek, the Greeks identify torch march from Greece to all countries of the world, then returned again to Greece, before the start of the session. So as not to be shorter march of the Olympic torch. “ (Copyright © Jelsoft Enterprises Limited 2000)

2-1-10 Olympic stamps: Founded the International Federation Olympic, for philatelists Olympics in 1982, at the suggestion of the Marquis Spanish "Juan Antonio Samaranch," the President of the International Olympic Committee then (1981 - 2001 m), a philatelic. In the "Athens in 1896", contributed sales of commemorative stamps, the expenses of preparing the session, with proceeds 400,000 thousand Greek drachmas. Many of the athletes and leaders of the international Olympic Movement immortalized stamps. In the session "Anfrs in 1920," Belgium has issued stamps Olympic group, after it was exclusive to Greece. In issued in 1937 Greece Group of historical stamps Greek Olympic sport; to honor the "Diajurus," the island "Rhodes." The nature of the first Olympic carrying the image of the founder "Coubertin," published in "Haiti" in 1939 two years after his death. And Iraq issued a series where the image of Olympic stamps quarters of the deceased (Abdul Wahid Aziz) marking the winning bronze in weightlifting tournament in light-weight at the Rome Olympics in 1960. On the Tokyo in 1964, Egypt issued the first set of Olympic stamps, as well as in the two sessions of "Los Angeles in 1984" and "Mexico in 1986." At the Munich Games in 1972, the Principality of "details" and accessories, a group of Olympic stamps. As the Principality "Umm Al Quwain" set stamps on the Olympic history, the Olympic posters. In the "Sydney 2000", the Australian Department of Post, on its image printing any Australian player, win the gold medal in 24 hours made for the gold medal.

2-1-100 Olympic commemorative currencies: Knew his first Olympics in 480 BC. M, and was category four drachmas, struck by order of Governor of the territory of Sicily "Anakzilus" Anxious. Commemoration of victory in a race war wagons. In the modern era of the Olympic Games, Olympics and his first emerged in the "Helsinki in 1952" in Finland, and in Moscow in 1980 and Seoul in 1988 and in the "Atlanta" in 1996, the interest minting of America, in support of the U.S. Olympic Committee, sports teams and the capacity of 21.3 million dollars “Proceeds from the sale of Olympic commemorative currency. Recalled that Finland was the first issued currencies Olympic commemorative precious metal when it hosted the Olympic Games-15 in

2-1 - 12 Olympic medals: In the modern age of Olympic cycles, the medals were awarded prizes for the winners, medals and witnessed great development during the long journey that began in 1896, were awarded to winners in each race only at the beginning,
The objective of mixing sport with the arts in the Olympics; was to review the excellence and superiority among human beings, as well as to take advantage of the meeting of minds and muscles and Greeks had the slogan Healthy Mind, Healthy Body. “Hence the comparison between Plato in the Republic of art and literature on one hand and between sport And physical education from the other hand, in the first path to beauty spirit, and in the other the means to beauty body. Defines rights and the Olympic ideal as a template to track the evolution of human personality, mind and spirit. We note that Greek art has manifested in the construction industry temples and the beautiful statues, is the statue of “Zeus” great Olympic gods of the seven wonders of the world, and my Greeks sports arena, briefed columns suitable for sporting purposes, and sanitary conditions, and added that the columns on sports arenas elegance, and reflected glory In Rehab particularly in the spread of the sun. Olympia has not been earmarked for sports, but was like a market where Arabs Oaks, which held sessions on the sidelines of various types of arts such as poetry and rhetoric and industry statues and succession. The approach geniuses of thought and Greek art, and there is the story of the heroic “Pitas” clarify some of the arts and literature, which was held on the sidelines of the Olympic festival, has asked the Friends of Olympic champion “Pitas” poet famous song”)Pindar,” to organize a poem of the hero “Pitas” On the occasion His victory and asked them to " Pindar " sum of money, grandest his Friends of the star, they said we can evaluate him a statue of copper less than this, but after consultation and found that the poem is better than the statue, paid for a poet Pindar amount requested, systems them first was a poem: You do not Statues makers not only seen as focus .. But I notice organized fly in prospects.. The flies with reputation "Pitas" successful corona nail. Whitney from the foregoing that the Greeks who appreciate poetry and poets; poet and built for the Olympics " (Pindar (520 BC. M 440 BC. M), a statue is still alive, is the most important poem, " Pindar," a poem XIII Olympiad Provided to Olympic champion "Akznobon." When rebellion good judgement ** Alexander the Great (336 BC. M 323 BC. M), destroyed the tale did not leave the house only a poet and Bhandare temple. In modern times Coubertin thought that accompany sports competitions, the dumping of poetic couples, the unifying vision of human energies, and in 1906, Coubertin proposed that includes the Olympic program at various competitions in the arts. In 1912, held the first contest for the arts, and in 1952 turned into performances only, and my head of the Olympic Committee "EVRY )Pindar " (1952 1972 m), fine arts in the Olympic program. The protocol contains the Olympics organizing a core programmer of arts, include Article X It contests for the arts. Olympic Committee has been notified of the Arts in 1992 and based in Paris. " (http://en.wikipedia.org/wiki/History_of_the_Modern_Olympics)
Opening ceremony: Begins Olympic opening ceremony of the session, the arrival of head of state often or sometimes on behalf of the Olympic stadium. It would be received at the entrance to the Olympic stadium, President of the International Olympic Committee, and Chairman of the Organizing Committee for the session. The Head of State is heading to the podium of honor with him and his entourage. The music playing the national anthem, after the anthem, flying the flags of participating States at the gates of the stadium, and starts a column display of the States participating in the session, each team is uniformed and file each team a banner bearing the name of the state, and national flag and the state of Greece came to the fore in her honor, when the Is another session would be organized teams and moving the rest of the States participating in the Olympics behind Greece depending on the arrangement mill epidemic of the State Organization and the State Organization comes in the back row presentation, and all the flags of States participating in the Olympics, when in front of the podium with President degeneration tribute to the officials - except "Saudi flag" No Linux; because it bears the slogan unification "No God but Allah Muhammad Messenger of God." After each team to complete the stadium in its stand in line behind the sign holder and holder of the flag in front pad head of state, like Chairman of the Organizing Committee, accompanied by Chairman of the International Olympic Committee set up to the podium in front of exclusive honor. The Chairman of the Organizing Committee President of the International Olympic Committee a few words, asking him to submit to the Head of State or rotate it, please open the session. And then ascends the International Olympic Committee President to the podium after a brief welcome speech, calling the Head of State to the Olympic opening of the session. At that moment, the Olympic flag rise slowly even if the sum five guns and fire horizontally group of eight people wearing a uniform, and in every way bar pigeon Olympic flag. And then playing music and cannons fired three shots, and climb the mayor of the city and its vicinity head the International Olympic Committee, comes delegate city that organized the previous session, and provides science tiles "Sato music", the President of the International Olympic Committee, which in turn submit it to the governor and preserves this science in the building Municipal to the next session. There are tow flags one of the summer Olympic cycle, and the other for the Olympic Games. Comes another player or player or two with us carrying the Olympic flame, just around the Olympic stadium, and then moving towards the torch has been permanent, and remains not extinguished the flame alive only in the closing ceremony, and make a joyful media campaign in the form of half circle, and during the passage of information campaign Podium in front of the President, they must Gorge media, and then went after the same order in which teams entered, and leave the Head of State position. And thus ends the opening ceremony.

Crowning the winners: Players who take the three places on the first rank, uniformed sports over a runway, which was developed exclusively against honor, standing in the first place in the degree rise slightly in the middle class by the second position and be at the right of first place wins, and take the third place on the left His first place.

Closing ceremony: Closing ceremony will be held at the Olympic stadium, following the end of the last competition, namely "marathon", and moving information campaign teams participating in the stadium behind their own banners holders, and take the order on the opening day itself, in midfield and go all the athletes in one column and collectively, rather than Each mission is single nation without universal adherence to sexually melted in a row, and this was the idea of Chinese boy "John Ian Wing," which was at the age of seventeen years, he was working carpenter trainees in Chinatown in Melbourne, Australia, when he sent a letter to "Wilfred I Hughes "Chairman of the Organizing Committee of the Melbourne in 1956, suggesting by this idea, and implemented the idea immediately, and called the session" Olympics friendship." The meeting ends on the platform of honor in front of athletes, raising the Olympic flag to force the Yemeni used in the opening ceremony, and raises the flag of a State Organizing Committee for the Games to force Central at the same time as it plays the national anthem and raising the flag state that will be established by the next session to force the left with The national anthem was played. Then climb the International Olympic Committee President to the podium and announce the conclusion of the Olympics. At the end of the ceremony extinguished the Olympic flame and the Olympic reluctant peace, at the same time get the Olympic flag bit of force, and holding it horizontally group of eight people wearing a uniform, fire guns and fired shots, and then singing, choir, and leave the stadium leaders, and media campaign, and athletes to the music Music.

Action research:

Historical approach was used to dictate the nature of the current study. "Interested in this method to collect facts and information through the study of documents, records and effects, and is used in the study of phenomena, events and attitudes which has a long or short time. And the sense that this method of research is studying the past, events and thus could not control the variables as is the case in empirical research. Frenkle & Wallen: 1993, 316)
interested in this way or that without any Personal bias or interference by the researcher, used this approach in research, policy and media personality, anthropology, sociology and management science. " (Obeidat: 1999, 49)

4 - Presentation and discussion of the results:

4-1 philosophy of the Olympic symbols:

Whatever the symbol takes place in contemporary studies of cash, and almost did not find the philosophical study does not include a chapter or more on the symbols. The reason for that is - primarily due to increased indicative symbols, language and objectives of the modern era. And privileged to attend it. In order to determine the significance of the terminology code (signal a banner) we say: Symbol word, or phrase, or image, or personal, or the name of the place contains within more than one sign, including the polar linking major. The first is the apparent dimension of the symbol, which is received directly from the senses, is the second dimension subcontractors or dimension beyond understanding exegesis only through symbol. There is a strong relationship between the visible symbol and the subsoil.

Linked to levels of use of the symbol, and deal with him, as well as to suggest strength and representation, the development of creative awareness, and its ability to abstract. The allegation that the symbol in its infancy did not refer to anything beyond (what), whether expressed by suggesting or sound or movement or any other form.

These first attempts to shed some light on the world of Olympic symbols and sports also shown us will see in parts of this research, new indications regarding the nature of the world of symbols and thus human nature itself. King human being symbolic of the stock to cover the enormous human nature. This means that the world of symbols and functions are not confined to the limited functions offered by these symbols of the Olympic athletes in certain courses. But beyond the functions of nature is absolutely not abide by the limits of time and place advantage. Human thought, for example, writes him immortality is certainly of this kind. The study of these aspects of the hidden world of symbols remained marginalized in some of Humanities and Social Sciences, which is expected not surprising in it.

1 - Philosophical concepts of the Olympic flag:
The choice of flags and symbols Spars are striking for all, a unique combination of elegance and strength and simplicity. And because human beings dwell in venerating these symbols, the flags and Spars focused mostly in the most beautiful locations where the sight of the largest possible number of people.

"I saw first, regardless of the color of cloth and endured images, symbols and slogans, they serve as an umbrella symbol revolves around his friends, who are often the owners of one case in particular in the battle" (Thames &Hudson; 1972, 19). The five rings of different colors reflects the continents of the planet is composed of expression in workshops or services without other geometric shapes, perhaps for connections first, then the depth of expression and potential written diverse. It is for the Chamber geometric form that knows no end, because everything else with the angles the sharp angles or sharp ridges end. Revolving if the best expression of continuity, survival and longevity, completeness and containment, without bias to a point on the ocean, or in the dimension of the Centre from any side of the Pacific is the symbol of god to get the words reflect the synchronization and harmony and unity College, and supplements And advice and eternal Interminableness.

2 - The philosophical concepts of the Olympic opening: Olympic life seeking to exchange and integrate different cultures, and the fact that the Olympic Games and the Olympics both Festival activity aimed at achieving the exchange and integration of cultures in the world of sports At the same time is suitable joint benchmark for real dialogue and exchange between different nations of the world. Inaugural manufactured succeeding generations in every city In a world cultural heritage bears the personal stamp of their city, which show the effects of belief, culture, customs and traditions, whether such a purely intellectual heritage bid; literature, philosophy and other humanities, or tender material produced by science and action; such as architecture, appliances and machinery, tools and means of livelihood war, and So. To the extent that generations in this city active and vital are a rich and diverse heritage, as far as the interweaving relationships with others, their experiences are wide, and accused the bid significantly. Researcher believes that during the successive eras of life lately performed in various cities around the world; Greece, Rome and Carthage, Alexandria, Mesopotamia And other cities in the ancient world, where generations manufactured during the period of glory shine keepers have history, and each city of those cities in the glory that discriminate created, and the specificity of the heritage left by, as though the glory of Greece in poetry, theatre, philosophy and the Olympic Games and was the glory of Rome Military firm and the luxurious necessities of life, and the glory of Alexandria in vaginal luxury intellectual and philosophy schools, sports grounds and Ruffian in writing, and many others.

3 - philosophical concepts of the Olympic postage stamps: Olympic stamps that tell how civilized development witnessed in the Olympics, and these stamps - Telling the era of Olympic history, and really reflect on the sense of cultural and literary enjoyed by the perpetrators of such idea, and telling about the history of the Olympic Games. The researcher believed that the wealth of Olympic stamps deserve great civilization preserved and documented in specialized centers, as recorded Olympic history, and explains a lot of shifts and changes undergone by the Olympic Games in the march of peoples lives.

The importance of postage stamps is that they link between peoples of different countries, therefore, whatever helped distances, including the means of communication with them has become easier through
problems for the people. Voluntary and learn teamwork and social norms of communication. Despite the link Palmtreologia Greek Olympics and religious rituals of various ancient communities, but it was still reflect on the visual perceptions and the intellectual, philosophical and social problems for the people. Before the emergence of philosophy, a myth that was capable of interpreting the world and the universe, the philosophical foundations of the civilizations of Greece and the Mediterranean civilizations, the Nile Valley and Mesopotamia and other civilizations possess yards cities and temples, primitive ritual and religious texts legendary tragic. And through that we can discover a lot of philosophical concepts, religious and aesthetic that combined social life and then having its supply and its implications in our modern, dynamic, which confirms the ability of totalitarian excesses of the troublemaker of a man's mind ancient civilizations, which was adopted question method for interpreting phenomena. The question of knowledge leading to the start of accumulated knowledge and civilization, eyebrows broke the dimension of this art legend. But why is critical and that led to the evolution of the Olympic symbols is what happened in terms of Greek social life created democratic practice in the old ethnic community internally developed enormously. Since then became the celebrations which were held in Greece, one of the expressions of distinct ethnic democracy, and enriched its evolution.

5 - Conclusions and Recommendations:

5-1 conclusions:
1 - invested Olympic Games uses modern technology in communications, economic, political and cultural between the peoples of the world significantly.
2 - The Olympic Games are not a major festival for athletes but also for volunteers and volunteer corps of vital activity, competence and qualifications of the conditions of the success of hosting the Olympics.
3 - Olympic Games contribute to the development and growth of young people by instilling the following concepts:

First: "The concept of responsibility." Voluntary Service through its objectives of the successful host city in the Olympics, strengthens their sense of mission and responsibility, and promotes the national spirit and the spirit of honesty and self-reliance. And a broader II: "The concept of self-confidence." The hosting of any city of the Olympic Games evidence of long-term evolution of the country gives young people the opportunity to directly sense the great achievements that are a source of pride by highlighting civilization and ancient traditions and ethics. Third: "The concept of learning." For the provision of quality services, we must know everything that is the Olympics of culture and knowledge of the city, learning techniques and services. Fourth: "The concept of openness to the outside." Olympic Games as a means of cultural exchange and develop competitive sports Chime open heart, openness and the ability to exchange equal and awareness of fair competition. V: "The concept of cooperation." They can learn through exercises and work realism special services volunteer to cooperate with others and learn teamwork achievement.

5-2 recommendations:
- establishing the principles of the Olympics moral, intellectual and philosophical.
- the contributions of diverse cultures in establishing the Olympic Games, is must not only Greek cultures, the domination of European cultures and this must introduce Islamic cultures, Indian, Chinese and many others because they have all cultures by providing them with the Olympics.

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DETERMINATION OF SMOKING HABITS OF PHYSICAL EDUCATION AND SPORTS STUDENTS WHO ARE ACTIVELY DOING SPORTS

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ABSTRACT

For example, in Turkey 133 ( % 50.9 ) of individuals for the first time at the age of 11 and, %13.6 in the previous years at the age of 12 meet to smoke (Yazıcı and Ak, 2006).

Objective

The aim of this study is to determinate the smoking habits of physical education and sports students who are actively doing sports.

Research methods and procedures

Smoking habit is very common in our country. The work group of study which is an identifying species consisted of 112 university students who play football actively and study at the department of Physical Education and Sports Academy at Karamanoğlu Mehmetbey University.

Results

It has been determined that students'smoking starting age average is 17.53±2.04, and has been smoking for 4.68±1.63 in this study. It has been determined that % 58 of students who participate in the study have the smoking story and %60 of the students is still smoking actively.

Discussion and conclusions

It is known that many sports men start smoking in early ages. Young people should be prevented from accessing to tobacco, protected from advertising and promotion and these people need to be supported about struggling to give up smoking habits and need to be acquainted about bad habits about smoking.

Key words: University Students, Cigarette Data Level, Doing Sports Actively.

Introduction

Throughout history, people have used harmful substances to enjoy and get clear of distress, excitement, pain and sorrow. These substances have made a person habit and addictive in times. Impaired physical and psychological health of people, important social problems emerged. People have to protect themselves and their environment from these substances. Cigarette habit of society is an important public health issue that concerns all of the people (Herken ve ark., 2000).

According to world health organization data, it is konown that in 1990 early, each year 3 million people died because of the smoking, but today all over the world, each year 1.5 million in developing countries, totally 4.5 million people and in Turkey 70-100 thousand people lose their life because of connected to the smoke reasons. According to estimates, it has been reported that in 2030, each year 7 million people (70%) in developing countries, totally 10 million people will lose their lives because of reasons depending on the cigarettes (Karatay an Kubilay, 2004).

Nowadays, cigarettes are in the first place among used addictive substances in the world. Cigarette habit often starts in the adolescent period. 300 million young people in the world is dependent on cigarettes, and one of every five cigarette users is between the ages of 13-15 (Taşçı et al., 2005). In general, in the period of adolescence, age of the beginning to this habit declines until the age of the childhood period. For example, in Turkey 133 ( % 50.9 ) of individuals for the first time at the age of 11 and, %13.6 in the previous years at the age of 12 meet to smoke. (Yazıcı and Ak, 2006).

Smoking habit is very common in our country. According to a research made in 1988 and representing the whole country, 15 years and over 62.8% of men, 24.3% of women, and 43.6% of all population smoke cigarettes, (Taşçı et al., 2005). In this study, smoking habits as a measure "to carry the cigarette package" has been taken; but according to the DSÖ assessment,
the smoker to be considered "regular smokers per day to 1" is sufficient (Printer and Ak, 2006).

Therefore, probably the habit of smoking is even higher than the assets. (Goldberg et al, 1993). Young people towards smoking the risk factors; they are specified as smoking, drinking close friends, parents, siblings or teachers to have a low socioeconomic level, more attractive and modern look for the mistake, depression and anxiety to resolve the path, low school achievement and male gender (Kutlu & Çivi, 2006).

Our country for cigarette consumption is in the third ranked among European countries, is in the seventh ranked among the world countries (Ministry of Health Research). In 1988, the smoking prevalence in men 62.8%, women 24.3%, 43.6% in the population over age 35 in the piar survey carried out on a sample group which will represent all Turkey have been identified (PIAR).

Risk factors for youth to head smoking: are indicated as parents, siblings or teachers, best friends who smoke, to have a low socioeconomic level, misconceptions of appearing more attractive and modern, depression and anxiety reduction path, low school performance and male gender (Kutlu & Çivi, 2006). The aim of the study in light of all this information; is to determine the smoking habits of physical education and sports students who are actively doing sports.

Methodology

Type and location of the survey: Working group of survey which is descriptive type has been made in the Physical Education and Sports School at Karamanoğlu Mehmetbey University in 2008-2009 academic year in the spring semester.

Working group of the study: The basis of the study has formed 112 university students who agree to participate in the study, are doing sports actively and are studying in the 1st, 2nd, 3rd and 4th in the Physical Education and Sports School at Karamanoğlu Mehmetbey University.

Data collection methods and tools: Datas 2008-2009 academic year spring - term were gathered by with survey method including students’ sociodemographic features and smoking cigarette cases and by based on self-report in classroom environment. In sociodemographic characteristics; such as age, where the family lives, which class he or she is studying, parental educational status, father’s occupation, family income level and number of siblings questions were asked, in the form which is questioning smoking cases; such as anyone’s smoking status in the family, smoking status, if smoking, starting age to smoke, how long he/she has been smoking, what the reason of starting smoking is, how many cigarettes he/she smokes in a day, what the reason of still smoking is, and whether or not he/she gives up smoking of questions were asked.

Verilerin Analizi: Verilerin analizinde sayı yüzde dağılımları ve t testi kullanılmıştır. Verilerin değerlendirilmesinde SPSS 13.0 programından yararlanılmıştır.
Table 1. Students Smoking Cigarette Distribution

<table>
<thead>
<tr>
<th>Properties smoking in the family</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>65</td>
<td>58.0</td>
</tr>
<tr>
<td>No</td>
<td>47</td>
<td>42.0</td>
</tr>
<tr>
<td>Smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>60</td>
<td>53.6</td>
</tr>
<tr>
<td>No</td>
<td>52</td>
<td>46.4</td>
</tr>
</tbody>
</table>

It has been determined that %58 of students who participate in the study have the smoking story and %60 of the students is still smoking actively(Table 1).

The students’ starting to smoke age average who smoke cigarettes is 17.53 ± 2.04 ,it has been identified that they have been smoking for 4.68 ± 1.63 years.

Table 2. Students Smoking Cigarette Distribution

<table>
<thead>
<tr>
<th>Start Smoking Reasons</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curiosity</td>
<td>6</td>
<td>10.0</td>
</tr>
<tr>
<td>Affectation</td>
<td>5</td>
<td>8.3</td>
</tr>
<tr>
<td>Sadness,stres</td>
<td>16</td>
<td>26.7</td>
</tr>
<tr>
<td>Friends environmental impact</td>
<td>25</td>
<td>41.7</td>
</tr>
<tr>
<td>Family environmental impact</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td>To look more mature</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Continue to smoke</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>To disperse distress</td>
<td>23</td>
<td>38.3</td>
</tr>
<tr>
<td>Not to be alone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not putting on weigh</td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>To prove independence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recreational effects</td>
<td>34</td>
<td>56.7</td>
</tr>
<tr>
<td>To increase attention</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The students daily smoking number has been identified as average 14 ± 4. While %14.3 of students who are smoking because of harmful for our health and %2.7 of students because of being afraid of being ill indicate to think of giving up smoking,%16.1 of students to get over stres,%12.5 of students to love smoking and %8 of students not to see any harmful side of smoking indicated not to think of givin up smoking, who smoke cigarettes expressed that it was dangerous for their healthy while %2.7 of students are not thinking of determining to give up smoking because of scare of being ill in the future , (n=41) %16.1 of them

Discussion and results

Among sudden deaths in sport in the first ranges are illness depending on smoking. Intensive training and smoking can bring up vital results. (Boraita, 2002).

Ages of starting smoking between 15-19 year-old were found in studies making Yıldırım’s in Manisa, Kutlu’s and Nail’s in Konya, Altintas’s in Ankara (Altintas et al 2006; Kutlu and Çivi 2006; Yildirim et al 2004). It was found that people had largely started to smoke between 16 and 20 years old in also Bilir’s,Ogel’s and Demirel’s studies(Bilir et al 1997; Demirel et al, 2004). The average age of starting smoking was found to be 19.63 ± 4.25 in Önsöz and his friends’ running the studies with smokers who were admitted to Marmara University aculty hospital of Medicine for any reason (Onsoz et al, 2009).It has been determined that students’ smoking starting age average is 17.53 ± 2.04, and has been smoking for 4.68 ± 1.63 in this study. Age of starting smoking in our study is similar to the literature. Adolescence is a period of increased risk behavior. Smoking during this period is one of common risk behaviors (Feijó and Oliveira 2001).

It has been determined that 58% of students who participated in the study have smoking experinced and %60 of students is still smoking cigarettes actively. The age of smoking is getting smaller In many developed countries. Because of that, the risk of development of various diseases increases depending on smoking on the early years (Goldberg et al 1993; Icle and et al 1992). This means that youngs who develop illness depending on smoking continuously will need to get treatment for a long time and will increase the cost of smoking related diseases (Haustein, 2006). Again it has been determined that 58% of
students who have smoking people in their family and %60 of students is still smoking cigarettes actively. It has been determined that friends environment is among starting smoking reasons in the first range (41.7%), sadness/stress is in the second range (%26.7), family environment is in the third range (%13.3) and curiosity is in the last period (%10.0). Students should be very careful to choose friends in high school and university, if parents are more sensitive and careful for this subject, they may prevent from getting bad habits. Students should be required to be taught about the negatives effects of smoking. Even if people who are especially models for young people in society (such as artists, athletes ...) smoke cigarettes, they should not smoke in front of society encouraging young people. Even if parents smoke cigarette, they absolutely must not use tobacco next to the children in the house. It has been found that people should need to be given information smoking and harmful effects.

It is known that many sports men start smoking in early ages, young people should be prevented from accessing to tobacco, protected from advertising and promotion and these people need to be supported about struggling to give up smoking habits and need to be acquainted about bad habits about smoking.

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THE DETERMINATION OF THE PHYSICAL EDUCATION AND SPORTS ACADEMY STUDENTS’ INFORMATION,OPINIONS AND THOUGHTS ABOUT USING DOPING WHO ARE INTERESTED IN FOOTBALL AND SPORTS DIVISION

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3 Selcuk University Institute of Health Sciences, Konya, Turkey

ABSTRACT
Doping is defined as Sportsmen during the competitions with the aim of increasing physical and mental performance prohibited by "International Olympic Committee (IOC) or used substances or methods by sportsman consciously or unconsciously.

Objective
This study is planned for the aim of determining of the physical education and sports academy students’ information, opinions and thoughts about using doping who are interested in football and sports division.

Research methods and procedures
The identification study was made at Karamanoğlu Mehmetbey University at fall term in 2008-2009 education-training year 100 university students who agree to participate in study, are interested in football and sports division and study in 1st, 2nd, 3rd and 4th class of Physical Education And Sports Academy at Karamanoğlu Mehmetbey University and Selcuk University, composed the creation of study.

Results
% 18 of the students is girls and % 82 of the students is boys having participated in the study. Students’ age average is 21.83±1.62, and % 67 of the students study at Karamanoğlu Mehmetbey University and % 33 of the students study at Selcuk University and the department of physical education and sports.

Discussion and conclusions
When students’ opinions and ideas are examined about using of doping of students in football industry, it was found 19 % of students have no enough information about doping. 23 % of the students have expressed the most stimulating substances used in the sports. While 85 % of the students express that doping means that a substance hazardous to health when, % 49 narcotic analgesic is used most in sports, and % 21 the most in sports is used to express Anabolic steroids have androgenic. It should be noted that the easy and healthy way to improve performance, and regular and proper training, adequate rest, proper motivated violence, adequate and balanced diet and sports activity is the scientific approach in all stages.

Key words: Football, University Students, Doping.
It has been known for BC 500-400 years. Such as deer liver and the lion heart, some parts were consumed by athletes and warriors in the hope of the courage, speed or giving the energy (Straus, 1985; Williams, 1992). It is accepted that emerging negativeness depending on using doping is known by athletes (Farnaz 1998).

However, insisted on using doping is thought to be the irresistible charm, attraction of the records and victories, getting trade of sports more and more and increasing a tight relationship between doping and professionalism step by step. Interest and motivation against doping emerge as one another factor caused by social and economic rewards, increasing of the sport every day and not comparable with nothing, while footballers’ team level and uniform of love are making them successful in sports, their lack of knowledge and laziness of training or preparing for a competition, going into the quest for variety to achieve success of athletes more quickly cause increasing the interest of the doping (Hınçal & Dalkara 1991). This study is planed for the aim of determining of the physical education and sports academy students’ information, opinions and thoughts about using doping who are interested in football and sports division.

Methodology
Type and location of the survey: The identification study was made at Karamanoğlu Mehmetbey University at fall term in 2008-2009 education-training year. Working group of the study: 100 university students who agree to participate in study, are interested in football and sports divition and study in 1st, 2nd, 3rd and 4th class of Physical Education And Sports Academy at Karamanoğlu Mehmetbey University and Selcuk University, composed the creation of study.

Data collection methods and tools: Study data was gathered by survey method that leant against self-declaration of participants. In the survey form some questions which are specific to interrogation of socio-demographic features: age, sex, studying university, how many years they do sports, who effectively directs them to do the sports a knowledge form which is leant against measuring knowledge level about doping were asked about using doping and questions to the students. Data Analysis: The number percentage distribution and t-test were used in the data analysis. Evaluation of data was made use of SPSS 13.0 programme.

Limitation of the study
1. Karamanoğlu Mehmetbey University, physical education and sports college students are limited.
2. With people doing sports actively is limited.
3. With students being interested in branch of football is limited.

Findings
University students’ socio-demographic properties who are doing actively sports and are interested in branch of football sports are researched below.

<table>
<thead>
<tr>
<th>Properties</th>
<th>AV./SD</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>21.83±1.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girl</td>
<td>19</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Boy</td>
<td>81</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>University</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Karamanoğlu Mehmetbey University</td>
<td>67</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Selcuk University</td>
<td>33</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Sports doing status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3 year</td>
<td>27</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>4-7 year</td>
<td>35</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>8-11 year</td>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>12-15 year</td>
<td>23</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>The reason of ling.dative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With his or her own wish</td>
<td>62</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>With his or her friend</td>
<td>13</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Media</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Physical Education Teacher or trainer</td>
<td>18</td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>
% 18 of the students are girls and % 82 of the students are boys participating in the study. Students' age average is 21.83±1.62, and % 67 of the students study at Karamanoğlu Mehmetbey University and % 33 of the students study at Selcuk University and the department of physical education and sports. It has found that % 27 of the students has done sport for 1-3 years, % 35 of them for 4-7 years, % 15 of them for 7-11 years and % 23 of them for 12-15 years. And they have indicated that students' tends to the sport is via % 62 by own attention, % 13 intervention of family and friends, % 7 media and % 18 the physical education teacher and trainer (Table 1).

<table>
<thead>
<tr>
<th>QUESTIONS</th>
<th>Yes</th>
<th>Partially</th>
<th>No</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you have enough information about doping?</td>
<td>19</td>
<td>24</td>
<td>57</td>
<td>100</td>
</tr>
<tr>
<td>The stimulative things are mostly used.</td>
<td>23</td>
<td>27</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Is Doping harmful to health?</td>
<td>85</td>
<td>12</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Narcotic analgesics are mostly used in sports.</td>
<td>49</td>
<td>28</td>
<td>23</td>
<td>100</td>
</tr>
<tr>
<td>Anabolic androgenic steroids are mostly used in sports</td>
<td>21</td>
<td>65</td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

When students’ opinions and ideas are examined about using of doping of students in football industry, it was found 19 % of students have no enough information about doping, 23 % of the students have expressed the most stimulating substances used in the sport. While 85 % of the students express that doping means that a substance hazardous to health when, % 49 narcotic analgesic is used most in sports, and % 21 the most in sports is used to express Anabolic steroids have androgenic (Table 2).

**Discussion and results**

When our research results are explored, while the proportion of students who are interested in branch of football and are doing sports, saying that we have enough knowledge about using doping was found % 19, the proportion of students saying that we don’t have enough knowledge about doping was found % 57. While the proportion of students saying that it is the most using stimulants at sports was found %23, the proportion of students saying that it is not the most using stimulants at sports was found %50. While the proportion of students thinking that doping is harmful was found % 85, the proportion of students thinking that doping is not harmful was found % 3. While the proportion of students saying that it is the most using narcotic analgesics was found % 49, the proportion of students saying that it is not the most using narcotic analgesics was found % 23. While the proportion of students saying that it is the most using anabolic androgenic steroids at sports was found % 21, the proportion of students saying that it is not the most using narcotic analgesics at sports was found % 14.

It was determined that students, who are interested in branch of football and are doing sports actively, have no enough knowledge about doping in our research. % 83 of the students who participated in the research saying that doping is insanitary is a positive result. Stimulants are used to increase the performance at sports. Increases % 0.6-1.2 at swimmers and % 1.5 at runners, increasing % 3-4 performance with the using of amphetamine (stimulant) at footballers in a study done were taken notes (Ariens 1965). Trainers, physical education teachers, sports managers and federalational athletes should be absolutely informed about doping, observed the athletes’ performance changes well and should be prevented from getting in the habit and neediness. Yıldırım (2001) compared with doping using inclinations between amateur and professional footballers. It was found that using doping was not common inclination and not becoming different between amateur and professional footballers meaningfully in his study. Consequently, he found that footballers’ doping using levels were not enough.

It should be noted that the easy and healthy way to improve performance, and regular and proper training, adequate rest, proper motivated violence, adequate and balanced diet and sports activity is the scientific approach in all stages.

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INTRODUCTION

Many minerals considered as essential (materials that body can’t produce and should be taken from outside) are necessary for organism’s doing its function healthily (B.L. Vallee, K.H. Falchuk, 1993). Although zinc, being one of these elements, ranks number 23 considering the position of being on earth, it is commonly used in biology. So indeed, zinc is the only metal being in each enzyme class. As a natural result of this, it exists nearly in every cell of body (B.L. Vallee, D.S. Auld, 1989). 1.4-2.3 gr zinc exists in an adult male and 60 mg zinc exists in a newborn infant. % 80-90 of all body zinc exists in muscles, skin and bones, but it doesn’t form a storage since its mobilization is limited (Y. Üçkardes, 2006).

Since zinc is necessary for many enzymes in metabolism, a serious zinc absence will affect muscle functions negatively. A low muscle-zinc level will decrease the capacity of endurance as a result (A. Cordova, Alva-M. rez-Mon, 1995). Zinc doesn’t have a very special storage like iron as well as its toxicity is low. So taking zinc regularly through a diet is needed.

THE COMPARISON OF URINE ZINC VALUES OF FOOTBALLERS IN THE INDUSTRIAL REGION AND OUTSIDE THE INDUSTRIAL REGION

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2School of Physical Education and Sport, Selcuk University, Konya, Turkey

ABSTRACT

The aim of this study is to examine urine-zinc values of footballers living and doing training in industrial region and footballers living and doing training outside industrial region.

In the research, 14 amateur footballers, whose age-average is 24.00 ± 3.46 year, height-average is 1.76 ± 0.05 meters, body weight average is 70.79 ± 6.70 kg and sports-age average is 11.71 ± 3.49 year and who do training in industrial region and 10 amateur footballers, whose age-average is 20.40 ± 0.84 year, height-average is 1.75 ± 0.07 m, body weight average is 69.70 ± 7.81 kg, sports-age average is 6.50 ± 1.84 year and who do training outside industrial region, were participated voluntarily.

One tube of urine specimen was taken from the footballers participated in the research. The urine specimen taken was analyzed in Biochemistry laboratories through Anodic Stripping Voltammetry (ASV).

A statistical difference has been determined between zinc values of footballers participated in the research considering their doing training in industrial region and outside industrial region. (P<0.05) The zinc values of footballers living and doing training in industrial region have been found to be higher than the zinc values of footballers living and doing training outside industrial region in the research.

To conclude, it is thought that the trace elements in human body are affected by working and living environment and as well, it can be said that this situation should be taken into account by the trainers.

Key words: industrial region, zinc, footballer.
it is stored as an independent enzyme in musculoskeletal system. Physical exercise may affect antioxidant enzymes like CuZn-SOD and Mn-SOD. But its effect on regular acute exercise and physical activity is disputable (C. Nakao, 2000). Nowadays, it is known that zinc has important roles in metabolic events, protein, carbohydrate, energy, nucleic acid, lipid and hem synthesis, gene expression, immune system maturation, tissue synthesis and embryogenesis (A. Karadag, 2006).

Therefore, it is aimed in this study to compare urine-zinc values of footballers doing training in Middle East Industry-Trade Center (MEITC) and footballers doing training outside MEITC.

**MATERIAL AND METHOD**

In the research, 14 amateur footballers, whose age-average is 24,00 ± 3,46 year, height-average is 1,76 ± 0,05 meters, body weight average is 70,79 ± 6,70 kg and sports-age average is 11,71 ± 3,49 year and who live and do training in Ankara MEITC region and 10 amateur footballers, whose age-average is 20,40 ± 0,84 year, height-average is 1,75 ± 0,07 m, body weight average is 69,70 ± 7,81 kg, sports-age average is 6,50 ± 1,84 year and who live and do training outside MEITC region, were participated voluntarily.

**RESULT**

Table 1. Physical characteristic data for the test subjects.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Footballers in industrial region (n = 14)</th>
<th>Footballers in outside industrial region (n = 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M ± SD</td>
<td>M ± SD</td>
</tr>
<tr>
<td>Age (year)</td>
<td>24,00±3,46</td>
<td>20,40±0,843</td>
</tr>
<tr>
<td>Body height (m)</td>
<td>1,76±0,056</td>
<td>1,75±0,078</td>
</tr>
<tr>
<td>weight (kg)</td>
<td>70,79±6,70</td>
<td>69,70±7,81</td>
</tr>
<tr>
<td>Sport of Experiences age</td>
<td>11,71±3,49</td>
<td>6,50±1,84</td>
</tr>
</tbody>
</table>

When table 1 was examined, it has been determined that age-average is 24,00 ± 3,46 year, height-average is 1,76 ± 0,05 meters, body weight average is 70,79 ± 6,70 kg and sports-age average is 11,71 ± 3,49 year of the footballers doing training in industrial region and age-average is 20,40 ± 0,84 year, height-average is 1,75 ± 0,07 m, body weight average is 69,70 ± 7,81 kg, sports-age average is 6,50 ± 1,84 year of the footballers doing training outside industrial region.

Table 2. The comparison of urine zinc values for footballers.

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>St. Error</th>
<th>Difference means</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footballers in outside industrial region (µg l⁻¹)</td>
<td>10</td>
<td>1,5040</td>
<td>0,3554</td>
<td>0,1124</td>
<td>1,2810</td>
<td>3,401</td>
<td>0,003*</td>
</tr>
<tr>
<td>Footballers in industrial region (µg l⁻¹)</td>
<td>14</td>
<td>2,7850</td>
<td>1,1458</td>
<td>0,3062</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*P<0.05

When table 2 was examined, a statistical difference has been found in comparison of zinc values of footballers doing training in industrial region and footballers doing training outside industrial region.

**Discussion and conclusion**
In this study aiming the comparison of urine-zinc values of footballers doing training in industrial region and footballers doing training outside industrial region, a statistical difference has been found between zinc values of footballers participated in research considering their doing training in industrial region and outside industrial region (p<0.05). In the research which Pizent et al. (2003) carried out over 156 control group and 299 healthy men aged 20-25 and living in industrial region in Zagreb and being exposed to zinc, copper and cadmium elements, they reported that these elements had an important effect on serum concentration (Al.Pizent, J. Juraseović, S. Telisman, 2003). In this study which was carried out with the aim of determining if there was a difference between the trace element levels in 24 –hour urine of the workers in Cinkur and the trace element levels in urine specimen of control group and examining the effects of working environment on trace element amounts in human body, the elements such as Fe, Zn, Pb, Mn and Cu in 24-hour urine of the study group were observed to be statistically higher at a significant level than the control group (Y. Yagmur, 1994). In a research which was carried out over male workers having no illness in Black sea Copper Operations Joint Stock Company Samsun Operation management, no difference in copper and zinc levels in people in the company was observed compared to the people outside the company. The result why copper and zinc levels are normal may result from plasma levels' being unable to show body copper and zinc situation entirely S.Aslan, 1999). E. Kara (2007) carried out a zinc application over 20 young male wrestlers and determined that serum and zinc levels measured after application increased significantly compared to the ones before application and showed that zinc application activated antioxidant system in athletes (E.Kara, 2007). In the study which C.J. Koury et al. (2004) carried out over triathletes, sprinters, marathoners and short-long distance swimmers, whereas a significant decrease was observed in plasma zinc values of triathletes, an increase was observed in erythrocyte zinc values during the comparison of triathletes to other groups (p<0.01) (C.J. Koury, Oliveira De Va, et all,2004). It is known that exercise changes zinc density a lot in circulation. Physical activity includes soft tissue trauma and also affects plasma zinc concentration. Plasma and serum zinc density increase immediately after the exercise with short, dense and long-term endurance exercise (C.H.Lukaski, 2000).

To conclude; in this study carried out, zinc values of footballers living and doing training in industrial region have been found to be higher than the zinc levels of footballers living and doing training outside industrial region. Therefore, it is thought that the trace elements in human body are affected by working and living environment and as well, it can be said that this situation should be taken into account by the trainers.
THE INVESTIGATION OF THE RELATIONSHIP BETWEEN PHYSICAL PERFORMANCE and LUNG FUNCTION TESTS AT SPORTSMEN

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ABSTRACT

Importance of exercise in measuring the sportive performance of the sportmen has been increasing in recent years. Therefore, lung function and exercise tests have been quite attractive for the researchers in specifying the appropriate sportmen and evaluating their pre-seasonal performance.

This research has been planned to specify the relationship between the lung function and exercise tests of the footballers and basketballers playing with Diyarbakir Amateur Group and identify the differences between them and those not engaged in sports (the sedentary).

All groups were taken through the physical performance test and the time they completed the running distance was specified. Yet, spirometric measuring as lung function tests of all individuals was taken.

According to the outcomes of this study, the Vital Capacity, one of the static parameters of the lung was found high due to the control group of the basketballers (P < 0.05). The dynamic respiration parameters of the basketballers FEV1/FVC, MVV values (P < 0.001) and FEF%25 of the basketballers were found to have considerable difference with those of sedentary.

Whilst the increase observed with FEV1/FVC ratio and MVV with footballers, the FEV1 and FEF%25 value was found to be rather high as P < 0.05.

Whilst no difference between the time to cover the running distance between basketballers and sedentary was specified, this time period was found to be rather low with footballers compared with other two groups.

It was concluded that lung function tests are required to be handled together with skill and coordination tests in evaluating the competence and the performance of the sportmen.

Key Words: Basketball, football, physical performance, spirometric tests.

Introduction and purpose

Sport has become a major social event nowadays. Sport maintains its development as an important sector via planning made in accordance with scientific principals. Besides, it can also be evaluated as gaining the habit of regular exercising which is important in terms of health. The aim of people dealing with sport is to develop physical and mental health, to provide the sense of self-confidence and to achieve the ultimate performance.

In recent years, the perception of the importance of sport for the health of both the individual and the society resulted in positive developments in sport sciences. Exercise physiology which is an important branch of the sport science also developed with a great acceleration in parallel with these developments and became one of the most important subjects in terms of sport.

The importance of regular exercise for health is clarified each passing day. Exercises enable the muscles, bones, articulations and cardiovascular system to function most properly.

Making sport regularly and for a long period increases the cardio-respiratory activity. Physiological properties that are specialized according to sport constitute the basic components for successful sport performance. Effective inspiratory capacity and physical appropriateness are the principal ones. In this context, determination of inspiratory capacity and application of improving exercise methods have become a crucial event in modern sports. Spirometrical measurements which give information about the resistance of air lines and air stream speeds and which are made in order to show the competence of the pulmonary function are frequently used in respiratory function laboratories.

This study is planned in order to determine the response of the football and basketball players in Diyarbakir amateur group to lung function tests and exercise tests and in order to put forward their difference from the sedentaries who do not make sport regularly.

Scope

Since both offence and defense systems are interbedded in sports of football and basketball and since the games are exciting, contentious and there is a struggle in close contact, every moment of watching the games give excitement to the spectators. Aside from depending on technical intelligence and mental factors, basketball and football games are sports that also require anthropometric and physiological parameters. Anatomic appropriateness, physiological strength and condition are not only the complement of team cooperation, technique and tactic but they are also an important effect in showing technical skill and in withstanding injuries and mutilations. Outstanding structural adjustment and physical strength are necessary to be successful and keep pace with the football and basketball of our day which is played in high tempo.
Today, team sports like basketball and football are more contentious and depend more on physical strength. When we analyze 1980s and 1990s, games in those periods depended more on technique. Coming to 2000s, that understanding changed and is replaced by another understanding which is completely different and which prioritize physical strength. Thus, in such team sports, more strong and powerful players in all aspects have began to be needed in order to obtain equity and superiority. The definition of athletically strong and powerful player is described as someone whose engine properties are developed (fast, swift, enduring) and who have the physical ability, muscle structure and a maximal inspiratory capacity that his/her branch requires. Therefore, along with the changing understanding of sport and type of struggle, training models and methods also show changes day by day. Together with the changing models, training methods that improve physical strength, include muscle work out appropriate to the branch and increase inspiratory capacity started to be applied in all branches and categories from amateur teams to professional ones. All these studies and measurements aim to use more objective determiners in player selection by determining the most appropriate anthropometric, physiologic and psychological properties for basketball, football and all sport disciplines.

In the light of all these improvements, basketball and football have become very attractive disciplines.

**Material and method**

In order to form the test groups, 15 basketball players (age: 16.80 ± 0.14) in amateur league level and 15 footballers (age: 16.87 ± 0.34) were included in the study. Besides, a control group was formed with 15 peer sedentary individuals (age: 17.27 ± 0.27). All of the experimental subjects are males and they have been playing actively in the related branches for 5 years. The sedentary individuals who are the control group have not performed actively in any sport activity until today.

The study is comprised of two stages:

- Physical Performance Test (Skill and Coordination Test)
- Lung Function Test

In the first stage, the subjects are tested in the skill and coordination track prepared for them. This stage depends on the principle of subjects’ completing the skill track racing against time. While preparing the track, it is taken into consideration that the test would not be peculiar to only one branch but it is aimed that the track would determine the skill, coordination, balance, speed, swiftness and flexibility of the sportsmen and sedentaries in general. Arterial blood pressures and hematocrit values of the sportsmen were measured before the physical test. In order to determine the hematocrit values, blood samples were taken before the exercise and preserved in capillary tubes. These blood samples that were preserved in tubes were later centrifuged and the hematocrit values of the subjects were determined.

**Figure 1 - Skill and Coordination Track**

As for the second stage, the subjects were taken to the laboratory and their spirometrical tests were performed. In order to avert the factors such as device adaptation problem, excitement and stress, pilot tests were performed before the main test. In the following stage, it was passed to the measurements.

All measurements were carried out in accordance with ATS (American Thoracic Society ) criteria. Biometrical properties of the subjects were taken as basis while determining the predictive values of the parameters.

In the statistical evaluation of the results, SPSS 16.0 For Windows package program was used. The results were tested via Analysis of Variance (ANOVA). LSD method was used in the Post Hoc evaluation of the differences between groups.

**Findings**

In Table-1 the biometric properties (age, height, body weight) of individuals are compared. According to that, while there is not a meaningful difference between the groups in terms of age and body weight, it is determined that the basketball group individuals’ heights are significantly higher in proportion to the control and football groups (p<0.001). The hematocrit values and systolic and diastolic blood pressures of all individuals are shown in Table-2. There is not a meaningful statistical difference between the groups in terms of these parameters (p>0.05).

In Table-3 the respiratory parameters of all groups and comparison results of track completion duration average values among groups are shown.

According to that, Vital Capacity value which is one of the statistical parameters of lungs is determined to be significantly high only in basketball group individuals compared to the control group (p<0.05).

Taking dynamic respiratory parameters of lungs into consideration, a significant statistical difference is determined when FVC1, FVC1/VC, MBC values (p<0.001) and MFRE values (p<0.01) in basketball group is compared to the control group.
As for the footballer group, while there is an increase in FVC1/VC rate and MBC value compared to the control group, FVC1 and MFRE value is found to be higher in a p<0.05 rate importance.

When the individuals are handled in terms of physical exercise tests, it is determined that the track completion durations of footballers are significantly lower than both control and basketball groups (P < 0.001 and P < 0.05 respectively). There is not a significant difference between the basketball group and control group individuals in terms of track completion duration.

Table 1 – Comparison of the biometrical properties of basketball, football and control group individuals

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>A. HEIGHT (cm)</th>
<th>B. WEIGHT (kg)</th>
<th>C. BARM HEIGHT (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTROL</td>
<td>178.9 ± 0.27</td>
<td>77.47 ± 1.67</td>
<td></td>
</tr>
<tr>
<td>BASKETBALL</td>
<td>180.8 ± 0.24</td>
<td>80.39 ± 1.63</td>
<td></td>
</tr>
<tr>
<td>FOOTBALL</td>
<td>180.2 ± 0.34</td>
<td>75.33 ± 1.67</td>
<td></td>
</tr>
</tbody>
</table>

*: Statistical importance of the difference when compared with the control group p< 0.001, (x ± SE).

Δ: Statistical importance of the difference when compared with the footballer group p< 0.01, (x ± SE).

Table 2 – Comparison of the Hematocric value, systolic and diastolic pressure average value among groups before the physical test.

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>HCT (%)</th>
<th>1F (mmHg)</th>
<th>1D (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTROL</td>
<td>43.20 ± 0.30</td>
<td>126.25 ± 4.78</td>
<td>73.52 ± 1.59</td>
</tr>
<tr>
<td>BASKETBALL</td>
<td>44.07 ± 0.34*</td>
<td>122.67 ± 4.52*</td>
<td>72.67 ± 1.50*</td>
</tr>
<tr>
<td>FOOTBALL</td>
<td>43.47 ± 0.33*</td>
<td>123.67 ± 3.93*</td>
<td>76.00 ± 1.04*</td>
</tr>
</tbody>
</table>

*: Statistical importance of the difference when compared with the control group p > 0.05, (x ± SE)
Table 3 – Respiratory parameter values and track completion durations of all groups.

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>FVC1 (L)</th>
<th>FVC1(V%)</th>
<th>MFEV (L/sec.)</th>
<th>MFEV (L/sec.)</th>
<th>MVEF (L/sec.)</th>
<th>TV (L)</th>
<th>TV (L)</th>
<th>TV (L)</th>
<th>TV (L)</th>
<th>TV (L)</th>
<th>TV (L)</th>
<th>TV (L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTROL</td>
<td>3.04 ± 0.06</td>
<td>78.34 ± 0.54</td>
<td>4.11 ± 0.13</td>
<td>3.75 ± 0.31</td>
<td>1.00 ± 0.10</td>
<td>0.68 ± 0.04</td>
<td>1.31 ± 0.03</td>
<td>1.97 ± 0.04</td>
<td>3.06 ± 0.06</td>
<td>25.46 ± 0.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BASKETBALL</td>
<td>3.00 ± 0.07***</td>
<td>82.95 ± 0.65**</td>
<td>7.00 ± 1.00**</td>
<td>4.23 ± 0.39</td>
<td>1.40 ± 0.20</td>
<td>0.72 ± 0.04</td>
<td>1.42 ± 0.07</td>
<td>2.02 ± 0.04</td>
<td>4.26 ± 0.05</td>
<td>36.29 ± 0.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOOTBALL</td>
<td>3.35 ± 0.08**</td>
<td>85.61 ± 0.72**</td>
<td>6.81 ± 1.00*</td>
<td>3.76 ± 0.22</td>
<td>1.46 ± 0.24</td>
<td>0.67 ± 0.03</td>
<td>1.31 ± 0.05</td>
<td>2.01 ± 0.02</td>
<td>4.00 ± 0.07</td>
<td>33.31 ± 0.42**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

***: Statistical importance of the difference when compared with the control group; p < 0.001, (x ± SE),

**: Statistical importance of the difference when compared with the control group; p < 0.01, (x ± SE),

*: Statistical importance of the difference when compared with the control group; p < 0.05, (x ± SE),

Δ: Statistical importance of the difference when compared with the footballer group; p < 0.05, (x ± SE).

Discussion and conclusion

In order to research if there is a correlation between the physical performance test values and respiratory functions of sportsmen from different sport branches, individuals in youth category consisting of basketball players, footballers and control groups whose ages range between 15–19 are included in the study.

The physical performances of individuals are evaluated on the basis of their completion durations of the prepared skill and coordination track. As for their respiratory functions, it was performed by measuring their lung volume and capacities via spirometrical method. After the statistical analysis of the acquired results, it was passed on to the comment stage.

In course of the literature scanning we made before starting the study, we noticed that there are many studies available on the physical performances of the sportsmen; however, there are not so many studies researching the relationship between the respiratory functions and physical performance tests of the sportsmen. From this point forth, we carried out this study with 45 young male individual consisting of basketball, football and control groups.

According to the results we acquired, it was observed that the respiratory parameters of the footballers and basketball players are significantly high as compared with the control group individuals. Moreover, it was determined that the physical performance tests of the football group individuals are in an advanced level as compared with both basketball players and control group.

Consequently, it can be said that there is a positive relationship between the respiratory functions and physical performance tests of the sportsmen. We are of the opinion that taking some physiological parameters into consideration in parallel with the sportive skills while selecting players would be beneficial in order to increase sportive success. However, we consider that some more comprehensive researches must be done in order to make an ultimate judgement.

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INFLUENCE OF JUMPING EXERCISES ON THE DEVELOPMENT OF DETENTION AT HANDBALL AGED 12 -13 YEARS

POPA CRISTIAN, PhD Lecturer, Ovidius University of Constanta, Romania

ABSTRACT
Objective. Jumps exercises put in handball training are o good method to develop the as it can be remarked on this essay our intention is to develop the vertical detachment of twelve-thirteen years old (12-13) boys, knowing the fact that the force can not be developed by bar bells at this age.

Research Methods and Procedures. The research was conducted over 6 months, TI has made in September 2005, and the TF in February 2006. The trainings were held both outdoors and in both groups by training room is under the same conditions, the difference exists only in the fundamental experiment in group training where exercises were introduced themselves (which included the independent variable) for the development of detente.

The difference in driving systems of the two groups was the application for development exercises detention of the experimental group. Otherwise drive systems have followed the general physical and driving qualities, the same for both groups. In the number of training sessions were conducted three workouts per week that was identical for both groups so that the second training experiment group contained the independent variable.

Results. On the experimental group will see the results of subjects in the 3 successive jumps (541.667 ± 21.197 baseline and after six months 573.75 ± 18.563; at a threshold of significance p ≤ 0.0005), vertical detachment on two legs (33, initial 75 ± 2.179 and 40.917 ± 2.61 after six months, at a threshold of significance p ≤ 0.0005) foot vertical separation of battle (42.25 ± 2.094 initially and after six months 48.833 ± 2.368; at a threshold of significance p ≤ 0.0005) increased due to implementation of training programs that contain the independent.

Discussion and Conclusions. Assuming the paper, the behavior of the dependent variable (distance traveled during the long jump 3 successive away with two feet vertically and on foot fighting) in the two groups (experimental group and control group), resulting in application independent variable (placing in training exercises for jumping).

Confirmed the hypothesis, that the method of jumping to handball novice influence of performance of subjects in the experimental group on the distance traveled during the 3 successive jumps, two feet vertical separation and vertical separation foot battle.

Key words: handball, detention, jumping exercises

Introduction
Modernization sport is a complex process of reassessment, the reassessment of what has proved and still proves valuable, and introducing new features requested by current guidance (D. COLIBABA - EVULEŢ, 1998). Continuous modernization of sport must find new methods, procedures and capacity to act in practice and continuous improvement of existing ones, those so-called classical In line with this task of great importance to sports we have developed this work aimed at achieving the higher odds of a goal important enough in general physical training novice athletes namely motor skill development and in particular the development of detention (G. RAŢĂ, B. RAŢĂ, 1999).

Almost impossible due to increased performance (that can not provide results of high level of skills young people have not even above average) to find the most appropriate methods and means of developing a task, and detention is a concern of many experts.

The purpose and tasks work

The purpose of the present work was observed jumping exercises influence on the development of detention at a beginner handball group consists of boys aged 12-13 years. Starting from the initial test is to measure the distance traveled during the three jumps chain, measuring the vertical detachment both run on two feet and breaking the leg of stroke and 6 months after final testing is accomplished in the same conditions as initial testing to see if they have had influence on the performance achieved by the distance traveled during the three jumps chain, the detachment foot vertical separation battle and, in a word on detention.

Research hypothesis
Selection and quantification of training is a necessary means outstanding in the current training process. (C. GEVAT, A. LARION, C. POPA, 2007).

Standardization and streamlining of training means the coach can provide sound and effective use
of training time by testing exercises (C. Rizescu, 2005). Given the purpose of the work - ways of developing detente legs, using the beginning I started jumping in handball at the following hypothesis:

- Which is contributed by jumping exercises used as a means of training the children start training on the behavior of the dependent variable, namely distance covered during the 3 successive long jump, the vertical detachment on two legs and foot fighting.

**Subjects**

When performing this experiment was attended by 24 male subjects engaged in group of beginner handball and who have never practiced any sport. The 24 subjects were formed into two distinct groups: the experimental group and control group (children being trained by Professor Georgescu Adrian at Sports Club Medgidia).

**Protocol research**

The research was conducted over 6 months, TI has made in September 2008, and the TF in February 2009. The trainings were held both outdoors and in both groups by training room is under the same conditions, the difference exists only in the fundamental experiment in group training where exercises were introduced themselves (which included the independent variable) for the development of detente.

Groups of control and has conducted training in the same conditions, not including the training exercises which included the independent variable.

Research monitors the two variables, the dependent variable and independent variable and positive or negative influence of these variables exerted by certain factors throughout the research. Evolution of the dependent variable, namely the evolution of the results on two feet vertically away with that on foot jump shot and three intertwined, like the independent variable is applied in the training and test conditions themselves. Thus both tests (TI and TF) were made in the room at a temperature of between 19-24 degrees in the morning on Monday at 8.30. Testing was done on the first day of the week because the children came after two days in which we are not specific effort, the rest.

Testing the dependent variable (two feet vertical separation that on foot jump shot and three chain) has been made on the parquet, by carrying out two tests, whichever is the best outcome for each subject, is written to achieve treatment statistical data.

Sports equipment during the test subjects was identical. There were no reported injuries or health problems (muscular or otherwise) arising before testing that could adversely affect the performance of subjects.

Actuation systems (the actual exercise of the training) were designed for the physical body with emphasis on speed of implementation force (without weight), detention and technical. In the preparation had an important role in implementing technical exercises themselves because the child had to acquire the correct mechanism to achieve coordination movements very good. Resistance has not been neglected; being developed in game motion weighted less in the preparation. Force had a higher share in developing the upper limb and trunk to the development of lower limbs. Detention of completed quality motive force for development of lower limbs. In the speed to pursue the development of amplitude, frequency movements, reaction speed and in particular the speed of execution.

The difference in driving systems of the two groups was the application for development exercises detention of the experimental group. Otherwise drive systems have followed the general physical and driving qualities, the same for both groups. In the number of training sessions were conducted three workouts per week that was identical for both groups so that the second training experiment group contained the independent variable.

**Results**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Testa 1</th>
<th>Distance traveled during the 3 successive jumps cm.</th>
<th>Vertical separation on two legs cm.</th>
<th>Foot vertical separation of height cm.</th>
<th>Waist cm.</th>
<th>Weight Kg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>INITIAL</td>
<td>D+ Cl+</td>
<td>241,667±42,179</td>
<td>23,724±2,179</td>
<td>42,25±4,094</td>
<td>160,17±44,1,51</td>
<td>20,22±4,272</td>
</tr>
<tr>
<td></td>
<td>Cl-</td>
<td>3,933±3</td>
<td>6,456±2</td>
<td>4,093±5</td>
<td>7,033±2</td>
<td>20,48±2</td>
</tr>
<tr>
<td>FINAL</td>
<td>D+ Cl+</td>
<td>375,54±18,263</td>
<td>40,91±6</td>
<td>46,05±42,169</td>
<td>161,55±41,1,19</td>
<td>50,83±10,241</td>
</tr>
<tr>
<td></td>
<td>Cl-</td>
<td>3,233±3</td>
<td>6,370±2</td>
<td>4,249±3</td>
<td>7,014±4</td>
<td>20,49±4</td>
</tr>
<tr>
<td>CONTROL</td>
<td>INITIAL</td>
<td>D+ Cl+</td>
<td>235,72±30,038</td>
<td>34,03±40,031</td>
<td>42,75±41,201</td>
<td>160,17±44,1,14</td>
</tr>
<tr>
<td></td>
<td>Cl-</td>
<td>3,214±4</td>
<td>5,199±2</td>
<td>3,023±4</td>
<td>6,590±4</td>
<td>20,48±2</td>
</tr>
<tr>
<td></td>
<td>FINAL</td>
<td>D+ Cl+</td>
<td>341,33±62,748</td>
<td>43,33±62,229</td>
<td>101,56±10,85</td>
<td>50,75±8,965</td>
</tr>
<tr>
<td></td>
<td>Cl-</td>
<td>3,568±3</td>
<td>5,021±2</td>
<td>5,144±5</td>
<td>6,718±4</td>
<td>16,635±2</td>
</tr>
</tbody>
</table>

**Discussions**

In the present study were followed over 6 months, several parameters such as distance covered
during the 3 successive long jumps away with two feet vertically and on foot fighting, size, weight.

Assuming the paper, the behavior of the dependent variable (distance traveled during the long jump 3 successive away with two feet vertically and on foot fighting) in the two groups (experimental group and control group), resulting in application independent variable (placing in training exercises for jumping).

On the experimental group will see the results of subjects in the 3 successive jumps (541.667 ± 21.197 baseline and after six months 573.75 ± 18.563; at a threshold of significance p ≤ 0.0005), vertical detachment on two legs (33, initial 75 ± 2.179 and 40.917 ± 2.61 after six months, at a threshold of significance p ≤ 0.0005) foot vertical separation of battle (42.25 ± 2.094 initially and after six months 48.833 ± 2.368; at a threshold of significance p ≤ 0.0005) increased due to implementation of training programs that contain the independent variable.

Results of control group subjects in the 3 successive jumps (539.583 ± 20.038 baseline and after 6 months 540 ± 19.268, at a threshold of significance p ≤ 0.05), vertical detachment on two feet (34.083 ± 1.881 initially and after 34.833 ± 1.749 six months, at a threshold of significance p ≤ 0.01) and vertical detachment battle foot (42.75 ± 2.301 initially and after six months 43.333 ± 2.229, the threshold of significance p ≤ 0, 01) increased only by application programs which did not contain the independent variable.

It is noted that the successive jumps 3 (experimental group 541.667 ± 21.197, 539.583 ± 20.038 control group, at a threshold of significance p ≤ 0.05), vertical detachment on two legs (the experimental group 33.75 ± 2.179, group 34.083 ± 1.881 control, at a threshold of significance p ≤ 0.05) and vertical detachment foot battle (the experimental group 42.25 ± 2.094, control group 42.75 ± 2.301, at a threshold of significance p ≤ 0.01) difference between experimental group and control group on initial testing is significant but a small threshold, which means that at the beginning of the experiment subjects in both groups were very slightly different on the results achieved by During the 3 successive long jump, vertical separation on two legs and foot vertical separation of battle since the subjects have not practiced any sports.

The difference between the two groups of test subjects in the final 3 successive jumps (the experimental group 573.75 ± 18.563, 19.268 ± 540 control group, the threshold of significance p ≤ 0.0005), vertical detachment on two legs (group experiment 40.917 ± 2.61, 34.833 ± 1.749 control group; at a threshold of significance p ≤ 0.0005) foot vertical separation of battle (the experimental group 48.833 ± 2.368, 43.333 ± 2.229 control group at a threshold of significance p ≤ 0.0005) due to the introduction of training programs experiment group independent variable (jumping exercises). On the tests applied, results in the 3 successive jumps, two feet vertical separation and vertical separation foot battle if we can confirm that the effects of introducing the work and training programs jumping exercises are positive (significant) in children aged 12 -13 years.

**Conclusions and proposals**

Confirmed the hypothesis, that the method of jumping to handball novice influence of performance of subjects in the experimental group on the distance traveled during the 3 successive jumps, two feet vertical separation and vertical separation foot battle, which leads to the following conclusion:

- Jumping method improves detention, significantly influencing the outcome of the distance covered during the 3 successive jumps, two feet vertical separation and vertical separation foot battle to handball novice aged 12 to 13 years.

Size and weight of subjects over 6 months of days have evolved differently (significant difference between experimental group and control group on the TI and TF) so that did not influence the results of two groups, the distance covered during the 3 successive jumps, breaking the upright on two legs and foot vertical separation of battle.

We believe that placing the preparation handball jumping exercises is beneficial in enhancing performance detente legs, but it is conducted on a longer period of time, at least one year and on this basis we propose a model for training in composition to finds himself jumping exercises

**REFERENCES**


HEALTH, FITNESS AND ECONOMIC STATUS: A COMPARATIVE STUDY

RAKESH TOMAR
Department of Physical Education, King Fahd University of Petroleum and Minerals, Saudi Arabia

ABSTRACT

Objectives
Evaluation of body composition has become an important aspect of adult fitness and medically supervised rehabilitation programme. Suitable body composition is important for general health and appearance for maximizing athletic performance. The purpose of study was to prepare the estimates for the body fat for college youth. Another purpose of the study was to compare body composition of adult men of Delhi on the basis of economic status of living.

Methods and Procedures
For the purpose of present study five thousand adult males of Delhi State were selected randomly as the subjects for the study. The age of the subjects were ranging from 18-25 years. Subjects were from various colleges of Delhi State. On the basis of family income, subjects were divided into three different age groups namely: low income group, middle income group and high income group. Following variables were selected for the purpose of present study: Body Density, Body Fat Percentage, Body Mass Index, Fat Mass and Skin folds thickness (Chest, Triceps, Sub scapular and Sum of three skin folds), Height, Weight and Activity. The scores for each variable were gathered for all the subjects separately and then pooled age wise. Analysis of variance was employed to compare the subjects belonging to different age groups, on different variables. The level of significance was set at 0.05

Results and Discussions
Analysis of results in relation to various income groups revealed significant differences between three income groups namely low income group, medium income group and high-income group on all the selected variables. Body Composition may be influenced by a number of factors such as age, sex, diet, and exercise. Height is genetically determined but its growth is also affected by the nutritional status, economic conditions and lifestyle of family. Height shows significant differences among three groups. It was low in low income group and highest in high-income group. Weight also tends to be more in high-income group because of increase fat percent and fat mass in high-income group. Aging is often associated with a gain in weight, an accumulation of body fat, a loss of lean tissue, demineralization of bone and decrement in aerobic power (Astrand, Astrand and Asa, 1973; Baur, 1960, Forber & Reina 1970, Malina 1969, Smith 1982). Both motor fitness variables sit-up and sit & reach showed decreasing trend. Activity level was also reduced. It was least in high income group and highest in low-income group. Both body fat percent and fat mass showed linear increase with increase in family income of subjects. This clearly indicates that economic status of an individual affects the body composition of the youth. Mean scores of all the body components were higher in high-income group than low and medium income group. Subjects belonging to high-income group have to lose maximum percentage of fat than other groups. In relation to lean body mass mean scores of medium income group was lower than the low-income group. Lack of exercise is the prime cause of obesity in all age groups. Obesity is defined as the condition of excess body fat. From the above discussion on the analysis of present study it can be concluded that reduced level of physical activity (as also indicated by reduced performance in two motor fitness variables) and increased family income at higher age may be attributed to the higher body fat percent, fat mass and body weight with the progression of age.

Key Words: body composition, economic status, body fat.

Introduction & Research Objective
Body composition is considered to be an important measure of health fitness. A high percentage of body fat relative to bone and muscle has been shown repeatedly to be predictor of wide range of degenerative diseases. Body composition is much better measure of health fitness. Suitable body composition is important for general health and appearance for maximizing athletic performance. For these reasons accurate measurements of body components are needed to develop sound preventive health and athletic programme. With growing supply of literature supporting the value of regular physical activity for health and fitness, the evaluation of body composition has become an important aspect of adult fitness and medically supervised rehabilitation programme. Body composition is a primary component of health related fitness. Exercise specialist typically assumes responsibility for evaluating the body composition of adults. Evaluation of body composition permits quantification of major structural components of body – muscle, bone, and fat. The accurate calculation of percent body fat is the true definition of fitness and obesity. The accurate measurement of lean body mass is now the most rational basis for nutritional and exercise prescriptions. The purpose of study was to compare body composition of adult men of Delhi on the basis of economic status of living. Another purpose of the study was to prepare the body fat estimates for college youth on the basis of their age.

Methods & Procedures
For the purpose of present study five thousand adult males of Delhi State were selected randomly as the subjects for the study. The age of the subjects were ranging from 18-25years. Subjects were from various colleges of Delhi State. On the basis of family income, subjects were divided into three different age groups namely: low income group, middle income group and high income group. Following variables were selected for the purpose of present study: Body Density, Body Fat Percentage, Body Mass Index, Fat Mass and Skin folds thickness (Chest, Triceps, Sub scapular and Sum of three skin folds), Height, Weight and Activity. The scores for each variable were gathered for all the subjects separately and then pooled age wise. Analysis of variance was employed to compare the subjects belonging to different age groups, on different variables. The level of significance was set at 0.05 For the purpose of analysis of data, Software SPSS for Windows (11.0 version) and Microsoft Excel 2000 were used to compare different groups on selected variables.

Results and Discussion

Table – 1
ANALYSIS OF VARIANCE OF SELECTED BODY COMPOSITION VARIABLES IN RELATION TO INCOME GROUPS

Table 1 reveals, all the variables listed above exhibits significant difference in relation to age.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Source of Variance</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Ratio</th>
</tr>
</thead>
<tbody>
<tr>
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<td>3151.41</td>
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<td>7710.22</td>
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<td>4401.90</td>
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*The F Ratio significant at the .05 level.
F.<sub>0.05</sub> (2, 4997) = 2.99

Table - 48
MEAN AND STANDARD DEVIATION OF SELECTED VARIABLES FOR DIFFERENT INCOME GROUPS
In relation to body fat percentage, Fat Mass, Triceps Skin Fold, Sub Scapular Skin fold, Sum of three skin fold the sequence of obtained mean scores among all income groups was Low Income Group < Medium Income Group < High Income Group.

In relation to Height, Sit Up, Body Density and activity, the sequence of obtained mean scores among all income groups was Low Income Group > Medium Income Group > High Income Group.

In relation to lean body mass, Body mass index, chest skin fold, sit & reach and weight the sequence of obtained mean scores among all income groups was Low Income Group > Medium Income Group > High Income Group.

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The journal is indexed in: 1. INDEX COPERNICUS JOURNAL MASTER LIST. 2. DOAJ DIRECTORY OF OPEN ACCES JOURNALS, 2009

Table – 2
PERCENTAGE OF FAT ESTIMATED FOR COLLEGE YOUTH
(Sum of Chest, Triceps and Sub Scapular Skin Folds)

<table>
<thead>
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<th>Sum of Three Skin Folds</th>
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Fig. 7: Mean Fat Mass
Fig. 8: Mean Lean Body Mass
Fig. 9: Mean Desired Body Mass
Fig. 10: Mean Body Mass Index
Fig. 11: Mean Chest skin fold
Fig. 12: Mean Triceps skin fold
Fig. 13: Mean Sub Scapular skin fold
Fig. 14: Mean Sum of Three skin fold
Fig. 15: Mean Activity Score
Body Composition may be influenced by a number of factors such as age, sex, diet, and exercise. It was evident from the analysis that various age groups considered in this study showed significant differences on body composition components. The difference existed may be due to combination of various factors. Aging is often associated with a gain in weight, an accumulation of body fat, a loss of lean tissue, demineralization of bone and decrement in aerobic power (Astrand, Astrand and Asa, 1973: Baur, 1960, Forber & Reina 1970, Malina 1969, Smith 1982). Analysis of results in relation to various income groups revealed significant differences between three income groups namely low income group, medium income group and high-income group on all the selected variables. Height is genetically determined but its growth is also affected by the nutritional status, economic conditions and lifestyle of family. Height shows significant differences among three groups. It was low in low income group and highest in high-income group. Weight also tends to be more in high-income group because of increase fat percent and fat mass in high-income group. Both motor fitness variables sit-up and sit & reach showed decreasing trend. Activity level was also reduced. It was least in high income group and highest in low-income group. Both body fat percent and fat mass showed linear increase with increase in family income of subjects. This clearly indicates that economic status of an individual affects the body composition of the youth. Mean scores of all the body composition components were higher in high-income group than low and medium income group. Subjects belonging to high-income group have to lose maximum percentage of fat than other groups. In relation to lean body mass mean scores of medium income group was lower than the low-income group. Since analysis of variance was found significant in all the variables Scheffe’s post hoc test was applied to test the inter group variability. Post hoc test revealed that variability does exist between the groups on body fat percent, body density and height. But variability does not exist between Low income group and Medium income group on fat mass, lean body mass, weight, chest skin fold, triceps skin fold, sub scapular skin fold and sum of three skin fold. Two motor fitness variables sit up and sit and reach does not exhibit variability.

From the above discussion on the analysis of present study it can be concluded that reduced level of physical activity (as also indicated by reduced performance in two motor fitness variables) and increased family income at higher age may be attributed to the higher body fat percent, fat mass and body weight with the progression of age.

**Conclusions**

1. In body composition components significant difference was found among all income groups in relation to body density, body fat percent, fat mass, lean body mass, chest skin fold, triceps skin fold, sub scapular skin fold and sum of three skin folds.
2. In subject’s characteristics significant difference was found among all income groups in relation to height and weight.
3. All the income groups showed significant difference in relation to activity level.
4. In relation to body fat percentage the sequence of obtained mean scores among all income groups was Low Income Group < Medium Income Group < High Income Group.
5. In relation to fat mass the sequence of obtained mean scores among all income groups was Low Income Group < Medium Income Group < High Income Group.
6. In relation to lean body mass the sequence of obtained mean scores among all income groups was Low Income Group > Medium Income Group > High Income Group.
7. In relation to weight the sequence of obtained mean scores among all income groups was Low Income Group > Medium Income Group > High Income Group.
8. In relation to body mass index the sequence of obtained mean scores among all income groups was Low Income Group > Medium Income Group > High Income Group.
9. In relation to body density the sequence of obtained mean scores among all income groups was Low Income Group > Medium Income Group > High Income Group.
10. In relation to chest skin fold the sequence of obtained mean scores among all income groups was Low Income Group > Medium Income Group < High Income Group.

11. In relation to triceps skin fold the sequence of obtained mean scores among all income groups was Low Income Group < Medium Income Group < High Income Group.

12. In relation to sub scapular skin fold the sequence of obtained mean scores among all income groups was Low Income Group < Medium Income Group < High Income Group.

13. In relation to sum of three skin fold the sequence of obtained mean scores among all income groups was Low Income Group < Medium Income Group < High Income Group.

14. In relation to sit & reach the sequence of obtained mean scores among all income groups was Low Income Group < Medium Income Group < High Income Group.

15. In relation to sit up the sequence of obtained mean scores among all income groups was Low Income Group > Medium Income Group > High Income Group.

16. In relation to height the sequence of obtained mean scores among all income groups was Low Income Group < Medium Income Group < High Income Group.

17. In relation to activity the sequence of obtained mean scores among all income groups was Low Income Group > Medium Income Group > High Income Group.

Acknowledgement

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REFERENCES


Content

❖ KINETOTHERAPY

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²University of Medicine and Pharmacy, Craiova
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¹Atatürk University, College of Physical Education and Sports, TR-25240-Erzurum-TURKEY
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³Hacettepe University Health Sciences Faculty Physical Therapy and Rehabilitation Department, Ankara/Turkey
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²Karamanoğlu Mehmet Bey University Institute of Social Sciences, Karaman, Turkey
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Requirements for the elaboration of the scientific papers

The experiment type paper
The research paper must include:
- **the title of the paper and the author** (authors) of the research; The title of the paper will be written with 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 12, Bold, Align Left, one line under the title of the paper, preceded by the highest academic degree. Under the author's name, the department (departments) and institution (institutions) name will be written, through which the article can be assigned, the contact address and the e-mail of the person (persons) responsible with the manuscript mailing or reprint and 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 structured abstract and 3-5 key words** will be written with Times New Roman, Size 10, Justified;
- **the introduction** and the object of the research will be written with Times New Roman, Size 10, Justified, two columns;
- **the hypothesis** (hypotheses) of the research, **the procedures and methods** of research (subjects, applied tests), **results, discussions, conclusions** will be written 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 articles will be written in italics.

The essay type paper
The essay type paper must contain:
- **the title of the paper and the author** (authors) of the research; The title of the paper will be written with 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 12, Bold, Align Left, preceded by the highest academic degree. Under the author's name, the department (departments) and institution (institutions) name will be written, through which the article can be assigned, the contact address and the e-mail of the person (persons) responsible with the manuscript mailing or reprint and 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 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.**

The abstract must not contain more than 150 words for unstructured abstracts (essay type) and 300 words for structured abstracts (experiment type). The abstract must be elaborated in English and Romanian (for Romanian authors). In the abstract there will be no abbreviations used. The structured abstract must contain:

<table>
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<th>For the experiment type paper</th>
<th>For the essay type paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>- the author (authors) of the research and the title of the paper;</td>
<td>- the author (authors) of the research and the title of the paper;</td>
</tr>
<tr>
<td>- the objective (objectives) of the research;</td>
<td>- the object of the research;</td>
</tr>
<tr>
<td>- the procedures and methods of research (subjects, applied tests);</td>
<td>- the content of the research (short summary);</td>
</tr>
<tr>
<td></td>
<td>- conclusions (main conclusion);</td>
</tr>
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</table>
Example of structured abstract for the experiment type paper:

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.

The research hypotheses
The hypotheses of the paper must be clear and concise.

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.

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>
<thead>
<tr>
<th>Variables</th>
<th>Feminine subjects</th>
<th>n=21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>M±DS</td>
<td>CV (%)</td>
</tr>
<tr>
<td>Body height (cm)</td>
<td>166,143±5,597</td>
<td>3,369</td>
</tr>
<tr>
<td>Body weight (kg)</td>
<td>61,524±8,364</td>
<td>13,595</td>
</tr>
<tr>
<td>IMC (kg/m²)</td>
<td>22,338±3,282</td>
<td>14,692</td>
</tr>
<tr>
<td>Body fat percentage (%)</td>
<td>25,329±3,074</td>
<td>12,136</td>
</tr>
<tr>
<td>Fat mass (kg)</td>
<td>15,182±4,066</td>
<td>25,715</td>
</tr>
</tbody>
</table>

* 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 following order: *, †, ‡, §, ¶, **, ††, ‡‡, etc. Also in the lower part of the 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 (°C), 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
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
- in the phrase “Also, (S. Keller, A.L. Roy, Carpenter G, 2002) found significant differences of isometric force...”
c) more than 6 authors
- at the end of the phrase (T.S. Keller, A.L. Roy, Carpenter G. et al 2002);
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

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.


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)

<table>
<thead>
<tr>
<th>1</th>
<th>The originality of the research theme</th>
<th>15 points</th>
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<td>2</td>
<td>The quality of the research paper structure</td>
<td>5 points</td>
</tr>
<tr>
<td>3</td>
<td>The clarity and quality of the research hypotheses elaboration</td>
<td>10 points</td>
</tr>
<tr>
<td>4</td>
<td>The quality of the registration of the results and their presentation</td>
<td>10 points</td>
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<td>5</td>
<td>The clarity and quality of the discussions directly linked to the results with reference to similar studies</td>
<td>10 points</td>
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<tr>
<td>6</td>
<td>The clarity and quality of the elaboration of the conclusions in accordance with the hypotheses of the paper</td>
<td>10 points</td>
</tr>
<tr>
<td>7</td>
<td>The applicability of the results found in the practical and scientific practice</td>
<td>10 points</td>
</tr>
<tr>
<td>8</td>
<td>The accuracy of the in text and bibliography quoting</td>
<td>10 points</td>
</tr>
<tr>
<td>9</td>
<td>The clarity and quality of the expression in the text</td>
<td>10 points</td>
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<tr>
<td>10</td>
<td>Strictly respecting the elaboration technical requirements</td>
<td>5 points</td>
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**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, gevatcecilia@yahoo.com, crispopa2002@yahoo.com, or at the mailing address Aleea Universitatii, Baza Nautica, Constanta, Romania, Tel./ Fax. ++40 241 640 443.

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 April and for the supplement of the magazine is 1st 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 tax is 10 euros (just for online journal)
For purchase a number of the journal the fee is 15 euros (2009, 2010 year)
For purchase a number of the journal the tax is 5 euros (2001-2008)
For subscription (3 annual numbers of journal 2009 or 2010) the fee is 25 euros