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CHANGE OF BLOOD SE LEVELS AFTER HIGH LEVEL AEROBIC EXERCISE

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ABSTRACT

Aim: This study was carried out to determine the effect of high level aerobic exercise upon the anti oxidant 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 with 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 HNO_3 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.

Parameter	Mean values ($\overline{X}$)	SD	Minimal Maximal
Age (year)	22.69	1.92	20.00–26.00
Height (cm)	181.50	4.00	174.00- 190.00
Body weight (kg)	80.69	2.89	76.00 – 87.00
MaxVO2 (ml. kg/dk)	50.01	3.07	42.4 – 53.7

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

Element	N	Pre training mean value ($\overline{X}_1$)	SD	Post training mean value ($\overline{X}_2$)	SD	$\overline{X}_1 - \overline{X}_2$	p
Selenium (µg / L)	16	339.71	86.41	274.95	41.22	64.76	.000

Discussion

Although the results in literature are contradictory it was clearly visible that there was a 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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❖ PHYSICAL EDUCATION AND SPORT

VIEWS OF PHYSICAL EDUCATION TEACHERS ABOUT DIMENSION OF THE MATERIAL AND MEASUREMENT EVALUATION OF THE NEW EDUCATIONAL PROGRAM OF PHYSICAL EDUCATION COURSE OF THE PRIMARY SCHOOL

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ABSTRACT

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.