RESULT

Table 1. SOD levels of groups before and after exercise (u/ml)

SOD (u/ml)				
Grup	**N**	**Before Mean±SD**	**After Mean±SD**	**P**
C	7	4,46±0,97	4,74±0,73	0,46
E	7	4,97±1,37	5,28±1,36	0,43
GE	7	5,09±1,18	5,52±0,91	0,07

Groups within and between groups is no significant difference in SOD levels. (P<0, 05)

Table 1. CAT levels of groups before and after exercise (nmol/dk/ml)

CAT (nmol/dk/ml)				
Grup	**N**	**Before Mean±SD**	**After Mean±SD**	**P**
C	7	20,98±4,91	21,66±6,30	0,38
E	7	21,98±2,73	22,59±7,80	0,87
GE	7	20,83±2,47	24,88±4,94	0,13

Groups within and between groups is no significant difference in CAT levels. (P<0, 05)

Table 1. GSH levels of groups before and after exercise (µmol/l)

GSH (µmol/l)				
Grup	**N**	**Before Mean±SD**	**After Mean±SD**	**P**
C	7	38,39±8,48	39,82±10,46	0,24
E	7	37,48±3,74	38,97±11,31	0,72
GE	7	38,15±3,19	45,40±11,52	0,07

Groups within and between groups is no significant difference in GSH levels. (P<0, 05)

MATERIALS

21 volunteers (14 healthy athletes and 7 sedentary women) included to the work with age range of 20-23 and body weight range 55-65 kg. And separated into 3 groups.

Group 1: Control C

Group 2: Exercise E

Group 3: Exercise with Ginseng GE

E & GE groups were performed on a regular basis along the 5 days per week for 6 weeks in subjects 20 m shuttle run test.

METHOD

Included in the GE group subjects during the 45 days at 10:00 pm each morning and evening at 19:00 am or orally at a dose of 500mg/kg ginseng that was provided. (GNC, Gold Ginseng, Korean White Ginseng Root, USA).All subjects before beginning the exercise period and ginseng supplements were taken blood samples. After 45 days ginseng supplementation and exercise period of the second blood samples were collected from all groups.

EXERCISE TEST:

E and GE groups in order to bring about fatigue in the subjects applied 20 m shuttle run test is a multistage test, the first stage is heated. Subjects ran 20 meters distance as roundtrip. Running speed at certain intervals which tone was controlled with a tape. Subjects began running in his first tone and until second tone the other line reached. The second signal is heard again when returning to the starting line came and this running went on this condition signal. When subjects hear the signal at the other end of the runway at the second signal they will be added to set their own pace. Especially the slow speed which is first, increased gradually at every 10 seconds. Subject missed the first signal tone but caught up the second and continued the test. If subject misses two consecutive tests may have been terminated. In this way at the end of the test exhausting was existed at subjects.

ANALYSIS:

Duly received as vena elbows in blood samples (ETDA) transferred to tubes containing the 15 minutes, 4 degrees immediately centrifuged at 3500 rpm the plasma samples were brought into place.From plasma samples; Cayman kits were used in the brand and GSH, CAT, SOD levels were determined as colorimetric.

STATISTICAL ANALYSIS

Obtained statistical analysis making were used to SPSS. Applications of all subjects before and after application were calculated. Of the mean value and standard error of the measured parameters. Significance of differences between groups by analysis of variance, Duncan's Multiple Range test was used. Each group before and after application of the difference between the values in the control of the Paired-Samples T test was used.

DISCUSSION AND CONCLUSIONS

The findings to all groups within the group in both between groups aren't seen as statistically significant a difference.

There is conflicting information about how is affects GSH levels of exercise. While F. Marzatiko, O. Pansarasa, L. Bertorelli, (1997) A. Childs, C. Jacobs, T. Kaminski, (2001), M. İnal, F. Akyüz, A. Turgut, (2001) in their study, exercise with increasing GSH levels mentioned, G.G. Duthie, J.D. Robertson, P.C. Morrice, (1990), Y. Hellsten, B. Sjodin, E.A. Richter, (1998) Y. Hellsten, M. Svensson, B. Sjodin, (2001), D. Thompson, C. Williams, P. Garcia-Roves, (2003) in their study were identified subjects which in a significant decrease in GSH values were recorded. Unlike S. Çolakoğlu, M. Çolakoğlu, M. Kırkalı, (1999) in their study the GSH levels of the subjects reported that a significant difference could not be determined.

Studies; G.G. Duthie, J.D. Robertson, P.C. Morrice, (1990) Hellsten, B. Sjodin, E.A. Richter, (1998) Hellsten, M. Svensson, B. Sjodin, (2001) M. Svensson, B. Ekblom, L. Cotgreave, (2002), Thompson, C. Williams, P. Garcia-Roves, (2003) are consistent with the findings. The increase in GSH levels in the exercise of other researchers (N. Ortenblad, K. Madsen, M.S. Djurhuus, 1997, A. Childs, C. Jacobs, T. Kaminski,.2001, F. Marzatiko, O. Pansarasa, L. Bertorelli, 1997, İnal, F. Akyüz, A. Turgut, 2001) or no changes (S. Çolakoğlu, M. Çolakoğlu, M. Kırkalı, 1999) reported findings that may be associated type of exercise with differences in severity and duration. Thus Gahil and colleagues who determined a reduction in the blood GSH level of people with intense physical exercises noted that it is open to discussion to find the origination of these various result if originated from various exercise programs or various test program or other differences. D.J. Humphreys, (2001) who notified that intake of ginseng during exercise reduces the amount of reactive oxygen,

recorded oxidative state of body balanced by either with enzymatic (SOD,CAT,GSHpx) and nonenzymatic (Tokferol, Beta-carotene, glutathione) activities and these systems prevent the damage which generated by free radicals in cells.

The effects of exercises on CAT enzyme that different researchers obtained show a variety. In each research applying different exercise programs to the subjects can cause these varieties (L.L. Ji, and S. Leichtweis, 1997). The information given by C. Leewenburgh, P.A. Hansen, J.O. Holloszy, (1999) , İnal, F. Akyüz, A. Turgut, (2001), J. Finaud, G. Lac, E. Filaire, (2006) shows that CAT activities of antioxidant enzymes in the blood increases after aerobic exercises in both animals and humans. But P. Mena, M. Maynar, J.M. Gutierrez, (1991) determined reduce in the CAAT values in cyclists.

There could not be the same idea about the results of works about the relationship between SOD parameters and exercise, as in other antioxidant parameters. Thus by the notes of L.L. Ji, and R. Fu, (1993) C. Leewenburgh, P.A. Hansen, J.O. Holloszy, (1999), İnal, F. Akyüz, A. Turgut, (2001)SOD activities of antioxidant enzymes in the blood increases after aerobic exercises in either animals and humans. Again F. Marzatiko, O. Pansarasa, L. Bertorelli, (1997) determined that SOD values increase in sprinters and half marathoners. By the same way, A. Turgut, C. Özgürbüz, O. Azboy, (1999) determined an increase in the SOD level of 800 meters freestyle swimmers after swimming. There are also works that show SOD value does not change in acute and chronic exercises. M.M. Kanter, L.A. Nolte, J.O. Holloszy, (1993) determined that SOD value does not change after 80 metered run. N. Ortenblad, K. Madsen, M.S. Djurhuus, (1997) determined that SOD level does not change in volleyball players, G.G. Duthie, J.D. Robertson, P.C. Morrice, (1990) determined that SOD level does not change in half marathon runners, H. Ohno, T. Yahata, Y. Şato, (1988) determined that SOD level does not change in sedentary students.

As a result in this research there can not be found a solution and we can say that ginseng applied with exercise can increase the parameters of antioxidant but this increase has no meaning.

REFERENCES

ALESSIO, H.M., GOLDFFARB, A.H.,.1988, *Lipid peroxidation and scavenger enzymes during exercise. Adaptive Response to Training.* J. Appl. Physiol. 64, 4: 1333-1336.

CHILDS, A., JACOBS, C., KAMINSKI, T., 2001, *Supplementation with vitamin C and N-acetyl-cysteine increases oxidative stress in humans after an acute muscle injury induced by eccentric exercise*. Free Radic Biol Med 2001; 31 (6): 745-53.

CNUBBEN, N.H.P., RIETJENS, I.M.C.M., WORTELBOER, H., VANZANDEN, J., VANBLADEREN, P.J., 2001, The interplay of glutathione-related processes in antioxidant defense, Environmental Toxicology and Pharmacology. 10: 141-l52.

ÇOLAKOĞLU, S., ÇOLAKOĞLU, M., KIRKALI, M., ÖRMEN, M., AKAN, P., 1999, *E vitamini desteğinin submaksimal egzersizde oksidan stres ve dayanıklılık üzerine etkileri.*BESBD. 3: 3.

DRINGEN, R., 2000, *Metabolism and functions of glutathione in brain*. Progress in Neurobiology. 62 : 649-671.

DUTHIE, G.G., ROBERTSON, J.D., MORRICE, P.C., 1990, *Blood antioxidant status and erythrocyte lipid peroxidation following distance running.* Archives of Biochemistry and Biophysics, 282,1: 78-83.

FINAUD, J., LAC, G., FILAIRE, E., 2006, *Oxidative stres relationship with exercise and training*. Sports Med. 36 (4): 327-358.

FRIDOVICH, I., 1990, *Fundamental aspects of reactive oxygen species or what's the matter with oxygen.* Annny Acad Sci, 893: 13-18.

HALLIWELL, B., 1999, *Antioxidant defence mechanism, from the beginning to the end (of the beginning).* Free Radic Res. 31: 261-272

HAN, BH., PARK, M.H., HAN, YN., 1985, *Studies on the antioxidant components of korean ginseng, the mechanism of antioxidant activity of mantol and phenolic acid.* Korean Biochem J. 18, 4 : 337- 340.

HELLSTEN, Y., SJODIN, B., RICHTER, EA., 1998, *Urate uptake and lowered*

ATP levels in human muscle after high-intensity intermittent exercise. Am J Physiol. 274: 600-6.

HELLSTEN, Y., SVENSSON, M., SJODIN, B., 2001, *Allantoin formation and urate and glutathione exchange in human muscle during submaximal exercise*. Free Radic Biol Med. 31 (11): 1313-22.

HUMPHREYS, D.J., 2001, *Nort American Ginseng and The Stress Response During Acute Exercise*. Edmonton, Alberta.

İNAL, M., AKYÜZ, F., TURGUT, A., 2001, Effect of aerobic and anaerobic metabolism on free radical generation swimmers. Med Sci Sports Exerc. 33, 4: 564-7.

JI, L.L., FU, R., 1993, *Antioxidant enzyme response to exercise and aging*. Med Sci Sport Exerc. 25 (2): 225-31.

JI, LL., LEICHTWEIS, S., 1997, *Exercise and Oxidative stress, sources of free radicals and their impact on antioxidant systems.* Age, 20: 91-106.

KANTER, M.M., NOLTE, L.A., HOLLOSZY, J.O., 1993, *Effects of an antioxidant vitamin mixture on lipid peroxidation at rest and post exercise.* J,Appl. Physiol, 74,(2): 965-969.

KIRKMAN, H.N., ROIFO, M., FERRARIS, A.M., Gaetani, G.F., 1999, *Mechanisms of protection of catalase by nadph. Kinetics and stoichiometry,* J Biol Chem. 274: 13908-13914.

LEEWENBURGH, C., HANSEN, P.A., HOLLOSZY, J.O., 1999, *Hydroxyl radical generation during exercise increases mitochondrial protein oxidation and levels of urinary dityrosine*. Free Radic Biol Med. 27 (1-2): 186-92.

MARZATIKO, F., PANSARASA, O., BERTORELLI, L., 1997, *Blood free radical antioxidant enzymes and lipid peroxides following long-distance and lactacidemic performances in highly trained aerobic and sprint athletes*. J Sports Med Phys Fitness. 37: 235-9.

MENA, P., MAYNAR, M., GUTIERREZ, J.M., MAYNAR, J., TIMON, J., CAMPILLO, J.E., 1991, *Erythrocyte free radical scavenger enzymes in bicycle professional racers, adaptation to training*. Int. J. Sports Med. 12, 6: 563-566.

OHNO, H., YAHATA, T., ŞATO, Y., YAMARAURA, K., TANIGUCCI, N., 1988, *Physical training and fasting erythrocyte activities of free radical scavenging enzyme system in sedentary men.* Eur. J. Appl. Physiol. 57: 173 – 176.

ORTENBLAD, N., MADSEN, K., DJURHUUS, M.S., 1997, *Antioxidant status and lipid peroxidation after shortterm maximal exercise in trained and untrained humans*. Am J Physiol 272: 1258–1263.

PEREZ-CAMPO, R., LEPEZ-TORRES, M., ROJAS, C., CADENAS, S., BARJA, G.A., 1993, *Comparative study of free radicals in vertebrates-i.antioxidant enzymes.* Comp Biochem. Physiol. 105B, 3/4: 749-755.

SOMANI, S.M., FRANK, S., RYBAK, L.P., 1995, *Responses of antioxidant system to acute and trained exercise in rat heart subcellular fractions.* Pharmacol Biochem Behav. 51: 627-34.

SVENSSON, M., EKBLOM, B., COTGREAVE, I., 2002, *Adaptative stress response of glutathione and acid uric metabolism in man following controlled exercise and diet*. Acta Physiol Scand. 176: 43-56.

TERBLANCHE, S.E., 2000, *The effects of exhaustive exercise on the activity levels of catalase in various tissues of male and female rats*. Cell Biol Int. 23: 749-53.

THOMPSON, D., WILLIAMS, C., GARCIA-ROVES, P., 2003, *Post-exercise vitamin C supplementation and recovery from demanding exercise.* Eur J Appl Physiol. 89: 393-400.

TURGUT, A., ÖZGÜRBÜZ, C., AZBOY, O., AKYÜZ, F., İNAL, M., GÖKTÜRK, E., SEBER, S., 1999. *Yüzücülerde aerobik ve anaerobik ağırlıklı yüklenmelerde oksidatif stresin karşılaştırılması.* Spor Hekimliği Dergisi. 34: 1-10.

YUAN, Y.V., KITTS, D.D., 1996, *Endogenous antioxidants. Role of antioxidant enzymes in biological systems. In, Shahidi F, ed. Natural Antioxidants, Chemistry, Health Effects and Applications.* Champaign, IL, AOCS Press. 258-270.

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THE ETIOLOGY OF PAIN AND ABNORMAL ANATOMICAL CHANGES IN THE SPINE – A LITERATURE REVIEW

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ABSTRACT

Straton Alexandru, Gidu Diana. The etiology of pain and abnormal anatomical changes in the spine – a literature review.

Background: Pain at the level of the spine is one of the most important reasons in generating low quality of life in sedentary subjects or former athletes and poor results in athletes. Also, pain at the level of the spine causes one of the largest indirect financial costs. Identification of physiological and anatomical problems that generate pain at the level of the spine, can lead to a better process for the reduction or eradication of pain, through the implementation of exercise training.

Aim: Identification of physiological and anatomical problems that generate pain at the level of the spine.

KEY WORDS: spine, muscle, pain.

INTRODUCTION

Back pain is second only to the common cold as a cause of lost days at work and it's also one of the most common reasons to visit a doctor's office or a hospital's emergency department. Back pain is one of humanity's most frequent complaints which generates low quality of life and one of the largest indirect financial costs.

The etiology of pain and abnormal anatomical changes at the level of the spine in sedentary peoples

Pain in the thoraco-lumbar spine is affecting a considerable proportion of the population (Sternbach R. A., 1986) and is one of the biggest health problems of our society, with 60% to 80% of population suffering from muscle injury or pain at the level of the spine (Andersson G. B. J., Fine L. J., Silverstein B. A., 1995). Approximately 50-60% of the population will have or had at least one period with pain at the level of the spine. Moreover, reported pain at the level of the spine, in adolescents, is considered a very serious public health problem (Olsen T. L., Anderson R. L., Dearwater S. R. et al., 1992), and women tend to suffer more frequently from pain at the level of the spine than men (Wells C., 1985).

Cassidy J. D., Carroll L. J., Cote P., (1998), showed that 28.4% of adults aged 20 and 69 years of Saskatchewan (USA) had pain at the level of the spine all the time and 84% have had pain at the level of the spine at least once in life. However, the favorable peak age for muscle accidents at the level of the spine, is 40 years (Andersson G. B. J., Fine L. J., Silverstein B. A., 1995).

Psychological factors play an important role in the emergence and development of chronic pain, but also in the etiology of acute pain with emphasis on transition to chronic pain (Linton S. J., 2000). Bigos S. J., Battie M. C., Spengler D. M. et al., (1992), found that psychological factors are more important than physical factors in reclaiming pain at the level of the lumbar spine.

Other risk factors in the occurrence of pain in the lumbar spine, which were found, will include sleep deprivation and fatigue, emotional instability, substance abuse (alcohol and drugs), smoking (Bigos S. J., Battie M. C., Spengler D. M., 1992; Al-Obaidi S. M., Anthony J., Al-Shuwai N., Dean E., 2004), family problems, excessive body weight, inappropriate body positions (generated mainly by the low consumption of drugs or changes in the kinematic pattern of walking in elderly subjects) (Bota A., 2007), physical inactivity, physical activity performed incorrectly (excessive or incorrect movements), poor muscle strength and prior pain at the level of the spine.

Physical factors set to work, which exposes the worker to an increased risk of pain at the level of the spine are persistent and very hard physical activity at work, prolonged sitting, chronic incorrect posture in orthostatic position, flexion, twisting, pushing, lifting (in many cases, the pain registered at the level of the lumbar spine caused by lifting weights have no explanation and is not confirmed by the presence of tissular accidents of structural components, which form the backbone), repeated falls, vibrations resulting from long periods of car driving and poor muscle strength. Psychological factors set at work are increased chronic stress (chronic stress is releasing cortisol hormone, which is involved in muscle and tendon injury), low job satisfaction, low motivation for work and mental fatigue (Bigos S. J., Battie M. C., Spengler D. M., 1992).

Muscle strength disbalances, between trunk extensor and flexor muscles, is a major risk factor in pain at the level of the lumbar spine (Lee J. H., Hoshino Y., Nakamura K., Kariya Y., Saita K., Ito K., 1999). Generalized muscle weakness (Lee J. H., Ooi Y., Nakamura K., 1995; Takemasa R., Yamamoto H., Tani T., 1995), obesity and decrease of trunk muscle strength are important factors in chronic pain at the level of the lumbar spine and exercise programs

conducted to increase trunk muscle strength, are useful in reducing chronic pain (Bayramoğlu M., Akman M. N., Kilinç S., 2001). The decrease in trunk muscle strength is one of the most important causes for problems emergence at the level of the lumbar spine, thus emphasizing, the importance of designing training programs based on developing muscle strength and resistance at the level of the trunk (Doymaz F., Cavlak U., Kucuk M., Telli O., Bas Aslan U., 2006).

Many studies have shown that chronic pain from the lumbar spine level is correlated with disc degeneration, which in turn may be accelerated by mechanical failure of the narrow hialin cartilage which is covering joint surface of the body vertebral bone from the bone support area cartilage of joint surfaces or from annulus fibrosus area (Sandover J., 1983). It is well known that intervertebral disc is used in spine stability (Krismer M., Haid C., Ogon M., Behensky H., Wimmer C., 1997) and to support compressive loads al the level of the spine, being the subject of tensions in the movement of flexion and lateral rotation, leading sometimes, to pain, because it's innervated. Compressive injuries of the intervertebral disc may be initially asymptomatic, but may lead to a degenerative process, which in turn, over time, can lead to internal disc disruption, which becomes symptomatic as a result of chemical or mechanical irritation of nociceptors in the annulus fibrosus. (Bogduk N., 1991). There is also, the possibility of genetic factors in the development of disc herniation as an expression of disc degeneration (Matsui H., Kanamori M., Ishihara H. Et al., 1998).

It is well known that spine stability is determined by bones, ligaments and muscles supporting structures. The bone-ligament structures of the human lumbar spine become mechanical unstable (in vitro) to a compressive load of approximately 90N, being a load less than the weight of the upper trunk. Lumbar spine is always subjected to compressive loads far greater than the tolerance of 90N. For example, a human upper body weight of 80kg. will exert a compressive load of approximately 400N in the joints of lumbar vertebral bodies L4 and L5 (Howarth S. J., 2006). This clearly illustrates the importance of muscles support at the level of the spine in improving the spine's ability in resisting to compressive loads without problems. Since movements at the level of the spine is achieved in all three planes simultaneously, it is essential that these movements to be precisely controlled by the trunk muscles to produce the strength necessary to optimize the load on the bone-ligament structures of the spine (Kaigle A. M., Holm S. H., Hansson T. H., 1995; Gardner-Morse M. G., Stokes I. A., 1998) and prevent accidents.

The etiology of pain and abnormal anatomical changes at the level of the spine in performance athletes and former athletes

Usually, the muscule-ligament support of the lumbar spine can withstand extreme loads without the occurrence of any problems. The level of the lumbar spine - the most mobile part of the spine - with muscule-tendon-ligament structures are an important source of a great dynamic power generation, when twisting motions are achieved in golf, tennis or baseball, when the landings are completed in gymnastics or athletics (jumping tests), when the squat is completed in weightlifting or when the kiking is carried out in box.

In performance sports the tensions from the level of musculoskeletal ligament structures and, also, from the intervertebral discs are different from subjects who did not practice performance sports, but also, is depending on the sport practiced. Sacro-iliac dysfunction may be the hidden occurrence of pain at the level of the lumbar spine in sports that have asymmetric movements or landings (Ovricenco M. V., 2005). Thus, functional aspects of spine biomechanics are not only essential in achieving proper training technique, but also, is essential in achieving an appropriate correct medical attitudes to prevent, diagnose and treat diseases of possible stress pathology at the level of the sacral-lumbar spine, in performance athletes (Ionescu M. A., 2005).

In a study conducted by Granhed H. and Morelli B., (1988), on 32 former performance wrestlers, aged between 39 and 62 years and 13 former performance weightlifters, aged between 40 and 61 years, it was found that the incidence of pain at the level of the lumbar spine, throughout life, was the highest in former performance wrestlers (59%), compared to former performance weightlifters (23%) or control group (composed of subjects who have not practiced any sport) (31%). However, former performance wrestlers and weightlifters, have a higher tolerance for pain occurring at the level of the lumbar spine, compared with control group. Also, former performance wrestlers have a higher frequency for the presence of old trauma to the spinal structures and former performance weightlifters have a significant decrease of intervertebral disc. Former performance wrestlers and weightlifters, with old trauma to the spinal structures, presents a more frequent presence of pain in the lumbar spine (Granhed H., Morelli B., 1988). In a study of 71 athletes (weight lifting, wrestling, ice hockey and sports tourism guidance) and 21 subjects who have not practiced any sports, found that more than 90% of performance athletes had intervertebral disc degeneration (disc thickness reduction) and 88% of performance athletes had intervertebral disc damage, the highest frequency being recorded in weightlifters and ice hockey players. Also, 78% of performance athletes and 38% of subjects who have not practiced any sports, reported pain at the level of the toraco-lumbar spine, and 71% of the same athletes and 75% from the same subjects who have not practiced any sports, reported pain at the level of the toraco-lumbar spine after 15 years. Many of the anomalies present at the toraco-lumbar spine appear to occur during the teenage growth and trend to

deteriorate, in a variable extent, in 15 years, probably due to continued or increased sport practice with loads or due to old growth of the subjects (Baranto A., Hellström M., Cederlund C. G., Nyman R., Swärd L., 2009).

Disc degeneration occurs with increased frequency in wrestlers (Videman T., Sarna S., Battié M. C. Et al., 1995) and gymnasts, compared with subjects who have not practiced sports. The presence of spondylosis was found at about 50% of the performance athletes, which at the same time, have had pain at the level of the toraco-lumbar spine. Also, the presence of scoliosis was found in approximately 80% of performance athletes, which exercised movements with asymmetric loads of trunk and upper limbs, as tennis players or spear throwers; however, the emergence of pain was not yet shown at the level of the toraco-lumbar spine (Swärd L., 1992; Hutchinson M. R., 1999).

Incidence of pain in the lumbar spine is lower in former athletes (937 former athletes - athletes - sprinters and distance runners, soccer players, weightlifters, wrestlers, boxers, etc..) versus subjects who has not practiced any sports (620 control subjects). Also, former weightlifters have intervertebral disc degeneration throughout the spine, while former soccer players have only intervertebral disc degeneration in the lumbar spine; however, the same symptoms were not found in distance runners or sprinters (Videman T., Sarna S., Battié M. C. et al., 1995).

Swärd L., Hellstrom M., Jacobsson B. şi Pëterson L., (1990), in a study of 142 athletes (wrestlers, gymnasts, soccer players and tennis players aged between 14 and 25 years) showed that decreasing the thickness of the intervertebral disc and vertebral body changes radiological investigated are directly correlated with perceived pain at the level of the thoraco-lumbar spine. However, a study of 134 former athletes (wrestlers, gymnasts, soccer players and tennis players aged between 27 and 39 years) and 28 subjects who did not practice any sports with comparable age, were found, despite radiological anomalies recorded at the level of the thoraco-lumbar spine, that pain perceived frequency of former athletes is not different then the group of subjects who did not practice any sports (Lundin O., Hellström M., Nilsson I., Swärd L., 2001).

Elite divers have an increased frequency of pain incidence recorded at the level of the thoraco-lumbar spine in young children (approximately 85% of the 20 elite divers, aged between 10 and 21 years, had pain at the level of the thoraco-lumbar spine or had pain for the first time in their life at a median age of 15 years) (Baranto A., Hellström M., Nyman R., Lundin O., Swärd L., 2006).

Rhythmic gymnastics athletes have shown an increased relative risk for pain occurrence at the level of the thoraco-lumbar spine (Hutchinson M. R., 1999). Apparently, the pain presence at the level of the thoraco-lumbar spine in female subjects (67 gymnasts aged between 13 and 19 years and 27 female subjects who did not practice any sport), has as associated factors increased body weight, increased body mass index, increased fat mass, age, smoking and a stronger agitated or depressed behavior. Also, a study of 19 Olympic-level gymnasts, aged between 12 and 20 years, has shown that mechanical injury present to the spine (microtrauma located in the spine, intervertebral disc degeneration, spondylosis (degeneration of intervertebral discs and joints, often accompanied by emergence of bone spurs in the vertebral bodies), spondilolistezis (anterior slipping of a vertebra in relation to the underlying vertebrae)) are directly connected with the presence of thoraco-lumbar pain at the level of the spine (Bennett D. L., Nassar L., DeLano M. C., 2006). However, other authors have found that rhythmic gymnastics isn't a sport with an increased risk of pain at the level of the thoraco-lumbar spine (Cupisti A., D'Alessandro C., Evangelisti I. et al., 2004).

Perceived pain in the lumbar spine is a common problem for rowers at all levels. For rowers, a major problem in generating problems (pain) at the level of the lumbar spine is the fatigue caused by long sessions of rowing (Holt P. J., Bull A. M., Cashman P. M., McGregor A. H., 2003). Some experts have found that the most common problems encountered in rowers, recorded at the level of the lumbar spine (McNally E., Wilson D., Seiler S., 2005), is due to hiperflexion and excessive rotation of the trunk, generating a sacro-iliac joint dysfunction and/or herniated disc (Rumball J. S., Lebrun C. M., Di Ciacca S. R., Orlando K., 2005).

Also, strike and service strike biomechanics in tennis, is leading to pain at the level of the lumbar spine (Marks M. R., Haas S. S., Wiesel S. W., 1988), which in large part, is due to disbalances recorded at the spine muscles (Knudson D., Blackwell J., 2000). However, a study conducted by Saraux A. Guillodo Y., Devauchelle V. et al., (1999), showed that the practice of tennis does not involve an increased risk of pain in the lumbar spine.

Therefore, the perceived pain at the level of the lumbar spine is typically generated by 5% - 8% of athletic injuries and perceived levels of pain intensity, encountered in performance athletes during growth, are influenced by sex, age, type of sport, very high intensity or frequency of training, inadequate technique, inadequate sports equipment, low force for flexion and extension muscles of the spine, poor mobility of the spine, etc. (Harvey J., Tanner S., 1991).

CONCLUSION

Many problems recorded at the level of the spine are caused by multiple physiological, physical and psychological factors, that expose sedentary subjects, former athletes or sports-performance athletes to a high risk of developing or maintaining the pain at the level of the spine. Also, the factors of pain generation and the present stage of the condition (acute

or chronic pain) are also determining factors in the choice of treatment.

BIBLIOGRAPHY

AL-OBAIDI S. M., ANTHONY J., AL-SHUWAI N., DEAN E., 2004, *Differences in back extensor strength between smokers and nonsmokers with and without low back pain.* The Journal of orthopaedic and sports physical therapy, 34 (5): 254-260.

ANDERSSON G. B. J., FINE L. J., SILVERSTEIN B. A., 1995, *Musculoskeletal disorders.* In: Levy, B. S., Wegman D. H. [Editors] (1995). Occupational Health: Recognizing and Preventing Work-Related Disease. 3rd ed., Little Brown and Company, Boston: 455-489.

BARANTO A., HELLSTRÖM M., NYMAN R., LUNDIN O., SWÄRD L., 2006, *Back pain and degenerative abnormalities in the spine of young*

BARANTO A., HELLSTRÖM M., CEDERLUND C. G., NYMAN R., SWÄRD L., 2009, *Back pain and MRI changes in the thoraco-lumbar spine of top athletes in four different sports: a 15-year follow-up study.* Knee surgery, sports traumatology, arthroscopy: official journal of the ESSKA, Epub ahead of print. *elite divers: a 5-year follow-up magnetic resonance imaging study.* Knee surgery, sports traumatology, arthroscopy: official journal of the ESSKA, 14 (9): 907-914.

BAYRAMOĞLU M., AKMAN M. N., KILINÇ S., CETIN N., ZAVUZ N., OZKER R., 2001, *Isokinetic measurement of trunk muscle strength in women with chronic low-back pain.* American Journal of Physical Medicine and Rehabilitation, 80 (9): 650-655.

BENNETT D. L., NASSAR L., DELANO M. C., 2006, *Lumbar spine MRI in the elite-level female gymnast with low back pain.* Skeletal radiology, 35 (7): 503-509.

BIGOS S. J., BATTIE M. C., SPENGLER D. M., FISHER L. D., FORDYCE W. E., HANSSON T., NACHEMSON A. L., ZEH J., 1992, *A longitudinal, prospective study of industrial back injury reporting.* Clinical Orthopaedics and Related Disorders, (279): 21-34.

BOGDUK N., 1991, *The lumbar disc and low back pain.* Neurosurgery clinics of North America, 2 (4): 791-806.

BOTA A., 2007, *Postural control strategies at different ages.* Sesiunea internaţională de comunicări stiinţifice, „Realizări şi perspective în domeniul educaţiei fizice şi sportului", Universitatea din Bucureşti, Facultatea de Psihologie şi Ştiinţele Educaţiei, Departamentul de Educaţie Fizică şi Sport, Ed. Universităţii din Bucureşti, 7 decembrie 2007: 85-88.

CASSIDY J. D., CARROLL L. J., COTE P., 1998, *The Saskatchewan health and back pain survey. The prevalence of low back pain and related disability in Saskatchewan adults.* Spine, 23 (17): 1860-1866.

CUPISTI A., D'ALESSANDRO C., EVANGELISTI I., PIAZZA M., GALETTA F., MORELLI E., 2004, *Low back pain in competitive rhythmic gymnasts.* The journal of sports medicine and physical fitness, 44 (1): 49-53.

DOYMAZ F., CAVLAK U., KUCUK M., TELLI O., BAS ASLAN U., 2006, *Analyzing the effects of physical characteristics on trunk muscles endurance in healthy Turkish subjects.* Medicină Sportivă, 6: 75-82.

GARDNER-MORSE M. G., STOKES I. A., (1998), *The effects of abdominal muscle coactivation on lumbar spine stability.* Spine, 23 (1): 86-91.

GRANHED H., MORELLI B., 1988, *Low back pain among retired wrestlers and heavyweight lifters.* The American Journal of Sports Medicine, 16 (5): 530-533.

HARVEY J., TANNER S., (1991), *Low back pain in young athletes.* A practical approach. Sports medicine, 12(6):394-406.

HOLT P. J., BULL A. M., CASHMAN P. M., MCGREGOR A. H., 2003, *Kinematics of spinal motion during prolonged rowing.* International journal of sports medicine, 24 (8): 597-602.

HOWARTH S. J., (2006), ***Locating intability in the lumbar spine: characterizing the eigenvector.*** **Waterloo, Ontario, Canada: 1-11. [Master Thesis].**

HUTCHINSON M. R., (1999), *Low back pain in elite rhythmic gymnasts.* Medicine and science in sports and exercise, 31 (11): 1686-1688.

IONESCU M. A., 2005) *Biomechanichs aspects of lombosacrat column at athletes.* Sport Medicine Journal, 3: 65-69.

KAIGLE A. M., HOLM S. H., HANSSON T. H., (1995), *Experimental instability in the lumbar spine.* Spine, 20 (4): 421-430.

KNUDSON D., BLACKWELL J., 2000, *Trunk muscle activation in open stance and square stance tennis forehands.* International journal of sports medicine, 21 (5): 321-324.

KRISMER M., HAID C., OGON M., BEHENSKY H., WIMMER C., 1997, *Biomechanics of lumbar instability.* Der Orthopäde, 26 (6): 516-520.

LEE J. H., OOI Y., NAKAMURA K., (1995), *Measurement of muscle strength of the trunk and the lower extremities in subjects with*

history of low back pain. Spine, 20 (18): 1994-1996.

LEE J. H., HOSHINO Y., NAKAMURA K., KARIYA Y., SAITA K., ITO K., 1999, *Trunk muscle weakness as a risk factor for low back pain. A 5-year prospective study.* Spine, 24 (1): 54-57.

LINTON S. J., 2000, *A review of psychological risk factors in back and neck pain.* Spine, 25 (9): 1148-1156.

LUNDIN O., HELLSTRÖM M., NILSSON I., SWÄRD L., 2001, *Back pain and radiological changes in the thoraco-lumbar spine of athletes. A long-term follow-up.* Scandinavian journal of medicine & science in sports, 11 (2): 103-109.

MARKS M. R., HAAS S. S., WIESEL S. W., 1988, *Low back pain in the competitive tennis player.* Clinics in sports medicine, 7 (2): 277-287.

MATSUI H., KANAMORI M., ISHIHARA H., YUDOH K., NARUSE Y., TSUJI H., 1998, *Familial predisposition for lumbar degenerative disc disease. A case-control study.* Spine, 23 (9): 1029-1034.

MCNALLY E., WILSON D., SEILER S., 2005, *Rowing injuries.* Seminars in musculoskeletal radiology, 9 (4): 379-396.

OLSEN T. L., ANDERSON R. L., DEARWATER S. R., KRISKA A. M., CAULEY J. A., AARON D. J., LAPORTE R. E., 1992, *The epidemiology of low back pain in an adolescent population.* American Journal of Public Health, 82 (4): 606-608.

OVRICENCO M. V., (2005), *Low back pain of sacroiliac origin.* Sport Medicine Journal, 3: 93-98.

RUMBALL J. S., LEBRUN C. M., DI CIACCA S. R., ORLANDO K., 2005, *Rowing injuries.* Sports medicine, 35 (6): 537-555.

SANDOVER J., 1983, *Dynamic loading as a possible source of low-back disorders.* Spine, 8 (6): 652-658.

SARAUX A., GUILLODO Y., DEVAUCHELLE V., ALLAIN J., GUEDES C., LE GOFF P., 199, *Are tennis players at increased risk for low back pain and sciatica?* Revue du rhumatisme (English ed.), 66 (3): 143-145.

STERNBACH R. A., 1986, *Survey of pain in the United States: the Nuprin pain report.* Clinical Journal of Pain, 2: 49-53.

SWÄRD L., (1992), *The thoracolumbar spine in young elite athletes. Current concepts on the effects of physical training.* Sports medicine, 13 (5): 357-364.

SWÄRD L., HELLSTROM M., JACOBSSON B., PËTERSON L., 1990, *Back pain and radiologic changes in the thoraco-lumbar spine of athletes.* Spine, 15 (2): 124-129.

TAKEMASA R., YAMAMOTO H., TANI T., 1995, *Trunk muscle strength in and effect of trunk muscle exercises for patients with chronic low back pain.* The differences in patients with and without organic lumbar lesions. Spine, 20 (23): 2522-2530.

VIDEMAN T., SARNA S., BATTIÉ M. C., KOSKINEN S., GILL K., PAANANEN H., GIBBONS L., 1995*The long-term effects of physical loading and exercise lifestyles on back-related symptoms, disability, and spinal pathology among men.* Spine, 20 (6): 699-709.

WELLS C., 1985, *Women Sport & Performance. A Physiological Perspective.* Human Kinetics Publishers, Champaign, IL: 3-16.

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PREVENTION AND CORRECTION OF SPINE DEFICIENCIES IN SCHOOL AGED CHILDREN USING PHYSICAL THERAPY METHODS

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ABSTRACT

Purpose: World Health Organization defines health as a good physical, mental and social state. Knowing very well the morpho-functional particularities of each school age group, the physical therapist may solve one of the main tasks of the physical therapy treatment represented by the training and the maintaining of a correct body attitude. When, due to functional or pathological cases, attitude or morphological (structural) deficiencies occur, physical therapy is required to contribute to their correction. This study seeks to highlight the effectiveness of the prophylaxis as a method for early detection, prevention and recovery of physical light deficiencies that occur in school age children. Physical deficiencies are common in early school aged children and their early detection can lead to full functional recovery through well composed physical therapy programs. Prophylaxis programs that have as main component physical exercise help in obtaining a better body tonus even in deficiencies case that require a longer period of time for recovery.

Methods: Following the somatoscopic examination, the results revealed that most of the pupils have a harmonious growing and development and a correct body attitude. Nevertheless some children have light, moderate or accentuated physical and organic disabilities. Besides somatoscopic examination and anthropometric measurements, we also used the lead line exam and the drawing with the dermatographic pencil of the spinous apophysis. Physical deficiencies considered light and in an early stage are represented by global attitude deficiency of the whole body or only a certain segments. Uncorrected in time, light deficiencies get worse and become medium deficiencies. Action of screening is carefully controlled and monitored at the beginning of each school year in conjunction with school environment. For this study the number of children selected through triage performed by school was 20 (10 girls and 10 boys).

Results: The data derived from measuring the following parameters were compared: thoracic perimeters in both complete inspire and expire and the degree of physical disability. There is a difference between postural relaxed body - uncontrolled and the same body in controlled positions. From a biomechanical point of view, the correct orthostatic position is maintained with minimal power and nervous consumption. Regarding the somatic aspect, the accurate posture is characterized by the positioned orientation of the segments corresponding to this function (physiological curvature, upper limbs in a slight flexion). Applying statistics analysis using t test for independent samples, data showed out that after treatment the following parameters had no statistical significance: thoracic perimeters in inspire ($t = 0.22$) and in expire ($t = 0.24$). Also, it was noted that the recovery of the curve ($t = 2.59$) had statistical significance at a significance threshold of $p < 0.05$.

Conclusions: Screening in school aged children is of major importance in detecting and correcting physical deficiencies and parents and children must be aware of the importance of preventive factors that help children in maintaining a right attitude in classroom. Programs to detect and recover any deficiencies must be established by qualified personnel, doctors and physical therapists.

KEY WORDS: spine deficiencies, physical therapy, prevention.

INTRODUCTION

World Health Organization defines health as a state of good physical, mental and social. We must not forget that health is a prerequisite for active human existence. Health is a precious good that has no exchange value and can be risky because it is never easy and is regaining lost hard. Any work in any disease is a negative factor: it hinders training to youth, adulthood prevents us to work, and in old age does not allow us to enjoy the fruits of labor (T.Sbenghe, 1996). Health maintenance should be an ongoing concern, a problem individual and collective task.

Only man who can make the service a lucid intelligence and a strong will to a healthy body and lively, strong and well trained, is able to handle any kind of efforts and better succeed in life. That is why the major tasks assigned school physical education can not be done without extending the luggage still driving the formation of new habits of children through the motion and directed processing of existing motor qualities (G.Fletcher, 1992). All this demands a continuous physical activity, organized on strictly scientific basis, taking into account primarily the morpho-functional features of the body in full growth and differentiation of somatic and vegetative development of the individuality of each child.

Kinetotherapist role is primarily one of education and skill improvement in children's correct attitude of the body (M.Cordun, 1999). This must begin with children entering first grade and continue as necessary. So we have to educate the children reflex right attitude and the therapist knows this only to do specific pathways of realization.

Correct attitude formation and preservation of the body, is one of the prophylactic tasks i to schoolchildren of all ages (C, Zaharia, 1994). Concerns for carrying out these tasks before school starts and continues throughout life.

Each individual has a particular physical configuration, resulting from interaction of several factors such as heredity, social environment, physical environment, etc..

Physical configuration includes the following three elements:

- Body attitude
- Increased body
- Body development

Body attitude should not be confused with the degree of development of it. From this perspective people are tall, short, robust or less robust, they are not elements of growth and attitude but that features such constitutional issues (Dumitru, D., 1984).

Only understand the position of the body attitude as a result of the relationship between body and segments as a function of manifestation and projection into space.

Deviations from a normal attitude we call poor attitude: they may be of some parts or whole body.

Correct deficiencies and attitudes to specific evidence, it is not corrected by specific evidence they are considered disabilities themselves, meaning that there have been changes in the muscle groups and joints of the bones due to certain causes (Nica, S.,1998). The study seeks to highlight prophylaxis effectiveness as a method of early detection, prevention and recovery of natural light deficiency occurring in children of school age. Light physical deficiencies are common in the school-age children, their early detection can lead to full functional recovery, kinetic programs well composed.

METHODS

Aim is to demonstrate the effectiveness of the prophylactic method early detection, prevention and recovery of natural light deficiency occurring in children of school age.

The exam somatoscopic found that most of the pupils have a smooth growth and a correct attitude of the body and some has some physical disabilities and organic light-grade, medium or high. Outside somatoscopic examination and anthropometric measurements were used to exam wire drawing with pencil lead and the spinous eyeliner. Physical deficiencies considered light in early study, consisting of overall poor attitude of the whole body or only certain segments. Physical deficiencies considered light in early study, consisting of overall poor attitude of the whole body or only certain segments. To specific functional test their physical deficiencies are corrected this level, which confirms that have not yet occurred structural changes (muscle, joint, bone) and the poor attitude that is due to disruption of the body reflex right attitude or only certain segments. Deficiencies in specific functional test environments partially corrected or not corrected for that in their case occurred structural changes that do not allow the segment to recover the deficiency or right attitude, as is the case with physical deficiencies easy.

Educational effects of corrective exercises are felt both by reflex training and right attitude of the body segments, and by educating the ability to perform as fairly static and dynamic exercises. This is possible because the cortex plasticity and it is important to note that educational effects are achieved and maintained only with the conscious participation of the deficiency. The action to correct physical deficiencies we rely on the multiple effects of corrective exercises that have an impact as shown on body stature, bodily functions and deficiencies, items on which the body maintain proper attitude. Exercises to tone muscles elected body that provides the force necessary to maintain the correct attitude rebuilt segments and act on the nervous system that made recovery and maintaining the correct attitude deliberately poor segments. Failure of one of these pregnancies result in substantial movement of the remedial effects of exercise in structure, year corrective action consists of static and dynamic. State action is either a positive or a static exercise (isometrics). This position can be correct only when the correct attitude is a mark of poor segments. Failure to one of these tasks substantially decrease the remedial effects of exercise. Structure, year corrective action consists of static and dynamic. State action is either a positive or a static exercise (isometrics). This position can be corrected only when the marking is a normal attitude of the body correctly when it is done by a recovery in the correct attitude and poor segments when recovery is beyond the proper attitude segments.

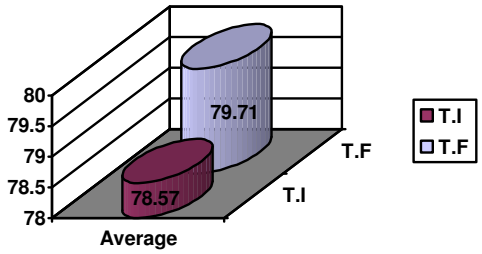
Uncorrected at the time, mild deficiencies worsen, turning into medium deficiencies. Action is carefully screening the beginning of each school year in conjunction with your school. Children selected from triage performed by medical school, there were 20 (10 girls and 10 boys).

RESULTS

They compared data from measuring the following parameters: perimeter of the chest in inspiration, chest perimeter in expiration and the degree of physical disability and have obtained the following values:

Table no. 1 - Evolution of chest perimeter in inspiration

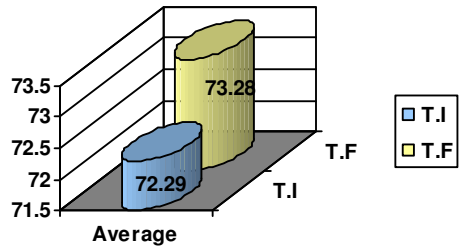
	Chest perimeter inspiration	
	T.I.	**T.F.**
Average	78,57	79,71
σ	7,59	7,2
Min.	70	72
Max.	93	93,5
C.V.	9.66	9.03



Graph no. 1 - Evolution of chest perimeter in inspiration

Table no. 2 - Evolution of chest perimeter in expiration

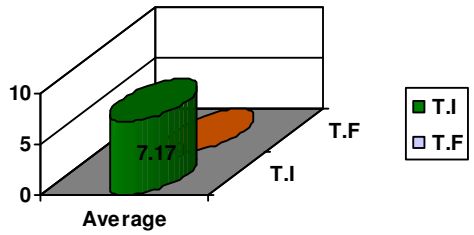
	Expiration chest perimeter	
	T.I.	**T.F.**
Average	72,29	73,28
σ	7,57	7,46
Min.	65	66
Max.	88	88,5
C.V.	10.47	10.16



Graph no. 2 - Evolution of chest perimeter in expiration

Table no.3 – Evolution of physical disabilities

	Physical disabilities	
	T.I.	**T.F.**
Average	7,17	0
σ	7,32	0
Min.	1,1	0
Max.	15	0
C.V.	102.80	0



Graph no. 3 - Development of physical disabilities

Positions and movements normal, natural body is a product of nervous system, manifested by musculoskeletal and is an infinity of forms.

Passive elements (bones, joints, and articulation tissues) and assets (nerves, muscles) involved in performing the maintenance positions and movements require energy directly proportional to internal and external forces that oppose the maintenance positions and movements to achieve.

The study positions and body movements, be they related to the bearing surface and gravitational axis or the imaginary planes, which meets the frontal or sagittal body axis craniofacial times. Findings must not be made by comparing normal subjects with template models, given that the body with normal and harmonic indices of growth and development may legally somatic infinite and their typological patterns is arbitrary.

The concept of harmonious development, in addition to report segments, always including mental component that occurs outside the "natural attitude." Natural attitude is therefore a function of the musculoskeletal and nervous system is driven by the infinity of positions and movements that continually doubles mental activity of the individual. Standing, a normal body growth and development generally corresponds to a global position and its a normal segmental.

Orthostatic body position is possible by skeletal muscle contraction, the contraction is performed under control of the nervous system.

Standing has highlighted an increase in metabolism compared to the supine. This increase is due to increased volume and intensity of muscle contractions necessary to maintain standing body segments. If standing uncontrolled (natural position) metabolism is increased by 22% compared to supine, the position-controlled energy consumption increase over the amount mentioned.

There is a difference between positional aspect of the body relaxed - the same body in uncontrolled and controlled positions.

Consider legally correct biomechanical position is maintained hypotension with minimal power consumption and nervous, and in part somatic, the correct orientation of the segments corresponding

positional function (behind the physiological curves, upper limbs in slight flexion).

	Chest perimeter inspiration	**Chest perimeter in expiration**	**Physical disabilities**
	T.I.-T.F.	**T.I.-T.F.**	**T.I.-T.F.**
t	0,22	0,24	2,59
p	-	-	<0,05

Table no. 4 - The statistical significance of differences in environments inspired chest perimeter, thoracic perimeter in expiration and physical disabilities.

Using statistical-mathematical analysis found that after treatment the following parameters were not statistically significant, chest perimeter in the chest in inspiration and expiration perimeter, while the recovery curve (amplitude and examination lead wire) had a threshold for statistical significance $p < 0.05$.

DISCUSSION AND CONCLUSION

Screening school age children is of paramount importance in detecting and correcting physical deficiencies and should be aware of parents and children the importance of preventive factors that help children correct attitude in the bank.

Programs to detect and recover any deficiency must be made by qualified personnel, doctor and physiotherapist respectively.

REFERENCES

CORDUN, M., 1999, *Kinetologie medicală,* Edit. Axa, Bucureşti.

FLETCHER, G.; BANJA, J. W., 1992, *Rehabilitation Medeane.* Edit. Lea & Fremiger, Philadephia.

SBENGHE,T.,1981, *Kinetologie profilactică, terapeutică şi de recuperare*, Edit. Medicală, Bucureşti.

SBENGHE, T., 1996,*Recuperarea medicală la domiciliul bolnavului,* Edit. Medicală, Bucureşti.

ZAHARIA, C, 1994, *Elemente de patologie a aparatului locomotor,* Edit. Paideia.

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❖ MANAGEMENT

THE HUMAN RESOURCE – A DECISIVE FACTOR IN SPORTS ENTERPRISE MANAGEMENT

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ABSTRACT

Resume: When someone invests their time in finding out people's general interests and fighting for the achievement of the entire group's goals more than for those of their own, that individual has all the rights to pursue their personal and valuable plans or ideas. Unfortunately, this is not a utopia, as we all are still dominated by "an only boss" who takes all the decisions and who doesn't treat nicely those in his entourage!

Introduction: Most managers are intensely preoccupied with their own image or that of… their unit, in which they are the first-string. The results are primary, sometimes achieved under any circumstances, because they assure the employees the minimum wage and social support; managers, whether they are acquainted with them or not, are very interested at present in commercial activities, neglecting on the side the essential factor which is dependable in the entire sports activity and not only! THE HUMAN BEING. Moreover, attempts to use people as "tools" (or "instruments") in order to gain personal advantages, even if only informational or distorted ones, without involving directly (don't you feel the same way at your own workplace?) do not lead to maximizing everyone's potential.

Research methods: pedagogical method of observation, type questionnaire survey method, method of data analysis and theoretical generalization literature.

KEY WORDS: management, human resource, interpersonal competence, leadership, commercial sport activities.

INTRODUCTION

Numberless treaties have been written about the concept of human resources, their importance but especially their purpose in developing an institution or a sports club. In the following article I want to lay stress on the role, the competence and especially the availability of the sportive units' leaders to appeal to or put into practice rules, basic principles of the social marketing, which is best reflected in sports. The manager must also know the concept of marketing and we're not talking here about the clubs which can afford such a comportment the manager must be aware of the complexity of the continuous and unpredictable change in the sports consumer's attitude.

The necessities of human resource do not refer only to the interpersonal relationships which a manager generates with his employees, which are important in a sports club or organization, but we are also talking here about the signal from the interior to the exterior of the club or institution, all those influencing the opportunities of image, income, business of the sports institution, club or organization (P. Kotler, 2003).

Not in few cases does the leader's decision depend on the well being of the institution, that's why the employees are expected to manage their careers just as a manager deals with the institution. That's why their responsibility is great considering their employees' destinies. Do they think the same? Or do they only think about that management "M" trying to satisfy everybody?.... in their opinion or interpretation?

Nowadays, more than ever, the value of a leader must be complex and wide. First of all, he must know himself, which his strong and weak points are, what abilities he has, what network of contacts he has, which his successes are, to document them, to be a specialist in his domain, but also a …generalist, to always have a back-up plan for everything he does and he must always be ready for action and permanently take care of his professional reputation (V. Cojocaru, 1998).

Sport is more complex now than ever before, marketing is a social and managerial process by which people get what is necessary to them and what they want by the creation and exchange of products. A good manager must have what to offer to the sportive society. The product refers to services as well as goods and represents anything that can be offered to satisfy a need or a desire (V. Cojocaru, 2000). The importance of the material goods does not reside in their mere possession, but more in the services they offer. In reality, there is a multitude of products among which people, too.

PURPOSE

These are of major importance because they will permanently be the bearer of value of management and especially of a good marketing culture. This is the human resource that the sports society needs. Marketing draws more and more the interest of the non-lucrative organizations, including the sports ones

(fantastic bearers of advertisement and image). They all face market problems.

Those who administer them today make efforts to support them, taking into account some unforeseen changes in the attitude and maybe gain of the consumers, that's why we need to have competent managers.

METHODS OF RESEARCH:

In our study we used different methods like pedagogical method of observation, type questionnaire survey method, method of data analysis and theoretical generalization literature.

CONTENT

A man who cannot adapt to the necessities of the others, of the society and especially the institution that he belongs to, cannot be called a leader, because only the degree or work longevity would recommend him!!?

Competition represents an essential characteristic of the present sportive activity, this must also be considered from the point of view of the economy, the disputes and confrontations of ideas and business opportunities in and by sports. As the world steps into the new millennium, the sports societies and we wonder what will be next. The things, the civil societies, people the institutions are not just changing, they have an accelerated changing rate. Don't the people who lead sports clubs, organizations and sports in general have the role to change at least as attitude, mentality not as adaptability to the market, because this requires knowledge and permanent self improvement, doesn't it? Don't we ask this to sports people?

Then shouldn't we, who lead sports and everything that generates physical education and sport, be more professional, better trained? Aren't the adaptability and knowledge in the domains similar or related to sport, but especially the management in a team of specialists the business of performant management…even in sport? Paradoxically, although the science of management has considerably evolved and has consolidated the system of concepts, theories, methods and techniques, there hasn't been reached a full agreement regarding the content and ways of handling the leader's or the manager's activity, although this subject has long been studied from several angles.

It is always talked about how to recruit staff, how to motivate them, which is the best interview and so on, but we look at the leaders so little namely the one who organizes, surveys and controls everything or at least this is what he should do. The well being of the activity of a club, a sports association, a university, a college depends 100% on his decision. They must understand that this position is not eternal! The leader must be aware of the fact that, whether he was elected or he got the job by contest, same day he will leave this leading position and will remain only with what he is, even in the same group, here interferes what we call mentality, is he willing to work more for his staff or for himself? In this way, we neglect the necessity of the existence of both the professional competence and the interpersonal competence (we are talking more about interdisciplinarity than interpersonal), which contribute to the efficiency of work in any activity and especially sports collectivity (H.H. SIEWERET, 1999). Neglecting the continuous growth of the interpersonal competence (of the ability to evaluate and positively influence the way in which the man relates to the social system of values, harmonizes his personal goals with the others' desires and needs, cooperates, helps and maybe most important knows how to calm down conflicts), may reflect in aggressive behaviour, impulsivity, brutality from the managers as well as from their employees. Similarly, the trials to use the others as "instruments", with the purpose to get some personal, even informative distorted advantages, without getting directly involved (don't you feel this at work), do not lead to the full values of each person's potential and they are not positively appreciated by the collectivity and even less by the creative, active people who have initiative and on the contrary, they are blamed by a restricted circle who inform him negatively. Why? Because that circle of people are helpless in decisions, opinions and then the others appear and stick to…the boss!! (S. Cherubini, 2000)

Furthermore, the creative people, maybe more expansive in speech or gestures, who are talkative, creative and have initiative, do not belong to the category about which Senecca said that "they are going through life like some straws down the river, they don't move themselves, but they are taken by the stream, because they have framed an ideal, a guide which orients them, a lighthouse that lights their life and they fight to reach their goal, which are all the more reasons for conflicts to occur". This is why researchers in this field appreciate the creators as difficult, even turbulent, sometimes aggressive people.

DISCUSIONS AND CONCLUSIONS:

If every individual had the desire to change and adapt his social status to the others' expectations, then the human relationships would have no conflicts. But would you really know that leader who doesn't know to wage a war, a fight? When a person is keen on knowing the general interests and fights to achieve the collectivity's objectives, subordinating his personal interests to these ones he is entitled to stick to the valuable ideas.

This is not utopia, but unfortunately we are still dominated by the "unique boss" he handles and deals with everything, good or bad, around him!...and the others keep silent for fear we should lose our job or the income whether it is low or high…aren't we guilty of letting these things pass us by? The interpersonal competence must be carefully and tactfully taken advantage of, by considering people as equal partners in the process of change. The interpersonal competence means handling human relationships between the boss

and the employees, having advantages for both sides and especially for the collectivity that they both belong to.

BIBLIOGRAPHY:

CHERUBINI, S., 2000, *Il marketing sportive, Editura Franco Angeli*, Milano.

COJOCARU, V., 1998, *Recomandări necesare în formarea specialistului de educate fizica şi cercetării ştiinţifice în Educaţie Fizica*, Bacău, 99-102.

COJOCARU, V., 2002, *Fotbal de la 6 la 18 ani în metodica pregătirii*, Ed. Axis Mundi, Bucureşti, 88-190.

KOTLER. P., 2003, *Despre marketing*, Curier Marketing, Bucureşti.

SIEWERET, H.H., 1999, *Totul despre interviu*, Editura Tehnică, Bucureşti.

ROLE OF HOSPITALITY MANAGEMENT IN SPORT TOURISM

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ABSTRACT

According to data of World Tourism Organization (WTO), there is an increase in the number of tourists travelling around the world by years. Parallel to the increased number of people travelling around the world, the increase in the "sports" movement, which is another type of tourism, had influence on tourism sector. Significant effects of widely distributed and mass sports organizations on tourism sector were distinguished on structural features of accommodation enterprises. In order to fulfill expectations of event participants (event spectators or sport lovers), hotel enterprises should differentiate from other hotels in terms of management strategies, functions and activities. In this end, the aim of this study is to reveal differences between sport hotels and ordinary hotels. Literature search was used as the model for determining the difference. In conclusion, it was determined that sport hotels and ordinary hotel have significant differences in many aspects.

KEY WORDS: Sport hotels, sport tourism, sport hospitality, hospitality management.

INTRODUCTION

In recent years, special interest tourism of various types has become increasingly popular. One form of special interest tourism which has garnered particular attention is travel related to sport or sport tourism (Gibson, et. al., 2003).

The Travel Industry Association of America (2003) estimated that in a year's time, over 50 million adults in the United States traveled 50 miles or more to attend organized sport events, competitions or tournaments as either spectators or participants (Daniels, et al., 2004). Research which has been implemented in Australia suggest that both large-scale and small-scale sport events can attract participants, spectators and tourist, increase media attention, and create a positive image among community residents, as well as visitors (Funk and Bruun, 2007).

Sport tourism broadly defined is "leisure-based travel that takes individuals temporarily outside their home communities to participate in physical activities, to watch physical activities, or to venerate attractions associated with physical activities" (Gibson, 1998). Thwaites (1999) has shortly defined sport tourism as "travelling in order to participate in or observe sporting activities".

The demand for sport tourism throughout the world has risen in recent years primarily because of a greater emphasis on health and fitness and the increased use of sport events by cities in order to attract sport tourists (Herstein and Jaffe, 2008).

Two important factors can be attributed to the growth in sport tourism over the last two decades. First, a general growth in discretionary income has provided consumers with greater choices concerning their leisure and recreational activities. Second, cities turned to sporting facilities in the early 1980s as a way to assist downtown development and draw attention to their central localities (Shonk, Chelladurai, 2008).

Sport facilities which are part of sport tourism have existed for thousands of years. Ancient cultures, including the Egyptians, Greeks, Romans, and Chinese, invested in the creation of sport facilities that were used to promote sport for a variety of purposes, including military readiness, entertainment, and physical wellness of their people.

Although many previous studies performed on sport facilities, sports hospitality has not been given required importance both in the practice and in the literature.

Sport hospitality establishments play principle role in fulfilling primarily accommodation and secondarily food-beverage, training and match and watching those activities. Therefore, it is required to clarify unique features and to determine differentiations from ordinary hotels in order to better define sport hospitality establishments.

RESEARCH-OBJECTIVES

As travel became more wide-spread and facilitated due to globalization, the participation to international organization and activities was increased. People not only participate to mass tourism activities also referred as "sea-sand-sun", but they are started to interest in different types of tourism. Being one of divergent tourism activities leading people to travel, sports tourism can be expressed as an activity increasing international movements as different sports organizations are held in different states and even in different continents.

Sport tourism is a social, cultural and economic case deriving from unique interaction between activity, people and the location (Weed and Bull, 2004). Sport establishments are enterprises founded for shaping social lives of human and for organizing different sport activities. Facilities structured for sport-oriented visits provide help for fulfilling satisfaction of people benefiting from or desiring to benefit from quality and sport branch-based services (Ramazanoğlu and Öcalan, 2005).

As importance attached to the health increased and sport activities are increasingly used in urban regions as an attractive element influencing people travelling for sport activities, a rapid increase is recently experienced all over the world in the demand for sport tourism.

Irrespective of the role, common feature of sport-oriented travels is the accommodation activity. Therefore, people generally fulfill accommodation needs in accommodation facilities located in the destination people visit for watching or participating to sportive activities. In this end, it is the principal aim of this study to clarify differentiations of accommodation activities operating for fulfilling accommodation, food-beverage, entertainment and physical sport activity of people participating to sport-oriented travels from ordinary accommodation facilities and to determine qualification required to be possessed by such facilities.

RESEARCH METHODS AND PROCEDURES:

Method of literature search was preferred in this study for clarifying difference between ordinary hotels and sport hotels. Relevant national and foreign literature was searched and differences between sport based accommodation facilities and other (traditional) accommodation facilities were revealed out within a general framework. In this end, the importance of this study is based on the determining differences between sport based hotels and ordinary hotels by making a mutual comparison in terms of management strategies, target audience, functions and operations fields.

Sport Based Hotels

Prior to descriptions on sport based hotels, it will be useful to describe target audience of such enterprises.

People travelling for sportive purposes are individuals participating to sport activities throughout holiday time and they are addressed in three groups (Herstein and Jaffe, 2008):

1. Participants of sport activities: The travel for participating to an organized sport activity.
2. Watchers of sport activities: They travel for watching an organized sport activity.
3. Sport-lovers: They travel for participating sport activities organized by them.

Some authors suggested that in Europe the trend was away from spectating to active participation. He identified three types of active sport vacations (Gibson, 1998):

1. The pure sport holiday, such as a trip to go skiing;

2. Taking advantage of the sport facilities at a holiday destination, although sport is not the primary purpose of the trip;

3. The private sporting holiday, where tourists take part in non-organized sports activities such as volleyball on the sand or beach cricket.

People included any of above mentioned types will need accommodation at the location where they participate to the activity. This particular target audience will need several different requirements varying from that of other types of tourism. There will be significant differences particularly in food-beverage service and sport infrastructure.

At this point, several examples of said differences may include offering particularly healthy, nutritive and fitting meals in the menu of sport based hotel, clients profile comprised of sport-lovers or sport teams and advertisement heavily based on media directly related with sports activities such as sport newspaper and sport channels (Herstein and Jaffe, 2008). For satisfying tourists travelling for sportive purposes, sport based hotels should accordingly arrange structural and administrative aspects of facilities and they will thus differentiate from other enterprises on particular aspects. Those differences are more clearly and obviously shown in Table 1:

Table 1: Management strategy of sports hotels vs other hotels

Characteristics	Sports Hotels	Ordinary Hotel
Identity	Limited identity, focused only on sports-oriented holiday experiences	Very general identity, focused on dream vacations
Missions Statement	Providing a sports vacation – "Sports lover's paradise"	Providing an experiential vacation – "Enjoying freedom"
Customer types	Sports lovers (families and young people) and sports teams (professionals)	All kinds of customers (from children to older clients)
Functions	Focusing only on sports activities	General-enjoyment activities such as entertainment, sightseeing trips, plays and musicals, games etc.
Food	Based on special healthy menus	Very popular food, based on favorite dishes (not necessarily healthy)
Employees	Sports lover	Do not have any special interest
Architecture	Internal and external décor reflects sports environment	Each hotel has its own thematically-based internal and external décor
Advertising	Sports-related media such as sports newspapers and TV channels	General tourist-and vacation-related media such as TV vacation programs, newspaper vacation supplements and radio programs
Public relations	Sporting events linked to the hotel's location	General events connected to hospitality, pleasure and vacations

Source: Herstein and Jaffe (2008)

There are two types of sports-related tourism; firstly, where sport is used by destinations seeking to develop their tourism profiles, and secondly, where tourism has emerged spontaneously as a result of sports activity. As the interaction between tourism and sports industry is reflected in sport based hotels, several administrative differences shown in Table 1 occur. On the contrary to ordinary hotels, sport based hotels should necessarily possess those qualifications in order to better respond to expectations of target audience.

Another important difference between ordinary hotels and sport based hotels is that this type of tourism is seasonal. In particular, seasonality generally exhibits a dramatic tourism peak during the summer months. Most of the literature describes seasonal variations in visitation that result in a number of negative effect on the destination. But sport is a dynamic phenomenon and the development of all-season sports facilities reinforces this point (Higham and Hinch, 2002). While seasonality of the tourism has negative influences on the sector, an advantage can be also mentioned for sport based hotels that such hotels are also preferred by different sports braches and in the out-of-season periods for activities, trainings and sport camps.

It can be observed that there are also several organizational differences in enterprises operating in the form of sport based hotel or in ordinary enterprises which also serve for sport tourists. Such type of accommodation facilities are obliged to employ staff with technical specialization in relevant sport branches, for example, sports sales manager.

Sport Tourism Quality is indicated by four primary dimensions each of which is defined by two or more subdimensions. The primary dimensions are (Shonk, Challedurai, 2008);

(a) access quality (composed of access to destination, sport venue, hotel),

(b) accommodation quality (including the environment, interactions, and value),

(c) venue quality (comprised of environment, interactions, and value), and

(d) contest quality (indicated by process of the contest and the product of the contest).

It is possible to witness examples of sport establishment in Turkey and around the world. Examples of them include Dionysos Hotels (Turkey), Limak Arcadia Golf & Sport Resort (Turkey), Disney's All-Star Sport Resort (USA), Sport Hotels Resort&Spa (Andorra), Alfamar Beach and Sport Resort (Portugal), Hotel Adler Spa & Sport Resort (Italy).

Recently, agencies dedicated for organizing accommodation and food-beverage services of sport based enterprises were founded in this field and such agencies specialized solely in this field. Those companies determine specific needs of each sport branch and they lead accommodation facilities according to needs of customers. Limited number of sport based accommodation facilities made it necessary for ordinary accommodation establishments differentiate the services for those customers.

Those agencies both organize accommodation facilities and sell tickets for sport games.

The Year 2010 will be very active in terms of sports tourism. Many local and international organizations will be held primarily including FIFA World Cup to be held in South Africa and it is believed

that sports tourism will further expand due to those organizations.

CONCLUSIONS

Sport is an important social phenomenon which attracts attention of each individual from all age groups, although in different type and level, and which became a billion dollar industry (Gençer et. al, 2008). The ever increasing interest to sport all around the world is associated with dynamism in the sport tourism. Tourism is among the largest sectors of the world due to both economic and social and societal aspects. Therefore, increased interaction between sport and tourism will ensure mutual benefit for both sectors, which already have high level of compatibility (Kurtzman and Zauhar, 2003). Ability of organizations being included in the sport tourism is dependent on linking the sporrt activity with settlement site (R.T.Gençer, et. al, 2008). Accordingly, structure of surrounding and facilities where sport activities are performed is of extreme importance for fulfilling expectations of sport activity participants. Quality of the service offered in sport based enterprises will play determinative role in customer satisfaction (R.T.Gençer, et. al., 2008).

In this end, efforts were made in this study to determine structural status and qualification of accommodation facilities responding to needs of sport activity participants such as accommodation, food and beverage and entertainment.

In the study, differences of sport based hotels from ordinary hotels were examined in terms of food and beverage menus, public relations and advertisement activities, architectural structures, profiles of target customers and functional aspects.

Results of the study is characterized as a recommendation for accommodation facilities in order to determine missing points by comparing actually possessed qualification with those of competitor enterprises. Moreover, determination of qualitative differences between ever increasing number of sport facilities all around the world (Sport Hotels, Sport Resorts, Spa&Sport Resors, etc.) and other hotels is also important considering the contribution to the literature.

REFERENCES

DANIELS, M., NORMAN, W. AND HENRY, M. 2004. *Estimating Income Effects of a Sport Tourism Event.* Annals of Tourism Research. 31, 180-199.

FUNK, D C., AND BRUUN, T. J. 2007. *The role of socio-psychological and culture-education motives in marketing international sport tourism: A cross-cultural perspective*. Tourism Management. 28, 806-819.

GENÇER, R. T., DEMİR, C. AND AYCAN, A. 2008. *Variables Influencing Service Quality Perceptions of Sport Tourists in Skii Centers.* Ege Academic Review. 8 (2), 437-450.

GIBSON, H. J. 1998) *Sport Tourism: A Critical Analysis of Research*. Sport Management Review, 1, 45-76.

GIBSON, H. J., WILLMING, C. AND HOLDNAK, A. 2003. *Small-scale event sport tourism: fans as tourists*. Tourism Management. 24, 181-190.

HERSTEIN, R. AND JAFFE, E. D. 2008. *Sport Hospitality as a Business Strategy*. Journal of Business Strategy. 29 (6), 36-43.

HIGHAM, J. AND HINCH, T. 2002, *Tourism, sport and season: the challenges and potential of overcoming seasonality in the sport and tourism sectors.* Tourism Management, 23, 175-185

KURTZMAN, J. AND ZAUHAR, J. 2003, *A Wawe in Time-Sport Tourism Phenomena.* Journal of Sport Tourism. 8(1), 35-47.

RAMAZANOĞLU, F. AND ÖCALAN, M. 2005, *Business Administration and Staff Management Approach in Sport Enterprises.* East Anatolian Region Researches. 36-40.

SHONK, D.J., CHELLADURAI, P. 2008, *Service Quality, Satisfaction, and Intent to Return in Event Sport Tourism,* Journal of Sport Management, 2008, 22, 587-602.

THWAITES, D., 1999, *Closing the gaps: service quality in sport tourism*. The Journal of Services Marketing, 13 (6): 500-516.

WEED, M. AND BULL, C., 2004, *Sport Tourism: Participants, Policy and Providers*. Elsevier, Oxford.

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PERFORMANCE MANAGEMENT IN THE INSTITUTION OF PHYSICAL EDUCATION AND SPORTS - SELECTIVE SCIENTIFICAL RESEARCHES OF THE DOCTORAL THESIS

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ABSTRACT

The thesis draws the lines of the essential coordinates of the performance management in the institutions of physical education and sports under the major impact of the predictable mutations of the 21st century – change, globalization, economy, knowledge based management and organization – and offers solutions along these coordinates for some of the problems by proposing improvement for the managerial activity and by bringing arguments for some of the theories.

KEY WORDS: sports organization, scientific approaches, economy, change, management.

INTRODUCTION

The whole world is changing in order to achieve high performances. Change is certainly the axis for the whole mankind of the 21st century. We notice that the phenomenon of change, even if it is often controversial, is becoming more important every day. The organizations that will succeed on this "journey" of transformation are the organizations of the future – which will of course derive from the classical ones that have the ability to challenge the future and to hold up against it. Change is a permanent "journey" of the whole modern organization while the manager is the guide – the key factor in the attempt to change. Therefore the managers of the future must own a series of qualities, knowledge, skills, and behaviors common to the employees and specific for the management. We offered a general presentation about them and underlined the great importance they play from the point of view of the performances achieved by the organization and its management.

The major programs for change must initially be guided by the head manager who will also use the power of change in order to implement the programs. This power of change could offer the new technologies or conditions for the legislative changes, privatization, free trade etc. Many times a combination between these factors call for a fundamental reorganization of the activity field. All these changes raise questions about strategy while the answers to these questions impose much more than the redesigning of the organization processes; it is necessary to reinvent the organization itself.

The change into a post-capitalistic society widens the spectrum of scientific approaches in the field of value and its capacity to rise on the whole front of scientific research and the passing to a society based on knowledge. As a result the change – the element of transition to a society based on knowledge – is the name of the game that involves everyone in the 21st century. It is not surprising that in some cases the progress is slowing down. The change starts with the ones that hold the power of decision and the initiative – the managers in general – it stimulates the executants and it never ends, no matter how good the global economy is.

The civilization that has just arrived – based on knowledge – brings a new genuine way of life based on: diversified resources that are interchangeable and easy to replace; production methods that replace the outdated present fabrication systems; training systems based on the capacities and virtues of the individual versus the ones based on the group. The new civilization based on knowledge brings a series of mutations on the level of society: mass production is demassified; the mass market is segmented down to "atoms"; the relative homogenous society becomes heterogeneous; the social-political and economical life that once was centralized becomes decentralized; the problems of life which appear minor are becoming global; the social-economical life relatively stable and stationary is accelerating. Under these circumstances we are underlining ***the important role of knowledge as main resource for the modern organization and fundamental resource for the creation of value.*** The revolution of cognizance leads to the expansion of the knowledge frontiers and decisively marks the evolution of all components of the global system. The acquiring, the ownership and the capitalization of the knowledge are becoming the keys to a modern society.

The fortune and the power of the future society will be based mainly on the intangible intellectual resources and on the knowledge capital. The acquiring of fortune won't be possible without the rational combination of the production factors, where the "knowledge" factor will play the leading role capable of substituting the others without completely replacing them. The acquired fortune will modify its structure in favor of the created super symbolic goods. The traditional resources are exhaustible, finite in time, while ***knowledge is unlimited and inexhaustible on all levels and continuously grows if being used.***

The society based on knowledge is an essential element of the "outer environment" of the organization management and it is carrying specific opportunities and threats, while the knowledge resources are considered the key constituent of the "inner environment" of its management. The managerial strengths and/or

weaknesses end with a success or failure of the managerial task of the organization which operates in the context of the emerging of three global processes: the globalization of the economy, the managerial revolution and the society based on knowledge.

CONTENT

The doctor thesis entitled *Performance Management in the Institution of Physical Education and Sports* is written in the context of the predictable mutations of the 21st century (change, globalization, organization and management based on knowledge) and distinguishes in the conceptual part between ***the main characteristics of the intellectual capital which represents the creational engine for the performance in the modern sports organization:***

- the mobility of the intellectual capital is much bigger than the one of the tangible actives;
- the value of the intellectual capital mostly depends on the capacity to use it efficiently and to motivate the people involved;
- the value of the intangibles will get higher and higher in the value content of the future capital;
- the multiplication capacity of the intellectual capital is much higher than other capitals;
- the investments in the intellectual capital generate a series of other investments;
- the intellectual capital has a specific circuit (with its help we understand the economic mechanism that permits the add value to the knowledge with an economic finality).
- There are plenty of reasons why the management concept needs to be introduced in the physical education and sports. The majority of respondents confirm that the future world is based on knowledge. Therefore it is obvious that the leading features of the contemporary world (change, economy, organization and management based on knowledge), and the knowledge capital have a great impact on the activity of physical education and sports.

Based on the same theory the following is confirmed about the activity of physical education and sports:

- the managerial act must be streamlined on a social scale;
- concrete criteria are needed in order to distinguish between values;
- the strategic management becomes more important every day (The adaptation of the strategic management depending on the possibilities, objectives, needs and applying the individual strategic management – in every sports branch, elaborating a strategy for performance of a minimum of four years).

The respondents also confirmed the necessity of the management in the activity of physical education and sports. More so this management must be realized as a subsystem of the general management. Its object consists of the functions, the operations and the subsystems applied in the activity of physical education and sports.

In order achieve performance the management of the modern organization must consider three distinctive forms: ***efficiency and efficacy; completing the strategic objectives; creating value.*** Therefore the performance is the way of satisfying both the needs of the internal environment and those of the external environment by finding a perfect combination between efficiency and efficacy. The efficacy measures what is being done, while the efficiency shows us how it's being done; it is not the same if an institution generates a smaller or a bigger value in its attempt to achieve its goals. This value appears in diverse forms, sometimes tangible and sometimes not and is delivered to the clients, shareholders, employees and partners. The more value is being produced by one institution the longer will be the period of time for the investment in the competitional battle.

The performance is a state of competition in an organization which can be achieved through a certain level of efficiency and efficacy that assures its durable presence on the market. You can not win a race without knowing where you are headed and what are the circumstances; without defining your path and the resources needed along the race and without being trained and motivated to win this race (I. Bogdan, 2006).

A sports organization can achieve great performances if it values the entire potential of every individual who is part of this organization by stimulating its creativity, offering him reasons for satisfaction and by making him aware of his own value. Self accomplishment offers the highest level of satisfaction. This is the point when the sportsman achieves the maximum performance.

The originality, the importance and the contemporaneous character of the doctor thesis result from the content but also from the fact that it approaches a complex issue which offers no solution in the immediate future not only in Romania but also in the majority of the world because ***the role played by the physical education and sports*** is not taken seriously enough although it is well known that it is ***educative, social, psychological or of health issue, social, economical or for the image.***

The last part of the thesis consists of analyses and proofs to all theoretical aspects discussed above based on selective scientific research with the results and conclusions presented as follows. It is important to note that all subjects debated along the thesis were confirmed by the results of the selective research analysis based on the questionnaire. This means that the thesis has a series of theoretical and practical contemporary coordinates that can be used in the institutions of physical education and sports and the institutions of higher education. The research can be thoroughly elaborated and directed towards the debated theme on both organizational and didactic level.

CONCLUSIONS

The following ***conclusions*** have been drawn after a partial solution to the issues above:

One of the conclusions drawn from the analysis of these studies is the fact that one of the unsolved problems of the specific university curriculum in general is the correlation between *objectives-contents-didactic technologies-evaluative technologies on the path of promoting the quality of developing human resources.*

The authors quoted in the thesis offer the following causes that lead to this conclusion:

- ❖ the dominance of the empiric view while setting educational and professional goals and selecting and disposing of contents;
- ❖ the relative lack of fundamental research in the field of specific university curriculum;
- ❖ the appearance of an excessive chaotic differentiation of profiles and majors etc.

The transition to the market economy generate a series of ideas referring to the human being, his possibilities and perspectives, the path he has to take in order to prove his capacities and achieve performance. The managers succeed more and more to bring the real closer to the possible and to hold on to their own destinies by solving complex equations regarding their influence on the process to ensure the performance. Every employee finds his own profession and develops his own system of directory ideas which grows at the same time with his maturity.

Confronted with these kinds of mutations the manager must set the human being and the inter-human relationships in the center of the process for implementing the performance management. In this significant process the manager's behavior and orientation towards the human resources is influenced by a series of objective and subjective factors of technical and human kind. There are some cases when the managers personally or through a specialist search and analyze ideas which refer to the nature, structure, dynamic and social functions of the human relationships and the state of mind present in the act of performance management.

The basic criteria in the performance analysis and its economical-financial mechanism represent the extent taken to insure full satisfaction to the material and spiritual needs of all members of the society (I. Bogdan, 2007).

The human resources generated a series of studies which try to elaborate models that contribute to achieving high performance.

Performance is achieved in the activity of any sports organization inside the perimeter of an objective structure where the human factor represents a humongous working force, with a non-homogenous structure and components with diverse specializations, various hierarchical positions and distinct personal characteristics. At the same time each and every one of them brings a multitude of social experiences, a variety of aspirations and states of mind that come in from the exterior. All these interfere with the conflicts of the fundamental relationships created in the interior.

While underlining the importance of the human resources it is important not to underestimate the material and financial resources. In order to function as a system the activity of achieving performance must be based on a strong inter-dependence between the human resources and the material and financial resources.

From the point of view of the human finality of the performance the transition to the market economy imposes the competence as a general skill in the society. A market economy that wants to function under the conditions of a scientific and technical revolution must appreciate and attract through all means the elements that are trained, talented and show initiative.

The transition to the market economy should be done in a performant way. In order to realize this it is necessary to create a proper social, cultural, political and psychological environment. Therefore it is important that the analyses and the solutions regarding the transition to the market economy will be extended from the technical and economical perimeter to the social, psychological and political area. This will guarantee a proper analysis of the environmental reaction and the real obstacles that appear on the path to an economy based on knowledge.

It is important to have a scientific view regarding the managerial activity because in an era of deep transformations the social, economic, technical-scientific and cultural phenomena are in a close interdependence and the complexity level of the problems got higher.

From the point of view of the economical psycho-sociology the performance results from the fact that all employees must achieve certain goals in a certain period of time using the most advantageous technical, physical and financial means.

The manager cannot ignore the humane perspective of the psycho-sociology that confirms the human being as the central value. The economic psycho-sociology helps to implement the humane finality in the managerial practice.

Any manager is performant or nonperformant depending on the way he practices his attributions by leading a group of people. Their level of receptivity and participation, their opinions and intentions, the morality and orientation represent complex psycho-social phenomena that need well trained and experienced managers in the field of social psychology in order to offer the best solutions. The managerial act is performant only if it offers reality based solutions and acts upon all human elements which condition the development of the sports organization.

It is a general issue to learn how to treat people. The manager position modifies this exigency by making it necessary and urgent. The manager must know the characteristic features of all employees that

he works with in order to achieve performance. He must instruct them and make the most of their talents by creating a favorable climate of work, initiative and creativity (M. Herciu, 2005).

The managerial activity is supposed to be a collaboration with a group of people while communicating on a rational-affective level. At the same time the performance of the managerial activity is conditioned by the psycho-pedagogic factors, the capacity of creating the perfect environment based on reciprocal trust and respect.

The most essential condition for the performance of the managerial activity is to understand your employees and to treat them as such. In the field of the interpersonal relations between manager and employees the following rules seem to be useful and performant:

• the manager should not isolate himself, but on the contrary try to get closer to the employees, to be continuously in contact with them, trying to stimulate their opinions and preoccupations;

• in order to stay informed the manager must learn to listen to the employees and correctly and completely register the answers;

• in order to understand the people that he works with the manager must overcome the level of theoretic approach and the appearances and must focus on the facts as only source of competent approach of the employees;

• the managers must prevent trough their actions the conflicts and misunderstandings between employees and must moderate a possible large collaboration and reciprocal understanding.

The manager must be trained adequately and must own a so called "psychological equipment" that is the skill to work with people, the ability to transform executors in collaborators and make them aware of this transformation.

The manager is characterized by his interest for the human being, for using the latter's full working capacity and offering him the best working position depending on his skills and merits. The manager must righteously select, train and promote the employees in order to stimulate the capable and thorough elements and promote the authentic values.

Communication is a basic psycho-social element in the life of a sports organization. Directly or indirectly, formal or informal the employees are permanently in touch on both a professional and personal level and the relationships between them generate a complex net of communications.

Communication offers the manager a participative contribution. This is the foundation of the performance management and represents the connective element between the members of the administrative board making it possible to understand the employees and being understood by the employees of the sports organization.

After proving the importance of the manager in the institutions of physical education and sports all respondents admitted the need of a manual and a specialization for the management in the physical education and sports in the specialized faculties (of physical education and sports) in our country.

After analyzing the feedback to our questionnaire we are presenting the following recommendations for an optimal management of the sports organizations, as well as an estimation regarding the role of the performance management and the resources in these institutions.

- Analyzing all functions of the general management and using them accordant with the specific of the sports organizations. Applying these functions in the system is important for achieving a high level of efficiency in general.
- The action plan on the level of the management of the sports organization and its compartments must result from a harmonic relationship between the goals and the resources.
- The managers must participate to the annual planning of sports training and to the prognoses. The 4 year planning equivalent with an Olympic cycle must follow the level of development of all sportive branches and trials on both a global and a national level.
- The financial planning must be a priority for the mangers and their task is to plan a solid and even budget.
- In case of a dysfunctional activity on the managerial level the structural organization must be modified and replaced by a competent one that is able to rationally use the human, material and financial resources.
- The coordination of the activities in a sports organization must be adequately and efficiently done. This can be achieved on a multilateral or unilateral level depending on the size of the sports organization and the volume of activities that take place.
- The managerial activity in an organization of sports performance must constantly include the motivation of the subordinated personnel. It is important to have supplementary funds in order to offer bonuses to sportsmen and technicians that achieve high performances on an international level.
- The managerial control, no matter how it is used, must be the dynamic factor in the organizational activity. It must measure and verify the quantitative and qualitative achievements of the programs for sportive training, the legal and rational use of financial resources, materials and technology, and the implication of the human factor in completing the tasks specific for the diverse compartments and positions.
- All managerial decisions must be taken after consulting with the competent factors and must lead to the choice of the optimal alternative.
- In order to take the best decisions and choose the best course of action all sports organizations must

be well informed with the latest news and they must process them and use them on all plans of activity.

- A good time administration is very important for the managerial efficiency.
- The number of sportsmen got lower in the period 2002-2007. Therefore the selection strategies on a quantitative level must be reconsidered without giving up the high standard of the quality.
- A psychologist specialized in the sports issues would have a benefic effect on the knowledge level, the conciliation level and the level of the sportive training.
- The managers should find the perfect combination between experience and training level and try to build a "younger" personnel. The selection of human resources must have a solid scientific base which in our opinion is one of the necessary conditions in order to achieve high performances.

In the field of performance the managerial practice, no matter where it is headed to, follows *the positive effect of the participation upon the quality of the actions and the motivation of the employees.* These effects are directly proportional to the level of participation. In order to put this in practice the institution must realize a proportion between the level of applying the participation principle and the cost of participation, in other words to set *the optimal limit for the extent of participation.* The participation finds favorable conditions of applicability in the performance management, but the standards must be set rationally considering the motivations. Regarding the participation the performance management is a formation process asking for participation in order to solve problems and to achieve certain goals that can be the actual objective. *Participation means to assure a participative management.* The managerial practice underlines the superiority of the participative management which consists of morally involving the personnel in doing their jobs through the personal work organization (I. Lador, 2000, p. 123).

The rational and efficient use of resources is general principle for any human organization. The management of the human resources decisively influences the existence of the sports organization represented by achieving high performances in diverse sportive branches on a national or international level. The main coordinates for the management of the human resources are recruiting of personnel, selecting sportsmen and hiring valuable specialists, improving the training and evaluation of the employees.

Recommendations

For this reason we are trying to point out some ***recommendations*** regarding the management of the human resources:

1. Recruiting of personnel for the sports organizations takes place on two distinct levels:

- Recruiting of sportsmen – is the direct effect of the sportive selection process according to the requests, criteria, tests and norms that were initially scientifically determined for every sportive trial and branch;
- Recruiting of employees – professors, trainers, medical personnel, accountants, administrative personnel etc. is done according to the legislation in effect (Law No. 84/1995, Law No. 128/1997, Law No. 69/2000).

2. In order to improve the personnel training the following organizational forms should be mentioned:

- Methodic-scientific and psycho-pedagogical activities determined on the level of organizations or groups of organizations;
- Communicative methodic-scientific sessions, symposiums and exchange of experience;
- Refresher course for specialized training or getting a higher didactical degree or trainer category;
- Refresher course for the management and executive personnel following certain programs;
- Scholarships for refresher courses, residential and documentary studies in the country or abroad;
- Post universal study;
- Doctor's degree.

3. A lawful competitive examination will take place in order to occupy an executive, administrative or managerial position. Regarding the scholar sports clubs the occupation of an executive position requires a post universal educational management degree or a graduation from an educational management module.

4. The activity of the employees in a sports organization of performance is evaluated according to position card and its characteristics:

- studies;
- seniority;
- other requirements;
- relations: hierarchical, functional, of collaboration, of representation;
- attributions, work, tasks;
- responsibilities;
- competence limits.

The thesis delimits the essential coordinates of the performance management in the institutions of physical education and sports under the major impact of the predictable mutations of the 21st century – change, globalization, economy, knowledge based management and organization – and offers solutions along these coordinates for some of the problems by proposing improvement for the managerial activity and by bringing arguments for some of the theories. After saying all this we don't consider the subject closed and we admit that there are some problems that require ulterior detailed research.

REFERENCES:

BOGDAN, I., 2006, *Performance management perspective of European integration, globalization and change*, Journal Theoretical and Applied Economics, No.6, Publisher AGER, Bucharest, Romania, 73.

BOGDAN, I., 2007, *International business management*, Lucian Blaga University Publishing House, Sibiu, Romania, 231.

HERCIU, M., 2005, *Financial Management of the company's future*, Mainland Publishing House, Sibiu, Romania, 153.

LADOR, I., 2000, *Theoretical Foundations of Management in Sports*, Publisher University of Pitesti, Pitesti, Romania, 123.

❖ SPORT AND HEALT

THE EFFECTS OF GINSENG AND EXERCISE APPLICATIONS IN SEDENTARY INDIVIDUALS IN WOMEN ATHLETES ON LIPID HYDROPEROXIDE AND NITRIC OXIDE

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ABSTRACT

Objective: In this study, the effects of ginseng and exercise applications in women athletes on plasma hydroperoxide (LOOH) and lipid nitric oxide levels are aimed to be determined

Material and method: As in total 21 volunteered subjects; 14 healthy women athletes whose weight are 55-65 and age 20-23 years old and 7 healthy women sedentary participated in the study. Subjects separated in 3 groups equally; Control group (C), Exercise (E), Ginseng supported exercise (GE). 20 m. shuttle run test was applied to the subjects in E and GE groups 5 days in week for 6 weeks. The subjects in GE group were provided ginseng tablets in 500 mg dosage as oral at 10.00 am and 07.00 pm for every 45 days. Blood samples had been taken from all the subjects before starting the exercise period and ginseng supplement. Second blood samples were taken from all the subjects after the exercise period and ginseng supplement for 45 days. Blood samples that were taken from elbow vena in accordance with procedures were then transformed into tubes including ethylenediaminetetraacetic acid (EDTA) and centrifuged immediately at 3500 rpm and 15min + 4ºC degree, thus plasma samples were obtained. Plasma LOOH and NO levels were determined with calorimetric method from the samples.

Result: When intra-group LOOH levels of C and GE groups were examined, no significant difference was observed in pre and post application, however a significant ($p>0.05$) increase in LOOH levels of group E was observed. As to inter-group LOOH levels have no significant difference. When NO levels of the groups were observed, it was seen that there was no difference in C group, and NO levels of groups E and GE were increased significantly ($p>0.05$). In inter-groups NO levels, it was seen that there was no difference in pre application and a significant ($p>0.05$) increase was observed in groups E and GE comparing with C group in the post application.

Discussion and conclusion: Consequently in this study, it can be said that performed exercise protocol increased stated formation of free radicals and the ginseng supply performed with this exercise protocol showed no significant effect.

KEY WORDS: Exercise, Ginseng, free radicals

INTRODUCTION

Exercise is an important factor that makes body under stress depending on it is period and density (E.D. Higuchi., L.J. Cartier., M, Chen., 1992). While it is stated that irregular, long-lasting and heavy exercises triggered free radical production and weakened antioxidant system by increasing oxidative stress in some experiments (G.V. Şaşmaz., 1997) but in some other ones, it is stated that regular and middle severe exercise strengthened antioxidant system by having an important affect on it (R. Aslan., 1997).

Free radical production and antioxidant activity increases with exercise. It must be discussed that this increasing is related to exercise's intense and period or not (N. Ortenblad., and K. Mad., 1997, S.K. Powers., and L.L. Ji:, 1999).However, body's natural antioxidant system can sometimes be insufficient on removing of the free radicals that level's increasing in blood due to the oxidative stress arising during exercise, depending on exercise's density either. When the antioxidant defense system is always in activity being close but on condition that not to exceed highest capacity limit, it is informed that GSH level in blood decreased being indicator of this system is active (K. Gohil., C. Viguie., W.C. Stanley., 1988).

Increasing in muscular activity increases production and consumption of energy so flowing of blood and using oxygen in working muscle at

important degree. However, while energy is taken out from organic molecules, using too much oxygen have organism faced harmful effects of toxic oxygen products. For that reason, they are always faced with free oxygen radicals having too much aerobic organism toxicities. Even in simple, calm life, free oxygen products are always produced at low levels during metabolic activities. The number of free oxygen arising increasing of metabolic activity increases. Nitric oxide, hydroperoxide can be seen between this oxygen products named free radical.

Ginseng is a plant used in medicine in Far East countries. Plant has an a lot of affects like regulator of blood pressure, strengthener of heart, dropper of blood cholesterol, getter centre nerve system action, giver of people's more eating need, healer of tiredness. It is put forward that it is the most effective increaser resistance spy between all healing plants and it is thought that it may has positive effects on oxidative stress. It is targeted that when it is taken these affects into consideration, ginseng, being made it's tablets in our day, with the sedentary given ginseng and not given in this experiment and changes in plasma nitrioxide, hydoreperoxide levels being found out by doctors, it's contributing available information and so sport physiology.

MATERIAL

21 volunteer people whose ages are between 20-23, weights are 55-65,14 women sportswomen and 7 healthy women sedentary of 21 volunteer were added this experiment. Group1:Control; C (n: 7),
Group2: Exercise; E (n:7),
Group3: Exercise reinforced Ginseng; GE (n: 7).

METHOD

Mecic running test has regularly done to people in E and Ge groups during 6 weeks, 5 days in a week. It is ensured that the people in GE group took orally Ginseng (GNC®, Ginseng gold, Korean White Ginseng root, USA) at 10.00 am and 07:00 pm during 45 days. Blood examples were taken from all people being in experiment before starting Ginseng reinforcement and exercise period. Blood examples were secondly taken after Ginseng reinforcement and exercise period lasting 45 days.

Exercise Test

20 m mecic running test which applied to people being in experiment is multi-leveled test aiming getting tired of people and its first level is warming up tempo. People run first 20 m distance as coming and going. Running speed is controlled with a tape giving signal voice. People started running when they firstly heard signal voice and reached the line by second signal voice. When they heard second signal voice they were backed to starting line by turning back and the running went on with these signals.The people set their own tempos as being on the other side of the patch when they heard the signal. The running which was slow at the beginning is increased at ever 10 seconds. If a person can't reach the line before signal, but if she can reach other signal, person went on the test. If person can't reach 2 signals after and after, test is finished. The tiredness is formed on people with this way.

ANALYSES

The blood examples taken from elbow vena suitably to it's method, put into having ethylenediaminetetraacetic acid (EDTA) tubes and the plasma examples were obtained by centrifuging at 4 degree and at 3500 rpm for 15 minutes. Nitric Oxide and Lipid hydroperoxide levels are found as colorimetric by Cayman® brand kits using from plasma examples.

STATISTICAL ANALYSES

SPSS packet programme was used while making statistical analyses of the information taken from the test. Measured parameter's average values and standard faults of all people in experiment were calculated before and after application. Duncan's Multiple Range test was used by Variance Analyze is done during importance control between groups. Paired-Samples T test was benefited during the control of differences of value before and after application.

RESULTS

Table 1. Groups LH levels before application and after applications (umol/I)

LOOH (μmol/l)				
Group	**N**	**Before Mean±SD**	**After Mean±SD**	**P**
C	7	285,82±44,63	299,90±79,87	0,71
E	7	274,82±61,06	327,34±69,55	0,02*
GE	7	269,97±76,58	271,23±75,64	0,87

* The difference is important in same line according to after application value.(P<0,05).

It is seen that there was no important difference between before application and after application at LOOH levels C and Ge inside of group but it is seen that there is an important($p>0.05$) increasing group E's LOOH level.LOOH levels between groups, there is no important difference.

Table 2. Plazma NO levels of the groups before application and after application

NO (µmol/l)				
Grup	**N**	**Before Mean±SD**	**After Mean±SD**	**P**
C	7	3,02±1,15	2,99±0,48 [b]	0,96
E	7	3,15±1,51	6,09±1,03 [a]	0,00*
GE	7	3,04±1,57	6,01±0,95 [a]	0,01*

a,b: Difference between information in same line but having different words is important.
*The difference is important in same line according to after application value

It was seen that there was no difference at NO levels in C group, It was seen that E and GE group's NO level, importantly ($p>0.05$) increased. It was seen that there was no difference between group's NO level before application, Increasing in E and GE groups is more important ($p>0.05$) than increasing in C group.

DISCUSSION AND CONCLUSİONS

Although antioxidant substances were applied they showed that DNA damaging is increased during endurance training on M. Belviranli., and H. Gökbel., (2006).It is agreed that physical exercise have free radical formation increased although there is contradiction information (M.M. Kanter., G.R. Lesmes., L.A. Kaminsky,. 1988). Heavy exercise can increase taking oxygen into the body nearly 20x, moreover, it increases consumption of oxygen nearly 200 x (A. Childs., C. Jacobs., T. Kaminski., 2001). At the result of these events, it is stated that there is increasing on free radical producing due to biochemistical reactions growing on mytocondyrions during exercise. (R.R. Jenkins., and A. Goldfarb., 1993). Intensive physical activity causes the oxidative damage in the blood and the various tissues of human and also animals. (A.H. Goldfarb., M.K. Mcintosh., Bt.. Boyer., 1996, V. Reddy., C. Kumar., T. Prasad., 1992. Again A. Öztürk., A.K. Baltaci., and R. Mogulkoç., (2003) reported that acute swimming exercise increases the lipid peroxidation in rats. Similarly K. Jana., P.K. Samanta., and I. Manna., (2008) reported that intensive swimming exercise make a significant increase in the MDA level of plasma by causing oxidative stress in the tests of rats.

NO production increases during the reduction or lack of blood flow in the organism. On the other hand NO can be produced by the transformation of xanthine oxidase which is the source of superoxide anion into xantinhe dehydrogenase (M. Joannidis., G. Gstraunthaler., W. Pfaller., 1990, M. Saito., and I. Miyagawa., 2000). Although nitric oxide level can be increased in the medium and high level exercises. It is recorded that if there is a correlation between CAT activity and NO during moderate exercise, it could be the result of the increase of the antioxidant activity provided by exercise (H. Düzova., M.H. Emre.,Y. Karakoç., et al 2006, E. Güllü 2007) regular chronic exercise also causes vasodilation by increasing the level of NO.

Experiments on various animals show that ginseng reducing free radicals, protecting cells from toxic effects (D.D. Kitts., and C. Hu., 2008, J. Voces., A.I. Alvarez., L. Vila., 1999). It is indicated that the effects of ginseng were performed by increasing the activity of GSHpx, CAT, SOD and decreasing the level of MDA and NO.It was also recorded that ginseng show an antioxidant activity by increasing the throwing NO in urine by indirect way, prevention of damaging of body tissues due to free radicals depends on dose (B.H. Han., M.H. Park., Y.N. Han., 1985). So it can be considered that differences between E and GE groups originated from dosage differences and implementation period.

When LOOH levels of groups were examined there was not a significant difference between groups, but after the application raise of LOOH level in E group is important, and this raise was not in K and GE groups so it can be considered that ginseng has an effect on LOOH level.

As a result it can be said that ginseng increases the NO and LOOH levels in women athletes and sedentary individuals, this increase originated from exercise not from the quantity of ginseng.

REFERENCES

ASLAN, R., 1997, *Sedanterlerde Akut ve Programlı Submaksimal Egzersizin Eritrosit Membranı Lipid Peroksidasyonu ve Antioksidan Savunma Sistemi Üzerine Etkilerinin Araştırılması.* Yüzüncü Y Üniversitesi Sağlık Bilimleri Enstitüsü, Fizyoloji Anabilimdalı, Yayınlanmamış Doktora Tezi, Van.

BELVIRANLI, M., GÖKBEL, H., 2006, *Acute exercise induced oxidatıve stres and antioxidant changes,* selcuk üniversity, Meram faculty of medicine, department of physiology, Konya Turkey; 3(3): 126-131

CHILDS, A., JACOBS, C., KAMINSKI, T., 2001, *Supplementation with vitamin C and N-acetyl-cysteine increases oxidative stress in humans after an acute muscle injury induced by eccentric exercise.* Free Radic Biol Med; 31 (6): 745-53.

DÜZOVA, H., EMRE, MH., KARAKOÇ, Y., KARABULUT, AB., YILMAZ, Z., GÜRSUL, C., YOLOĞLU, S., 2006, *Orta ve yüksek düzeyde treadmill egzersizinin sıçanların kas ve eritrosit oksidan/antioksidan sistemine etkisi.* İnönü Üniversitesi Tıp Fakültesi Dergisi; 13(1): 1-5.

GOHIL, K., VIGUIE, C., STANLEY, WC., BROOKS, GA., PACKER, L., 1988, *Blood glutathione oxidatıon during human exercise.* J. Appl. Physiol ; 64: 115.

GOLDFARB, AH., MCINTOSH, MK., BOYER, BT., 1996, *Vitamin E attenuates myocardial oxidative stress induced by dhea in rested and exercised rats.* J Appl Physiol ; 80: 486-90.

GÜLLÜ, E., 2007, *Sedanterlerde ve Dayanıklılık Sporcularında Maximal ve Submaximal Egzersiz Sonrası Oluşan Oksidan Stres ve Antioksidan Düzeylerinin Karşılaştırılması.* Ankara, Doktora tezi.

HAN, BH., PARK, MH., HAN, YN., 1985, Studies *on the antioxidant components of korean ginseng, the mechanism of antioxidant activity of mantol and phenolic acid.* Korean Biochem J; 18, 4 : 337-340.

HIGUCHI, ED., CARTIER, LJ., CHEN, M., HOLLOSZY, JO., 1992, *Sod and cat in skel adaptive response to exercise.* L Gerontol ; 40(3): 281-286.

JANA, K., SAMANTA, PK., MANNA. I., GHOSH. P., SINGH, N., KHETAN, RP., RAY, BR., 2008, *Protective effect of sodium selenite and zinc sulfate on intensive swimming-induced testicular gamatogenic and steroidogenic disorders in mature male rats.* Appl Physiol Nutr Metab. ; 33: 903-14.

JENKINS, RR., GOLDFARB, A., 1993, *Introduction oxidant stress aging and exercise*. Med. Sci. Spans Exercise ; 25: 210.

JOANNIDIS, M., GSTRAUNTHALER, G., PFALLER, W., 1990, *Xanthine oxidase, evidence against a causative role in renal reperfusion injury.* Am J Physiol Renal Physiol ; 258: 232-6.

KANTER, MM., LESMES, GR., KAMINSKY, LA., LAHAM, SAEGER, J., NEQUIN, ND., 1988, *Serum creatine kinase and lactate dehydrogenase changes following an eighty kilometer race*. Eur. J. Appl. Physiol ; 57, 60.

KITTS, DD., HU, C., 2008, *Efficacy and safety of ginseng food, nutrition and health. faculty of agricultural sciences,* University of British Columbia, 6650 N.W. Marine Drive, Vancouver, B.C. V6T-1Z4, Canada Public Health Nutrition ; 3(4A): 473- 485.

ORTENBLAD, N., MAD, K., 1997, *Djurhuus MS. Antioxidant status and lipid peroxidation after short-term maximal exercise in trained and untrained humans*. Am. J. Physiol ; 272: 1258-1263.

ÖZTÜRK, A., BALTACI, AK., MOGULKOÇ, R., ÖZTEKIN, A., SIVRIKAYA, A., KURTOGLU E., KUL A., 2003, *Effects of zinc deficiency and supplementation on malondialdehyde and glutathione levels in blood and tissue of rats performing swimming exercise.* Biological Trace Element Research; 94: 157-166.

POWERS, SK., JI, LL., 1999, *Leeuwenburgh C. Exercise training-induced alterations in skeletal muscle antioxidant capacity: a brief review.* Med Sci Sports Exerc ; 31: 987–997.

REDDY, V., KUMAR, C., PRASAD, T., 1992, *Exercise-induced oxidant stress in the lung tissue, role of dietary supplementatıon of vitamin E and selenium.* Biochemistry International; 26(5): 863-871.

SAITO, M., MIYAGAWA, I,. 2000, *Real-time monitoring of nitric oxide in ischemia-reperfusion rat kidney.* Urol Res, 2000; 28(2): 141-6.

ŞAŞMAZ, GV., 1997, *Genç erkek farelerde farklı sürelerdeki hafif egzersizin kas ve karaciğer antioksidan sistemlerine etkisi,* Gazi Üniversitesi Tıp Fakültesi Biyokimya Anabilimdalı, Yayınlanmamış Doktora Tezi Ankara.

VOCES, J., ALVAREZ, AI., VILA, L., FERRANDO, A., CABRALDEOLIVERIA, C., PRIETO, JG., 1999, *Effects of administration of the standardized Panax ginseng extract G-115 on hepatic antioxidant function after exhaustive exercise.* Comp. Biochem. Physiol ; 123: 175-84.

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RELATIONSHIP BETWEEN BODY MASS INDEX AND PHYSICAL SELF-ESTEEM IN ROMANIAN ADOLESCENTS

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ABSTRACT

Purpose : The purpose of this study was to identify determinants of physical self-worth in Romanian adolescents and their relationship to physical self-esteem and Body mass index (BMI).

Design and methods: A quantitative correlational research design was utilized. The Children and Youth Physical Self- Perception Profile (CY-PSPP, Ecklund, Whitehead, & Welk, 1997) was completed by a sample of 168 high school students (age range = 15-18 years), from one high school in city of Cluj. CY-PSPP was recently adapted to Romanian norms (Craciun et al., 2010).

Results: Quantitative data from this study revealed negative correlations between BMI and all self-perceptions($p<.05$), except strength, which showed a positive correlation ($p<0.05$).

Conclusions: This paper was conducted with the intention of a better understanding relationship between perceived physical self-esteem and BMI. The majority of components of physical self-esteem were negatively correlated with BMI increases. Thus, it means that physical self-perceptions will decrease as physical activity levels decrease.

KEYWORDS: physical activity, BMI, physical self-worth, global self-worth , self-perceptions

INTRODUCTION

Increased knowledge of physical activity levels in children an adolescents and its relation to body composition and to individual perceived physical self-esteem ought to be of interest for professionals working with physical activity and sciences dealing with human bodily movement. Childhood obesity is a major world health, social and economic issue. For individual children, the immediate psychosocial effects of social isolation, discrimination, and peer problems can accompany childhood obesity. By adolescence lower self-esteem combined with increased rates of sadness, loneliness and loneliness and nervousness has been reported for obese children. It is known that children are becoming increasingly physically inactive. This is concerning as there are many well-documented health implications for the individual as a result of being overweight or obese (Pate et al., 1995). Identification of sedentary children as risk of developing hypokinetic diseases is imperative to all stakeholders with an interest in children's health. At present there is no known data reporting on the physical activity levels, body mass index, physical self-esteem and the relationship between these factors in Romanian adolescents. Longitudinal research addressing causal relationships between overweight/obesity and self-esteem in young children is extremely limited. For elementary school-aged children, longitudinal studies have suggested greater decreases in self-esteem over time for obese than non-obese children and an inverse relationship between change in adiposity and change in self-esteem. Therefore, this research may be useful for targeting specific groups of students by promoting and implementing physical and psychologically appropriate education programs.

There is a need to better understand the determinants of physical activity in youth. As perceived competence theory suggests, perceptions that the children hold of themselves may be important motivational influences for current and future physical activity (Biddle et al. 1993). Through the study of self-perception, important findings for the motivational determinants of physical activity in adolescents can be explored. The possession of positive feelings of self-worth or high self-esteem has been considered important, not only as an index of mental well-being but also as a mediator of behavior (Fox 1988). Research shows that the self-esteem is associated with positive achievements and socially related behaviors such as leadership ability, satisfaction, decreased anxiety, and improved academic and physical performance (Hayes et al. 1999). Such research has highlighted the importance of self-esteem in physical education and exercise programs (Biddle et al. 1993). Self-worth is generally accepted as a fundamental contributor to human behavior. Once thought to be a unidimensional construct, self-worth is now seen as a multifaceted, multidimensional hierarchical structure with many different domains and sub-domains. Sub-domains affects one's self-concept or self-perception at each level in the hierarchy – affecting first one's physical self worth (PSW) and ultimately global self-worth (GSW). One's GSW, at the apex of the hierarchical construct, is a relatively stable trait. As one descends the hierarchy, self-concept becomes less stable and more situation-specific (Marsh & Shavelson, 1985). In addition to the many health benefits, studies (Sonstroem, 1984)

have confirmed that physical activity (PA) is also associated with an increase in self-confidence and an improved sense of well-being. Research hallmarks that physical activity has important role in one's emotional and mental health, reducing symptoms of anxiety and depression and aids in decreasing stress levels. Physical self-worth is thought to be a powerful and strong domain within the hierarchal structure of global self-worth. Fox and Corbin (1989) developed the Physical Self-Perception Profile (PSPP) based on the hierarchical model and measures physical self-perception and its relationship to overall global self-worth. The PSPP is both hierarchical and multidimensional with GSW at the apex of the hierarchal structure and physical selfworth (PSW) at the domain level with (a) skill, (b) body attractiveness, (c) fitness and conditioning, and (d) physical strength as sub-domains.

The PSPP was tested on youth, adolescents and college students and found valid and reliable in testing physical self-perception (Welk et al., 1997).Subsequently, Ecklund, Whitehead, & Welk, 1997) and modified and validated the PSPP for its use with children and youth (CY-PSPP) as young between nine years and high school age.

METHODS

Participants

168 high school students (age range = 13-18 years), from one high school in city of Cluj were asked to volunteer their participation in this study. 88 were boys (58%) and 80 were girls(42%). Permission to conduct this study was obtained from the school manager, participants and their parent with signed informed ascent letters prior to any data collection.

Instrument

The Children and Youth Physical Self-Perception Profile (CY-PSPP) is used in this study to identify the psychological factors which have a relationship with physical activity levels among Romanian adolescents.

The CY-PSPP includes scales to address perceptions of Physical Conditioning (Cond), Sports Competence (Sport), Body Attractiveness (Body) and Strength (Strong) as well as scales to assess Physical Self Worth (PSW) and Self-Esteem (SE). Each scale is assessed with six items scored on a four-point scale with the average score used to represent the value for the scale. Respondents are first asked to decide which side of a contrasting description is most like them (e.g., some kids are pleased with the appearance of their bodies BUT other kids wish that their bodies looked in better shape physically).All of the items use a structured alternative format to reduce the tendencies for socially desirable responses and approximately half of the items were reverse coded to keep the instrument more interesting for participants. The CY-PSPP was administered by the researcher during physical education classes. Participants were told to answer each question as best they could and to choose the statement that best described them. There were no right or wrong answers and questionnaires would not be graded. Before the questionnaire was handed out to all participants were guided through a practice question to prevent questionnaires from being filled out incorrectly. Confidentiality was assured as participants placed a number code on the questionnaire. Participants were free to ask questions about the questionnaire at any stage. The researcher then examined each questionnaire to be sure it was completed with the age, gender, and grade filled in correctly. Questionnaires not filled out correctly were then removed from the study.

Body mass index (BMI)

It is also important to relate physical activity levels and physical self esteem to a health outcome, in this case, body composition. An appropriate body composition measure for the studied population is to calculate BMI from height and weight measurements. BMI has been correlated with other body composition measures, is noninvasive and convenient for both screening and large field work studies (Lynch, Wang & Wilcken, 2000; Dietz & Bellizzi, 1999).

This study investigated whether there is a relationship between physical self-esteem and BMI or overweight and obesity. For classification of overweight and obesity, definitions provided by Cole, Bellizi, Flegal & Deitz,2 000), were used due to their appropriateness for the studied population. It is generally acknowledged that as physical activity increases, BMI decreases (Tudor-Locke et al., 2001). There is no data on the relationship between physical self esteem and BMI in adolescent Romanian population. Caution must be taken, however, when using BMI with an adolescent population due to differences in the timing and tempo of sexual maturation (Lynch et al., 2000).

Design

A quantitative correlational research design was utilized. The Children and Youth Physical Self- Perception Profile (CY-PSPP, Ecklund, Whitehead, & Welk, 1997) was completed by a sample of 168 high school students (age range = 15-18 years), from city of Cluj. CY-PSPP was recently adapted to Romanian norms (Craciun et al., 2010). Body composition measure for the studied population was calculated from height and weight measurements.

RESULTS

In adolescent 15-18 years of age (Table 1) the total score of CY-PSPP ranged from 73-140 in boys and 73-138 in girls. Semnificant gender differences were found in global self – esteem, total score of CY-PSPP and physical condition.

Body mass index was calculated for 88 boys and 80 girls and compared to the International BMI cut point to examine the prevalence of overweight and obesity. The prevalence of overweight was 19.7% for boys and 20.4% for girls. 7.6% from boys and girls were obese. The rate of increase in BMI was greater than Swedish or Australian children but lower than in American adolescents (Tudor-Locke et al., 2001).Quantitative data from this study revealed significant negative correlations between BMI and Physical Condition ($r = -.270$, $p < 0.01$), Sports Competence ($r = -.135$, $p < 0.05$) and Physical Self-worth ($r = -.210$, $p < 0.01$), with Attractive Body ($r = -.320$, $p < 0.01$) being the most significant.. A positive correlation existed between BMI and Strength Competence ($r = .180$, $p < 0.01$).

CONCLUSIONS

The concern about the rapid increase in the percentage overweight and obese children and adolescents was an important factor for starting this study. This paper was conducted with the intention of a better understanding relationship between perceived physical self-esteem and BMI. The majority of components of physical self-esteem were negatively correlated with BMI increases. Thus, it means that physical self-perceptions will decrease as physical activity levels decrease. Focusing on an increase in physical activity rather than a decrease in body weight will be a much more constructive approach for adolescents, avoiding the stigma put on these when weight is the only focus. With obesity levels rising and a decrease in children and adolescents' physical activity levels evident, it is imperative to stand on interest in children's health work towards developing opportunities to encourage and support daily participation in physical activities.

Many factors are important for a healthy lifestyle, such as cultural, social and personal factors. Physical self-esteem, a personal factor formed by the social interaction between individual was measured by CY-PSPP. By translating the questionnaire and test it for validity and reliability in Romania we provided an instrument that could measure perceived physical self-esteem for children and adolescents.

In conclusion, physical activity offers metabolic adaptation that benefit health even without a measurable decrease in weight. Focusing on an increase in physical activity rather than in body weight might be a much more constructive approach for children. It avoids the stigma placed on these young people when weight is the focal point. This recommendation might help in goal setting for professionals, such as physiotherapist and physical educators, working with children and adolescents at risk for obesity. Perceived physical self-esteem is an important predictor and recent studies indicates the possibility to increase its level in adolescent with physical activity intervention program (Lindwall, 2004). Since perceived physical self-esteem contains both perceptions of abilities in physical fitness and strength, sense of body attractiveness and sport competence this model ought to be built up to promote broad variety of motor skills combined with moderate to vigorous intense in physical strength and physical fitness.

Table 1. Median, range and gender differences for CY-PSPP and sub-domains in adolescents 15-18 years (n = 168)

	Boys N=88		Girls N=80		Total N=168		Gender diff (P)
	Median	Range	Median	Range	Median	Range	
Global self esteem	21	14-24	18	8-24	20	8-24	0.01
Physical self worth	18	11-24	17	11-24	18	11-24	0.22
Sport Competence	19	8-24	18	9-24	18	8-24	0.13
Body Attractiveness	18	9-24	17	8-24	17	8-24	0.09
Physical Strength	18	10-24	17	7-24	17	7-24	0.35
Physical Condition	20	8-24	18	7-24	19	7-24	0.01
Total CY-PSPP	109	75-140	102	72-136	105	72-140	0.04

REFERENCES

BIDDLE S., PAGE A., ASHFORD B., JENNINGS D., BROOKE R., FOX K. (1993). Assessment of children's physical perceptions. *International Journal of Adolescence and Youth,* 4: 93–109.

COLE, T.J, BELLIZZI M.C., FLEGAL K.M., DIETZ W.H. (2000). *Establishing a standard definition for child overweight and obesity worldwide*: international survey. *British Medical Journal,* 320:1–6.

CRACIUN, M., GROSU E.F., PETREHUS D. (2010). *Adaptation to Romanian norms of children and youth physical self-perception profile* (CY-PSPP). A pilot study. *Transylvania University Press,* 96-101.

DIETZ, W.H., BELLIZZI M.C. 1999. *Introduction: the use of body mass index to assess obesity in children*. *American Journal of Clinical Nutrition,* 70:123–125.

EKLUND, R.C., WHITEHEAD J.R., WELK G.J. 1997. *Validity of the children and youth physical self-perception profile: A confirmatory factor analysis*. *Research Quarterly for Exercise and Sport*, 68:3 – 249.

FOX, K. R. (1988). *The self-esteem complex and youth fitness*. *Quest,* 40:230–46.

FOX, K.R. & CORBIN C.B. 1989. *The physical self-perception profile: development and preliminary validation*. *Journal of Sport & Exercise Psychology*, 11, 408-430.

HAYES ,S.D., CROCKER, R.E., KOWALSKI K.C. 1999, *Gender differences in physical self-perceptions global self-esteem and physical activity: evaluation of the physical self-perception profile model*. *Journal of Sport Behavior,* 22:1–14.

LYNCH, J., WANG X.L, WILCKEN D.E.L. 2000. *Body mass index in Australian children: recent changes and relevance of ethnicity*. *Arch Dis. Child* 82:16–20.

LINDWALL, M. 2004, *Exercising the self: On the role of exercise, gender and culture in physical self-perceptions*. Thesis, Department of psychology, Stockholm University.

MARSH, H.W., SHAVELSON R.J. 1985. *Self-concept: its multidimensional hierarchical structure*. *Educational Psychology,* 20:107–25.

PATE, R., PRATT, M., BLAIR, 1995, *Physical activity and public health*. JAMA; 273: 402-407.

TUDOR-LOCKE, C.E., MYERS, A.M. 2001. *Methodological considerations for researchers and practitioners using pedometers to measure physical (ambulatory) activity*. *Quarterly Exercise Sport,* 72:1–12.

SONSTROEM, R.J., 1998, *Physical self-concept: assessment and external validity*. *Exercise Sport Science Revue,* 26:133–64.

WELK, G. J., CORBIN, C. B., NANN DOWELL, M., & HARRIS, H., 1997, *The validity and reliability of two different versions of the Children and Youth Physical Self-Perception Profile*. *Measurement in Physical Education and Exercise Science*, 1, 163–177.

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THE EFFECTS OF ACCUTE SUBMAXIMAL EXERCISE ON SOME STRESS HORMONE LEVEL

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ABSTRACT

Objective: In the study, it is aimed to examine influence of Acute Submaximal exercise in the sportsmen and sedentary individuals who sport regularly on epinephrine and cortisol levels.

Material and method: In the study 20 student subjects were used who were average 17–20 year old and 65–75 weight of 10 healthy male sportsmen from the Higher School of Physical Education and Sports and also 10 healthy boy students studying in other faculties. Subjects were divided into 2 groups: Sedentary group (S) and Exercise Group (E). Blood samples of both groups were taken; the first one before (OD) the specified exercise test and the second (ES) right after the completion of test. The third (E2S) blood sample was taken 2 hours after the exercise and the fourth (E24S) one 24 hours after the exercise

Result: It was seen that Epinephrine OD values of the Group S significantly increased after exercise ($P<0.05$), while E2S value was indifferent to ES value and E24S value significantly decreased ($P>0.05$). It was seen found that Epinephrine OD values of the Group E significantly increased after exercise ($P<0.05$), while there was no significant change in ES and E2S levels, and E24S values significantly decreased ($P<0.05$) than the values after exercise (ES, E2S). It was found that cortisol OD values of Group S significantly increased after exercise ($P<0.05$). Although ES2 value was lower than the ES value, it was seen that they were statistically identical and levels of ES, E2S and E24S were significantly higher than OD level ($p<0.05$). E24S value significantly decreased than ES value ($P<0.05$). It was found that Cortisol OD values of Group E significantly increased ($p<0.05$) after the exercise and E2S and ES values were identical while E2S level was found significantly ($P<0.05$) higher than E24S level. E24S value was found significantly lower than ES value ($P<0.05$). E24S value was determined to be significantly higher than OD level. When epinephrine and cortisol levels were compared between two groups, any important difference was not seen.

Discussion and conclusion: It was found that there is an important influence of submaximal exercised applied in this study in moderate intensity on Epinephrine and Cortisol levels

KEY WORDS: Exercise, Epinephrine, Cortisol

INTRODUCTION

The balance has arised with cooperation between a great number of agents under the hormonal neural control. Factors like physical stres s that can change this balance in the body as an accute and chronic illness have activated a great number of homeostatic mechanism. Especially, they have important roles on homeostatic changes such as cardiovascular system and fluid balance in the sportsmen.

It has been informed that there has been the increase in the levels of stres hormones such as epinephrin and cartisol having direct and indirect effects on the regulation of cardiovascular system of organism. The increase has changes according to the intensity , period of exercise and person's exercise situation. In the studies mentioned up to now , it has been known that because of the variation of the environmental conditions, exercise protocol and the features of different experimentals , the comment f the hormonal changes is very hard because of exercise.

During exercise , the release of epinephrin out ofthe adrenal medulla has increased. The intensity and period of the exercise have effect on this increase. The increase in lipolysis has been seen in paralel with the increase in epinephrin concentration because of the increase in the intensity of the exercise from % 20 max VO2 to % 65 max VO2. The increase in the intensity of the exercise has increased epinephrin concentration and the increasing epinephrin concentration has caused the increase in lipolysis (M.R. Rodriguez., and F.C. Edward., 2000). But this answer is lower in the stability performance of sedentary individuals. In addition, it has been seen that when comparing athleths with untrained individuals, before exercise, athletes' epinephrin secretion is more than untrained individuals in these athletes' physical activities it arises as a conclusion of their long- dated accordance with endocrine gland. As a paralel with this accordance, this accordance has been observed in the skeletal muscles,herts and other tissues. This accordance have the advantage on the athletes' performances.(M. Kjaer., 1998)

Especially it has been informed that there is the definite increase in the level of cortisol in the high intense exercise (Korbak, 1990). The increase in the release of cortisol has paralel with the increase in stres in the exercie.(R. Güneş., 1995).

In this study, it has aimed at the research of the effects of acute submaximal exercise on the levels of serum epinephrin and cortisol in the athletes and sedentary individuals.

MATERIAL AND METHOD

MATERIAL

In this study, 20 healthy sportsmen whose avarage ages are 22.82± 14.9 years and body weights are 73.96± 9.16 kg and who study in Selcuk University Physical Training and Sport Colloge and 20 healthy

male students who study in other faculties , totally 40 students, have been used as experimentals. Groups:

1. Group: sedentary group; S (n:10),
2. Group: exercise group; E (n:10),

METHOD

Experimentals have been divided into 2 groups as sedentary group (S) and exercise group (E). Before exercise test mentioned before applied to both 2 groups, the first (0v)and the second blood samples have been taken (AE) immediately after test . After 2 hours out of exercise , the third blood samples (A2E) and fourth samples (A24E) after 24 hours have been taken.

Exercise Test

20 m mecic running test which applied to people being in experiment is multi-leveled test aiming getting tired of people and its first level is warming up tempo. People run first 20 m distance as coming and going. Running speed is controlled with a tape giving signal voice. People started running when they firstly heard signal voice and reached the line by second signal voice. When they heard second signal voice they were backed to starting line by turning back and the running went on with these signals.The people set their own tempos as being on the other side of the patch when they heard the signal. The running which was slow at the beginning is increased at ever 10 seconds. If a person can't reach the line before signal, but if she can reach other signal, person went on the test. If person can't reach 2 signals after and after, test is finished. The tiredness is formed on people with this way.

Tımes and Abbrevıatıons of the Measurement

1. **Sampling Time:** The value:0 before supplementation :0V
2. **Sampling Time:** Immediately after exercise : AE
3. **Sampling Time :** After 2 hours out of exercise **:** A2E
4. **Sampling Time:** After 24 hours out ofexercise: A24E

ANALYSISES

In the biochemistry laboratory of Selcuk University Medical Faculty, their serums have been attained by transfering blood samples taken from elbow veins as an accordance with (v. Brachialis) type sufficiently to tubes containing Ethylenediaminetetroacetic acid and centrifuging them in 15 min. , 4 C, 3500 rmp immediately. The level of serum epinephrin out of serum samples has been determined with elisa method by using Adrenaline Research EIA-REF=KHB510081.400 (made in Belquim , Lot=3023) Epinephrin Kit. The serum cortisol levels have been determined by using cortisol EIA 96 (Lot=410117 made in San Diego . California, USA), test's kit with the method of elisa in the device labelled with EI × 800 Biotek readers and counted from K.C. Junner program.

STATISTICAL ANALYSISES

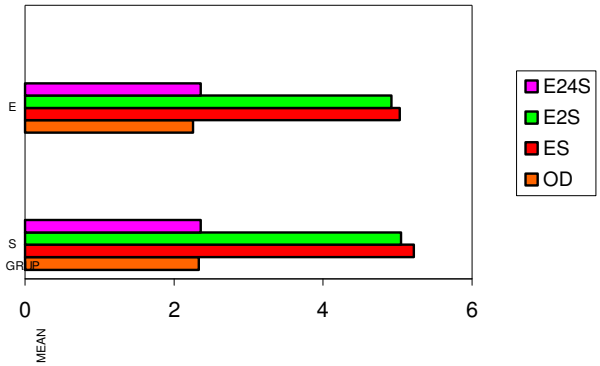
SPSS package program has been used in the acquired statistical analysises. The avarage values and Standard errors of experimentals' measurement parameters have been counted. Duncon' s Multiple Range Test has been used by making variance analysis in the importance control of the differences among groups. In the determination of the in- group, Wilcoxon spelling system has been used in the determination of the statistical differences.

RESULTS

Table 1. The acquired values of the levels of serum epinephrin of all groups: (n:10)

Epinefrin (ng/ml)	**OD**	**ES**	**E2S**	**E24S**
Gruplar	Mean±SD	Mean±SD	Mean±SD	Mean±SD
S	2,33±0,03 **b**	5,22± 0,36 **a**	5,05± 0,46 **a**	2,36±0,21 **b**
E	2,25± 0,14 **b**	5,03± 0,43 **a**	4,92±0,26 **a**	2,36±0,31 **b**

abcd: In the same line, the differences between avarage values are ($p<0.05$) important within group carrying different letters.

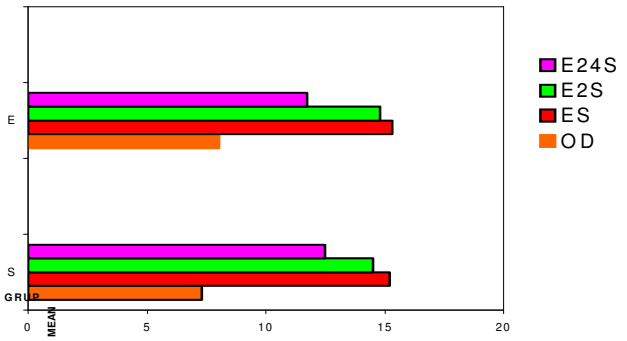


Graphıc 1. The avareges of epinephrin levels in within group and in-group (ng/ml)

Table 2. The acquired values of the levels of serum cortisol of all groups : (n=10)

Kortizol (ug/dl)	**OD**	**ES**	**E2S**	**E24S**
Gruplar	**Mean±SD**	**Mean±SD**	**Mean±SD**	**Mean±SD**
S	7,30±0,22 **c**	15,19±1,17 **a**	14,51±0,69 **ab**	12,47±1,31 **b**
E	8,04±0,27 **d**	15,31±0,50 **a**	14,81±1,48 **ab**	11,73±1,42 **c**

abcd: In the same line, the differences between avarage values are ($p<0.05$) important within group carrying different letters.



Graphıc 2. The avarages of the levels of the cortisol in within group and in-group: (ng/ml)

It was seen that Epinephrine OD values of the Group S significantly increased after exercise ($P<0.05$), while E2S value was indifferent to ES value and E24S value significantly decreased ($P>0.05$). It was seen found that Epinephrine OD values of the Group E significantly increased after exercise ($P<0.05$), while there was no significant change in ES and E2S levels, and E24S values significantly decreased ($P<0.05$) than the values after exercise (ES, E2S). It was found that cortisol OD values of Group S significantly increased after exercise ($P<0.05$). Although ES2 value was lower than the ES value, it was seen that they were statistically identical and levels of ES, E2S and E24S were significantly higher than OD level ($p<0.05$). E24S value significantly decreased than ES value ($P<0.05$). It was found that Cortisol OD values of Group E significantly increased ($p<0.05$) after the exercise and E2S and ES values were identical while E2S level was found significantly ($P<0.05$) higher than E24S level. E24S value was found significantly lower than ES value ($P<0.05$). E24S value was determined to be significantly higher than OD level. When epinephrine and cortisol levels were compared between two groups, any important difference was not seen.

DISCUSSION AND CONCLUSION

While the understandable increase ($p<0.05$) in the values of epinephrin (0V) of S group has been

observed after exercise , the similarity of A2E ‘s value ($p<0.05$) with AE and the understandable decrease in A24E ‘ value ($p<0$ .05)ha ve been observed. The considerable extent of increase in epinephrin’ value (0V) of E group with exercise, if it is unimportant, the continuation of this increase after 2 hours, after 24hours, the considerable extent of the decrease in value according to values after exercise have been observed after exercise . The understandable increase in S group’s cortisol values (0V) ($p<0.05$) after exercise has been determined. Altough A2E’s value is lower than AE’s values , as an statistical situation , the higher and understandable increase in similar AE, A2E, A24E’s values than 0V and TS values has been observed. According to A24E and AE’s values, it has been determined. Altough it decreases, it cannot reach to initial value, that’s to say, normal level. The understandable increase in cortisol (0V) values of E group has been observed after exercise. Altough A2E ‘s value is lower than AE, no differences have been observed as a statistical data. When finding A2E and A24E cortisol levels similar, it has been found that A24E’ value is lower than AE’ value in an understandable level while comparing A24E’s value with 0V , the similar results have been determined .

In the stduy, when analyzing intergroups’ values statistical differences in serum epinephrin and cortisol levels have been observed in any period.

In this study, the increase in einephrin levels of all groups with exercise have been accepted as a natural conequence of the increase in the symphatic neural system as directed to the provision of phsiologic conditions needed for exercise.

In this study,most studies have supported the increase in determinated epinephrin level in all groups with exercise. Thus, R. Bahr., A.T. Hostmark., E.A. Newsholme., (1991), A.S. Darleen., and S.M. Kathleen., (2002) theimportant increase in serum epinephrin level as related with acute exercise , V. Stich., I. Glisezinski., F. Crampes., et al, (1999), epinephrin level as a result of 60 min % 60 max VO2 high intense exercise have been acquired. P. Markas., G.N. Koukoulis., G. Bourikas., et al, (2005). Physical Exercise Test has been applied to 2 groups who make from exercise and control group containing soldiers. The understandable increase in epinephrin levels after exercise and any differences between groups ha ve been recorded in both groups.

I. Tabata., F. Ogita., M. Miyachi., (1991), when they put 6 cyclists through exercise until they become fatique in the intensity of % 50 max VO2, in the end of the exercise the understandable increase in serum cortisol levels has been determined and they have informed that long-dated exercise in the low intensity has increased the plasm cortisol concentration (M. Kjaer 1988). After they put 7 sportsmen and 7 sedentary groups through cycle exercise in the intensity of %85 max VO2, the understandable increase in serum cortisol levels has been observed and the increase in adrenal gland’s secretion in experimentals has been shown because of the long-dated stability exercises.

W.S. Gozansky., J.S Lynn., M.L. Laudenslager , (2005), when they put 10 female experimentals through 10 min.- exercise in the level of %90 maximal heartbeat, the understandable increase in the serum cortisol levels after exercise has been stated after exercise . M.S. Tremblay., H. Copeland., W. VanHelder., 2005) when they put 8 male experimetals through exercise in the treadmil and the intensity of %55 max VO2 ,while the understandable increase in serum cortisol levels has not been seen in the 80. And 40. Min., in the 120. Min the understandable increase has been seen after exercise and they have recorded that long-dated run in the low intensity has increased cortisol levels. Especially , it has been informed that long- dated (exercises exceeding 2 hours) and exercise in the intensity of %60 max VO2. Cortisol will increase plasm concentration very much.

L. Maimoum., J. Manetta., I. Couret., et al, (2006) when they put 7 male cyclists through 50 min cycle exercise, after exercise and after 15 minutes out of the exercise in the samples, immediately after exercise, the increase in cortisol level has been known in proportion to the values before exercise.

N. Kokalas., G. Tsalis., N. Tsigilis., (2004) when they put 6 orsmen through 3 different exercises (in the avarage intense interval exercise, long-dated stability exercise and power exercise) they have informed the understandable increase in cortisol level after long-dated stability exercise in proportion to other exercise types. In addition,while the small increase in cortisol has been observed as proportion to psychologic stres in the low and avarage grade exercises., it has been focused that this increase in the high intense and lon-dated exercise has been seen very definitely (M. Ünal., 1998).

When the results of available researchs have been analyzed, after aerobic, anaerobic and power exercise, the increase in cortisol concentration has been observed and cosideing the types of exercise, the understandable increase in cortisol level has been observed as an expected result.

In this study, the increase in all groups has been recorded as a normal increase because 20 meter shuttle run test is the submaximal exercise type.

J.C. Thomas., F. Gail., K. Panagiota., (2003) when they put 32 male and female children in 10-11-year-old through 20 meter ru, the understandable increase in the cortisol levels has been observed after exercise aGüneş(1998) and in the low intense exercise, there is no increase in cortisol levels or it decreases very much and when the intensity of the exercise increases, the cortisol also increases. Especially, in the high intense exercise, there is definite increase in cortisol level (K. Karbek.,1990). The increase in the release of cortisol is paralel with the increase in the stres in the exercise. (R Güneş., 1995).W. Daly., C.A. Seegers., D.A. Rubin., (2005) when they put 22 male

experimentals through the exercise in the treadmil and intensity of % 100 max VO2 until they become fatique, the understandable increase in cortisol levels ($p<0.05$) has been observed after exercise when observing their coritsol levels, after 30, 60, 90 min. And 24 hours out of exercise, this increase has contined until 30 mim. and later out of exercise , the understandable decrease in cortisol level ($p<0.05$) has been determined after 24 hours out of execise. Its reach to values has been determined. In our study after exercise , the increase has been similar with the values before exercise in the time of A24E as similar with these studies and only less increase in S group has been observed.
Acquired findings in this study are important in terms of having similarity between it and literature findings substantially. In conclsion, in this study , it can say that avarage intense and submaximal exercise has an important effect on serum epinephrin and cortisol levels.($p<0.05$).\

REFERENCES

BAHR, R., HOSTMARK, A.T., NEWSHOLME, E.A., GRONNEROD, O., SEJERSTED, O.M., 1991, *Effect of Exercise on Recovery Changes in Plasma Levels of FFA. Glycerol, Glucose,* Acta Physiol Scand. 143: 105-115.

DALY, W., SEEGERS, C.A., RUBİN, D.A., DOBRİDGE, J.D., HAEKNEY, A.C., 2005, *Relationship Between Stres Hormones and Testosterone with Prolonged Endurance Exercise.* Eur J Appl Physiol, 93.375–380.

DARLEEN, A.S., KATHLEEN, S.M., 2002, *Gender Differences in the Endocrine and Metabolic Responses to Hypoxic Exercise.* J Appl Physiol, 92:504-512.

GOZANSKY, W.S., LYNN, J.S., LAUDENSLAGER, M.L., KOHRT, W.M., 2005, *Salivary Cortisol Determined by Enzyme Immunoassay is Preferable to Serum Total Cortisol for Assessment of Dynamic Hypothalamic-Pituitary-Adrenal Axis Activity.* Clin Endocrinol (Oxf), 63:336-341.

GÜNEŞ, R., 1995, *Egzersiz Hormonal Uyumlar.* I. Klinik Spor Hekimliği Sempozyumu Ankara, 76-97.

KARBEK, K., 1990, *Biyoloj.*, Ant Yayınları, Ankara, p 84.

KJAER, M., 1998, *Adrenal Medulla and Exercise Training.* Eur J Appl Physiol Occup Physiol, 77:195-199.

KOKALAS, N., TSALİS, G., TSİGİLİS, N., MOUGİOS, V., 2004, *Hormonal Responses to Three Training Protocols in Rowing.* Eur J Appl Physiol, 92.128–132.

MAİMOUM, L., MANETTA, J., COURET, I., et al, 2006, *The Intensty Level of Physical Exercise and the Bone Metabolisim Responge.* Int J Sports Med, 27:105-111.

MARKAS, P., KOUKOULİS, G.N., BOURİKAS, G., et al, 2005, *Effect of 4 Weeks of Basic Military Training on Peripheral Blood Leucocytes and Urinary Excretion of Catecholamines and Cortisol.* J Sports Sci, 23:825-834.

RODRİGUEZ, M.R., EDWARD, F.C., 2000, *Effects of Plasma Epinephrine on Fat Metabolism During Exercise: Interactıons with Exercise.* Am J Physiol Endocrinol Metab, 278: 669-676.

STİCH, V., GLİSEZİNSKİ, I., CRAMPES, F., et al, 1999, *Activation of Antilipolytic α_2 – Adrenergic Receptor by Epinephrine During Exercise in Human Adipose Tissue.* J. Applied Physiol, 277:1076-1083.

TABATA, I., OGITA, F., MIYACHI, M., SHIBAYAMA, H., 1991, *Effect of Low Blood Glucose on Plasma CRF, ACTH and Cortisol During Prolonged Physical Exercise.* J Appl Physiol, 71: 1807-1812.

THOMAS, J.C., GAIL, F., PANAGIOTA, K., 2003, *Effects of Physical Activity, Body Fat and Salivary Cortisol on Mucosal Immunity in Children.* J Appl Physiol, 95:2315-2320.

TREMBLAY, M.S., COPELAND, H., VANHELDER, W., 2005, *Influence of Exercise Duratıon on Post-Exercise Steroid Hormone Response in Trained Males.* Eur J Appl Physiol, 94:505-513.

ÜNAL, M., 1998, *Aerobik ve Anaerobik Akut/Kronik Egzersizlerin Immun Parametreler Üzerindeki Etkileri.* İ.Ü. Sağlık Bilimleri Enstitüsü, İstanbu, s 20l.

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THE MANAGEMENT OF MOTOR APTITUDES EVALUATION ACCORDING TO THE KNOWLEDGE OF THE MANIFESTATION LEVEL OF THE PHYSICAL CONDITION

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ABSTRACT

Purpose: The optimum physical condition establishes an efficient report between the skills specific to every student and the physical effort made in solving the motor responsibilities during the physical education and sport class and not only. Choosing and applying the most efficient methods and means specific to the sport branch – athleticism, in order to increase the efficiency of the students' physical condition (19 – 20 years) during the physical education and sport class, is conditioned by the manifestation level of the motor capacities, of the functional and psychic capacities of each individual but also by the bio-professional diagram requirements of the future job. The increase of the physical condition efficiency is realized through: the motor support development (strength, resistance, power, articular mobility and muscular elasticity, coordinative capacities); the increase of the functional support efficiency (the respiratory system, the cardio – vascular system, the metabolic processes, the nervous system, the immune system); the increase of the general physical structure efficiency (the decrease of the adipose tissue and the adaptation of the body form at the individual requests) and the formation of the well-being feeling.

Methods: Used research methods and techniques – the observation method, the experimental method – the provoked checking experiment, in order to observe and measure the produced effects; natural, realized in natural conditions represented by the physical education class; at the same time based on the comparison of the results of the experiment pattern with the ones of the reference pattern in a transversal, synchronic, at the same time sections and the processing, analysis and obtained data interpretation methods by applying the tests (the statistic-mathematic method, the graphic method).

Results: Using the means specific to athleticism, in a high percentage, during the physical education and sport class has a benefic effect over the individual physical condition components development (exception being the mobility from standing and maintaining in hanging). The rhythm of the increase and development process has been slowed down, fact pointed out also by the insignificant differences resulted from the calculation of the arithmetic mean after the initial and final tests of the anthropo-motor parameters.

Conclusions: Unifying the tasks for the physical condition evaluation in a battery of tests "Eurofit", on different age segments of the university population in order to organize a data base which would offer a comparison point concerning the manifestation level of the physical condition, depending on the age of the individuals. The development and maintenance of the physical condition components assures the motor functionality permanent once with the ageing of man.

KEY WORDS: management, evaluation, motor aptitude, physical condition.

INTRODUCTION AND RESEARCH OBJECTIVES

Knowing the manifestation level of the motor aptitudes is benefic not only for the physical education but also for strengthening the health and for educating the population in order to maintain health by obtaining an optimum physical condition. Knowing the manifestation level of the human physical condition, on different age segments of the population, is underlines by the intervention of The European Union Ministry Committee towards the state members through the recommendation no. R(87)9. Having at its base these recommendations I made the following research objectives:

- The physical condition manifestation at a high level is benefic not only for the reference domain physical education and sport but also for educating the population in order to build and maintain an optimum health state.
- Learning and the motor components habituation (the motor capacities/aptitudes) must constitute a mean of self knowledge and of motivation of each individual from assuring a good physical condition, but also towards the physical education in general.
- The evaluation of the motor aptitudes of the individuals will constitute the data base necessary for the elaboration of the national politics concerning the health, nutrition, physical education and sport, education for health programs.
- The measurements precision and reliability of the motor capacities/aptitudes are useful both for the individual, the teaching staff and for the decision factors that must contain in every political program measures for improving the individual or general level of the physical condition.

The researches and analyses of the dolman specialists have confirmed the fact that individuals who participate at the motor activity institutionalized present an individual physical condition, with until 20 – 30 %, superior towards the ones that do not participate, from various motives, at these activities.

The increase of the general metabolism efficiency is realized on the account of the motor activity; the brain, the liver and the endocrine glands intensify the chemical activity due to the made physical effort, the intellectual activity producing a slight increase of the metabolism.

RESEARCH HYPOTHESES

The research has been made according to the following hypotheses:

- Knowing and the development of the components specific to the physical condition offer a continuous physical functionality as man is ageing.
- The improvement of strength, endurance and muscular flexibility lead to the increase of the abilities level and equilibrium required for the quotidian tasks, removing the accidents appearance.
- Practicing the physical exercises in a rhythmic way is conditioned also by the facilities, in this purpose, offered by the community and the environments responsible for the physical activity.

RESEARCH PROCEDURES AND METHODS

In order to see the unification of the tasks for the physical condition evaluation, the Committee for the Sport Development of the European Council has realized a battery of tests "Eurofit" (R.Thomas, , J.P Eclache, and J. Keller, 1995) made of (table 1) 9 motor tests (*The cardio-respiratory endurance* – through the run to and fro race 20 x 50 m and the test on the ergometric bicycle, *Strength* – the static force through dynamometry, the explosive strength by jumping in length from standing; *Muscular endurance* – the functional strength by maintaining in hanging, the trunk strength by lifting from laying down; *Speed* – the coordination speed through the run to and fro race 10 x 5 m, the superior limbs speed by touching the plates; *Gracefulness* by the mobility from standing; *Equilibrium* through the Flamingo test), 7 anthropo - motor measurements (body height, body weight and 5 flexions of the adipose tissue).

Table 1. Appreciation file "**Eurofit**" [Thomas, R., Eclache, J.P. and Keller, J, 1995, pg. 58, fig. 5.10]

Dimension	Factor	Eurofit Test	The order of applying the test
Cardio-respiratory endurance	Cardio-respiratory endurance	The run to and fro race of resistance Test on the ergometric bicycle	**9**
Strength	Static strength	Dynamometry	**5**
	Explosive strength	Jump in length from standing	**4**
Muscular endurance	Functional strength	Maintaining in hanging	**7**
	Trunk strength	Trunk lifting from laying down position	**6**
Speed	Speed-coordination	The run to and fro race 10x5m	**8**
	Superior limbs speed	Touching the plates	**2**
Gracefulness	Gracefulness	Mobility from standing	**3**
Equilibrium	General equilibrium	Equilibrium test Flamingo	**1**
Anthrop-motor measurements		Body height	
		Body weight	
		Cutancous flexions (biceps, triceps, sub scapular, supra-iliac, pulp)	
Identification data		Age, Sex	

The research has being realized across the physical education classes of the professional study groups, specialty "Petroleum and Petrochemical Equipment" from the 1st year of studies, formed of 50 students, of male sex, university year 2008-2009, *The Mechanical and Electric Engineering* Faculty of the Petroleum – Gas University of Ploiesti. The structure of the university year has been of 28 modules of physical education classes with a number of 56 conventional classes; there had been no truancy recorded.

The working program had at its base the methods and means provided in the analytical program of physical education (a special accent being on the means specific to athleticism) for the 1st year of studies. The students have been subjects to an initial test in October 2008 (that had contained a number of 9 motor tests: the equilibrium test Flamingo – expressed in seconds; Touching the plates – expressed in seconds; Mobility from standing position – expressed in cm; Jump in length from standing – expressed in cm; Dynamometry right and left – expressed in kg/strength. Lifting from laying down – expressed in number of repetitions, Maintaining in hanging position at the fixed bar – expressed in seconds; The run to and fro race 10x5 m – expressed in seconds; The run to and fro race of resistance – expressed in minutes and seconds and 2 anthrop-motor measurements: Body height – expressed in cm and Body weight – expressed in kg) and a final test in May 2009, recording the following statistic indicators by the statistic-mathematical processing (table 2). The used means, specific to the sport branch

athleticism, for the improvement of the individual physical condition, are grouped in:

• *Physical exercises for the improvement of the anaerobe effort's capacity* are characterized by maximum efforts of short duration and that assure the energy from the consumption of the glycolitic reserves of the organism in lack of O_2 (the debt of O_2 is "paid" after finishing the effort, by the engagement of the metabolic processes of anaerobe type), this supposes the making of the exercises with maximum efforts, of short duration by using the speed running, jumps and exercises with difficulties. The physical exercises that engage the anaerobe metabolism present a series of characteristics of it: the accentuation of the activity of the ATP – PC system in the skeletal muscles, the increase of the glycogen quantity and of lactic acid in the muscles, the glycolitic enzymes are more actives and hypertrophy of the white muscle fibers. The used method for the development of the anaerobe effort's capacity is the repetition method (Dragnea Adrian and Mate-Teodorescu Silvia, 2002), that suppose: learning and knowing the used physical exercises in order to make with a high or maximal intensity, the execution time of the speed exercises will be smaller so that these will develop with the same intensity all over its development, and the break from the repetitions must be proportioned in order to assure a rebound of the high functions of the organism.

• *Physical exercises for the improvement of the anaerobe effort's capacity* determine a series of changes, due to the chemical reactions specific to the anaerobe metabolism: the content of mioglobyne from the skeletal muscles is higher, the increase of muscle possibilities to spend carbohydrates and fats, the increase of the number and mass of mitochondria from the skeletal muscles fibers, the enzymes activity is high and the red muscles fiber hypertrophy. The anaerobe effort's capacity indicated the human organism's capacity to make a reduced sub maximal effort, maintained a long period of time, on the basis of oxidative processes (high share of O_2) resulted from the glucide and lipids reserves consumption. The most used exercises for the improvement and maintenance of the anaerobe effort's capacity are grouped as followed: running on large distances that have at the base the organism's resistance at efforts of long duration and making of each physical exercise time of a minute and of which execution duration is increased, acquires an anaerobe character. The used methods for the development of the anaerobe effort's capacity are grouped as followed: the effort "until denial" method, the medium efforts method, the method in circuit, but the most used method is the one of the athletic exercises with difficulty that consists of the execution of the exercises specific to the sport branch – athleticism, in difficulty conditions (Alexandrescu, Dumitru, Tatu, Titus and Ardelean, Tiberiu, 1983).

• RESEARCH RESULTS AND THEIR INTERPRETATION

The recorded data processing and interpretation has been realized by calculating (Niculescu, M., 2002):

- the normal distribution parameters, respective of the central tendencies – arithmetic mean (X) and dispersion – the standard deviation (S);
- the variability coefficient (Cv%);
- establishing the correlation between different administrative variables of the same pattern after the two tests (the correlation coefficient of Spearman, **R** = **1 -** $\frac{6\sum(X-Y)^2}{n(n^2-1)}$; where **R** = the correlation coefficient by the degrees method; **X – Y** = the difference between degrees; **n** = the number of subjects).

1. *The Flamingo Test*

• the arithmetic mean (table 2, figure 1) – records a significant increase of 4,20 minutes, after applying the working program and the second test;

• The calculus of the variability coefficient presents us an "homogeneous" pattern.

2. *The Touching the plates test*

• the arithmetic mean (table 2, figure 1), after the second test, is improved with 3,43 seconds;

• The calculus of the variability coefficient presents us a "homogeneous" pattern.

3. *The Mobility from standing test*

• the calculated arithmetic mean (table 2, figure 1) shows us a regress of 0,26 cm, in comparison with the made measurement in October;

• the calculus of the variability coefficient presents us a "homogeneous" pattern, after the first test and a "relatively homogenous" pattern after the second test;

• Reported at the appreciation scale established by the battery of test Eurofit, the calculated arithmetic mean for this pattern is situated at the level of "medium" grade, between 0 - 6 cm.

4. *Jump in length from standing test*

• the arithmetic mean (table 2, figure 2) confirms an improvement at the manifestation level of the strength in speed regime of the inferior limbs musculature, it has been recorded a progress of 5,83 cm after the final test in comparison with the initial test;

• calculating the variability coefficient points out the fact that the obtained results by the individuals of the researched pattern are "homogenous";

• Reported at the appreciation scale established by the battery of test Eurofit, the calculated arithmetic mean is situated at the level of "weak" grade after the initial test and at the "under medium" grade level after the final test.

5. *The Dynamometry test*

• the calculated arithmetic mean (table 2, figure 1) after the final test, both for the right hand and for the

left one, presents us a progress: for the right hand of 5,97 points and for the left one of 3,89 points.

• the calculus of the variability coefficient shows that the obtained results at the two tests for the right hand are "homogeneous" and for the left one are "relatively homogeneous";

• Reported at the appreciation scale established by the battery of test Eurofit, the calculated arithmetic mean is situated, for the right hand: at the level of "medium" grade after the initial test and at the "over medium" grade after the final test, and for the left hand" at the level of "under medium" grade after the initial test and at the "medium" grade after the final test.

6. *Trunk ascension from standing test*

• the calculated arithmetic mean (table 2, figure 1) is the proof that the recorded progress by the students after making the program used during the university year 2008-2009 which is of 3,33 number of repetitions;

• The calculated variability coefficient presents us the fact that the recorded results at this test are "homogeneous".

7. *The maintaining from hanging test*

• the calculated arithmetic mean (table 2, figure 1) shows us a slight regress of the final test results in comparison with the initial one, its value being of 0,58 seconds;

• The calculated variability coefficient shows us that the results at the two tests are "homogeneous".

8. *The run to and fro race 10x5 m*

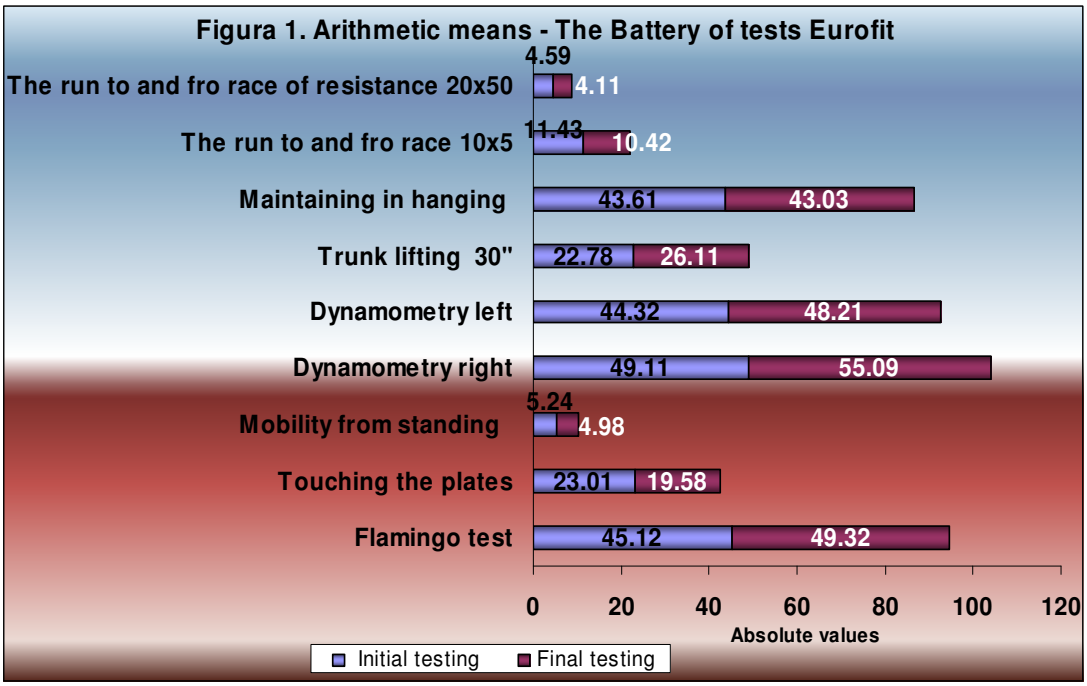
• speed – coordination records an obvious progress of 1,01 seconds, fact pointed out also by the calculus of the arithmetic mean for this test (table 2, figure 1);

• the obtained results at the two tests are "homogenous", confirmed by the calculus of the variability coefficient;

9. *The run to and fro race 20x50 m*

• the calculated arithmetic mean (table 2, figure 1) presents us an improvement of the cardio-vascular endurance of 0,48 seconds in comparison with the initial test;

• The recorded results at the two tests are "homogenous" by calculating the variability coefficient.



For the two anthrop-motor parameters (table 2, figure 2), *body height and body weight,* the calculus of the arithmetic means points out that the rhythm of increasing in height process has been slow down (the difference between the two measurements being of 0,18 cm - insignificant), also the decrease in weight, has insignificant values (64 grams); the obtained values by calculating the variability coefficient for the body height are "homogeneous" and "relatively homogeneous" for the body weight parameter, for both tests.

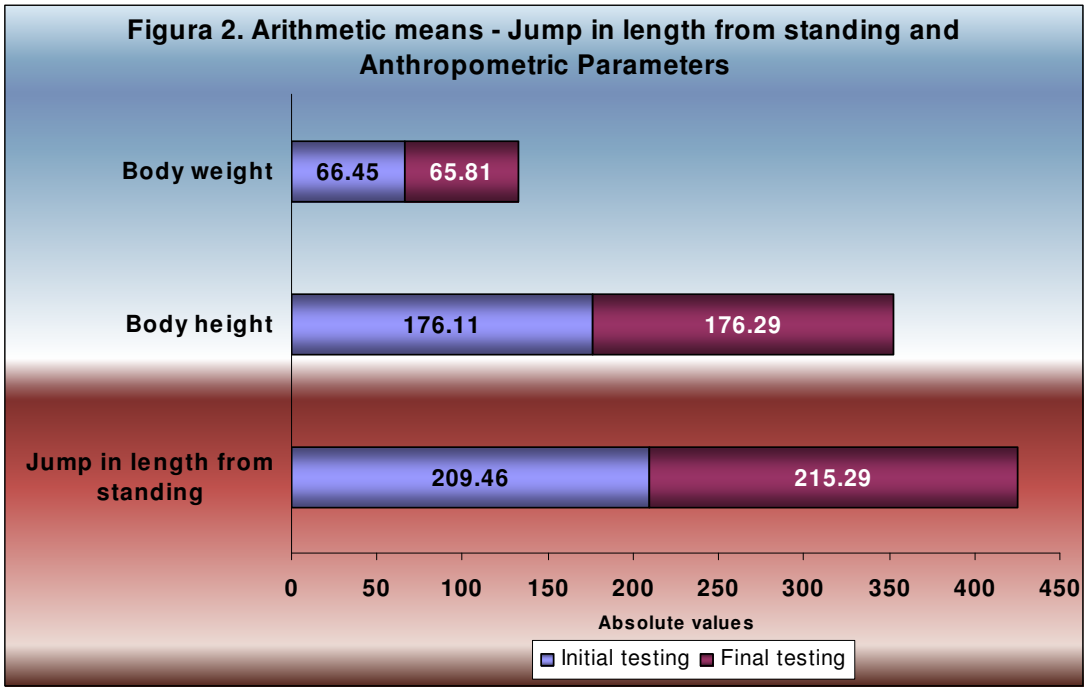
Table 2. Calculated statistic indicator

Statistic indicators		Eurofit Tests											
		1	*2*	*3*	*4*	*5*		*6*	*7*	*8*	*9*	*10*	*11*
						right	*left*						
Initial test	X	**45,12**	**23,01**	**5,24**	**209,46**	**49,11**	**44,32**	**22,78**	**43,61**	**11,43**	**4,59**	**176,11**	**66,45**
	S	2,71	1,69	0,45	2,87	3,11	4,56	1,77	2,94	0,38	0,44	6,03	8,81
	Cv%	6	7,34	8,58	1,37	6,33	10,28	7,76	6,74	3,32	9,58	3,42	13,25
Final test	X	**49,32**	**19,58**	**4,98**	**215,29**	**55,08**	**48,21**	**26,11**	**43,03**	**10,42**	**4,11**	**176,29**	**65,81**
	S	2,85	1,57	0,52	9,31	2,98	5,71	1,82	2,86	0,37	0,39	6,01	9,06
	Cv%	5,77	8,01	10,44	4,32	5,41	11,84	6,97	6,64	3,55	9,48	3,40	13,76

Note: **1** – The Flamingo test; **2** – Touching the plates; **3** – Mobility from standing; **4** – Jump in length from standing; **5** – Dynamometry – right and left; **6** – Trunk lift from standing position; **7** – Maintaining in hanging; **8** – Run to and fro race 10x5 m; **9** – Run to and fro race of resistance 20x50 m; **10** – Body height; **11** – Body weight.

Calculating the correlation (**R**) to determine the "strength" of the connection between the different obtained results at the two tests presents us the following situation:

- calculating the index of the correlation with value between 0,81 and 0,90 (*very good correlation*) between the results at tasks – dynamometry with left hand and dynamometry with the right hand (0,89) that tested the static strength at the level of the plantar musculature; jump in length from standing and the run to and fro race 10 x 5 m (0,87) that tested the explosive strength and the repetition strength – coordination at the level of the inferior limbs.
- calculating an index of correlation with a value between 0,61 and 0,80 (*good correlation*) between the results at the tasks – touching the plates and run to and fro race 10 x 5 (0,80) that have tested the speed of repetition – coordination at the level of the superior limbs and inferior ones; dynamometry right hand and maintaining in hanging (0,80), dynamometry left hand and maintaining in hanging (0,78) that tested the static strength of the superior limbs feet and the functional strength of the superior limbs; the run to and fro race 10 x 5 m and the run to and fro race 20 x 50 m (0,78) that have tested the speed of repetition – the coordination of the inferior limbs and the cardio-respiratory endurance; jump in length from standing and touching the plates (0,76);
- the other calculated values are framed at the level of *weak correlation (0.21 – 0.40), very weak (0.00 – 0.20)* or having negative values.



CONCLUSIONS

- Unifying the tasks for the evaluation of physical condition in a battery of tests "Eurofit" on different age segments of the university population in order to organize a data base that will offer a comparison point concerning the manifestation level of the physical condition, depending on the individuals' age.
- The development and maintaining of the physical condition components assure the motor functionality permanent once with man ageing.
- The manifestation level of the abilities and equilibrium are in report of direct proportionality with the development level of the strength, endurance, muscular flexibility and quotidian requests.
- In order to answer to the requests and increased exigencies of UE it is necessary the more and more implication of the local communities in order to assure certain material conditions benefic for the practice of physical exercises in a rhythmic manner.
- The necessity of making a physical activity at least one hour/day, especially by youth; the general profit of the physical activity is represented by the improvement of the health state and the possibility to realize certain activities, with an acceptable efficiency, for a long period of time.
- Improving the optimum level of the manifestation of the physical condition must be realized in a total equilibrium, reported to the future situation of graduate of a technical faculty; health state is the aspect that fundaments the man's evolution and on this base, we can build a high level of manifestation of the individual physical condition.
- Besides its compensatory psycho-biological function, physical education and sport contribute also to the stimulation of the intellectual capacity, at the enrichment of the theoretical knowledge volume of the students.
- Using during the physical education and sport, in a high percentage, the means specific to athleticism has contributed to the increase of the medium arithmetic values (exception mobility and maintain in hanging) for the other 7 motor tasks.
- The values of these arithmetic means, in comparison with the appreciation scales battery of test "Eurofit" are at the level of the "weak" or "under medium" grades.

REFERENCES

ALEXANDRESCU, D., TATU, T. and ARDELEAN, T., 1983, *Athleticism*, Didactic and Pedagogic Publishing House, Bucharest.

DRAGNEA, A. and TEODORESCU–MATE, S., 2002, *Sport theory*, FEST Publishing House, Bucharest.

NICULESCU, M., 2002, *Scientific research methodology in the physical education and sport*, ANEFS Publishing House, Bucharest.

THOMAS R., ECLACHE J.P., and KELLER J., 1995, *Motor aptitudes. Tests and measurements for young athletes*, C.C.P.S., Bucharest.

http://www.topendsports.com/testing/eurofit.htn.

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PHYSICAL ACTIVITY PROFILES ON A SAMPLE OF ROMANIAN ADULTS

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ABSTRACT

Purpose. With this study we pursue to describe the prevalence and characteristics of physical activities among Romanian adults.

Methods. We applied a Physical Activity Questionnaire designed to analyze physical activity data on four domains: work, active transportation, domestic and garden and also leisure time. We had one study group represented by active working adults (N = 30, sex ratio 1/1, average age: 44 years) and they were asked to complete the questionnaire. Based on the score that they obtained, we determined total physical activity of the participants in terms of energy expenditure (MET –minutes/week), but also as a categorical level: low, moderate and high. Before completing the questionnaire, the subjects were asked to include themselves in a category based on their perceived level of total activity as: inactive, active and very active.

Results. We had 23,3% of subjects who self-reported as being inactive, 60% considered that they are active and only 16,6% said that they are very active. The questionnaire's scores showed that 30% of the investigated adults had a low level of physical activity, 53,3% reached a moderate level and the percent of those with high level of physical activity remained the same. There is a significant difference ($p< 0,01$) on how men appreciate their activities, comparing with women's perception.

Conclusions. Despite the importance of physical activity and the continuous recommendations for being more active, the magnitude of sedentary is still high. There is also a discrepancy between what people think of being physically active and what it really means according to international standards. Efforts are needed for a better understanding of the amount of physical activity recommended for a healthy and active life.

KEY WORDS: Physical activity, profile, sample, adult.

INTRODUCTION

Every year more and more evidence give a warning to the population about the enlarged burden of the chronic diseases related with physical inactivity. This has become the second most important risk factor for ill health in industrialized countries, after tobacco smoking, and is estimated to be related to about 2 million deaths per year worldwide (L.B. Andersen et all, 2000).

At the socio-economic level the implications of sedentary are represented by the arising costs from the increasing of chronic diseases, such as coronary heart disease, diabetes and hypertension, in addition to obesity and overweight, which also affect children. Some studies have shown that, when obesity is included, the economic costs of physical inactivity can be assigned to poor energy expenditure which directly leads to medical conditions or alternatively the accumulation of adiposity and then contributes to excess morbidity and mortality.

The great challenge for the health care providers is how a physically active lifestyle can be reintroduced into many people's lives, especially with the increasing presence of technology at home, in workplaces and in transport that is designed to save people's labor.

However, there were developed different preventive strategies and they seems to be not only effective but also very simple and easy to do as engaging in about 30 minutes per day of moderate physical activity, such as walking or cycling.

The alarming severity of the health effects of physical inactivity and the substantial potential for cost-effective prevention led international health organizations to conceive plenty of strategies to make policy-makers and citizens aware of the risks related to physical inactivity and of very effective strategies that individuals and communities can use to influence their health and wellbeing (WHO, 2000).

Many documents summarized a lot of scientific evidence on the negative health effects of physical inactivity and on the benefits provided by moderate levels of physical activity, especially walking and cycling. They highlights the interaction between strategies for health promotion and the role of transport and land-use policy in providing environmental conditions that can facilitate and enable people deciding to walk and cycle for transport (WHO, 2002).

The potential reduction in the costs of treating heart disease if sedentary adults walked regularly has been calculated in some countries and it seems that a lot of money would be saved annually if 10% of adults began a regular walking program. The cost savings from walking would be especially high for men aged 35–64 years and for women aged 55–64 years (M. Hamer, 2008).

Also, the study says that increased physical activity prolongs life in middle-aged people of up to 10 years, after an adaptation period.

Physical activity is probably one of public health's best allies, having the following benefits (G. Lippi, 2006):

- a 50% reduction in the risk of developing coronary heart disease, non-insulin dependent diabetes and obesity;

- a 30% reduction in the risk of developing hypertension, a decline in blood pressure among hypertensive people;
- helping to maintain bone mass and thus protecting against osteoporosis;
- improving balance, coordination, mobility, strength and endurance;
- increasing self-esteem, reducing levels of mild to moderate hypertension and promoting overall psychological wellbeing.

Most of the middle-aged people know which the recommendations for having a healthy and fit life are. They are aware about the necessity of being active and they realize that this activity will help control their weight, strengthen their muscles and bones, improve balance and help prevent or improve many of the problems and conditions associated with passing years.

Conversely, only a few of those are acting upon their knowledge of the imperative need to be physically active. Unfortunately, many midlife and also older adults pay a high price of their negligence in terms of disease, disability and premature death. Recent reports show that the number of deaths per year due to obesity (and so to sedentary) are faster approaching to those linked with smoking.

Physical inactivity and related obesity and overweight are direct contributing factors to the most prevalent and disabling diseases and conditions, such as diabetes, heart disease, stroke, some kinds of cancer, arthritis and osteoporosis (D. Wartburton, 2006).

Regarding the Romanian health policy of promoting physical activity for preventing or reducing the negative effects of noncommunicable diseases, there are a lot of evidence about the amounts, intensity and frequency of physical effort and even of environmental facilitations. Instead of this there are no feedback responses about how people view their own health, what they know about physical activity and fitness, and what they are really doing to maintain their own health and fitness.

The purpose of this study is to draw into attention the prevalence and characteristics of physical activities among middle-aged Romanian adults.

METHOD

We designed a transversal study in order to obtain an image about what being physically active is considered to mean and what different people do to increase their activity, after the intense mediatization from the latest years.

Physical activity is defined as any body movement that results in energy expenditure. As such, it includes sports but also such activities as walking, cycling, playing, skating, cleaning house, dancing or climbing stairs. This means that it can be part of daily life (WHO, 2002).

Recent studies pointed the major role of environmental interventions in promoting physical activity like walking or cycling.

Being a rhythmic, dynamic and aerobic activity, walking is also the oldest mean of transport accessible to the vast majority of people despite of age, gender or social status. In order to benefit from it the only condition is to provide appropriate environmental conditions for making it also safe, enjoyable and convenient.

According to the new physical activity guidelines, in order to achieve the most health benefits, the recommendations are to do two types of physical activity each week: aerobic activity and muscle-strengthening.

Prior procedures for increasing the physical activity level and improve cardio-respiratory fitness integrated the participation in vigorous- intensity activity (at least or more than 20 minutes per day and at least or more than 3 days per week). It is obvious that transportation-related physical activities, different household and various leisure time activities can be taken into account.

Nowadays, most of the physical activity recommendations for young adults (18-65 years) include (W. L. Haskell, 2007):

- 30 minutes of moderate-intensity physical activity 5 days per week;
- or 20 minutes of vigorous-intensity physical activity 3 days per week;
- or an equivalent combination of moderate- / vigorous-intensity physical activity;
- and 8-10 muscular strengthening exercises (8-12 repetitions) at least 2 days per week.

For many people, 150 minutes of physical activity each week might seems a lot of time, but the fact is that positive result were observed at a moderate or vigorous effort for at least 10 minutes at a time**.**

There are differences between people regarding the various forms of being physically active and also the intensity of effort. Thereby the intensity of physical activity depends on an individuals previous exercise experience and their relative level of fitness (W. L. Haskell, 2007).

There are also different ways of evaluating one person's physical activity.

In many surveys, metabolic equivalents (METs) are commonly used to express the intensity of physical activities. One MET can be definite as the ratio of a person's working metabolic rate relative to their resting metabolic rate. One MET is defined as the energy cost of sitting quietly and is equivalent to a caloric consumption of 1kcal/kg/hour. It is estimated that compared with sitting quietly, a person's caloric consumption is three to six times higher when being moderately active (3-6 METs) and more than six times higher when being vigorously active (>6 METs) (WHO, 2002).

For our study's practical purpose, we applied a Physical Activity Questionnaire designed to analyze

physical activity data on four domains: work (paid work), active transportation (walking or cycling), domestic and garden and also leisure time. We had one study group represented by active working adults (N = 30, sex ratio 1/1, average age: 44 years) and they were asked to complete the questionnaire.

Each person had to respond about their physical activity per week, considering the last month.

The participants were asked whether and how much: they were physically active at work, they cycled or walk to work, they were physically active in their leisure time, and they participated in sport activities.

Based on the score that they obtained, we determined total physical activity of the participants in terms of energy expenditure (MET –minutes/week), but also as a categorical level: low (less than 600 METs/week), moderate (600-1500 METs/week) and high (1500-3000 METs/week).

Before completing the questionnaire, the subjects were asked to include themselves in a category based on their perceived level of total activity as: inactive, active and very active.

These self-reported levels of physical activity were compared with the observed levels.

RESULTS

All the participants responded that they understand and value the benefits of exercise and physical activity.

Nevertheless, only 53,3% of the subjects had a moderate level of physical activity, cumulating an average of 1200 METs per week. From our questionnaire results we observed that one third (30%)of the respondents didn't achieve a minimum of 600 METs per week and only 16,6% of them reached a high level of total activity – about 2500 METs per week.

About one half (46,6%) of women seems to have a low level of physical activity, while men (86,6%) are more physically fit.

We questioned our subjects on four important domains of physical activity: work, transportation, housework and leisure time. Considering this, work domain requires the most of vigorous energy expenditure (73%), while transportation and leisure time are more responsible for the moderate physical effort (62%). The lowest level of physical effort is attained during housework, maybe because all the persons that we evaluated are living in the city and they don't do gardening or yard work.

Regarding the repartition of physical activity by gender, women are significantly more engaged in moderate or low intensity activities, but for a larger period of time (10-12 hours/day) and men are responsible most of the heavy works. This result is according to the recommendations for people who currently have low intensity activities to perform them for more than one hour per day.

Also women were those most interested to enhance their physical activity at home and this included everything from housework to a jog around the neighborhood or simply taking a brisk walk.

None of all survey respondents deny the value of physical activity, but there were 4 respondents who need to be to be clarified about what moderate and vigorous activity means.

Considering the self reported physical activity we had the following results: 23,3% of them said that they are mostly inactive, 60% believed they are physically active and only 16,6% objectively evaluated themselves as being very active.

Among participants who considered themselves active, working and walking were by far the most cited activities.

For the entire study group and for both sexes, 65% said they walk regularly, briskly enough and long enough to meet the recommended values for physical activity.

From those people who say they engage in vigorous activity, 74% mean at work and smaller percents doing more structured activity such as exercising or cycling (26%). Only 3% of the total respondents considered housework being a vigorous activity.

Taking into account the results of many previous studies, it an unanimous opinion that walking and cycling used as a mean for daily transport has even more potential than leisure activities for getting people physically active. Our results showed that walking is more preferred by women (80%), instead of cycling that do most of men. Some research discovered that, compared with walking, the health benefits of cycling are somewhat greater because the intensity of effort is greater. Also when cycling, people use their large skeletal muscles of the body in a rhythmic pattern, with periods of active work alternating with rest periods (WHO, 2002).

More than 30% of the adults we questioned are not sufficiently active in their daily life and this level is similar to with that of entire Europe's population with the tendency of continuing decline. According to some studies physical inactivity is the second most important risk factor for poor health, after smoking, in industrialized countries.

Comparing the percent of those people who said they are inactive (23,3%), the 30 % of those really inactive and 16,6 % of those very active it became obvious an over self-evaluation from those who considered themselves as having a moderate level of physical activity. Men seems to be more objective and accurate in their evaluation, while there is a significant difference ($p < 0,01$) between women perception of physical activity and it's real level.

DISCUSSION AND CONCLUSION

Most of the strategies for promoting physical activity sustain active transportation (walking and cycling) to become the major support for increasing

the levels of physical activity, but for this to happening there is a need of corroborated effort between health, transport and environmental sectors. Also physical activity should be reintegrated into the routine of everyday life (H. Besson, 2008).

This study represents, at a small scale, a feedback answer for the romanian health providers and it also highlights some opportunities for improvement in physical activities participation among adults. The cumulative findings of this study may shorten the gap about the physical activity profile of active working category of romanian adults , who will be the old category in 20 years from now.

Most of mid-aged people are aware of the importance of physical activity for health benefits and they know that it should be strenuous enough to cause at least a small increase in heart rate and breathing.

Our findings, but also the results of other studies showed that some people not only they recognize the value of physical activity, but they also take measures to increase their level of physical activity and to improve their health. Unfortunately, the number of those who take no action is still high.

Having this problem, scientists must find out what is the motivation of people to become and remain active and identify the impediments that stopped so many others from taking this step. Some clues for effective strategies to improve participation can be found in the values of exercise cited by those who do exercise, like: improved health, increasing self-esteem, decreased anxiety and depression.

Those are some of the reasons why people participate in different physical activities. From the variety of activities, it seems that walking is the activity of choice, maybe because it is the safest, enjoyable and convenient.

According to WHO guidelines', walking is the main form of transport for journeys under 1.6 kilometers and can become an important part of intermodal transport in urban settlements if linked with efficient public transport. Walking has been also associated with a lower risk of death in middle-aged men and specifically with a reduced risk of heart disease (WHO, 2000).

There are also an important number of people who exercise to improve flexibility, strength, and balance.

Despite the importance of physical activity and the continuous recommendations for being more active, the magnitude of sedentary is still high. There is also a discrepancy between what people think of being physically active and what it really means according to international standards.

Efforts are needed for a better understanding of the amount of physical activity recommended for a healthy and active life.

REFERENCES

AADAHL, M., KJAER, M., JORGENSEN T., 2007, Perceived exertion of physical activity: Negative association with self-rated fitness, Scand J Public Health, 35(4): 403 - 409.

ANDERSEN, L. B., et al, 2000, *All-cause mortality associated with physical activity during leisure time, work, sports, and cycling to work,* Archives of internal medicine, 160(11): 1621–1628.

BESSON, H., EKELUND, U., BRAGE, S., 2008, *Relationship between subdomains of total physical activity and mortality,* Med Sci Sports Exerc.,40: 1909–1915.

BUCKSCH, J., 2005, *Physical activity of moderate intensity in leisure time and the risk of all cause mortality,* Br J Sports Med, 39(9): 632–638.

EUROPEAN NETWORK FOR THE PROMOTION OF HEALTH- ENHANCING PHYSICAL ACTIVITY, 2000, *Guidelines for health-enhancing physical activity promotion programmes*, Helsinki, HEPA Network

HAMER, M., CHIDA, Y., 2008, *Walking and primary prevention: a meta-analysis of prospective cohort studies,* Br J Sports Med, 42(4): 238–243.

HARAM, P. M., et al, 2009, *Aerobic interval training vs. continuous moderate exercise in the metabolic syndrome of rats artificially selected for low aerobic capacity,* Cardiovasc Res, 81(4): 723 - 732.

HASKELL, W.L., et al, 2007, *Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association,* Med Sci Sports Exerc., 39(8): 1423–1434.

KAHAN, E., FOGELMAN, Y., BLOCH, B., 2005, *Correlations of work, leisure, and sports physical activities and health status with socioeconomic factors: a national study in Israel,* Med. J., 81(954): 262 - 265.

LIPPI, G., SCHENA, F., GUIDI, G. C., 2006, *Health benefits of physical activity* Can. Med. Assoc. J., 175(7): 776 - 776.

MATTHEWS, C. E., et al, 2007, *Influence of exercise, walking, cycling, and overall nonexercise physical activity on mortality in Chinese women,* Am J Epidemiol*,* 165(12): 1343–1350.

METZGER, J. S., et al, 2008, *Patterns of objectively measured physical activity in the United States,* Medicine and Science in Sports and Exercise, 40(4): 630-638.

WARTBURTON, D. E., NICOL, C. W., BREDIN S. D., 2006, *Health benefits of physical activity: the evidence,* Can Med Assoc J.,174(6): 801–809.

WORLD HEALTH ORGANIZATION, 2002, *A physically active life through everyday transport with a special focus on children and older people.*

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WORLD HEALTH ORGANIZATION, 2000, *2008-2013 action plan for the global strategy for the prevention and control of noncommunicable diseases* Eighth plenary meeting.

THE INSTITUTIONAL ENVIRONMENT OF ADULT TRADITIONAL SPORTS AND GAMES, AND SOCIAL HEALTH

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ABSTRACT

Since the industrial revolution, the development of free time has gradually permitted the creation of a sporting system in conformity with the image of the surrounding merchant society, turned more and more toward the elitism and the sport industry, model now copied by the system of management in the enterprises. This is to the detriment of a form of participative democracy, which saw the local actors taking ownership of their leisure, as the practice of their traditional sports and games. The original environment and its values of 'usage' were denigrated, and then relegated to an inferior status as images of an old fashioned world.

The presentation of modern sports as an irreversible process of civilised progress has permitted the sporting system lobbies to impose themselves at the highest level bodies of decision making. This has been used as a springboard to install an institutional system, which devalues any activities not in conformity with the new norm, such as regional or cultural sports and games. A rhetoric of the myth of sport to the large administrations and the public has been created by the general environment, by the exploitation of emotions associated with major events, the use of ancient mythology and the deep human need for collective identification and admiration of extraordinary feats.

One of the processes used to reduce the social impact of traditional sports and games was their infantilisation similar to a neo-colonial process of acculturation, which has a secondary effect of destroying mechanical solidarity and generating social pathologies that can be profound. The market, which manoeuvres today the sports industry, has tendency to eliminate any obstacles which can prevent it from rationalising and controlling the economy generated by sporting activity. Commercial sport is not simple entertainment; it is the result of a choice of civilisation. It is with more democracy between nations at the highest level and more power to civil societies that societies will be able to express the most fundamental of their rights; their cultural diversity, a major factor of social health.

KEY WORDS: acculturation, democracy, mechanical solidarity, infantilisation, social health.

INTRODUCTION

The development of free time has been considerable since the advent of modern industrialised societies, especially in the 20th century, and this free 'space-time' has greatly changed their socio-cultural environment. They became strongly urbanised and disconnected from the original environment in which sporting games had developed and found their place. That means in symbolic spaces having values of 'usage' full of sense for every body: the saint's days festivals, or festive gatherings bound to the collective works calendar in the country side, but also more lately the recreation time in the environment of their urban work place. This situation had created a 'mechanical solidarity', as defined by Durkheim[1], as well as different shapes of social contract binding the group. The working world of the craftsmen and peasants, in another words the majority of civil society, organised their games in the very environment of their work place, the play ground being built by them, as well as the material. By this, whereas they were "nothing" in the surrounding world, they were their own masters in the one of their game, and this world stopped at the moment they left work. In Western Europe, it is ingeneral in the contests organised at the occasion of the local festivals and bank holidays that the players could play against other than their usual group.

Industrial society is characterised by the will to optimise the means of production in order to increase profits, imposing the centralisation of decision making with its pyramid of decision, distribution of standardised objects, and rationalisation of tasks. These concepts have been naturally transferred in the construction to the institutions assigned to manage sports. This is how we find in the Olympic motto Swifter, Higher, Stronger a slogan in conformity with the elitist and productivist industrial society. The focusing of the media around the production of results in centimetres, kilograms, seconds, statistics, or records, goes in the same direction. Today the sporting phenomenon is no longer a simple entertainment; it is a universal civilisation fact, of economic, social and political order, even if through its external picture this gives sometimes the illusion of a simplified social working shape. Major questions and stakes hide behind sport.

If we turn to the recent past, one hundred and fifty years ago, let's recall that in the two powerful colonial empires of Western Europe - France and Great

[1] French scientist, pedagogue, one of the founding fathers of Sociology.

Britain - countries also at the origin of the Olympic Games revival, it was common for the workers to work twelve to fourteen hours per day, longer than in the previous centuries. In the United States, the third country at the origin of the Modern Olympics, the week was also from sixty-five to seventy hours around 1850. In France it was only in 1841 that the law limited to twelve hours per day the work of boys from twelve to sixteen years, and in Britain [2] it was limited in 1847, in an insurrectionary atmosphere, to ten hours for children under twelve years. In some big cities of Britain, the migration rate (from other regions) rose to 40-50%. In twenty years, from 1851 to 1871, at least 30% of the farmers, farm workers and shepherds had to leave the British countryside to emigrate to the cities or the New World because the Industrial Revolution needed hand workers. The perspective of less difficult jobs, and the power of attraction of the cities exhibiting their wealth, seemed to offer a better life to a countryside population which emigrated en masse. The massive exodus of countryside populations to the cities is still now a contemporary situation in many poor countries.

Modern sport as a mercantile product

The new activities practised during the free time won from working time have very quickly interested promoters and the more and more intense intervention of the media has created the globalised sporting environment of today. It began with newspapers and posters at the beginning of the 19th century in Great Britain, but it is the direct broadcasting techniques, which began about 1910 in the US that, applied to sporting spectacles, developed a phenomenon where they become more and more a commercial product. Then the images, on television, accentuated development and the improvement of technology accentuated this further after the launching of telecommunication satellites in 1962. Intercontinental broadcasts were now possible and a little later, images projected directly from sporting events. In parallel to this media construction, and fed by it, one can note the same evolution in the domain of technical material improvement, of sports stadia and equipment. The development of the sporting model was thus permanently built alongside technological development, a model that most of the federations joined sooner or later, every system committing to bring its support to the others with the condition that all must go in the same direction.

So sport equipment manufacturers, sporting infrastructure builders, specialised media's, professionals of the entertainment industry, sponsors and federations unify, in order that all will get returns from their investments, an increase of facility sales, media influence, economic returns and the number of membership cards sold. All are bound together. The new sporting practice oversees a progressive growth of its mercantile exchange value. The example of the Roland Garros tennis tournament in Paris is very relevant; in 1967 the winner received a purchase order of $150 to spend in a local shop. With the professionalisation of the tournament, in 1968 the winner earned one hundred times this sum. The live televising of the tournament during two weeks from 1970 then produced a dizzy effect on the number of players in France, with about one hundred thousand extra members every year for the federation! Today the winner receives a cheque representing eight thousand times the prize of 1967! However this sum is not comparable to the two hundred and thirty billion dollars spent by the advertising industry, solely in USA, in 2001.

Thus, the sporting environment became by stages a very strong international economic vector, with powerful extra sporting ramifications. One could even affirm that the modern sport concept was one of the first non-industrial activities to be globalised. As the modern sporting model got settled under the guise of a civilisation process, one noted that the immense majority of the major industrialised countries lost completely any interest in the way in which this happened. Yet, while only seeing the profitable side offered by the new activities, people became in fact, more and more, solely consumers of recreational activities. Our societies permitted the development of a system that was accompanied by a democratic regression, and civil society can only note that it almost lost all influence. This process saw the sporting spectacle, as it exists today, using commercially, the emotions of games associated festivals, culturally conditioning society and introducing new concepts of human links and consumption. Playful activity - games and sports, a societal element being part of our deepest emotional sensitivity, is almost lost to us. Sport and games have always been part of our cultural heritage but the industrial society would have allowed them to gradually fade away in the economic and commercial domain.

All dominant societies try to reproduce themselves

This observation is paradoxical for a society that since the 18th century has claimed to be inspired by the Olympic values of antiquity, because to consider the 'Games' as merchandise would not have occurred to the men of that epoch. In democratic societies today one can observe a tendency to a sort of abandonment by the people of their rights in compensation for material goods, and this from the moment they have done their civic duty which consists of electing political representatives. But we are aware that the political world often lets the economic world establish its own rules. However, in polls taken among the youth of several industrialised countries it appears that a majority have lost confidence in the future, reported the sociologist Olivier Galland (File published in the

[2] British parliamentary reports of 1831-1832 (vol. XV. pp. 44, 95-97, 115, 195, 197, 339, 341-342) describe interviews of 8 years old children beginning their work every day at 5 or 6 o'clock in the morning and finishing at 8 or 9 o'clock in the evening!

newspaper *Le Monde*, March 10, 2009.) The number is alarming, 74% in France, 68% in Spain, 64% in Germany, and even 57% in China! We can understand them, because the inheritance left by their parents is striking: their countries in debt, ecological damage inflicted on the planet in the name of economic growth, and a world (including all binders of society: culture, education, health) dominated by individuals whom nobody knows and for whom nobody votes: the 'market' and its speculators, and we all bear some responsibility for this situation.

Our industrial societies are sick due the consumerism (In the sense given in sociology) pathology of hyper consumption, and the commercial sport, which invades our TV screens, shows clearly that the sports industry applies the same methods as that of the commercial market place. But to develop a rationalised hyper consumption, it is necessary to standardise cultures, that is to say tastes, playful practices, the imaginary, the spiritual, the whole in order to distribute to the world the same drinks, the same food or the same leisure. It is a situation of neo-colonialism that requires that one looks back on the process of colonisation. In the middle of the 17th century, in Ireland, the English led the first experiments of colonial policies on a large scale, exactly at the time of the setting up of progressive institutions in London within the House of Commons. The Irish had numerous interdictions against speaking their language in official places, or playing certain music in public, or to practice certain games, and all the usual prohibitions when the final objective is to acculturate a country in order to enslave it and to draw from it the major part of its energy and wealth. As for neo-colonialism, to ensure the submission of a society it is necessary to destroy cultural references, economic organisation, the education system, sports and games and the language of the former decision-makers then to impose that of the new masters. The games, taste gastronomic, musical and architectural, are representations bound to cultural references.

For the autochtones the traditional games of adults have always been lived with many other elements, like a way to mean a Us: "We exist, we create, we think and we decide by ourselves". Thus, the future industrial societies developed while imposing new superstructures, sometimes to rationalise and to develop the economy, but always while destabilising or destroying the traditional societies of colonised countries in the name of a civilising mission, their own regions often underwent similar policies. So an important part of the world's cultural wealth, that enriched our generation is disappearing or has disappeared. However the importance of the diversity of these playful practices is more and more affirmed by the works of scientists, who show that games have an immense capacity to develop the energy to construct individual and collective identities, they liberate and develop creative energy. The practice of adult traditional games is also, in general, in harmony with natural space.

In sport it is necessary to tame nature while creating artificial spaces, but also to impose a psychological domination of the opponents, the goal is not only to play but mainly to win. This philosophy is also used in enterprises that require its managers to follow objectives of excellence [3], as in a sporting competition where only the first place is important. For industrial society it was indeed natural, at least necessary to its eyes, to develop this creative strength as an economic potential. In the same way, it was natural to it to always quantify and measure, because in terms of management the unknown is unforeseeable and therefore risky. However, if the industrial societies have transformed most of the different playful culture domains in terms of economic production, they wanted to keep a mythical ideal because otherwise the mirage, the dream doesn't work! As the winners of wars have always controlled the teaching of history in their favour, one can say that the economic dominating system reproduced naturally a leisure system in its image. This brings us to observe that sporting victory is often used by countries to present the image of a superior social system for their population, a picture often tinted by nationalism. Sport is not therefore a simple entertainment; it is a fact of universal civilisation of economic, social and political order, behind which crop up major questions and stakes. To give power to the sporting system to debate alone sports problems and philosophy would be the same as permitting leaders of commerce and energy to debate alone about the problems of pollution, and of the future of our planet!

The myth of sport

How can this situation be settled and why does it still exist today, in that civil society does not have the same democratic vigilance shown in many other domains, such as work, education, food, human rights, or pollution? It seems that we have a taboo domain, comparable to that of all the myths, where sport is magnified, as formerly a divine activity. All the most honourable attributes are associated to it, without any critique; an instrument of personality formation, social integration, health, democratic construction, formation and education, emancipation, economic development and even an instrument to the service of peace and understanding between peoples! Thus, today most people refer to sport to describe their physical

[3] Does the definition of sport by Pierre de Coubertin not contain the germs of excess? : "*Sport is the voluntary and usual cult of intensive muscular exercise, motivated by the desire to progress and capable to go on until the risk (of injury). It must be applied with ardour, I will even say with violence. Sport, is not physical exercise good for everybody, under the condition to be reasonable and moderate; sport is the pleasure of the strong, or of those who want to become so, physically and morally. Nothing would kill it more surely than to want to imprison it in a moderation contrary to its essence*."

activities, even when it is merely about walking a few hundreds metres to do some shopping. This is the result of a commercial promotional strategy, relayed by the players and the entire system of the administrative machine, federations, administrations and equipment manufacturers. Even though it is not questioned here that some of these values are carried by sport, it is necessary to denounce the hypocrisy which consists of saying that sport is a miracle medicine for the problems of society!

If we juxtapose this complaisant speech to the privileged institutional position given to the huge modern sport federations, it makes one think of rhetoric. Indeed, we are all aware that high-level sport, in numerous disciplines, has often ominous effects for health, and those athletes often frequent hospital [4] operating rooms. These same high-level athletes often have difficulty in accepting the idea of become again 'ordinary' citizens when their sporting career is over. From this, it is very tempting to use artifices not to fall into the emptiness represented by the anonymity of a career's end. Like some politicians, they are determined to cling to their social standing, with risky conduct such as drugs, alcohol, or doping. "For most champions, to stop is a small death" said a former professional champion of the cyclist Tour de France. The doping problem is therefore absolutely not an independent social fact of sport but a visible emergence of its degeneration and that of our societies, and an unchangeable fact so much so that the financial stakes are so important in commercial sport. If we take amateur sport, we must ponder that in certain cases the ethical vision of its leaders should be disturbed [5], even alienated, since a good example is not being given by the summit of the sporting pyramid?

The reality is much more contrasted. We know that according to the club, the social condition of the player or the social situation of the country, there is no egalitarianism when the object is to organise a meeting between athletes: These are the athletes of the rich countries who win the medals! One could find many counter examples to the values listed in the last chapter, as the fact that in many team sports only the best children were chosen to play, which seems normal for adults, but that, for the educators, is a desocialising attitude and anti-educational. If one takes the role of understanding between the peoples, we can tell at a minimum that it is very controversial because it is well known that the globalised sports are mainly the reflection of Western society. It is the case among the Olympic sports where only two among them are non-western. Two Tunisian researchers(Borhane Erraïs & Mohammed Ben Larbi, 1985) wrote in 1985 that "the world body culture had spilled out (in Tunisia) since the second half of the 20th century" after the country underwent the influence of the French Protectorate[6]. The outcome was that physical activities became controlled by pyramidal bodies "subjugated by the international federations and the Olympic Committee". After having made a collection of the playful practices of Tunisia, the survey showed that in three-quarters of the Protectorate century the indigenous body practices had almost completely disappeared.

Other examples exist to show that today's modern sports reflect a type of ethnocentrism. If we consider the massive emigration from Great Britain in 19th century to colonise the North American continent, Australia, and many other countries, one of the concrete consequences was the international spread of a playful and body culture form. The Commonwealth games are one of the modern representations of this spread, and the fifty-three nations in membership and seventy-five teams participating represent an enormous political weight, as these Games are the most important after the Olympics. Their concept was initiated in 1891 with a Pan British competition which was intended to be held every four years. Whether this project was weakened with the 1896's first Games of Athens, an Empire Festival was again organised in 1911 in London. In 1930 The British Empire Games were founded and in 1966, in Kingston, Jamaica, the name was changed to, The British Empire and Commonwealth Games, then later due to political changes, The Commonwealth Games.

Today the sports media cover offers the sporting system a very favourable compost to develop itself. For the ordinary person it represents the possibility to climb to the top of the social hierarchy while becoming a sort of video game hero, almost a god of ancient mythology with all the advantages associated with this position. For underprivileged social groups the system finds a resonance through the big sporting celebrations that answer to a deep spiritual need, mixing communion and collective identification and veneration of extraordinary exploits while slipping themselves, by mimetism, into the skin of almost superhuman beings. It is also the representation of a space out of time and realities, a necessary need to go back to the 'festival', similar to traditional games. However, the sporting world asks permanently for this right to 'a separated time', to evolve as in a parallel world to society, invoking its own laws in this area as it was for the European Union white book [7] negotiations,

[4] In 1990's, a study showed that in France 85% of the high-level athletes were victims of an injury obliging them to take at least 5 days break.

[5] In 1994, a study made in the United States estimated that every year a million amateur sportsmen spent $120 millions in the purchase of anabolic steroid products on the black market.

[6] A system where the administration and economy of the country is under the control of the armed forces, similar to a British Dominion. Tunisia became independent in 1956.

[7] Article of Henning Eichberg, prof. at Syddansk university, Denmark, research Institute for Sport, Health and Civil society (CISC). http://isca-web.org/filer/football%20European%20Sport%20revised300407.pdf

even when one had serious transgressions. The last polemic on the Beijing OLYMPICS reinforces the obvious connection between politics and Olympic Games.

Impact of the sports myth on institutional decisions

The list of concrete cases showing discrimination led by this myth of sport, instituted by the macro sporting system, is long and complex. Opaque curtains scramble the visibility and protect the myth, continuing thus to transmit a sort of doping dream. This system of the 'untouchable's' appears in a study made in 2005 by the Danish Institute for Sport Studies, which concluded that newspapers and sporting publishers from all over the world are the best promoters of the sports industry. It is the main conclusion of one of the more important studies achieved on this topic and based on the analysis of ten thousand articles collected in thirty-seven general daily newspapers from ten different countries (www.playthegame.org/). The investigation deducts that the sporting pages seem to operate like a supplementary marketing branch to the sport industry and don't respect the ethics we expect from journalists. Knut Helland, professor in the Bergen University in Norway and a sports journalism expert deducted that "the commercial activity around sport generates such a pressure on the journalist that it has become impossible to work according to the classic ideals of journalism", which is a fundamental question, touching directly on democracy.

Other observations, alarming for democracy at the European level, can be made showing clearly the interdependence between decisions and political conditioning. The political non recognition in general rhyme with the refusal to subsidise traditional games organisations by the states, a situation that is then reproduced by all other administrative levels: regions, provinces and sometimes the town councils. This also concerns the school system where the door is in general closed, at the level of the teacher training or of practice in the schools. This is how most adult traditional games federations are treated; an example is the *Boule de Fort* in France that comprises fifty eight thousand players, the third biggest federation in terms of the number of participants in the region of Pays de la Loire it doesn't receive any financial aid. This game of the *Boule de Fort* is mainly practised by rural people of modest means and the French media never mentions it! On the contrary, we note that the TV regularly broadcasts images of games almost without participants in France, such as American football.

Confronted by this absence of institutional recognition the players of traditional games have therefore, either abandoned their practice, or they had to create a dynamic and a creativeness to find solutions to allow their games to survive. The traditional games organisations developed some qualities already present in the very essence of traditional games: resourcefulness, creativeness of a human being, and especially, the will to be actors in their own lives, absolutely opposite values to the spectators' consumer situation developed by the mercantile system. These are all activities created around traditional games that forged their image of a social linking tool of development, which allowed clubs and academies to receive the support for their 'social' and 'cultural' action on behalf of local political representatives, permitting to them to engage in a process of recognition in several countries of Europe. This evolution even touched the administrative system, even if the means are still often not there. It is also the will of some regional parliaments which have now permitted some sporting practices to hoist themselves to a equivalent level to modern sports federations, in a register associating sport and culture, to gain an official recognition as a 'cultural sport' in the concerned regions or country as Ireland.

Today we are aware that to adopt the language, the culture - and we could add the games - of the dominant system, has always constituted a way of promotion. So the autochthonous elite's have often adopted the games of their masters, certainly in the goal to rise socially even though sometimes a similar local game already existed. The case of cricket shows indeed that the game could be a space where the colonist accepted a certain equality, at least during a match, but today cricket international meetings can take the dimension of a nationalistic (Adam Kuper, 1995) revenge. Plato, the Greek philosopher, declared about two thousand five hundred years ago, "when you want to control the people, control their music", which means to control the free time, the festivals and the games… However, if forms of body expressions have been destroyed against their will, the populations therefore have the right to reconstruct them, in conformity with their cultural and spiritual environment. Paradoxically some states, such as the former Eastern Europe countries, judged these reconstruction's potentially reactionary and nationalistic and decided to destroy them or to confine them in a minor role. It was for example the case with the traditional wrestling *grundbirkózás* in Hungary, one of today's most popular school sports there, or *palant*, a game similar to baseball, in Poland, of which the two first were confined to the school practice for young children. However we are all aware today that the manipulations and the nationalistic recuperations are bound up with major sporting events.

These obsolete arguments continue to influence many countries in their physical education policies in which traditional games are often excluded, except in some cases, such as in Spain where the education system allows traditional games to be taught in the universities of physical education while creating specific jobs for teachers. This situation in fact uncovers the fears of the macro political or economic systems to see the citizens appropriate to themselves the places of debates, of democratic decisions, to be actors of their own lives, refusing the mass culture

imposed by the market. Once again the problem of the traditional games recognition is bound to a conception of democracy: on one hand the power of the 'experts' named by the central administrations and on the other the local power permitting the implication of civil society in a participative democracy; in other words the concepts of 'theoretical people' and 'sociological people' developed by Pierre Rosanvallon (Pierre Rosanvallon, 2008).

Democracy and social practices linked with health

When we say that playful practices are the mirrors of their societies, then we must wonder about the pertinence of a solely antagonistic system of meetings put in place by the sporting system. One does not worry sufficiently about the repetitive side and the normative functions of these practices which always claim they are without consequences on political (social) life. After about a century of existence this system contributed to create an image of 'losers' for the young that are not always in front, as if the industrial society has recreated a new caste for the first of the class, the 'winners'. However a society that creates winners, also forges a multitude of losers noted Albert Jacquard (2004), a French poly-technician. To persuade a whole part of society that they are part of the losers, is to infantilise them. Infantilisation [8], is a way to deculturate the critical thought of adults. Benjamin Barber, in his book (Benjamin Barber, 2007) on the cultural and democratic regression that is hidden behind consumerism, a consequence of infantilised adults, explains to us that one of its perverse effects is also often a sectarian radicalisation of the concerned persons and a weakened adult culture.

In the today's big companies, this system of 'winners' and 'losers' inspired from modern sport is completely integrated to the elitist system of management, where excellence is permanently required. The idea that the progress of society is achieved through the selection of human beings is applied: the market eliminates the weak and keeps the strong. This organisation takes its source in the 'social Darwinism' ideas of Herbert Spencer [9], for whom a 'healthy' society, like an animal species described by Darwin, organised the elimination of its weaker elements, in a sort of auto natural regulation. All dominant systems, without pre-established rules, tends thus to exclude or to destroy the elements that cannot follow or do not allow themselves be assimilated. By definition, this new social organisation tries to break the bases of solidarity between employees, the foundations of the old 'mechanical solidarity', whereas today all official speeches ask to recreate the social link! It is as if we have recreated a society with an underclass. Thus, when one juxtaposes the speeches made by the sports industry (chapter 'myth of sport') and the result of the setting up of its real politics, the contradictory character is striking. Commercial sport and the mercantile system is one unit, and this is reproduced in amateur sport so much so that there is no resistance. Thus, as Benjamin Barber affirms about the market and education, "it is not enough to have transformed the education in trade; it transforms the trade in education". So for dozens of years our society has been fed with theories that do not function in terms of social health, that are even counterproductive in terms of human investment.

The infantilisation of local cultures, of neo colonial type or other, is a way to inoculate the shame or fatalism by destroying the credibility of the local social contract. This erasing, constrained, from cultural influences has been studied by ethno psychiatrists. Dr Carrer's team which worked on some very important pathologies in Brittany (Breton Cultural Institute, 1986), such as suicide and alcoholism, showed that each time one noted the father's loss of influence, because he represents the image of authority in the family in this region; however in psychoanalysis the father's role is to curb the mother's influence on the young child. In matriarchal societies as in the Breton speaking western Brittany, this is accentuated because the father's lack of influence is supposed to be compensated by the phenomenon named 'psychic extra father', that means the customs, religious and social rituals, or the weight of the social group. In this case, the father and the psychic extra father are devalued. Dr Carrer concludes that when an outside culture is imposed, destroying the socio-cultural institutions, the effects are sufficiently sensitive to create a "social pathology". One can compare these observations to those about the Canadian Inuit population which has the highest rates of suicides and alcoholism in the world, or again the problems of immigrant families in Europe, where the father cannot express his authority in a language and through cultural references now foreign to him.

Pierre Parlebas said, at the 2002 symposium in Nantes (*Popular culture and education for the 21st century* October 2002 – Nantes), that traditional games "accumulated indignities", "condemned by the Church, suspected by the State, often abandoned to the children", that they "took refuge in the underprivileged classes", and we can add that this process of denigration has been applied to all the traditional body practices. In France, in the 18th century, at the time of the affirmation of the philosophical, scientific and political ideas of the *Age of Enlightenment*, the aristocracy and upward moving bourgeoisie confined the common people to a secondary, negligible role. This was done by means of a symbolic separation "(common) people – children" opposed to the

[8] Infantilisation is an attitude consisting of acting towards a person as to a child incapable of managing alone. The system that infantilises adopts an attitude of superiority to the infantilised persons, suggests that it knows what is good for them, manifests a will to think for them and, teaches them its morals. Infantilisation drives the infantilised people to adopt the point of view of the dominant system.

[9] English scientist of the 19th century who associated social studies to biology.

"aristocracy – adults" (Philippe Ariès, 1973). Thus, for them, the practice of festival games, the group dances in which everyone including children participated, revealed elements of 'childhood' in which were the common people, while couples dancing became the dance of the comfortable and superior classes, who also abandoned traditional games. In Britain the aristocracy distanced themselves from ordinary people while practising sports newly created from the transformation of former games into sporting disciplines, 'sports'. These are two examples confirming the theory of eugenics [10] developed by Francis Galton.

Sport is neither virtuous, or the opposite, nor do traditional games have miraculous remedies for our societies. However a society that creates discriminations or alienation and which does not respect human dignity, contributes to create serious social pathologies that tend then to turn into physiological problems. It is proven that the different institutional situations imposed on the sporting or playful practices reveal discriminatory realities, in particular for the games of cultural tradition, and the eradication of these discriminations can only help to improve some social pathologies. Today, the best answer to the global problem of health is a global answer, by the setting up of societal structures, which answer to a more highly democratic criterion, permitting first of all to place the human being at the centre of the world system, and not the market. This is a necessity in order that everybody should be in a condition to express the most fundamental of rights: their culture. Claude Lévi-Strauss, the great anthropologist and thinker, said that "civilisation implies the coexistence of cultures offering between them the maximum of diversity, and consist even in this coexistence (Speech at UNESCO)". The remedy in order to solve the pains that overwhelm our societies is more democracy between nations at the world level, and more power to a civil society which will be respectful of all. In this sense, states moving towards the recognition of traditional games and sports and giving them the same prestige as modern sporting disciplines contribute to the improvement of the social health of their population.

REFERENCES

BARREAU J.-J., **JAOUEN G., 2001**, - *Les jeux traditionnels en Europe - los juegos tradicionales en Europa*. Confédération FALSAB, France.

BARBER B., 2007, *Consumed : How Markets Corrupt Children, Infantilize Adults, and Swallow Citizens Whole.* W.W. Norton, New York.

BORHANE ERRAÏS & MOHAMMED BEN LARBI 1985 - *Ethnographie des pratiques corporelles dans la Tunisie pré-coloniale*. In Histoires sociales des pratiques sportives - INSEP, Paris, december.

EICHBERG H., **1998**. *A Revolution of Body Culture,* In *Les jeux populaires, des traditions aux régions de l'Europe de demain.* BARREAU J.-J. & JAOUEN G., 1998, Confédération FALSAB.

PLAYING AND DISPLAYING IDENTITY IN POSTMODERNITY AND OLYMPISM, 2003, PAWLUCKI A., Academy of Physical Education and Sport, Gdansk, Poland.

JAOUEN G., **1996**. – *The necessity of preserving and promoting traditional games*, dans *I° congreso internacional de luchas y juegos tradicionales* – Canaria, Gobierno de Canaria, Spain.

L'ÉDUCATION ET LA CULTURE À TRAVERS LA TRANSMISSION DES JEUX TRADITIONNELS, 2003, In Hopala, Brest.

UN NECESARIO RECOÑECEMENTO PARA OS XOGOS TRADICIONAIS, 2007, In Revista Galega de Educación N° 37, Santiago de Compostela, Spain.

WHICH SPORTING LEISURE'S, FOR WHICH SOCIETY OF TOMORROW*?* **2008**, In *International journal of Eastern sports & physical education*, published in South Korea.

LIPONSKI W., JAOUEN G., 2003. *Ethnology of Sport. Special issue of Studies in Physical Culture and Tourism.* University of Poznan, Poland.

LIPONSKI W., author, **JAOUEN G.,** Editor of the French version, **2005** – *L'Encyclopédie des sports – plus de 3000 jeux et sports du monde entier* – Gründ, Paris.

PARLEBAS P., 1999 – *Jeux, sports et sociétés* - Lexicon of motor praxeology – INSEP, Paris.

LE DESTIN DES JEUX, HÉRITAGE ET FILIATION, IN JEUX TRADITIONNELS – QUELS LOISIRS SPORTIFS POUR LA SOCIÉTÉ DE DEMAIN *?* **2005**. Breton Cultural Institute, Edit GUIBERT J. & JAOUEN G.,.

LES JEUX TRADITIONNELS ET LEURS DESTINS CULTURELS, CONFERENCE OF L'ARIANA2008., April 2008, Tunisia, for the 1st TSG Euro Mediterranean meeting.

[10] Eugenics is an action which tries to improve the hereditary character of the human species by deliberate intervention. Several very serious political attitudes were inspired by this theory. Its promoter was Francis Galton, a 19th century English scientist and cousin of Darwin.

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THE EFFECTS OF SWIMMING EXECISE AT 20°C WATER AND L-CARNITINE ON MICE'S BLOOD PARAMETERS

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ABSTRACT

Objective: We aimed to research the effects of swimming exercise that's water temparature 20°C on physiological functions of mice administred exhausted exercise.

Methods and procedures: It was used 60 male mice of the type of balb/C and twelve mountly aged in this research.The mice were divided into four groups consist of non-training(n:15), swiming training(n:15), practical(n:15) and unpracticle(n:15) L-carnitine. L-carnitine as phamalogical agent was used the dose 100mgr/kg (0.4ml) to experiment groups. It was given saline solution the same volume of L-carnitine to control group. The mice were swum until exhaustion in the morris water tank at 20°C ambiant. Swimming exercise was applied during three weeks. Both control group and experiment group mice were measured blood parameters of their pre and post exercises. Blood samples (0.5ml) was taken twice from tail veins of the control and experiment mice during experiments.The blood cell parameter findings obtained by the blood cell counter device. All mice outenasied by eter inhalation long period after experiment three weekly. The findings were evalueted as means ± SEM. Data for the exercise-trained groups were compared to those for the sedentary groups using one-way anova. Statistical significance among groups were evaluated at $p < 0.05$.

Results: The data that's erythrocyte, hemoglobin, haematocrit and RDW, MPW, PDW were founded significantly ($p<0.05$) when it was compared to the findings of control group with only swimming group. The values of leukocyte, erythrocyte, hemoglobin, RDW and trombocyte parameters were founded differences between two groups significantly ($p<0.05$) when it was compared to the findings of the control group with experiment group is swimming and taking L-carnitine. The values of MCV, PLT and PCT were found significantly ($p<0.05$) differences between two groups when the experiment group that's both swimming exercise and taking L-carnitine compared to with the only swimming group.

Discussions and conclusions: It was evaluated that the exhaustion swimming exercise influenced negative effect on hematologic parameters of mice because of cold stress. It must absolutely avoid from heavier swimming exercise to them. We concluded that swimming training protocols, special environment, cold stress and the other factors had to be well-programmed..

KEY WORDS: L-Carnitine, Swimming Exercise, Cold stres, Mouse Training

INTRODUCTION

It is very important the effects of environmental factors on athletic performance. The athletic performance affects very bad to have inadequat body temperature in all different areas. Water temperature impacts to performance levels in the range of important (T K Okizawa, 2010, R. Greger U Windhorst. 1996, TJ. Doubt, 1991). The water temparature that changes to body tempererature 0.5°C is very effective on cardivascular performance levels and so the athletics peformance is being influenced negatively. There is many literatuture about the effects of different environmental temperature on functionel structure (D Weinert, 2007, J Bittel,1992). The organisms consumpt metabolic energy at the top of level because of the factors to be using contrary to traditional life ways, for example body temparature. It has to use more energy. L-Carnitine is very important for to use the mitokondrial energy production that increase during exercise at the brain, liver and kidney **(LA.** Calò, 2008, S. Baptista 2008, WD Van Marken Lichtenbelt . 2007). Endurance sports affect on energy consumption and macrophages and these state obtains many advantage with both beta oxidation of fetty acits and immunity (Himms-Hagen J. 1995, ICheng GJ. 1990).

Hypotermia can be caused by the swimming exercise under body temperature of water heat and hypotemia is very important for atletic performance (Schaefer VI.1996, Ferreti G.1992). And low temparature, humidity, body composition and other factors are negative effects on performance (TJ Doubt,1991, JP, Wehrlin, 2006, P.Robach,.2005).

The environmental and intrinsic factors stimulate to erythropoiesis. Swimming exercise affects also haemopoietic activity during physical activity (LA Calò, 2008, Aoi W. 2004, D Weinert . 2007).

We aimed with this study that is to demonstrate many different effects of swimming water temparature with using L-carnitine on mice blood parameters and swimming performances.

MATERIAL AND METHOD

This research was done in Erciyes University the center of experimental research center. It was used in our research 60 male mice of the type of balb/C and tuwelve mountly age in this research. The mice were devided into four groups consist of 1.group; control sedantery group(C1), 2.group; only swimming group(C2), 3.group;taking salin solution%0.9=0.4ml(D1), 4.group; taking L-carnitin 100mgr(D2). . All groups were formed with fiveteen

mouse. The salin solution (%0.9Nacl) and L-carnitine(Santa Farma-l-cartine/1gr-3ml) were given at the same volume (0.4ml) by intrperitoneal(IP) injection. The mice were swum until exhaustion in the morris water tank at 20°C ambiant. The mice were swum Swimming exercise was applied during three weeks. Both the control groups and experiment groups at mice as pre-post measuring were tested blood parameters of their red blood cell(RBC), wight blood cell(WBC), haemoglobine(Hb), haematocrite(HCT), mean corpuscular volume(MCV), mean corpuscular haemoglobine(MCH), mean corpuscular haemoglobine concentration(MCHC), platelet (PLT), platocrite(PCT) with the animals's swimming time(ST) and body temparature(BT). Blood samples was taken twice during experiments from all mice's tail veins and v.subclavia (0.5ml). .The blood cell parameter findings obtained by the blood cell counter device(CRP Counter, LC-178CRP). All mice outenasied by eter inhalation long period after from experiment three weekly.

The statistically analysis of findings were evalueted as means ± SEM. Data for the control groups and experiment groups were compared by using one-way anova. Statistical significance among groups were evaluated at $p < 0.05$.

RESULTS

The mice tested swimming exercice in the 20°C water heat under laboratory condition. It was were tested the measurable findings are RBC, WBC, Hb, Hct, MCV,MCH, MCHC, PLT and PCT. It has been presented all our findings in Table1-3.

The effects of swimming excercise on some blood parameters which was done in 20°C swimming water heat, were found like that.(Table 1.):

Table 1: The evaluation of some blood parameters at swimming water heat 20°C.

Parameters	C1 n:12	C2 n:12	D1 n:12	D2 n:12
RBC	9.4±0.3[a]	8.9±0.4[b]	8.4±0.4[a]	9.9±1.2[a]
WBC	5.8±0.3[a]	6.7±3.0[a]	7.9±2.0[a]	8.5±1.0[a]
Hb	15.6±0.4[a]	14.0±0.5[a]	12.7±0.5[a]	12.8±1.0[a]
Hct	48.4±2.3[a]	43.2±2.6[a]	41.5±1.5[a]	43.6±2.1[a]

a: Differents of groups is important to C1 statistically($p<0.05$).
C1:Sedantery, **C2**: Only swimming **D1**: Taking salin solution **D2**:Taking L-carnitine

RBC and WBC levels were found meaningful differences between C1 and other groups that is in favour of swimming groups and taking L-carnitine taken group ($p<0.05$). But it was not important among swimming groups($p>0.05$).

Hb and Hct levels was found meaningful differences statistically between C1 and in decreasing direction to swimming other groups($p<0.05$).

Some haematological parameters which is MCV, MCH, MCHC, PLT and PCT, have been presented in Table 2.

Table 2. The comparison of same haematological parameters at swimming water heat 20°C

Parameters	C1 n:12	C2:12	D1 n:12	D2 n:12
MCV	44.1±0.7[a]	44.8±0.8[a]	44.9±0.6[a]	45.6±1.4[a]
MCH	14.2±0.2[a]	15.6±0.1[a]	14.9±0.1[a]	15.2±0.3[a]
MCHC	32.5±0.2[a]	33.4±0.6[a]	33.8±0.7[a]	33.4±0.9[a]
PLT	470.1±225.1	523.1±243.0	802.0±102.7	729.6±181.3
PCT	0.23±0.1	0.31±0.0	0.45±0.0	0.39±0.0

C1:Sedantery, **C2**: Only swimming **D1**: Taking Salin solu. swim **D2**:Taking L-Carnitine

MCV levels were found meaningful differences between C1 and other groups that is in favour of swimming groups and taking L-carnitine taken group ($p<0.05$). But it was found not important among swimming groups($p>0.05$).

MCH and MCHC levels were found meaningful differences between C1 and other groups that is in favour of swimming groups and taking L-carnitine group ($p<0.05$). But it was found not important among swimming groups($p>0.05$).

PLT and PCT levels were found very important meaningful differences statistically when were compared with between C1 group and all other groups($p<0.05$) .But it was found not important among swimming groups($p>0.05$).

The findings of swimming time and body temparature levels have been presented in Tablo 3.

Table 3: Table. The findings of the body temparature and the swimming time at water heat 20°C

Parameters	C1 n:12	C2 n:12	D1 n:12	D2 n:12
Body Temp. (°C)	38.0±0.2	38.1±0.2	38.5±0.2	38.4±0.3
Swim. Time (min)	----------	43.7±5.3[a]	49.6±6.2[a]	52.6±0.1[a]

C1:Sedantery, **C2**: Only swimming **D1**: Taking Salin solu. swim **D2**:Taking L-Carnitine

The body temparature were not found meaningful differences among all groups statistically ($p>0.05$).

The swimming time levels were found meaningful differences between C2 and other groups which is especially in favour of the taking L-carnitine group ($p<0.05$). The differences between swimming groups was also found important statistically($p<0.05$).

DICUSSION AND CONCLUSION

The direct physiological response of immersion into cold water typically a rapid tachicardia and intense hyperventilatory drive. This "cold shock" response can be extreemly respiratin resting values to more than 30 breaths and 80L/min in ventilation and 150 beats/min in herth rate in seminude individuals rapidly immersed to the neck in mid cold water (MJ Tipton, ES Golden, 1998). Futhermore, the psychological stres and panic of sudden immersion exert an additional strong in the symphatetic neural system and possible producing of increasing hyperventilation and tachicardia (MJ Barwood, 2006).

It is known that physical activity and its levels increase hematopoietic activity. The swimming excercise also have effects on the blood parameters.The effects of excercise and cold on erythrocyte, hemoglobin and hematocrit levels are altered their levels by releated each other. The erythrocyte levels have increased significantly at the swimming groups according to nonswimming sedantary groups. However, hemoglobin and hematoctrit levels have increased meaningly according to sedantery group. It is known that intensity of excercise, nutrition, l-carnitine and sensory stres are affected these parameters increasingly (S. Baptista 2008).

A number of studies indicate that cold water stress can result in suppression of the erhytropoiesis, heamethologic and immune system in animals and man (Aoi W et al 2004, Cheng GJ et al 1990).

It is known that different water tempratures have different effects on athletic performance according to different cold or warm water temperature (Weinert D. 2007, Bittel J. 1992). Exercise, hipoxia, l-carnitine and other factors stimulate to erythropoiesis (Calò LA.2008). It has increased significantly haematological parameters that's RBC, WBC, Hb and Hct levels corraletion with blood cells. Moreover, cold stres release secretion of adrenaline that's causes to eryhtropoesis (A Kuroshima .1995).

It has indicated that the blood parameters increased in RBC, HCT MCH, MCHC and platelet aggregation values because of concerning the plasma Norepinephrine and epinephrine concentrations(**LA** Calò .2008**,** W Aoi , S Iwashita , 2004).

It has been suggested that early in the response to stress, functions of a variety of cells within the immune system are altered the suppression function of macrophages in cold water stressed mice (GJ Cheng 1990). The cold stress can be compensated with feding, condition level, body composition and other factors because of being adversely affected by the mice's swimming exercise at 20°C water temparature and cold stres.

It is known that is in the swimimng groups were not altered their body temparature meaningfully. Mechanisms of effect of exercise training on cold tolerance are different in adult and aged animals(J Himms-Hagen .1995)

As a result; the swimming mice were survived approximately one hour in this research. It has ben tought that it has been adversely affected their erhytropoiesis and endurance because of swimming exercise in the cold water which is the lower 18°C than mice's body temparature.

REFERENCES

AOI W., IWASHITA S., **FUJIE M**., **SUZUKI M**., **2004.** *Sustained swimming increases erythrocyte MCT1 during erythropoiesis and ability to regulate pH homeostasis in rat.* Int J Sports Med. Jul;25(5):339-44

BAPTISTA S., **PILOTO N., REIS F., TEIXEIRA-DE-LEMOS E., GARRIDO AP., DIAS A., LOURENCO M., PALMEIRO A., FERRER-ANTUNES C., TEIXEIRA F., 2008.** *Treadmill running and swimming imposes distinct cardiovascular physiological adaptations in the rat: focus on serotonergic and sympathetic nervous systems modulation.* Acta Physiol Hung. Dec;95(4):365-81.

BITTLE J., 1992. *The different types of general cold adaptation in man.* Int.J.Sports Med. Suppl. 1(13):S172-S175.

CALO LA., DAVIS PA., PAGNIN E., BERTIPAGLIA L., NASO A., PICCOLI A.,

CORRADINI R., SPINELLO M., SAVICA V., DALLA LIBERA L., 2007. *Carnitine-mediated improved response to erythropoietin involves induction of haem oxygenase-1: studies in humans and in an animal model.* Nephrol Dial Transplant. 2008 Mar;23(3):890-5. Epub Oct 25.

DOUBT TJ., 1991. *Physiology of exercise in the cold.* Sport Med. 11(6):367-381.

FERRETTI G., 1992. *Cold and muscle performance,* Int.J.Sports Med. Suppl. 1(13):S185-S186.

FORAY J., 1992. *Mountain frobite. Current trends in prognosis and treatment.* Int.J.Sports Med. Suppl. 1(13):S193-S195.

GREGER R., WINDHORST U., 1996, *Comprehensive human physiology*. Springer, pp:2199-2219.

HIMMS-HAGEN J., 1995. Does thermoregulatory feeding occur in newborn infants? A novel view of the role of brown adipose tissue thermogenesis in control of food intake. Obes Res. Jul;3(4):361-9.

ICHENG GJ.,. **MORROW-TESCH JL**., **BELLER DI**., **LEVY EM**., **BLACK PH**., **1990.** *immunosuppression in mice induced by cold water stress.* Brain Behav Immun. Dec;4(4):278-91.

ROBACH P., **SCHMITT L**., **BRUGNIAUX JV**., **ROELS B**., **MILLET G**., **HELLARD P**., **NICOLET G**., **DUVALLET A**., **FOUILLOT JP**., **MOUTEREAU S**., **LASNE F**., **PIALOUX V**., **OLSEN NV**., **RICHALET JP**., **2006.** *Living high-training low: effect on erythropoiesis and aerobic performance in highly-trained swimmers* .Eur J Appl Physiol. Mar;96(4):423-33. Epub Dec 3.

SCHAEFER VI, TALAN MI., 1997. *The effect of exercise training in a cold environment on thermoregulation in adult and aged C57BL/6J mice*. Exp Gerontol. Nov-Dec;32(6):695-705.

SCHAEFER VI., TALAN MI, **SHECHTMAN O**., **1996.** *The effect of exercise training on cold tolerance in adult and old C57BL/6J mice*. J Gerontol A Biol Sci Med Sci. Jan;51(1):B38-42.

VAN MARKEN., LICHTENBELT WD., DAANEN HA., 2003. *Cold-induced metabolism.* Curr Opin Clin Nutr Metab Care. Jul;6(4):469-75.

WEHRLIN JP., **2006.** Zuest P, Hallén J, Marti B.Live high-train low for 24 days increases hemoglobin mass and red cell volume in elite endurance athletes.J Appl Physiol. 2006 Jun;100(6):1938-45. Epub 2006 Feb 23.

WEINERT D., **WATERHOUSE J**., **2006**. *The circadian rhythm of core temperature: effects of physical activity and aging*. Physiol Behav. 2007 Feb 28;90(2-3):246-56. Epub Oct 25.

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THE EFFECTS OF 8-WEEK STEP-AEROBIC EXERCISE ON THE BODY COMPOSITION AND HEMATOLOGIC PARAMETERS IN THE OBESE AND OVERWEIGHT FEMALES

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ABSTRACT

Objective: In this research, the exemination of the effect of aerobic exercise on the body composition and hematologic parameters in the obese and overweight, sedentary women has been aimed.

Material: 29 obese people whose avarage age is 41.55 ± 6.72 year, avarage height is 159,21 ± 7.18 cm, avarage weight is 85.97 ± 9.60 kg, 29 overweight people whose avarage age is 35.10 ± 9.11 year, avarage height is 160.59 ± 5.20 cm, avarage weight is 68.55 ± 6.72 kg, in total, 58 people have been accepted to this research. These groups have been arranged according to the body mass index.

Method: In this research, 8 weekly period- aerobic exercise in 3 days of the week have been applied to people. Before and after the exercise protocol, the body fat percentage, the rate of the waist to the hip, elasticity, some hemotologic parameters (WBC, RBC, MCV, HGB, HCT, PLT) ,sistolic and disostolic blood pressure have been measured.

Result: When the group inside findings have been examined. While the important decrease in the level of BW, BMI, BFP and WHR in the obese group, the important increase in E and DBP have been seen. There are understandable decrease in the level of BW, BMI, WHR, BVF SBP and DBP ($p<0.05$) , understandable increase in E ($p< 0.05$), there is also no difference in WHR.

After and before the exercise of the obese and overweight groups, the understandable increase in the level of RBC, HGB, HCT ($p<0.05$) and understandable decrease in the level of MCV ($p<0.05$) have been seen. As different from the overweight group, understandable increase in WBC ($p<0.05$)has been seen. The important difference in PLT in the both groups hasn't been seen. When differences between two groups have been examined, after the exercise, the level of RBC in the obese group is higher than those in the overweight group.($p<0.05$)

Discussion and conclusion: In conclusion, it can be said that in the obese and overweight women, the applied exercise protocol have an important effect on the antropometric and hemotologic levels, regular aerobic exercises will reduce the body fat percentage without the loss of the muscle.

KEY WORDS: Step-aerobic exercise, Antropometric Measurements, Obesity, Hemotologic Parameters.

INTRODUCTIONS

Saving the adequate liquid volume is an indispensable stipulation to maintain normal activities of cardiovascular system. This balance in the body is provided with the interaction among many numbers of organs involving hormonal and neural messages. The factors such as physical stress, which can change this balance potentially into chronic or acute state, trigger different hemostatic mechanisms (R. Murray et al., 1991).

During the exercise, certain amount of liquid enters into the tissues leaving the veins and the density of erythrocyte, hemoglobin and plasma proteins increases (K. Karacabey et al., 2004, F.Özdengül, 1998). It has been stressed that decreases may occur in the level of erythrocyte when the vein volume hemostasis is reobtained as a result of relaxation and intake of liquid and electrolyte after exercise (R. Morgan et all 2004).

When blood flow increases and is accelerated with exercise, the leucocytes clinging to vein wall mingles with the flow and the amount of leucocytes in the blood increases. In addition, hormonal changes can also cause this increase (D.N.Khansari et al., 1990, M. Waern, C.Fossum, 1993, N. Akgün, 1994). The higher stress is accompanied by exercise, the greater the leucocytes increase. This increase is especially significant in the strenuous exercises. The principal reason of this increase is the blood pressure (especially systolic blood pressure) and liquid filtration from capillaries into the tissues by arteries. Another reason is that osmotic pressure rises as a result of metabolism products augmenting in the liquid among the tissues caused by increased metabolism and consequently water recedes (K. Karacabey et al., 2004, F. Özdengül, 1998). Changes in the hemotologic parameters occur according to the type, stress and duration of the exercise. Presumably, these changes are caused by such factors as the methods used in experiments, experiment times, the type of exercises applied, the age, sex and training condition of the subjects (S. Shephard et al., 1994). However, there is no complete consensus in the literature how exercise affects on blood concept. While some researchers express that exercise increase blood volume (M.Günay et al., 2006), others state that it does not change (N. Akgün, 1994).

It has been explained in the literature that the increase in the hematocrit is caused by hemoconcentration connected with exercise, more considerably the release of high hematocrit blood from

splenic to circular circulation (W.Ganong, 1996, B.Yılmaz, 1999, M.Guyton, 1996), and it has become more significant with the entering of leucocytes in the margination pool into the circulation as a result of the increase in the leucocytes due to accelerated circulation (D.N.Khansari et al., 1990).

Obesity, the suffering of this century, develops after puberty in many cases. The prevalence of obesity occurrence in both sexes is high due to the deceleration of metabolism in the early years of adulthood. Furthermore, pregnancy establishes the base of obesity in females. Sedentary living is the most common cause of obesity in adult age group (D.J .Wilson 1988). Obesity, risk factor for many diseases, threatens life quality. In order to prevent obesity, it is essential that sedentary living should be abandoned and exercise be included into daily life. We aimed to investigate the effects of exercise and obesity on hematologic parameters in this study.

MATERIAL

The choice of subjects:

29 obese (O) subjects whose mean age was 41.55 ± 6.72 years, mean height: 159,21 ± 7.18 cm, average body weight (BW) : 85.97 ± 9.60 kg, and 29 overweight (OW) subjects whose mean age was: 35.10 ± 9.11 years, mean height: 160,59 ± 5.20 cm and average body weight (BW) was : 68.55 ± 6.72 kg, total 58 individuals taking part in the step aerobic exercise program run by KOMEK (Konya Vocational Course) were included in the study.

They were classified according to their body mass index (BMI). In classification, the subjects with 25.0 – 29.9 BMI were regarded as overweight (OW) and with 30.0 – 39.9 as obese (O).(WHO,1999) The subjects were informed about the parameters and their written consents were obtained and then examined physically. The completely healthy individuals who had no diabetic, cardiac and chronic systemic and metabolism diseases and the diseases affecting immune functions in their clinical examinations and history were included in the study. The subjects were asked to follow their usual normal nutrition habits and to avoid excessive physical activities during the study.

METOD

Exercise program and its severity:

We had the subjects do warm-up exercises for 10 minutes, active step aerobic exercises for 45 min. and finally stretching cooling exercises for 10 min. at the 60-70% severity of their target pulse rate three days a week for 8 weeks, and the rates before and after the exercises were recorded. The severity of the aerobic exercise was determined according to Karvonen protocol.

Pulse Rate (PR)= 60-70% PR(PR max-PR min)+PR

Maximal PR=220- age (K.Özer, 2006).

Measuring/measurement means:

Before the subjects started training, the initial tests and at the end of the training after 8 weeks the final tests of height(H), body weight(BW), systolic blood pressure (SBP), diastolic blood pressure (DBP), body fat percentage (BFP), waist and hip rate (WHR), elasticity (E) and body mass index(BMI) were obtained and recorded.

Anthropometric Measurements:

The body weights of the individuals included in the study were measured in kilogram (kg) with NAN scale in their casual home clothes with bare feet before the exercises began. Their heights were measured in meters with studio meter and recorded. Body mass index (BMI) was calculated with Weight / height² (kg/m^2) formula. The contour of the body was measured in cm. with a fiberglass tape measure which is 0.6cm wide, rigid but flexible. The steps taken during the measurements were mentioned below.

Waist circumference was measured horizontally from the narrowest point of the distance between ksifoid prominence and umbilicus, and hip circumference was measured from the trochanters horizontally as the widest diameter while the legs were 20-30cm apart. Moreover, the values of waist and hip circumferences were divided to each other and waist/hip rat was obtained. The thickness of skin pleat was measured from triceps, biceps, subscapular and suprailiac zones using Holtain T/W Skinfold Caliper. In order to measure the thickness of the skin pleat, the fold between thumb and index finger was separated from the muscular tissue removing the skin with its hypodermic fat tissues and slightly compressing it between the ends of caliper and the values on the dial was read and recorded.

Total Body Fat Percentage:

Body density was calculated using Durnin-Womersley formula with triceps, biceps, subscapular and suprailiac SF Total body fat percentage was calculated applying Siri equation to this body density.

Durnin-Womersley Formulas:

Female=1, 1581- (0,0720x (LOG S (triceps, biceps, subscapular and suprailiac SF) (J.V.Durnin and J. Womersley, 1974)

Siri equation:

Total Body Fat Percentage= (4.95/body density - 4.50) x 100 Siri (Siri, 1956)

Blood Pressures: the SBP and DBP of the subjects were taken in mmHg with stethoscope and sphygmomanometer (B.N.Roohi, 2008).

Sit and Reach Test was used to measure the elasticity of the individuals. The test was repeated twice and the highest score was recorded (K.Tamer, 2000).

Blood parameters: White blood cell (WBC), Red Blood Cell Count (RBC), Mean Corpuscular Volume (MCV), Hemoglobin (HGB), Hematocrit (HCT9, Platelets (PLT) were measured from the fasting blood samples. Laboratory tests were carried out using standard measurements techniques.

Statistic Analyzes: The arithmetic means and standard deviations of all statistical data in the study were calculated with SPSS 15.0 packet program. The comparison of test assessments of the subjects with each other before the training and after 8-week training was performed with Paired Samples t-test.

RESULTS

Table 1: Body composition, blood pressure, elasticity and in-group comparison of measurement values obese and overweight individuals before and after 8-week regular exercise scheme.

	Overweight group (N:29)				Obese group (N:29)			
	Mean	Std. Deviation	T	P	Mean	Std. Deviation	T	P
Age (year)	35.10	9.11			41.55	6.72		
Height(cm)	160.59	5.20			159.21	7.18		
BW(kğ)1	68.55	6.727			85.97	9.601		
BW 2	66.00	6.164	7.376	.000*	83.31	10.160	4.687	.000*
BMI 1 (kg/m2)	26.57	2.257			33.99	3.888		
BMI 2 (kg/m2)	25.58	2.027	7.502	.000*	32.92	3.960	4.506	.000*
WHR 1(%)	,7919	,05723			,8411	,05645		
WHR2 (%)	,7744	,04781	2,092	,046*	,8316	,05206	1,047	,304
BFP1 (%)	36.12	2.739			39.31	2.644		.
BFP 2 (%)	33.41	3.772	5.448	.000*	37.56	2.492	3.435	002*
Elasticity (cm)1	28.90	5.492			27.62	6.925		
Elasticity(cm2	30.07	5.675	-2.727	.011*	30.45	6.231	-3.225	.003*
Sistolik (mmHG)1	11,66	,974			12,31	1,491		
Sistolik(mmHG)2	11,69	,541	-,226	,823	11,79	,675	2,637	,013*
Diastolik(mmHG)1	7,21	,861			7,72	,701		
Diastolik(mmHG)2	7,48	,574	-2,117	,043*	7,37	,561	2,774	,010*

In Table 1, according to the values of first and last tests of the subjects, there was significant difference in the parameters of BW, BMI, BFP, WHR, E, SBP, DBP respectively in favor of the last tests(Table: 1 P<0.05*)

Table2: In-group comparison of hematologic parameters before and after exercise.

	Overweight group (N:29)				Obese group (N:29)			
	Mean	Std. Deviation	T	p	Mean	Std. Deviation	T	P
WBC1(x10^9/)	5.7660	0.8986			6.352	1.4614		
WBC2(x10^9/)	6.4186	1.4164	2.895	.007	6.761	1.6582	2.005	.055
RBC1(x10^{12}/)	4.3979	0.2563			4.5562	0.4223		
RBC2(x10^{12}/)	4.7014	0.3013	9.207	.000	4.8897	0.3767	8.270	.000
HGB1(g/dl)	12.034	1.1191			12.169	1.0840		
HGB2(g/dl)	13.266	1.4884	8.573	.000	13.476	1.4664	9.405	.000
HCT1(1/1)	37.790	2.974			38.390	3.434		
HCT2(1/1)	39.369	3.378	5.110	.000	40.049	3.622	3.288	.003
MCV1(fl)	86.052	7.0386			84.841	6.2558		
MCV2(fl)	83.686	6.3494	-5.187	.000	82.066	7.0578	-6.622	.000
PLT1(K/u)	274.90	60.904			297.76	68.408		
			.590	.560			.152	.880

In Table 2, according to the values of first and last tests of the subjects, while there was significant difference in favor of initial and final tests in the parameters of RBC, HGB, HCT, MCH, MCHC respectively in group K and O, MCV diminished considerably (p<0,000). PLT was high significantly. While WBC was higher in group K, it was not significant in group O (p<0.05).

DISCUSSION

Physical exercises done regularly have effects on obesity, cardiovascular system, blood pressure, physical goodness, body fat rate and healthy life in middle-aged people (D.E.Laaksonen et al, 2002; A.S.Ryan et al, 1996; I.S.Ockene et al. 2004, G.Charach et al. 2004)

M.Egana and B.Done (2004) applied stepper exercise program on 24 females for 12 weeks and were given tests before and after the exercises and there were significant difference in favor of last tests of BFP and BW. Özcan et al. (2004) found statistically significance in the values of BFP, SBP, DBP and E in the sedentary males exposed to 6-week aerobic exercises.

F.F.Çolakoğlu and S. Karacan (2006) applied 30min. walking-running training 3 days a week for 12 weeks and found significant difference in favor of last tests of BMI and BW before and 12 weeks after training while they determined no significant difference between the tests of SBP and DBP. Ü. Erbaş (2007) investigated the effects of regular aerobic exercise on 54 middle-aged sedentary females for 6 months. He gave total 3 tests; an initial test before training, a middle test 3 months later and a final test 6 months later. After the exercise protocol, it was determined that the middle test values of SBP, DBP, BW, BFP, BMI and E were significantly different from those of initial test, and the values of final test were significantly different from both initial and middle test. J.M. Saavedra et al. (2007) applied water aerobic on middle-aged females 2 days a week for 8 months and established that there was significant difference in favor of final tests between the values of BW and BFP before and at the end of 8-month exercise.

M.E. Kafkas et al. (2009) concluded that 12-week regular aerobic and resistance exercises had positive effects on BW, BMI, BFP and blood pressure. L. Perussa et al.(1997) established in their study on 97 sedentary male-female subjects that regular aerobic exercises had positive effects on BMI and BFP. E. Zorba et al. (2000) found in their study that there was significant increase in E values after 45-minute exercise 3 days a week for 8 weeks. In our study there was significant difference in the values of BW, BMI, BFP, E and DBP between the initial and final tests of 8-week aerobic-step exercise in favor of final tests and there was also difference between the values of SBP ($p<0,05$).

We observed significant increase in the parameters of HGB, HCT, MCH, MCHC in favor of last tests in our study ($p<0,05$). There are various studies indicating that exercise have effects on the hemoglobin values (M. Günay et al., 2006,S.L.Nieman et al., 1999,G. Büyükyazı et al., 2000, B. Freund et al., 1991, G.Ersöz et al., 1995, E.Wade et al., 1987). G.Buyukyazi and F.Turgay found in their study on male sportsmen that hemoglobin levels increased significantly after interval trainings (G. Buyukyazı et al. 2000)

B. Ferund et al. determined increase in the levels of hemoglobin after the exercise at 60-80%with MaxVO2. However, it has been reported that generally the significant increase in the hematocrit level just after the exercise retuned to basal level within 24-48 hours (M.Ünal, 1998, G.Ersöz et al., 1995, E.Wade et al., 1987). Since the blood samples were taken 24 hours after the exercise in our study, HGB and HCT values are not acute answers. We found considerable difference in MCV. We think that this is related to iron deficiency anemia caused by inadequate respond of iron depot to increased hemoglobin production. Consequently, additional iron must be taken with exercise.

Significant increase occurred in the parameters of WBC in this study. It is possible to regard this increase in WBC as acute phase respond (W. Weight et al.1991). Many studies have stated that especially intensive exercise increases WBC concentration (P.A. Deuster et al., 1989, M. Kappel et al., 1998) and in addition to intensity of the exercise, the condition of the individual is determinant in this increase (S.İbiş et al, 2010). The significant increase in leucocytes is caused by the entrance of leucocytes in the margination pool into the circulation system with the accelerated circulation (D.N.Khansari et al., 1990). Moreover, we suggest that the increase of hematocrit density also affects leucocyte level.

While some studies report that exercise increases the number of thrombocytes (F. Özdengül, 1998, Younesian, 2004), others state that exercise have no effects (M.Ünal, 1998, S. Patlar et al., 2007). Insignificant increase in the number of thrombocytes was observed in O-K group in our study. Although the increase can be explained as the hemoconcentration related to exercise, it can also be defined as the activation of neural system caused by the factors such as compelling body and stress and the increased number of blood platelets (M. Günay, 2006).

The effects of regular exercise on middle aged females can be seen in literature and research samples. Deformation in the body composition and increased blood pressure caused by overweight and age can be observed in middle-aged individuals. It has been proved that the negative effects of sedentary living on individuals can be lowered with exercise. According to literature, sports activities promote life quality, and general physical performance completely affects positively the functional capacity of the systems.

In conclusion, we can deduce that intensive and exhausting exercises affect the hematologic values more than normal and moderate exercises, and reasonable exercise like aerobic exercise make significant changes in the hematologic parameters. It can be considered that exercise affects hematologic values, and these are caused by hematocrit increase related to the decrease in the blood plasma during and after exercise.

REFERENCES

AAVEDRA, J.M., DE, L.A., CRUZ, E., ESCALANTE, Y., RODRİGUEZ, A.F.,. 2007 *Influence of a medium-impact aquaerobic program on health-related quality of life and fitness level in healty adult females.* J Sports Med Phys Fitness, 47(10): 468–474, 2007

AKGÜN, N., 1994, *Egzersiz Ve Spor Fizyolojisi.* 1.Cilt. 5. Baskı:69-255, Ege Üniversitesi Basımevi: İzmir.; S. 89.

BÜYÜKYAZI, G., TURGAY, F., 2000, *Sürekli Ve Yaygın İnterval Koşu Egzersizlerinin Bazı Hematolojik Parametreler Üzerine Akut Ve Kronik Etkileri*. H.Ü. Spor Bil. Ve Tek. Yüksekokulu VI. Spor Araştırmaları Kongresi. Kasım, Ankara. S 182, 3-5.

CHARACH, G., RABİNOVİCH, PD., WEİNTRAUB, M., 2004,. *Seasonal changes in blood pressure and frequency of related complications in elderly Israeli patients with essential hypertension.* Gerontology, 50.315–21

ÇOLAKOĞLU, F.F, KARACAN, S.,2006, *Genç bayanlar ile orta yaş bayanlarda aerobik egzersizin bazı fizyolojik parametrelere etkisi*. Kastamonu Eğitim Dergisi, 14(1): 277–284, 2006

DEUSTER, P.A., CHROUSOS, G.L., LUGER, A., DEBOLD, J.E., BERNİER, L.L., TROSTMAN, U.H., 1989, *Hormonal And Metabolic Responses Of Untrained, Moderately Trained And Hıgly Trained Men To Tree Exercise İntensities. Metabolism 38.141–8*

DURNİN, J.V., WOMERSLY, J., 1974, *Body Fat Assesed From Total Body Density And İts Estimasion From Skinfold Tickness: Measurements On 481 Men And Women Aded From 16 To 72 Years*. Br J Nutr.32.77–97.

EGANA, M., DONE, B., 2004, *Physiological changes following a 12 week gym based stair-climbing, elliptical trainer and treadmill running program in female*. J Sports Med Phys Fitness, 44: 141–146.

ERBAŞ, Ü., 2007, *Orta yaş obez bayanlara yönelik kalistenik egzersizlerin fiziksel ve fizyolojik etkileri,* Yüksek Lisans Tezi, Ankara: Gazi Üniversitesi, Sağlık Bilimleri Enstitüsü, Beden Eğitimi ve Spor Anabilim Dalı

ERSÖZ, G., KÖKSOY, A., ZERGEROĞLU, A., YAVUZER, S., 1995, *Akut-Kronik Fiziksel Egzersiz Ve İmmunglobulinler.* Spor Bilimleri Dergisi, 6, 3, 3–12.

FREUND, B., SHİZURU, E., HASHİRO, G., CLAYBAUGH, J., 1991, *Hormonal Electrolyte And Renal Responses To Exercise Are Instensity Dependent*, J.Appl. Physiol,70,2, 900-

GANONG, W., 1996, *Tıbbi Fizyoloji*, Cilt 1, 17. Baskı, (Çev: Türk Fizyolojik Bilimler Derneği), Ankara. Barış Kitabevi.

GUYTON, M., HALL, J.,1996, *Textbook Of Medical Physiology,* Tıbbi Fizyoloji, (Çev: Çavuşoğlu H). İstanbul. Yüce Yayınları.

GÜNAY, M., TAMER, K., CİCİOĞLU, İ., 2006, *Spor Fizyolojisi Ve Performans Ölçümü,* Gazi Kitabevi, Baran Ofset, Ankara. 219.225.227.

İBİŞ, S., HAZAR, S., GÖKDEMİR, K., 2010, *Aerobik Ve Anaerobik Egzersizlerin Hematolojik Parametrelere Akut Etkisi.* Uluslararası İnsan Bilimleri Dergisi [Bağlantıda]. 7:1.

KAFKAS, M.E., AÇAK, M., KARADEMİR, T., 2009, *12 Haftalık Düzenli Aerobik Ve Direnç Egzersizlerinin Orta Yaş Erkek Ve Kadınların Vücut Kompozisyonları Üzerine Etkisi ,* Niğde Üniversitesi Beden Eğitimi Ve Spor Bilimleri Dergisi Cilt 3, Sayı 3

KAPPEL, M., POULSEN, T., GALBO, H., PEDERSEN, B.K., 1998, *Effect of Elevated Noradrenaline Concentration on the İmmune System in Humans*. Eur J Appl Physiol 79, 93–98.

KARACABEY, K., PEKER, I., PAŞAOĞLU A., 2004, *Voleybolcularda Farklı Egzersiz Uygulamalarının Acth Kortizol İnsilün Ve Glikoz Metabolizması Üzerine Etkileri*. Spor ve Tıp Dergisi. Logos Yayınevi, 12(1), 7-12.

KHANSARİ, DN., MURGO, AJ., FAİTH, RE.,1990, *Effects Of Stress On The İmmune System.* Immunol Today 11: 170-175.

LAAKSONEN, D.E., LAKA, H.M., SALONEN, J.T., NİSKANEN, L.K., RAURAMAM, R., LAKKA, T.A., 2002, *Low Levels Of Leisure-Time Physical Activity And Cardiorespiratory Fitness Predict Developmen Of The Metabolic Syndrome*, Diabetes Care. 25.1612–1618, 2002

MORGAN, R., PATTERSON, M., NİMMO, A., 2004*, Acute Effects Of Dehydration On Sweat Composition İn Men During Prolonged Exercise İn The Heat*. The American College Of Sports Medicine, 182, 37.

MURRAY, R., EDDY, D., PAUL, G., SEİFERT, J., HALABY, G., 1991, *Physiological Responses To Glycerol Ingestion During Exercise*. American Physiological

NİEMAN, S.L., NEHLSEN-CANNARELLA, D.A., HENSON, D.E., BUTTERWORTH, O.R., FAGOGA, B.J., WARREN, M.K., 1996, *Rainwater.Immune Response To Obesity And Moderate Weight Loss.*International Journal Of Obesity 20,353-360.

OCKENE, I.S., CHİRİBOGA, D.E., STANEK, E.J., HARMATZ, M.G., NİCOLOSİ, R., SAPERİA, G., et al, 2004, *Seasonal*

Variation İn Serum Cholesterol Levels:Treatment İmplications And Possible Mechanisms. Arch Intern Med, 164:863–70, 2004

ÖZDENGÜL, F., 1998,. *Akut Submaksimal Egzersizin İmmun Sisteme Etkileri*. S.Ü. Sağlık Bilimleri Enstitüsü Fizyoloji. ABD. Doktora Tezi.

ÖZER, K., 2001, *Fiziksel uygunluk*. Nobel Yayın Dağıtım, Ankara,

PATLAR, S., KESKİN, E ., 2007 *Düzenli Egzersiz Yapan Sporcularda Ve Sedanterlerde Gliserol Takviyesinin Bazı Hematolojik Parametreler Üzerine Etkisi* Egzersiz 2007 • Sayı 1 • No 1

PÉRUSSE, L., COLLİER, G., GAGNON, J., LEON, SA., RAO, C.D., SKİNNER, S.J., et al, 1997, *Acute and chronic effects of exercise on leptin levels in humans*. J Appl Physiol, 83(1): 5–10, 1997

RYAN, A.S., PRATLEY, R.E., GOLDBERG, A.P., ELAHİ, D., 1996, *Resistive Training İncreases İnsulin Action İn Postmenopausal Women*. J Gerontol Med Sci. 51A:M199-M205

S ROOHİ, BN., 2008 , *BMI, Fat Percentage And* VO_{2max} *İn College Female Staff. J Sports Med Phys Fitness*, 48(11): 211-216

SIRI, N.E., 1956. Advances in biological and medical physics. Lawrence JH, Tobias CA, editors. London and New York: AcademicPress

SHEPHARD, R., SHEK, P.,199. *Potential İmpact Of Physical Activity And Sport On The İmmune System* - A Brief Revieıo. Br. J Sports Med 28: 247 – 255.

ÜNAL, M., 1998. *Aerobik Ve Anaerobik Akut/Kronik Egzersizlerin İmmün Parametreler Üzerine Etkileri.* Fizyoloji Doktora Tezi, İstanbul Üniversitesi Sağlık Bilimleri Enstitüsü, İstanbul.

WADE, E., RAMEE, R., HUNT, M., WHİLE, J., 1987, *Hormonal And Renal Responses To Converting Enzyme Inhibition During Maximal Exercise*. J Appl Physiol, 63, 1796–800.

WAERN, M., FOSSUM, C., 1993, *Effects Of Acute Physical Stress On Immune Competence İn Pig*s. Am J. Vet Res 54: 596–601.

WEİGHT, L.W., ALEXANDER, D., JACOPS, P.,1991, *Strenuous Exercise: Analogous To The Acute Phase Response*? Clin Sci 1991;

WHO, I., 1999. *Obesity: Preventing And Managing The Global Epidemic: Report Of A WHO Consultation. WHO Technical Report Series;* 894. Geneva: The Office Of Publication, World Health Organisation, 1999.

WİLSON, D.J., FOSTER, D.W., KRONENBERG, M.H., LARSEN, P.R., 1998, *Williams Textbook Of Endocrinology 9th Edition,* WB.Saunders Company, Philadelphia, 1998.

YILMAZ, B.,1999, *Hormonlar Ve Üreme Fizyolojisi,* , 1.Basım, 247-371, Feryal Matbaa, Ankara.

ZORBA, E., BABAYİĞİT, G.İ., SAYGIN, Ö., İREZ, G., KARACABEY. K., 2004, *65–85 Yaş arasındaki yaşlılarda 10 haftalık antrenman programının bazı fiziksel uygunluk parametrelerine etkisinin araştırılması.* Fırat Üniversitesi Sağlık Bilimleri Dergisi, 18(2): 229–234

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THE EFFECTS OF 8-WEEK AEROBIC EXERCISES ON THE BLOOD LIPID AND BODY COMPOSITION OF THE OWERWEIGHT AND OBESE FEMALES

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ABSTRACT

Objective: The purpose of study was the determine the effects of 8 weeks aerobik exercise program on body composition and blood lipids of sedantery middle aged women.

Material and method: 29 obese (O) subjects whose mean age was 41.55 ± 6.72 years, mean height: 159,21 ± 7.18 cm, average body weight (BW) : 85.97 ± 9.60 kg, and 29 overweight (OW) subjects whose mean age was: 35.10 ± 9.11 years, mean height: 160,59 ± 5.20 cm and average body weight (BW) was : 68.55 ± 6.72 kg, total 58 individuals taking part in the step aerobic exercise program run by KOMEK(Konya Vocational Course) were included in the study In this research, 8 weekly period- aerobic exercise in 3 days of the week have been applied to people. Before and after the exercise protocol, the body fat percentage(BFP), the rate of the waist to the hip(WHR), elasticity(E)), blood lipid parameters (cholosterol, HDL-C,LDL-C,VDLD-C,TRİGLY) , systolic blood pressure (SBP),and diastolic blood pressure (DBP) blood pressure have been measured.

Result: In this study, it has been determined that there is significant difference ($p<0.05$) between the tests of BW, BFP, BMI, WHR, SBP and DBP given after 8-week aerobic-step exercise protocol in favor of the last test. We too have demonstrated in this study that exercises have affected positively BW, BFP, BMI and WHR compatible with other studies. We established in this study that HDL-K increased but triglyceride increased in the overweight and obese groups before and after exercises, and LDL-K decreased in the overweight group ($p<0.05$)

Discussion and conclusion: As a result, exercises cause favorable changes in lipids and lipoproteins. Furthermore, diet program in addition to exercise program will provide more prolific results with obese people. It has been proved with the obtained results that the negative effects of sedentary living on individuals are decreased with exercises.

KEY WORDS: Step-aerobic exercise, Antropometric Measurements, Obesity, Blood lipid Parameters.

INTRODUCTION

It is a well-known fact that blood parameters vary in accordance with the stress, duration and type of exercise. There can be changes in the blood values during and after the intensive exercise caused by the differences such as the state of individual training, environmental factors and nutrition (G.T.Sönmez, 2002). It has been stated in some studies that the physical and physiological features of the organism are improved as a result of training performed three days a week and lasted 20-60 minutes under maximal 60-90% rate (J.Smith, 1990, EL.Fox et all,1999).

However, there are controversies about the effects of regular exercises compared with the studies on biochemistry of blood. Beside the studies reporting that there have been positive developments in the biochemistry of blood as a result of acute exercise (A.Berg et al, 1983, B.Foger et al. 1994), there are also studies stating that there have been improvements as a result of not acute but long term exercises (M.Sucic and I.Oreskovic 1995, R.Yanagibori et al. 1993). Moreover, it has been determined with the studies that in order to find out the effects of regular exercises on the lipoproteins, at least 5-week regular exercise is required to have positive effects on the lipid metabolism (R.M.Şekeroglu et all, 1997), exercises have positive effects on all body regimes and prevent the occurrence of health problems (F.Turgay et all, 2002).

Physical inactivity is the most important cause of the development of obesity. The possibility of performing tasks with little energy in modern societies and spending more time in front of television and computer lead this unused energy to be accumulated as lipid (G.A. Bray,1989, H.L.Taras et all ,1989, M.S.Buchowski and M.Sun ,1996).

In addition to decreasing weight and blood pressure, exercise also increases HDL-K, and reduces triglycerides and insulin resistance. Exercises have an effect providing euphoria resulting from the secretion of endogen opioid. Although there has not been a precise consensus on the level of required exercise, moderate and regular exercise program is suggested as a part of healthy life not only for the atherosclerotic patients with high risk but for the healthy subjects. Prospective epidemiologic studies have strongly established that sedentary life style has increased the risk of coroner artery illness (R.S. Pfaffenbarger et all, 1993).

Exercise activities accelerate body metabolisms. 300-500 kilocalories can be spent with an hour walking. Besides diet, medicine and other complements, exercise must be advised. Plasma non-esterified lipid acids are burnt with very low stressed exercise (%25 VO2 max) (walking).as the exercise intensifies, plasma glucose and muscular glycogens are burnt. Triglycerides in the muscles are burnt with moderate exercises (%65 VO2 max).

As the level of total cholesterol and LDL-cholesterol rises, the risk of coronary artery disease increases. Every 1% decrease in the level of LDL-cholesterol lowers 2% the risk of the coronary artery disease occurrence. The accumulation of fat around abdomen, waist and hip increases blood lipids especially LDL/HDL cholesterol rate, blood pressure and triglycerides level, and thus increases the risk of cardiovascular disease (C.Maffeis, 2001, A.Sarria , 2001).

Life quality improves, energy level increases, hobbies develop, mobility boosts, relation with opposite sex improves, emotional state recovers and job performance gets better as result of long term effects of dieting in obesity.

The habit of regular exercise of normal and obese individuals protects them life long from chronic diseases and improves life quality.

MATERIAL

The choice of subjects:

29 obese (O) subjects whose mean age was 41.55 ± 6.72 years, mean height: 159,21 ± 7.18 cm, average body weight (BW) : 85.97 ± 9.60 kg, and 29 overweight (OW) subjects whose mean age was: 35.10 ± 9.11 years, mean height: 160,59 ± 5.20 cm and average body weight (BW) was : 68.55 ± 6.72 kg, total 58 individuals taking part in the step aerobic exercise program run by KOMEK (Konya Vocational Course) were included in the study.

They were classified according to their body mass index (BMI). In classification, the subjects with 25.0 – 29.9 BMI were regarded as overweight (OW) and with 30.0 – 39.9 as obese (O). The subjects were informed about the parameters and their written consents were obtained and then examined physically. The completely healthy individuals who had no diabetic, cardiac and chronic systemic and metabolism diseases, and the diseases affecting immune functions in their clinical examinations and history were included in the study. The subjects were asked to follow their usual normal nutrition habits and to avoid excessive physical activities during the study.

METOD

Exercise program and its severity:

We had the subjects do warm-up exercises for 10 minutes, active step aerobic exercises for 45 min. and finally stretching cooling exercises for 10 min. at the 60-70% severity of their target pulse rate three days a week for 8 weeks, and the rates before and after the exercises were recorded. The severity of the aerobic exercise was determined according to Karvonen protocol.

Pulse Rate (PR)= 60-70% PR(PR max-PR min)+PR

Maximal PR=220- age (K.Özer, 2006).

Measuring/measurement means:

Before the subjects started training, the initial tests and at the end of the training after 8 weeks the final tests of height(H), body weight(BW), systolic blood pressure (SBP), diastolic blood pressure (DBP), body fat percentage (BFP), waist and hip rate (WHR), elasticity (E) and body mass index(BMI) were obtained and recorded.

Anthropometric Measurements:

The body weights of the individuals included in the study were measured in kilogram (kg) with NAN scale in their casual home clothes with bare feet before the exercises began. Their heights were measured in meters with studio meter and recorded. Body mass index (BMI) was calculated with Weight / height² (kg/m^2) formula. The contour of the body was measured in cm. with a fiberglass tape measure which is 0.6cm wide, rigid but flexible. The steps taken during the measurements were mentioned below.

Waist circumference was measured horizontally from the narrowest point of the distance between ksifoid prominence and umbilicus, and hip circumference was measured from the trochanters horizontally as the widest diameter while the legs were 20-30cm apart. Moreover, the values of waist and hip circumferences were divided to each other and waist/hip rat was obtained. The thickness of skin pleat was measured from triceps, biceps, subscapular and suprailiac zones using Holtain T/W Skinfold Caliper. In order to measure the thickness of the skin pleat, the fold between thumb and index finger was separated from the muscular tissue removing the skin with its hypodermic fat tissues and slightly compressing it between the ends of caliper and the values on the dial was read and recorded.

Total Body Fat Percentage:

Body density was calculated using Durnin-Womersley formula with triceps, biceps, subscapular and suprailiac SF Total body fat percentage was calculated applying Siri equation to this body density.

Durnin-Womersley Formulas:

Female=1, 1581- (0,0720x (LOG (triceps, biceps, subscapular and suprailiac SF)))(J.V.Durnin and J. Womersley, 1974)

Siri equation:

Total Body Fat Percentage= (4.95/body density - 4.50) x 100 Siri (Siri, 1956)

Blood Pressures: the SBP and DBP of the subjects were taken in mmHg with stethoscope and sphygmomanometer (B.N.Roohi, 2008).

Sit and Reach Test was used to measure the elasticity of the individuals. The test was repeated twice and the highest score was recorded (K.Tamer, 2000).

Blood parameters: Total cholesterol, triglyceride, HDL cholesterol, LDL cholesterol were measured from the fasting blood samples. Laboratory tests were carried out using standard measurements techniques.

Statistic Analyzes: The arithmetic means and standard deviations of all statistical data in the study were calculated with SPSS 15.0 packet program. The comparison of test assessments of the subjects with each other before the training and after 8-week training was performed with Paired Samples t-test.

RESULTS

Table1: In-group comparison of the measurement values of body composition, blood pressure, elasticity of the overweight and obese individuals before and after 8-week regular exercises.

	Overweight group (N:29)				Obese group (N:29)			
	Mean	Std. Deviation	T	P	Mean	Std. Deviation	T	P
Age (year)	35.10	9.11			41.55	6.72		
Height(cm)	160.59	5.20			159.21	7.18		
BW (kg)	68.55	6.727	7.376	.000*	85.97	9.601	4.687	.000*
BW 2 (kg)	66.00	6.164			83.31	10.160		
BMI 1 (kg/m2)	26.57	2.257	7.502	.000*	33.99	3.888	4.506	.000*
BMI 2 (kg/m2)	25.58	2.027			32.92	3.960		
WHR 1(%)	,7919	,05723	2,092	,046*	,8411	,05645	1,047	,304
WHR2 (%)	,7744	,04781			,8316	,05206		
BFP1(%)	36.12	2.739	5.448	.000*	39.31	2.644	3.435	.002*
BFP 2 (%)	33.41	3.772			37.56	2.492		
Elasticity (cm)1	28.90	5.492	-2.727	.011*	27.62	6.925	-3.225	.003*
Elasticity(cm2	30.07	5.675			30.45	6.231		

When table 1 was examined; according to the initial and final test values; there was significant difference between the parameters of BW, BMI, BFP, WHR, E, SBP and DBP respectively in favor of the final tests (Table: 1P<0.05*)

Table 2: The comparison of in-group biochemical parameters before and after exercises

	Overweight group (N:29)				Obese group (N:29)			
	Mean	Std. Deviation	T	P	Mean	Std. Deviation	T	P
CHOL1 (mg/dL)	193.72	27.736	-2.328	.027*	187.45	29.810	1.224	.231
CHOL2 (mg/dL)	185.28	30.491			193.59	35.219		
TRIGLY 1(mg/dL)	88.86	39.324	-1.306	.202	127.48	66.585	-3.855	.001*
TRIGLY 2(mg/dL)	83.34	46.528			101.93	45.128		
VLDL -C1 (mg/dL)	17.87	8.455	-1.487	.148	26.74	12.300	-5.306	.000*
VDLD-C 2 (mg/dL)	16.59503	9.309			20.84	8.43		
HDL-C 1(mg/dL)	40.328	11.782	3.728	.001*	36.865	10.090	5.303	.000*
HDL-C 2 (mg/dL)	45.734	12.460			42.586	10.880		
LDL-C1(mg/dL)	134.648	20.487	-1.160	.256	125.783	22.820	1.761	.089
LDL-C 2 (mg/dL)	130.441	26.086			133.076	26.566		

When Table 2 was examined; the initial and final biochemical test values there was considerable difference in the final tests of cholesterol, HDL-C in group K, NTG-C, VDLD-C, HDL-C parameters in group O respectively (Table: 2 P<0.05*).

DISCUSSION AND CONCLUSİONS

Physical exercises performed regularly have effects on obesity, cardiovascular system, blood pressure, physical fitness, body fat rate and healthy life of the middle-aged individuals (D.E.Laaksonen et al, 2002; A.S.Ryan et al, 1996; I.S.Ockene et al. 2004;

G.Charach et al.2004). There is a strong negative correlation between coronary cardiac disease and the height of plasma HDL concentration. On the contrary, it is a known fact that there is a positive correlation between the high level of LDL and cholesterol concentration and cardiac disease (R.W.Grandyean et all, 1996, W.L. Haskell et all 1992).

It is alleged that regular exercise has positive effects on the lipid profile (A.T.Hostmark et al. 1992, B. Foger, et al 1994). However, there are controversial studies related with the exercise type and duration leading to changes in the lipid metabolism. Considering physical activities and exercise physiology are primarily intended for sportsmen, more detailed researches are required into the exercises for sedentary people. We planned this study for this intention.

B.N Roohi et al. (2008) found in a study carried out on 37 females that BFP was 28.68 ± 5.33 kg and BMI was 26.59 ± 4.02 kg. M.Egana and B.Done (2004) applied (n=7) treadmill, n=(8) elliptical and n=(7) stepper exercises on 24 females for 12 weeks and the groups were given BFP and BW pre tests before starting exercises and they found that the rate of the BFP in the last tests was significantly different in favor of the last tests. Özcan et al. (2004) found no statistically significant difference in the values of BFP, SBP, DBP and E of the sedentary males after 6-week aerobic exercises. F.F.Çolakoğlu and S.Karacan (2006) applied 30 min run-walk training program 3 days a week for 12 weeks and established that the results of BMI and BW in the first and last tests before and after 12 weeks were significantly different in favor of the last tests. However, there was no significant difference in SBP and DBP. Ü.Erbaş (2007) investigated the effects of regular aerobic exercise protocol on 54 middle aged sedentary females for 6 months. He gave total 3 tests; an initial test before training, a middle test 3 months later and a final test 6 months later. After the exercise protocol, it was determined in the initial, middle and final test values of SBP, DBP, BW, BFP, BMI that middle test results were considerably different those of initial test, and the results of the final test were significantly different from both fir and middle test. J.M Saavedra et al. (2007) applied water aerobics on healthy 43.1 ± 9.7 years old middle-aged females twice a week for 8 months. They established that the values of the last tests of BW and BFP after 8-month exercise were significantly different from the initial tests and positive in favor of the final tests. M.E.Kafkas et al.(2009) are of the opinion that12-week regular aerobic and stress exercises have positive effects on BW, BMI, BFP, WHR and blood pressure. Pressue et al. (1997) have found in their study carried out on 97 sedentary male-female subjects that regular aerobic exercises have positive effects on BMI and BFP.E. Zorba et al. (2000) established significant increase in the values of elasticity after the exercises performed 45 min 3 days a week for 8 weeks in the middle-aged sedentary females.

In this study, it has been determined that there is significant difference ($p<0.05$) between the tests of BW, BFP, BMI, WHR, SBP and DBP given after 8-week aerobic-step exercise protocol in favor of the last test. We too have demonstrated in this study that exercises have affected positively BW, BFP, BMI and WHR compatible with other studies.

There are plenty studies indicating that regular exercises increases HDL-C. M.R.Şekeroğlu et al. (1997) have observed decrease in the level of serum triglyceride and increase in HDL-C after 5-week exercise program. Haskel have found in his study that triglyceride level has decreased mean 18% and HDL-C has increased 16% in the individuals with hypercholesterol as a result of aerobic exercise. Still, there are studies alleging that triglyceride decreases with exercises (G.H.Hartung and S.J.Lawrence, 1993 M.Sucic and İ. Oreskovic, 1995). Besides, there are other studies maintaining that triglyceride does not change (O.O.Oyelola and, M.A. Rufai,, 1993).

A.Bedir et al.(1998) have found that young female doing sports have lower level of total cholesterol and higher HDL-C and LDL-C than sedentary young females. Yet, only HDL-C was significantly lower. Besides, there are some studies suggesting that HDL-C does not increase only as a result of exercises (A.K Gupta et al. 1993, O.O.Oyelola and, M.A. Rufai,, 1993).

There are also some studies claiming that LDL-K decreases with exercises (G.H.Hartung, et al. 1993, M.Sucic and I.Oreskovic, 1995). Besides, some studies allege that LDL-K does not change with exercises (F.Giada,et al. 1995, Ç.İşlegen,et al. 1988). We established in this study that HDL-K increased but triglyceride increased in the overweight and obese groups before and after exercises, and LDL-K decreased in the overweight group.

BFP is higher in obese people than in overweight people. Metabolism responds to exercises differently. In severe exercises (%85 VO2 max), fat burning lowers and glycogen burning increases. More energy is spent during the exercises in obese people than in normal people. They are obliged to do more mechanic work in order to overcome the friction between upper and lower extremities and body. As a matter of fact, it has been determined that net outputs of the exercises have decreased due to the size of the body mass (R .Marks and, JP. Allegrante, 2006, N. Özbey, 2002). It was observed in this study that cholesterol and LDL-K increased in the obese. However, cholesterol and LDL-K decreased in the overweight compatible with the literature.

Usually obesity is accompanied by hypertension, glucose tolerance, triglyceride, total cholesterol, LDL cholesterol and elevated VLDL-cholesterol, HDL-cholesterol decrease (Ç.Erol et al., 1999; WHO, 2000; A.B Bowman and M.R.Russell, 2001, A.Onat, 2003). As it is known, circulation

system diseases and the development of complications are caused by the level of blood lipid levels. The main function of LDL-K is to transfer cholesterol from liver to the other tissues. However the task of HDL-K is to carry cholesterol from tissues to blood.

In other words, while HDL-K has protective effects against the development of atherosclerosis and circulation system diseases, LDL-K has the effects of making it easy (N.H.Gisberg, 1994). It is considered that lipoprotein lipase activity, which is responsible for catabolism of triglycerides and has positive correlation with HDL-K, increases with exercises (F.Giada, et al. 1988).

As a result, exercises cause favorable changes in lipids and lipoproteins. Furthermore, diet program in addition to exercise program will provide more prolific results with obese people. Because surplus weight brings about extra exercise load and this normal exercise for overweight people turns out to be strenuous exercise and thus, metabolism responds this severe exercise reverse reaction. Consequently, while benefit is expected from the exercises, severe exercises pose risk for obese people. Exercise program accompanied with diet makes the individuals feel psychologically good, healthy and safe enabling them to escape from atherosclerotic risk factors of obesity. It has been proved with the obtained results that the negative effects of sedentary living on individuals are decreased with exercises.

REFERENCES

BEDİR, A., ADAM, B., IMAMOGLU, O., KURU, Ö., 1998, *The Effect of Exercise Traning On Lipid Profile in Turkish Young Adults,* The New Sports of Medicine, Volume 15,Number1;14

BERG, A., JOHN, J., BAUMSTALK, M., 1983, *Change on HDL subfractions after a single extended episode of physicalexercise*.Atherosclerosis1; 47:231-40.

FOGER, B., WOHLFARTER, T., RISTCH, A., LECHLEITNER, M., MILLER, CH., PATSCH, JR., 1994 *Kinetics of lipids, apolipoproteins, and cholesterol ester transfer protein in plasma after a bicyle marathon*. Metabolism ;43:633-9.

BOWMAN, A.B., RUSSELL, M.R., 2001, *Present Knowledge in Nutrition. Eighth edition,* ILSI Press, Washington DC.

BRAY, GA., 1989 *Classification and evaluation of the obesities.* Med Clin North Am; 73:161-184

BUCHOWSKİ, MS., SUN, M., 1996, Energy expenditure, television viewing and obesity. Int J Obes; 20:236-244.

CHARACH, G., RABİNOVİCH, PD., WEİNTRAUB, M, 2004, Seasonal changes in blood pressure and frequency of related complications in elderly Israeli patients with essential hypertension. Gerontology, 50:315-21

ÇOLAKOĞLU, FF., KARACAN, S., 2006, Genç bayanlar ile orta yaş bayanlarda aerobik egzersizin bazı fizyolojik parametrelere etkisi. Kastamonu Eğitim Dergisi, 14(1): 277–284,

DURNİN, JV., WOMERSLY, J.,1974, *Body Fat Assesed From Total Body Density And İts Estimasion From Skinfold Tickness:* Measurements On 481 Men And Women Aded From 16 To 72 Years. Br J Nutr 1974;32:77-97.

EGANA, M., DONE B., 2004, *Physiological changes following a 12 week gym based stair-climbing, elliptical trainer and treadmill running program in female*. J Sports Med Phys Fitness, 44: 141–146,

EROL, Ç., and ARK., 1999, Türk Kardiyoloji Derneği Koroner Arter Hastalığına Yaklaşım Ve Tedavi Kılavuzu, İstanbul.

ERBAŞ, Ü., 2007, *Orta yaş obez bayanlara yönelik kalistenik egzersizlerin fiziksel ve fizyolojik etkileri*, Yüksek Lisans Tezi, Ankara: Gazi Üniversitesi, Sağlık Bilimleri Enstitüsü, Beden Eğitimi ve Spor Anabilim Dalı, 2007

FOGER, B., WOHLFARTER, T., RİSTCH, A., LECHLEİTNER, M., MİLLER, CH., PATSCH, JR, 1994 *Kineticts Of Lipids,Apolipoproteins, And Cholesterol Ester Transfer Protein İn Plasma After A Bicyle Marathon Metabolism*;43: 633-9

FOX, E L., BOWERS, R, W., FOSS, M L., 1999, *Beden Eğitimi ve Sporun Fizyolojik Temelleri* (Çeviri: Cerit, M.), Bağırgan Yayınevi, Ankara, ss 241, 288, 291

GİADA, F., BALDO, G., BALOCHİ, MR., ZULİANİ, G, 1988, *Heparin Released Plasma Lipase Activites Lipoprotein And Apoprotein Levels İn Young Adult Cyclist And Sedantery Men* .Int J Sport Med; 9:270-4

GİADA, F., VİGNA, G.B., VİTALE, E., BALDO-ENZİ. G., BERTAGLİA, M., CRECCA, R., 1995, *Effec Of Age Onthe Responceof Blood Lipids, Body Composition, Aerobic Pover To Physical Condition And Deconditioning*. Metabolsm;44:161-5

GİSBERG, NH., 1994, *Lipoprotein metabolism and its relatinshiü to atherosclerosis*. Med clin namerica; 78; 1-20

GRANDYEAN, P.W., ODA, GL., CROUSA, S.F., BROWN, J.A., GREEN, J.S., 1996 , *Lipid And Lipoprotein Changes in Women Following 6 Months Of Exercises Training in Worksite Fitness Program*. The Journal Of Sports Medicine And Physical Fitness 36: 54 – 59

GUPTA, A.K., ,ROSS, E.A.., MYERS J.N, KASHYAP M.L, 1993 *İncreased Reverse Cholesterol Transport İn Atletes Metabolism* ;42: 684-90

HARTUNG, G.H., LAWRENCE S.J., 1993, *Reeves Rs ,Foreyt Jp Effec Of Alcohol And Exercise On Postprandial Lipemia And Triglyceride Clearence İn Men Atherosclerosis*;100:33-40

HASKEL, WL., LEON, AS., CASPERSON, CO., FROELİCHER, VF., HAZBERG, JM.,1992, *Harlow et all Cardiovascular Benefits And Assesment Of Physical Activity And Physical Fitness in Adults.* Medicine And Science in Sports And Exercise 24(6) , 201 – 20

HOSTMARK, A.T, BERG, J., BRUDAL, S., BERGE, SR., KİERULF, P., BİJERLEDAL, K., 1992, *Coronary Risk Factors İn Middle-Aged Men As Relted To Smoking, Coffe İntake And Physcal Activity* . Scan J Soc Med;20 :196-203

İŞLEGEN, Ç., ÇOKİVECAN, F.,ONAT,T., 1988, *14 Haftalık Aerobik Egzersizin Plazma Lipitleri,Aerobik Kapasite Ve Tansiyon Üzerine Etkileri* Spor Hekimliği Dergisi;23;95-102

KAFKAS, M, E., AÇAK, M., KARADEMİR, T., 2009, *12 Haftalık Düzenli Aerobik Ve Direnç Egzersizlerinin Orta Yaş Erkek Ve Kadınların Vücut Kompozisyonları Üzerine Etkisi* , Niğde Üniversitesi Beden Eğitimi Ve Spor Bilimleri Dergisi Cilt 3, Sayı 3

LAAKSONEN, DE., LAKA, HM., SALONEN, JT., NİSKANEN, LK., RAURAMAM, R., LAKKA, TA., 2002, *Low levels of leisure-time physical activity and cardiorespiratory fitness predict developmen of the metabolic syndrome*, Diabetes Care. 25:1612-1618,

MAFFEİS, C., 2001, *Waist circumference and cardiovascular risk faktors in prepubertal children*. Obes Res. 9:3: 179-187.

MARKS, R., ALLEGRANTE, J.P., 2002, *Body Mass Indices in Hip Osteoarthritis*. Arthritis 4(2): 112-6.

OCKENE, IS., CHİRİBOGA, D.E., STANEK, E.J., HARMATZ, M.G., NİCOLOSİ, R., SAPERİA, G., ET AL. , 2004 *Seasonal variation in serum cholesterol levels:Treatment implications and possible mechanisms.* ArchIntern Med, 164:863-70

ONAT, A., 2003, *Türkiye'de obezitenin kardiyovaskuler hastalıklara etkisi.* Türk Kardiyoloji Derneği Arşivi. 21:5:279-289.

OYELOLA, O.O., RUFAİ, M.A., 1993, *Plasma Lipid Liporotein And Apolipoprotein Profiles İn Nigerian University Atletes And Nonatletes* Br J Sports Med ;27 :271-4

ÖZBEY, N., 2002 *Egzersiz ve obezite*. In: Bozbora A, editör. Obezite ve tedavisi. Ðstanbul: Nobel Tıp Kitabevleri;. p. 177-83.

ÖZER, K., 2001,*Fiziksel uygunluk*. Nobel Yayın Dağıtım, Ankara,

PFAFFENBARGER, R.S., J.R., HYDE, R.T., WİNG A.L., et al. 1993, *The association of changes in physical activity level and other lifestyle characteristics with mortality among men*. NEJM; 328:538-45.

PÉRUSSE, L., COLLİER, G., GAGNON, J., LEON, SA., RAO, C.D., SKİNNER, SJ., et. al, 1997, *Acute and chronic effects of exercise on leptin levels in humans*. J Appl Physiol, 83(1): 5–10, 1997

ROOHİ, BN., 2008, *BMI, Fat Percentage and* VO_{2max} *İn College Female Staff. J Sports* Med Phys Fitness, 48(11): 211-216

RYAN, AS., PRATLEY, RE., GOLDBERG, AP., ELAHİ D., 1996 , *Resistive training increases insulin action in postmenopausal women.* J Gerontol Med Sci. 51A:M199-M205,

SARRİA, A., 2001, *Body Mass İndex, Triceps, Skinfold And Waist Circumference İn Screening For Adiposity İn Male Children And Adolescents*. Acta. Pediatr. 90:4: 387-392.

SAAVEDRA, J.M., D.E, LA., CRUZ,E., ESCALANTE, Y., RODRİGUEZ, A.F.,2007 *Influence of a medium-impact aquaerobic program on health-related quality of life and fitness level in healty adult females*. J Sports Med Phys Fitness, 47(10): 468–474

ŞEKEROĞLU, M.R., ASLAN, R., TARAKÇIOĞLU, M., KARA, M., TOPAL, S. 1997, *Sedanterlerde Akut Ve Programlı Egzersizin Serum Apolipoproteinleri Ve Lipidler Üzerine Etkileri*, Ege Üniversitesi Spor Hekimliği Dergisi 32(3) : 130.

ŞEKEROGLU, R.M., ASLAN, R., TARAKÇIOGLU, M., KARA, M., 1997, *Sedanter Erkeklerd eakut Ve Programlı Egzersizin Serum Apolipoproteinleri Ve Lipitleri Üzerine Etkileri* Genel Tıp Dergisi;7(1):5-8

SIRI, N.E., 1956, *Advances in biological and medical physics.* Lawrence JH, Tobias CA, editors. London and New York: Academic Press; 1956.

SUCIC, M., ORESKOVI, C., 1995, I. *Effect of kinesiologic recretion on plasma lipoproteins and apolipoproteins in fertile women.* Metabolism ;44:701-4.

TAMER, K., 2000, Sporda *Fiziksel Fizyolojik Performansın Ölçülmesi Ve*

Değerlendirilmesi. Bağırgan Yayımevi, S.140, Ankara

TARAS H.L., SALLİS JF., PATTERSON TL., ET AL. 1989, *Television's İnfluence On Children's Diet And Physical Activity*. J Devel Behav Pediatr; 10:176-180.

TURGAY, F., KARAMIZRAK, S.O., İŞLEĞEN, Ç., SESSİZ, H., ACARBAY, Ş., 2002, *Aerobik Ve Anaerobik Eşik Hızlarında Yapılan İki Değişik Egzersizin Kan Lipid Ve Lipoproteinleri Üzerine Etkisi,* Ege Üniversitesi Spor Hekimliği Dergisi 37 (1) : 7-8.

WHO, I. 2000, *Obesity: Preventing And Managing The Global Epidemic*. WHO Technical Report Series:894, Ceneva.

YANAGIBORI, R., KAWAKUBO, K., GURJI, A., AOKI, K., MIYOSHITA, M.,1993, *Effects of 12 week-exercise walking on serum lipids, lipoproteins and apolipoproteins in middle aged women: does menopause status influence training effects*. Nippon Koshu Eisei Zasshi 1993; 40:459-67.

SÖNMEZ, G.T., 2002, *Egzersiz Ve Spor Fizyolojisi*, Ata Ofset Matba, Bolu Ss 37, 57, 75.

SMİTH, N.J., 1990, *The Recommended Quantitiy And Quality Of Exercise For Developing And Maintaining Cardiorespiratory And Muscular Fitness İn Healthy Adults*. American College Of Sports Medicine (Acsm), In: Medicine And Science Sports And Exercise, , Pp 22. 265.

ZORBA, E., BABAYİĞİT, G.İ., SAYGIN, Ö., İREZ, G., KARACABEY. K., 2004, *65–85 Yaş arasındaki yaşlılarda 10 haftalık antrenman programının bazı fiziksel uygunluk parametrelerine etkisinin araştırılması.* Fırat Üniversitesi Sağlık Bilimleri Dergisi, 18(2): 229-234

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THE EFFECT OF 8 WEEKS STEP-AEROBİC EXERCİSE PROGRAM ON BODY COMPOSİTİON AND SLEEP QUALİTY OF SEDANTERY WOMEN

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ABSTRACT

Objective: The purpose of this study was to determine the effects of 8 weeks step-aerobic exercise program on body composition and sleep quality of sedantery women.

Material: 70 women volunters (age 35,1 ± 9,11, weight 68,55 ±6,72, height 160,59 ± 5,20) with stable general health were included into this study. Their sleep qualities were assessed by Pitsburg Sleep Quality Index (PSQI). Also to understand the body composition of the women; flexibility, body fat percentage, body weight and body height were assessed. As statistical anlysis of datas were done by t test ($p < 0.05$) for understand the differences between test before exercise (TBE) and test after exercise (TAE) on body composition and quality of sleep areas.

Method: During 8 weeks , women participated in a step-aerobic exercise program during 30 minutes and 3 times per week. Before the exercise program and at the end of the program measurements of flexibility, body fat percentage, body weight, body height and the ındex of quality of sleep were assessed.

Conclusion: According to the analysis, the general results of the present study indicated that there was a significant relationship between the body composition and quality of life areas in test before exercise and test after exercise, especially body fat percentage.

KEY WORDS: Sedantery Women, Step-Aerobic Exercise Program, Body Composition, Quality Of Sleep.

INTRODUCTIONS

Physical exercise is commonly accepted to be an important aid in the promotion of sleep (JA Horne 1981, SD, Youngstedt 2005) Epidemiological studies have generally shown positive associations between physical exercise and sleep (MT Mello, et all 2000, I, Vuori et all, 1988). Additionally, exercise is recommended by the American Sleep Disorders Association (American Sleep Disorders 1991) as a non-pharmacological intervention to improve sleep.

Investigations into the determinants of poor sleep quality are important for two major reasons. First, complaints about sleep quality are common and second, poor sleep quality can be an important symptom of many medical disorders.

Sleep problems usually take one or more of the following forms: delay of sleep onset, difficulty staying asleep, or awakening too early. Inadequate quantity and quality of sleep have long been observed to be concomitants of a variety of clinical medical and psychiatric conditions. Poor sleep is prospectively associated with an increased risk of myocardial infarction, particularly when combined with increasing resting heart rate (P Nilson 2001)

Poor sleep is also prospectively related to fatal accidents at work and accident risk is considerably increased in relation to irregular work hours (T Akerstedt 2002). Good sleep quality has been associated with better physical health (J Barton et all, 1995, DS Lewin and RE Dahl 1999) and greater psychological well being (JL Shaver and VM Paulsen 1993 NG Bliwise1992) Therefore, factors that affect sleep quality could also influence the general well being of individuals.

There is growing scientific evidence that regular exercise will help you sleep better. But emphasize that a good night's sleep is linked to many other factors to which you should pay attention. The National Sleep Foundation reports that 74% of adults in the United States experience a sleeping problem a few nights a week or more, 39% get less than 7 hours of sleep each weeknight, and 37% are so sleepy during the day that it interferes with daily activities (DM. David 2005)

According to a report issued by the National Commission on Sleep Disorders Research, 30% to 40% of people in the United States have insomnia within any given year, defined by the National Institutes of Health as ''an experience of inadequate or poor quality sleep'' (National Center on Sleep Disorder 1998)

MATERIAL

The choice of subjects

70 sedantery women whose mean age was: 35.10 ± 9.11 years, mean height: 160,59 ± 5.20 cm and average body weight (BW) was : 68.55 ± 6.72 kg, taking part in the step aerobic exercise program run by KOMEK(Konya Vocational Course) were included in the study.

The subjects were informed about the parameters and their written consents were obtained and then examined physically. The completely healthy individuals who had no diabetic, cardiac and chronic systemic and metabolism diseases, and the diseases affecting immune functions in their clinical examinations and history were included in the study. The subjects were asked to follow their usual normal nutrition habits and to avoid excessive physical activities during the study.

METHOD

We had the subjects do warm-up exercises for 10 minutes, active step aerobic exercises for 45 min. and finally stretching cooling exercises for 10 min. at the 60-70% severity of their target pulse rate three days a week for 8 weeks, and the rates before and after the exercises were recorded. The severity of the aerobic exercise was determined according to Karvonen protocol.

Pulse Rate (PR)= 60-70% PR(PR max-PR min)+PR

Maximal PR=220- age (K.Özer,2006).

Measuring/measurement means:

Before the subjects started training, the initial tests and at the end of the training after 8 weeks the final tests of height(H), body weight(BW), systolic blood pressure (SBP), diastolic blood pressure (DBP), body fat percentage (BFP), waist and hip rate (WHR), elasticity (E), body mass index (BMI) and Pitsburg Sleep Quality Index (PSQI) Turkish version were obtained and recorded.

Anthropometric Measurements:

The body weights of the individuals included in the study were measured in kilogram (kg) with NAN scale in their casual home clothes with bare feet before the exercises began. Their heights were measured in meters with studio meter and recorded. Body mass index (BMI) was calculated with Weight / height² (kg/m^2) formula. The contour of the body was measured in cm. with a fiberglass tape measure which is 0.6cm wide, rigid but flexible. The steps taken during the measurements were mentioned below.

Waist circumference was measured horizontally from the narrowest point of the distance between ksifoid prominence and umbilicus, and hip circumference was measured from the trochanters horizontally as the widest diameter while the legs were 20-30cm apart. Moreover, the values of waist and hip circumferences were divided to each other and waist/hip rat was obtained. The thickness of skin pleat was measured from triceps, biceps, subscapular and suprailiac zones using Holtain T/W Skinfold Caliper. In order to measure the thickness of the skin pleat, the fold between thumb and index finger was separated from the muscular tissue removing the skin with its hypodermic fat tissues and slightly compressing it between the ends of caliper and the values on the dial was read and recorded.

Total Body Fat Percentage:

Body density was calculated using Durnin-Womersley formula with triceps, biceps, subscapular and suprailiac SF Total body fat percentage was calculated applying Siri equation to this body density.

Durnin-Womersley Formulas:

Female=1,1581- (0,0720x(LOG (triceps, biceps, subscapular and suprailiac SF) (J.V.Durnin and J. Womersley, 1974)

Total Body Fat Percentage= (4.95/body density - 4.50) x 100 Siri (Siri, 1956)

Blood Pressures: the SBP and DBP of the subjects were taken in mmHg with stethoscope and sphygmomanometer (B.N.Roohi, 2008).

Sit and Reach Test was used to measure the elasticity of the individuals. The test was repeated twice and the highest score was recorded (K.Tamer, 2000).

Measuring the quality of life: Pitsburg Sleep Quality Index (PSQI) Turkish version was used to measure the sleep quality of the individuals. The test was used before and at the end of 8 weeks.

STATISTIC ANALYZES:

The arithmetic means and standard deviations of all statistical data in the study were calculated with SPSS 15.0 packet program. The comparison of test assessments of the subjects with each other before the training and after 8-week training was performed with Paired Samples t-test.

RESULTS

Table 1:

	Mean	Std. Deviation	T	P
Age (year)	**35.10**	**9.11**		
Height(cm)	**160.59**	**5.20**		
BW(kğ)1	**68.55**	**6.727**	**7.376**	**.000***
BW 2	**66.00**	**6.164**		
BMI 1 (kg/m2)	**26.57**	**2.257**	**7.502**	**.000***
BMI 2 (kg/m2)	**25.58**	**2.027**		
WHR 1(%)	**,7919**	**,05723**	**2,092**	**,046***
WHR2 (%)	**,7744**	**,04781**		
BFP1(%)	**36.12**	**2.739**	**5.448**	**.000***
BFP 2 (%)	**33.41**	**3.772**		
Elasticity (cm)1	**28.90**	**5.492**	**-2.727**	**.011***
Elasticity(cm2	**30.07**	**5.675**		

In Table 1, according to the values of first and last tests of the subjects, there was significant difference in the parameters of BW, BMI, WHR, BFP, E, respectively in favor of the last tests (Table: 1 P<0.05*)

Table2:

Pitsburg Sleep Quality Index (PSQI)	Mean	Std. Deviation	T	P
Subjective sleep quality 1	1.39	0.84	4.543	.000*
Subjective sleep quality 2	0.94	0.92		
Sleep latency, min 1	39.65	28.45	9.247	.127
Sleep latency, min 2	38.48	31.38		
Sleep duration, hr 1	6.58	1.27	5.368	.215
Sleep duration, hr 2	6.51	1.41		
Habitual sleep efficiency 1	1.11	1.22	1.268	.728
Habitual sleep efficiency 2	1.24	1.31		
Sleep disturbances 1	1.37	0.66	1.357	.814
Sleep disturbances 2	1.36	0.61		
Daytime dysfunction 1	1.09	0.69	2.014	.035*
Daytime dysfunction 2	1.42	0.72		
Use of sleep medication 1	0.49	0.92	0.728	.185
Use of sleep medication 2	0.48	0.83		
Global score (range 0–21) 1	13.32	2.32	0.516	.020*
Global score (range 0–21) 2	14.48	2.66		

In Table 2, according to the values of first and last tests of the subjects, there was significant difference in the parameters of SSQ, SL, SD, HSE, DD, USM, GS respectively in favor of the last tests (Table: 2 P<0.05*)

DISCUSSION

Scientists have shown that people who exercise regularly do indeed spend more time in slow wave sleep (K.A Kubitz et all, 1996, S. Tworoger et all, 2003). In a study conducted at Stanford University, physically inactive older adults were assigned to exercise or nonexercise groups for 16 weeks (A. King et all, 1997) Subjects in the exercise group engaged in low-impact aerobics and brisk walking for 30 to 40 minutes, 4 days per week. Exercise training led to improved sleep quality, longer sleep, and a shorter time to fall asleep. A year-long study of postmenopausal women showed that those exercising moderately in the morning for 3 to 4 hours per week had less trouble falling asleep compared with those exercising less (S. Tworoger et all, 2003).

Poor sleep quality is a common and distressing problem for cancer patients. Patients with cancer often report that their sleep is disturbed during the stressful periods associated with diagnosis, treatment side effects, and physical discomfort (C.A, Espie, et all, 2008).

Such sleep disturbance may be related to psychiatric disorders such as depression and anxiety (M.A Andrykowski, et all, 1998, R.C, Wang et all, 2007); however, regardless of cause, sleep disturbance is often unrecognized or poorly managed (M.J Sateia and P..D Nowell 2004, J, Savard and C.M, Morin 2001).

Exercise as an intervention has been suggested as having the potential to improve sleep quality (D.L, Sherrill, et all, 1998). In large surveys, up to 80% of people spontaneously report exercise as a factor that promotes sleep quality (C.M Shapiro and D, Bachmayer ., 1988).

In a randomized controlled trial, Singh et al. tested the effect of a weight training program on sleep for depressed elders. The study found that weight lifting was effective in improving subjective sleep quality, depression, strength, and quality of life, without significantly changing activity levels. King et al. explored the effects of moderate-intensity exercise training on sleep quality among healthy older adults and found that exercise training improved sleep quality.

A recent study by Yeh et al. examined the effects of a Tai Chi exercise program on sleep in patients with chronic heart failure and found that Tai Chi exercise enhanced sleep stability. However, in another study, Tworoger et al. found little effect from aerobic exercise on sleep outcomes. Exercise is widely recommended as an onpharmacological intervention to improve sleep (DL, Sherrill et all, 1998) and depression (DA Lawlor and SW Hopker 2001).

A Review of the literature on experimental evidence for whether or not exercise promotes sleep (HS, Driver and SR Taylor 2000) concluded that overall the effects were modest.

However, the studies included in the review employed small sample sizes and primarily recruited good sleepers, limitations that make the clinical relevance of these findings unclear. Although exercise has been consistently associated with better sleep in epidemiologic studies, there are a number of limitations and potential confounding factors in the literature (SD Youngstedt and CE Kline 2006).

Many of the epidemiologic studies relied on measures of exercise and sleep with unknown validity. There are no prospective epidemiologic studies of exercise and sleep.

So yes, exercise should help you sleep better. There is some evidence, however, that exercising and sweating close to bed time can have an adverse effect on sleep quality for both fit and sedentary subjects (National Sleep Foundation 2004, A. King et all, 1997, S. Tworoger et all, 2003).

REFERENCES

AMERİCAN SLEEP DİSORDERS ASSOCİATİON., 1991, *The international classification of sleep disorders - diagnostic and coding manual.* Kansas: DCSC; 234 p.

ANDRYKOWSKİ, M.A., CURRAN, SL., LİGHTNER, R., 1998, *Off-treatment fatigue in breast cancer survivors: a controlled comparison.* J Behav Med 21:1–18

DAVİD CM., 2005, *Can Exercise Help Me Sleep Beter.* ACSM'S Health & Fitnes Journal, 9(3): 6-7

DE MELLO, M.T., FERNANDEZ, A.C., TUFİK, S., 2000, *Levantamento epidemiológico da prática de atividade física na cidade de São Paulo.* Rev Bras Med Esp;6:119-24.

LEWİN, D.S., DAHL, R.E., 1999, *Importance of sleep in the management of pediatric pain.* Dev Behav Pediatr 20, 244–252

DURNİN, J.V., WOMERSLY, J., 1974, *Body Fat Assesed From Total Body Density And İts Estimasion From Skinfold Tickness:* Measurements On 481 Men And Women Aded From 16 To 72 Years. Br J Nutr 1974;32.77–97.

ESPİE, C.A., FLEMİNG, L., CASSİDY, J., et all, 2008, *Randomized controlled clinical effectiveness trial of cognitive behavior therapy compared with treatment as usual for persistent insomnia in patients with cancer.* J Clin Oncol 26,4651–4658

HORNE, J.A.,1981, *The effects of exercise upon sleep: a critical review.* Biol Psych;12.241–90.

BARTON, J., SPELTEN, E., TOTTERDELL, P., SMİTH, L., 1995, *Is there an optimum number of night shifts? Relationship between sleep, health and well-being.* Work Stress 9,109–123

SHAVER, J.L., PAULSEN, V.M., 1993, *Sleep, psychological distress, and somatic symptoms in perimenopausal women.* Fam Pract Res J 13, 373–384

KİNG, A.C., OMAN, R.F., BRASSİNGTON, G.S., BLİWİSE, D.L., HASKELL, W.L., 1997, *Moderate-intensity exercise and self-rated quality of sleep in older adults.* A randomized controlled trial. JAMA 277,32–37

KİNG, A. C., OMAN, R.F., BRASSİNGTON, G.S., et al, 1997, *Moderate-intensity exercise and self related quality of sleep in older adults.* Journal of the American Medical Association 277,32–37.

KUBİTZ, K.A., LANDERS, D.M., PETRUZZELLO, S.J., HAN, M., 1996, *The effects of acute andchronic exercise on sleep: a meta-analytic review.* Sports Medicine 21.277–291.

LAWLOR, D.A., HOPKER, S.W., 2001, *The effectiveness of exercise as an intervention in the management of depression: systematic review and meta-regression analysis of randomized controlled trials.* BMJ 322:763–767 39. Driver HS, Taylor SR (2000) Exercise and sleep. Sleep Med Rev 4:387–402

NATİONAL CENTER ON SLEEP DİSORDERS RESEARCH AND OFFİCE OF PREVENTİON, 1998, *Education, and Control, National Institutes of Health. Insomnia: Assessment and Management in Primary Care.* Bethesda, MD: National Institutes of Health, NIH Publication No. 98–4088,

BLİWİSE, N.G., 1992, *Factors related to sleep quality in healthy elderly women.* Psychol Aging 7, 83–88

ÖZER, K.,2001,*Fiziksel uygunluk.* Nobel Yayın Dağıtım, Ankara,

NİLSSON, J.A., NİLSSON, B., HEDBLAD, G., BERGLUND, P., 2001 *Sleep disturbances in association with elevated pulse rate for the prediction of mortality—consequences of mental strain.* J Inter Med 250, 521–529.,

ROOHİ, BN., 2008 , *BMI, Fat Percentage And* VO_{2max} *İn College Female Staff. J Sports* Med Phys Fitness, 48(11): 211-216

SATEİA, M.J., NOWELL, P.D., 2004, *Insomnia.* Lancet 364:1959–1973

SAVARD, J., MORİN, C.M., 2001, *Insomnia in the context of cancer: a review of a neglected problem.* J Clin Oncol 19.895–908

SHAPİRO, C.M., BACHMAYER, D., 1988, *Epidemiological aspects of sleep in general public and hospital outpatient samples.* Acta Physiol Scand Suppl 574,41–43

SHERRİLL, D.L., KOTCHOU, K., QUAN, S.F., 1998, *Association of physical activity and human sleep disorders.* Arch Intern Med 158:1894–1898

SİNGH, N.A., CLEMENTS, K.M., FİATARONE, M.A., 1997, *A randomized controlled trial of the effect of exercise on sleep.* Sleep 20.95–101

TAKERSTEDT, P., FREDLUND, M., GİLLBERG, B., JANSSON, 2002, *A prospective study of fatal occupational accidentsrelationship to sleeping difficulties and occupational factors.* J Sleep Res 11, 69–71

TAMER, K., 2000, Sporda *Fiziksel Fizyolojik Performansın Ölçülmesi Ve Değerlendirilmesi*. Bağırgan Yayımevi, S.140, Ankara

TWOROGER, S.S., YASUİ, Y., VİTİELLO, M.V., et al, 2003, *Effects of a yearlong moderate-intensity exercise and a stretching intervention on sleep quality in postmenopausal women.* Sleep 26.830–836

VUORİ, I., URPONEN, H., HASAN, J., PARTİNEN, M., 1988, *Epidemiology of exercise effects on sleep.* Acta Physiol Scand Suppl 574:3–7

WANG, R.C., WANG, S.J., CHANG, Y.C., LİN, C.C., 2007, *Mood state and quality of sleep in cancer pain patients: a comparison to chronic daily headache.* J Pain Symptom Manage 33.32–39

YEH, G.Y., MİETUS, J.E., PENG, C.K., et al, 2008, *Enhancement of sleep stability with Tai Chi exercise in chronic heart failure: preliminary findings using an ECG-based spectrogram method.* Sleep Med 9.527–536

YOUNGSTEDT, SD., KLİNE, C.E., 2006, *Epidemiology of exercise and sleep.* Sleep Biol Rhythms 4.215–221

YOUNGSTEDT, SD., 2005, *Effects of exercise on sleep.* Clin Sports Med. 2005;24(2):355–65.

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AN INVESTIGATION OF THE EFFECTS OF PROLONGED DANCING XERCISES ON SOME HAEMATOLOGICAL PARAMETERS

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ABSTRACT

The Objectives: The present study was to designed to examine the effects of exhausting dancing exercises on some haematological parameters.

The Methods: Male [n=8, age 21.38 ± 2.32 yr, body mass 66 ± 3.81 kg, height 174 ± 2.67 cm] and female [n=8, age 20.88 ± 2.42 yr, body mass 52 ± 4.40 kg, height 163.9 ± 3.98 cm] folk dancers performed prolonged dancing exercises during 3 hours until exhausting; their heart beats were 150-170 beat/minute. Blood samples were taken before and immediately after exercise and analyzed for haematological parameters. Mann-Whitney U tests used for analyzes between males and females, and Wilcoxon's signed-rank test used for differences within groups.

The Results: After acute exhausting dancing exercise a leukocytosis was found with a significant increase in neutrophil , lymphocyte, monocyte and platelet counts both in men and women ($p<0.01$). When comparing to the men, women had lower RBC ($p<0.01$), HGB($p<0.001$), HCT($p<0.001$), and NEUT($p<0.05$) levels before and immediately after exercise. But after exercise MCH ($p<0.05$) and WBC ($p<0.01$) levels also showed significant differences between men and women.

Conclusions: Long duration exercise induces oxidative stress, tissue damage and inflammation. This might reflect enhanced immune system activities, such as; alteration in the circulation quantity of white blood cells and subsets. Also the inflammatory effect of exercise in tissues may be another stimulant. The present study demonstrated that exercise leads an increase in white blood cell accompanied by an increase in platelet counts.

KEY WORDS: Prolonged Exercise, Immune System, Leukocyte, Neutrophil, Platelet, Exhaustion

INTRODUCTION

Athletes frequently encounter muscle soreness and damage after long duration or exhausting exercise (D. Thompson, L. Mcnaughton, 2001; F. H. Fu, and D. A. Stone, 2001). Structural damage to the contractile elements of the muscle fibers occurs after high-intensity or prolonged exercise in which eccentric muscle contractions are used. Increases in muscle damage markers both within the injured muscle and in the blood can act as attractants, initiating the inflammatory process (J. H. Wilmore, D. I. Costill, and W. L. Kenney, 2008; C.M. Deaton, and D.J. Marlin, 2003; P.M. Clarkson, M.J. Hubal, 2002; H. Kuipers, 1994). This inflammation-like immune response is necessary for muscular regeneration and adaptation to physical exercise (Z. Radak, H.Y. Chung, E. Koltai, A. W. Taylor, S. Goto, 2008; P. Tauler, A. Aguilo, N. Cases et al, 2002).

Immune response to exercise depends on the intensity and duration of the exercise. Exercise causes an increase in the muscle and plasma levels of cytokines involved in acute inflammatory responses during and after exercise (J.H. Wilmore, D.I. Costill, and W.L. Kenney, 2008; H. Bruunsgaard, H. Galbo, K.J. Halkjaer, 1997; L. Hoffman-Goets, 1996).

Circulating white blood cells represent a population participate in ongoing tissue surveillance, repair and adaptation. (Tauler,P., Aguilo,A., Cases,N., Sureda,A., Gimenez,F.,Villa,G. et al.,2002). The leukocytes increase in number as a result of exercises that induce muscle soreness. In contrast to moderate activity prolonged or strenuous exercise causes numerous changes in immunity that reflect physiological stress. (S. A. Plowman, and D. L. Smith, 2008; A. Moreira, R.A. Kekkonen, L. Delgado et al 2007; D.B. Pyne, 1994)

During exercise mononucleated cells in muscle are activated by the muscle damage, providing the chemical signal to circulating inflammatory cells such as neutrophils. Neutrophils invade the injury site and release cytokines, which then attract and activate additional inflammatory cells. Neutrophils possibly also release oxygen free radicals that can damage cell membranes (Wilmore, J.H., Costill,D.I., and Kenney, W.L., 2008). Muscle soreness, decreased immune response, vulnerability after long duration exercise or eccentric exercise have been associated with oxidative stress (M. Lamprecht, J. Greilberger, K. Oettl, 2004).

The neutrophil concentration in the bloodstream increases during and after exercise, whereas the level of monocytes only raised during exercise. Large increases in neutrophil numbers are evident for 2-6 hr following high-intensity exercise (S. A. Plowman, and D. L. Smith, 2008; E.W. Petersen and B.K. Pedersen, 2002; L. Hoffman-Goets,1996).

As well, long term exercise results in increased secretion of cortisol, which also could lead to immunosuppresion since cortisol plays a role in maintaining the neutrophilia and lymphopenia after prolonged exercise. Circulating total leukocyte, neutrophil and monocyte counts remained high for 3 hours after exercise, but some immune cell counts decreases below baseline at this stage of recovery. The immunosuppression depends on boths intensity and duration of the exercise that has been undertaken (Z. Radak, H.Y. Chung, E. Koltai, et al, 2008; Natale, V.

M., Brenner, I. K., Moldovenau, A. I. et al, 2003). It has been reported that leucocytosis and neutrophilia may be sustained for a few hours during the recovery period; however, the lymphocytosis and elevations in lymphocyte subsets are typically followed by a significant depression during recovery (Y. Chen, S. H. Wong, C. Wong et al, 2008).

The basal level of circulating leukocytes is rapidly increased by physical activity. Despite the increase in neutrophil number following prolonged or high-intensity exercise, there is an evidence that neutrophil function may not respond uniformly. It has been reported that prolonged exercise is associated with enhanced neutrophil function. In contrast, moderate exercises has no effect on immune response (S. A. Plowman and D. L. Smith, 2008; L. T. Mackinnon, 2000; L. Hoffman-Goets, 1996).

An acute bout of prolonged exercise is associated with transient changes in a number of aspects of circulating neutrophil function, including degranulation, the concentration of free radicals in skeletal muscle and oxidative burst (N.C. Bishop, N.P. Walsh and G.A. Scanlon, 2003; J.R. Poortmans, 2003). There is a functional interaction between platelet and neutrophils. It is emphasized that neutrophils regulate platelet activation in atherosclerosis and thrombosis pathogenesis by tissue factor and free oxygen radicals. And the platelets plays a role in inflammatory responses. (A. Yakaryılmaz, 2005).

In this study, we researched the effects of prolonged exhausting dancing exercises on some haematological parameters.

MATERIAL AND METHODS

Subjects:

Sixteen folk dancer who had not participated any exercise for at least 48 hours, volunteered to participate as subjects after all procedures were explained. Written informed consent was obtained from all subjects prior to their participation and all subjects reported to be nonsmokers, and not taking any vitamin/mineral supplements. Subjects didn't have any health-related problems that might affect the parameters measured. Subjects were asked to refrain from consuming alcohol, caffeine and drugs for 2 days prior to all blood draws.

Table 1. The physical parameters of the subjects

	Subjects (M ± SD)	
Variables	**Females (n=8)**	**Males (n=8)**
Age(years)	21.38 ± 2.33	20.88 ± 2.42
Height (cm)	163.9 ± 3.98	174.0 ± 2.67
Weight (kg)	52.38 ± 4.45	66.34 ± 3.69
IMC (kg/m^2)	19.48 ± 1.26	21.90 ± 0.69

IMC, body mass index; M, average; SD, standard deviation; n, number of subjects.

Exercise Protocol:

Folk dancers performed prolonged dancing exercises during 3 hours until exhausting; their heart beats were 160-170 beat/minute during high intensity periods and 130-140 beat/minute during low intensity and recovery periods. The exercise applied like an interval training method until exhaustion. Heart rate was monitored by using a Polar coded transmitter, recorded continuously.

Blood Sampling and Laboratory Procedures:

Blood samples were drawn pre-exercise and immediately post-exercise in order to analyze the haematological parameters. Approximately 5 mL blood was obtained from a forearm antecubital vein using Vacutainer tubes.

Data Analysis:

In order to determine if participants experienced prolonged aerobic exercise would report different count of blood cells compared to pre-exercise, Mann-Whitney U test was performed for analyzes between males and females, and Wilcoxon's signed-rank test was used for differences within groups.

RESULTS

Haematological parameters measured before exercise protocol, and male and female subjects are shown in Table 2. It was found that the male values for the red blood cells (RBC), the haematocrit (HCT), the neutrophil (NEUT) and the hemoglobin (HGB) content were significantly higher than the corresponding female values ($p<0.01$, $p<0.001$, $p<0.05$ and $p<0.001$, respectively).

Table 2. Haematological parameters of females and males before exercise protocol

	Subjects (M ± SS)		Mann-Whitney U
Variables	**Females**	**Males**	**Z**
RBC (K/uL)	4.59 ± 0.24	5.35 ± 0.30	3.151**
HGB (g/dL)	12.16 ± 1.89	15.68 ± 0.80	3.361***
HCT (%)	38.93 ± 4.59	47.61 ± 2.12	3.361***
MCV (fL)	84.86 ± 9.03	89.09 ± 2.62	0.630
MCH (pg)	26.54 ± 3.97	29.34 ± 1.14	1.890
WBC (K/uL)	7.15 ± 2.16	8.54 ± 1.27	1.115
NEUT (K/uL)	3.94 ± 1.26	5.07 ± 1.05	0.046*
LYM (K/uL)	2.52 ± 0.73	2.74 ± 0.50	0.528
MONO (K/uL)	0.56 ± 0.23	0.56 ± 0.16	0.833
EO (K/uL)	0.11 ± 0.07	0.14 ± 0.06	0.243
BASO (K/uL)	0.03 ± 0.01	0.02 ± 0.01	0.959
PLT (K/uL)	236.3 ± 53.8	273.1 ± 66.9	0.279

$p<0.05$*, $p<0.01$**, $p<0.001$***

The mean corpuscular hemoglobin (MCH) ($p<0.05$) and the white blood cell counts (WBC) ($p<0.01$) also showed significant differences between men and women in addition to RBC ($p<0.001$) , HGB ($p<0.001$), HCT ($p<0.001$) and NEUT ($p<0.01$) values (Table 3).

Table 3. Haematological parameters of females and males after exercise protocol

	Subjects (M ± SS)		Mann-Whitney U
Variables	**Females**	**Males**	**Z**
RBC (K/uL)	4.61 ± 0.22	5.43 ± 0.31	3.366***
HGB (g/dL)	12.18 ± 1.84	15.96 ± 0.90	3.371***
HCT (%)	38.85 ± 4.31	48.05 ± 2.67	3.361***
MCV (fL)	84.31 ± 9.03	88.64 ± 3.11	0.737
MCH (pg)	26.44 ± 3.98	29.45 ± 1.15	2.001*
WBC (K/uL)	11.59 ± 3.32	15.79 ± 1.96	2.521**
NEUT (K/uL)	6.93 ± 2.26	10.07 ± 1.58	2.626**
LYM (K/uL)	3.64 ± 1.30	4.40 ± 0.92	1.050
MONO (K/uL)	0.89 ± 0.27	1.16 ± 0.35	1.680
EO (K/uL)	0.10 ± 0.08	0.13 ± 0.09	0.264
BASO (K/uL)	0.03 ± 0.02	0.03 ± 0.02	0.163
PLT (K/uL)	279.3 ± 67.8	340.0 ± 85.3	1.472

p<0.05*, p<0.01**, p<0.001***

After acute exhausting dancing exercise a leukocytosis was found with a significant increase(p<0.01) in neutrophil , lymphocyte, monocyte and platelet counts in men (Table 4) and in women (Table 5).

Table 4. Haematological parameters of females before and after prolonged dancing exercise

	Subjects (M ± SS)		Wilcoxon
Variables	**Pre-exercise**	**Post-exercise**	**Z**
RBC (K/uL)	4.59 ± 0.24	4.61 ± 0.22	0.848
HGB (g/dL)	12.16 ± 1.89	12.18 ± 1.84	0.284
HCT (%)	38.93 ± 4.59	38.85 ± 4.31	0.070
MCV (fL)	84.86 ± 9.03	84.31 ± 9.03	1.192
MCH (pg)	26.54 ± 3.97	26.44 ± 3.98	0.424
WBC (K/uL)	7.15 ± 2.16	11.59 ± 3.32	2.521**
NEUT (K/uL)	3.94 ± 1.26	6.93 ± 2.26	2.521**
LYM (K/uL)	2.52 ± 0.73	3.64 ± 1.30	2.521**
MONO (K/uL)	0.56 ± 0.23	0.89 ± 0.27	2.524**
EO (K/uL)	0.11 ± 0.07	0.10 ± 0.08	0.710
BASO (K/uL)	0.03 ± 0.01	0.03 ± 0.02	1.890
PLT (K/uL)	236.3 ± 53.8	279.3 ± 67.8	2.527**

p<0.05* , p<0.01**, p<0.001***

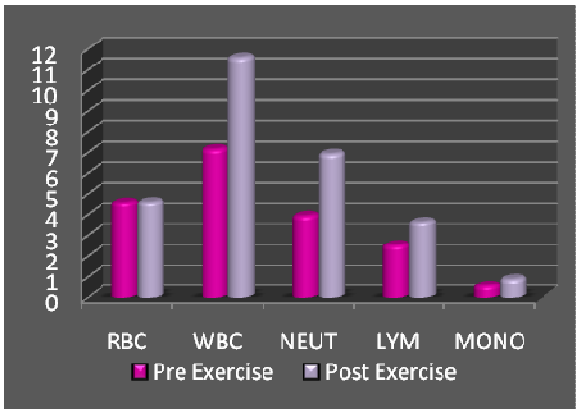

Figure 1. Some haematological parameter of females before and after prolonged exhausting exercise. (RBC, red blood cells; WBC, white blood cells; NEUT, neutrophils; LYM, lymphocytes; MONO, monocytes.). There was no significant difference in RBC between pre-exercise and post-exercise values (p>0.05). However, a significant increase was observed in white blood cells and its subsets (p<0.01).

Table 5. Haematological parameters of males before and after prolonged dancing exercise

	Subjects (M ± SS)		Wilcoxon
Variables	**Pre-exercise**	**Post-exercise**	**Z**
RBC (K/uL)	5.35 ± 0.30	5.43 ± 0.31	1.682
HGB (g/dL)	15.68 ± 0.80	15.96 ± 0.90	1.689
HCT (%)	47.61 ± 2.12	48.05 ± 2.67	1.123
MCV (fL)	89.09 ± 2.62	88.64 ± 3.11	1.183
MCH (pg)	29.34 ± 1.14	29.45 ± 1.15	0.949
WBC (K/uL)	8.54 ± 1.27	15.79 ± 1.96	2.521**
NEUT (K/uL)	5.07 ± 1.05	10.07 ± 1.58	2.524**
LYM (K/uL)	2.74 ± 0.50	4.40 ± 0.92	2.521**
MONO (K/uL)	0.56 ± 0.16	1.16 ± 0.35	2.524**
EO (K/uL)	0.14 ± 0.06	0.13 ± 0.09	0.703
BASO (K/uL)	0.02 ± 0.01	0.03 ± 0.02	1.511
PLT (K/uL)	273.1 ± 66.9	340.0 ± 85.3	2.524**

p<0.05* , p<0.01**, p<0.001***

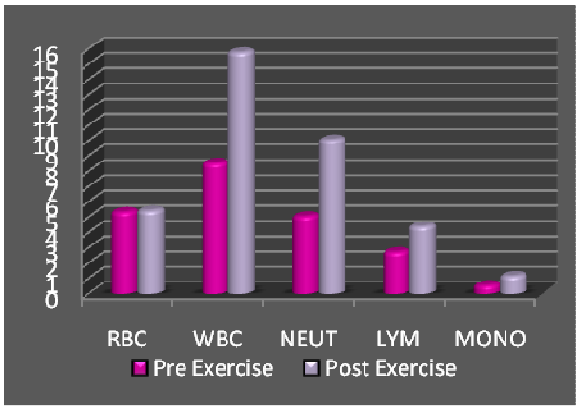

Figure 2. Some haematological parameter of males before and after prolonged exhausting exercise. (RBC, red blood cells; WBC, white blood cells; NEUT, neutrophils; LYM, lymphocytes; MONO, monocytes.). There was no significant difference in RBC between pre-exercise and post-exercise values ($p>0.05$). However, a significant increase was observed in white blood cells and its subsets ($p<0.01$).

The platelets and the blood immune cells increased noticeably after prolonged exhausting exercise in study group (males and females), significantly ($p<0.001$). But there was no statistically significant difference in other blood cell parameters such as RBC, HGB and HCT (Table 6).

Table 6. Some haematological parameters of males and females before and after prolonged exercise

	Subjects (M ± SS)		Wilcoxon
Variables	**Pre-exercise**	**Post-exercise**	**Z**
RBC (K/uL)	4.96 ± 0.47	5.01 ± 0.50	1.706
HGB (g/dL)	13.91 ± 2.29	14.06 ± 2.40	1.560
HCT (%)	43.26 ± 5.66	43.45 ± 5.88	0.907
WBC (K/uL)	7.84 ± 1.86	13.69 ± 3.41	3.516***
NEUT (K/uL)	4.50 ± 1.26	8.50 ± 2.49	3.517***
LYM (K/uL)	2.63 ± 0.62	4.02 ± 1.16	3.517***
MONO (K/uL)	0.56 ± 0.19	1.02 ± 0.33	3.517***
PLT (K/uL)	254.8 ± 61.7	309.6 ± 80.8	3.520***

$p<0.05$* , $p<0.01$**, $p<0.001$***

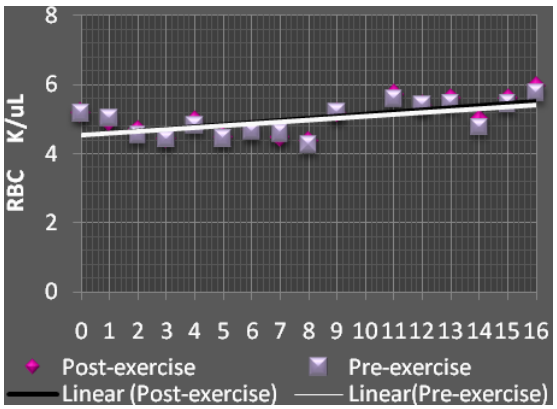

Figure 3. Distribution of red blood cell counts before and after prolonged exercise in study group. (RBC, red blood cells). There was no significant differences in RBC values after exercise ($p>0,05$).

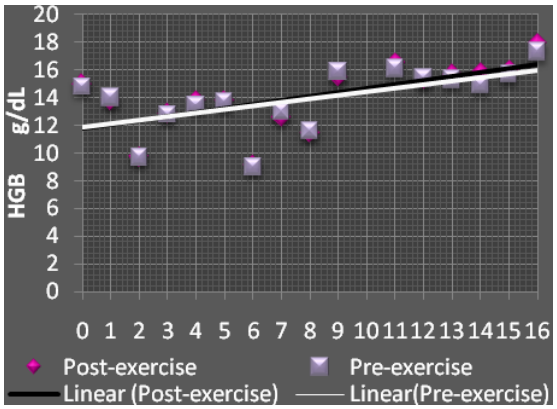

Figure 4. Distribution of hemoglobin before and after prolonged exercise in study group(HGB,hemoglobin). There was no significant differences in HGB values after exercise ($p>0,05$).

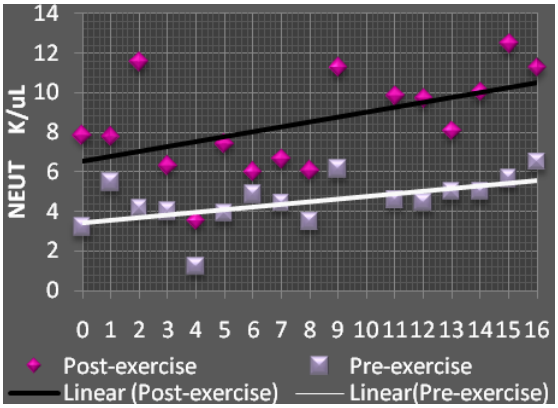

Figure 5. Distribution of neutrophils before and after prolonged exercise in study group(NEUT, neutrophils). NEUT increased significantly after exercise ($p<0.001$).

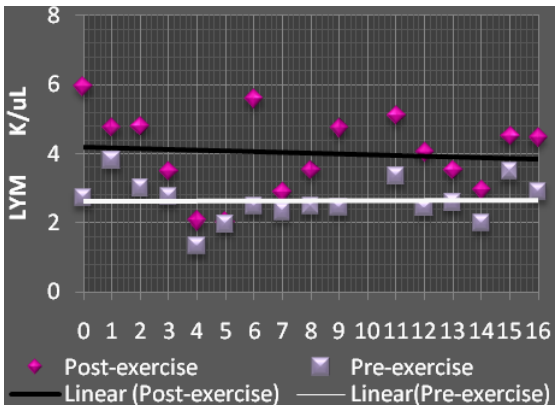

Figure 6. Distribution of lymphocytes before and after prolonged exercise in study group(LYM,lymphocytes). LYM increased significantly after exercise ($p<0.001$).

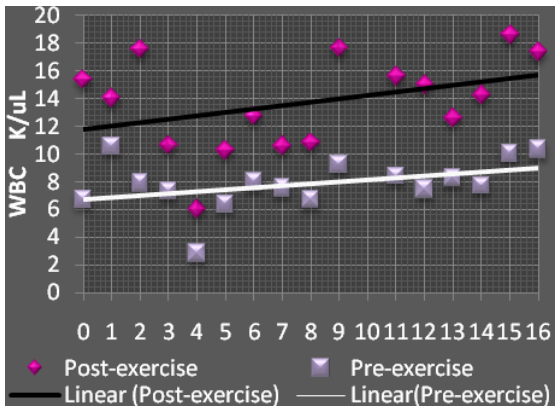

Figure 7. Distribution of white blood cell counts before and after prolonged exercise in study group. (WBC, white blood cells). WBC increased significantly after exercise ($p<0.001$).

DISCUSSION

The aim of the study was to examine the effects of prolonged exhausting exercises on some haematological parameters.

Changes in immune response to exercise have been reported consistently. Researchers declined that during and immediately after prolonged or heavy physical exercise, the total number of WBC in peripheral blood samples increases (D. G. Rowbottom, K. J. Green, 2000; H. Gabriel and W. Kindermann, 1997; D. C. Nieman, 1997; S. Shinkai, S. Shore, P. N. Shek, R. J. Shephard, 1992).

Before the experiment, we analyzed blood for haematological parameters if there is a difference between men and women subjects. We found that males has higher RBC, HGB and HCT values than females ($p<0.01$, $p<0.001$ and $p<0.001$, respectively). The results indicate that there is no significant difference in WBC, LYM, MONO, BASO and PLT values between men and women.

R. D. Telford, R. B. Cunningham (1991) measured 706 nationally ranked athletes in 12 sports for HGB, HCT, RBC and WBC. They reported that the blood variables was significantly greater in males ($p<0.01$), with the exception of the WBC, which was greater in females ($p<0.01$).

Prolonged or strenuous exercise has been consistently reported to result in an increase of the leukocyte counts (M. G. Nikolaidis, A. Z. Jamurtas, 2009; P. J. Robson, A. K. Bllannin, N. P. Walsh, L. M. Castell, M. Cleeson, 1999; L. Hoffmann-Goetz, 1998; M. Gleeson, A. K. Blannin, D. A. Sewell, R. Cave, 1995; J. S. Wang, C.J. Jen, H.C. K., et al, 1994). In agreement with other investigators, prolonged exercise caused an increase in immune blood cells and platelets counts both in men and women, in our study. Collaterally, progressive increase neutrophil, lymphocyte and monocyte concentrations after 10 km running exercise were noted by Y. Chen, S.H. Wong, C. Wong et al. (2008). In support of our data, researchers reported that prolonged periods of intense exercises results in great neutrophilia and important lymphopenia (A. Moreira, R.A. Kekkonen, L. Delgado et al , 2007; N. Cases, A. Agulio, P. Tauler, et al. 2005). Similarly, E.W. Petersen and B.K. Pedersen (2002) reported that the neutrophil concentration in the bloodstream increases during exercise and continues to increase post-exercise. The lymphocyte concentration increases during exercise but falls below pre-exercise values following intense long-duration exercise, although not after moderate exercise.

As reviewed by L.T. Mackinnon (2000), the immune function may show differences with exercise type, duration and the intensity. Recent evidences suggest that prolonged periods of intense exercises induced a significantly greater increase in circulating counts for total leukocytes, neutrophils, lymphocytes and natural killer cells. In contrast, moderate exercise training has no effect on immune function (J.C., Quindry, W.L. Stone, J. Ki and C.E. Broeder, 2003)

Our comparison of men and women consistent with previous reports by showing no significant effect of gender on changes in WBC, NEUT, LYM, MONO and PLT values in response to exercise (W. B. Timmons, M.J. Hamadeh, M.C. Devries and M.A. Tarnopolsky, 2005; E.W. Petersen and B.K. Pedersen ,2002). Moreover, N. M. Moyna, G. R. Acker, K. M. Weber et al (1996) reported that progressive incremental exercise increases circulating leukocyte counts and alteration in the number of circulating leukocytes are independent of gender and fitness. Also, W. B. Timmons, M.J. Hamadeh, M.C. Devries and M.A. Tarnopolsky (2005) reported that immunological responses to exercise were similar between men and women. Conformably, P. M. Clarkson, M. J. Hubal (2002) reported that in contrast to the animal literature, which displays that females experience less damage than males, research using human studies suggest there is no difference between men and women.

J.S.Wang, C.J. Jen, H.C. K., et al (1994) demonstrated that the intensity of acute exercise is important factor affecting blood platelet function. They reported an increase of %18.2 after moderate exercise and %24.7 after strenuous exercise in platelet counts of

physically active healthy men. D.C. Nieman, D.A. Henson, C.S. Sampson et al demonstrated that exhaustive resistance exercise to muscular failure applied on males, results in a very similar immune response to that associated with intense endurance exercise.

Concurring with several other authors (I,Singh, H. Quinn, M. Mok et al,2006; J. S. Wang, 2004),we found a significant increase in platelet counts after prolonged exhausting exercise. J. S. Wang (2004) concluded that intense exercise promotes the extent of shear-induced platelet aggregation in men and elevation of circulating norepinephrine may be related with this augmentation during intense exercise (H. Ikarugi, T. Taka, S. Nakajima et al, 1999, P.T, Larsson, N.H., Wallen, and P.Hjemdahl, 1994).

High-intensity exercise causes tissue damage, production of stress hormones such as epinephrine and norepinephrine, and increases in the function and quantity of various immune cells. The increased mobilization of leukocytes into the circulation associated with an increased neuroendocrine response. (V.M. Natale, I.K. Brenner, A.I. Moldoveanu et al, 2003; O. Ronsen, ,B.K. Pedersen, T.R. Oritsland, et al, 2001). Previous studies have shown that the increases in leukocyte numbers are related mainly to plasma norepinephrine concentrations in moderate exercises, but with more intense exercise epinephrine concentrations assume a major importance (I. Brenner, P.N. Shek, J. Zamecnik and R.J. Shephard, 1998)

Previous researches suggesting that prolonged exercise activating several components of the inflammatory response. In our study, we observed an augmentation of the exercise-induced increase in total leukocyte, neutrophil, lymphocyte, monocyte and platelet counts independent of gender, concurring with similar studies.

CONCLUSION

In conclusion, these findings suggest that prolonged intense exercise leads an increase in white blood cells and subsets, accompanied by an increase in platelet counts. The immunological responses to prolonged exercise were similar between men and women. This observation confirms the results from studies in humans.

Acknowledgments

This article is dedicated to the memory of Prof. Dr. Yaşar SEVİM.

REFERENCES

BISHOP, N.C., WALSH,N.P. and SCANLON,G.A., 2003, *Effect of Prolonged Exercise and Carbohydrate on Total Neutrophil Elastase Content,* Medicine & Science in Sports & Exercise, 35(8):1326-32.

BRENNER, I., SHEK, P.N., ZAMECNK, J. and SHEPHARD, R.J., 1998, *Stress Hormones and the Immunological Responses to Heat and Exercise,* International Journal of Sports Medicine, 19(2):130-143.

BRUUNSGAARD, H., GALBO, H., HALKJAER, K.J., JOHANSEN, T.L., MACLEAN, D.A., PEDERSEN, B.K., 1997, *Exercise-Induced Increase in Serum Interleukin-6 in Humans is Related to Muscle Damage,* The Journal of Physiology 499:833-41.

CASES, N., AGULIO, A., TAULER,P. et al, 2005, *Differential Response of Plasma and Immune Cell's Vitamin E Levels to Physical Activity and Antioxidant Vitamin Supplementation,* European Journal of Clinical Nutrition, 59:781-88.

CHEN, Y., WONG, S.H., WONG, C., LAM,C., HUANG,Y., SIU,P.M., (2008), *The Effect of A Pre-Exercise Carbohydrate Meal on Immune Responses to an Endurance Performance Run,* British Journal of Nutrition, 100:1260-68.

CLARKSON, P.M., HUBAL, M.J., 2002, *Exercise-Induced Muscle Damage in Humans*, American Journal of Physical Medicine & Rehabilitation, 81(11):52-69.

DEATON, C.M. and MARLIN, D.J., 2003, *Exercise-Associated Oxidative Stress*, Clinical Techniques in Equine Practice, 2(3): 278-91.

FU, F. H. and STONE, D. A. ed., 2001, *Sports Injuries: Mechanisms, Prevention & Treatment*, Lippincott Williams & Wilkins , Philadelphia.

GABRIEL, H. and KINDERMANN, W., 1997, *The Acute Immune Response to Exercise: What Does It Mean?*, International Journal of Sports Medicine, 18(1): 28-45.

GLEESON, M., BLANNIN, A. K., SEWELL, D. A., CAVE R., 1995, *Short- Term Changes in The Blood Leucocyte and Platelet Count Following Different Durations of High- Intensity Treadmill Running,* Journal of Sports Sciences, 13(2): 115-23.

HOFFMAN-GOETS, L. ed., 1996, Exercise and Immune Function, CRC Press, Florida.

HOFFMAN-GOETZ, L., 1998*, Influence of Physical Activity and Exercise on Innate Immunity,* Nutrition Reviews, 56(1): 126-130.

IKARUGI, H., TAHA, T., NAKAJIMA, S. et al, 1999, *Norepinephrine, But Not Epinephrine, Enhances Platelet Reactivity and Coagulation After Exercise in Humans*, Journal of Applied Physiology, 86:133-8.

KUIPERS, H., 1994, *Exercise-Induced Muscle Damage,* International Journal of Sports Medicine, 15(3):132-5.

LAMPRECHT,M., GREİLBERGER,J., OETTL, K., 2004, *Analytical Aspects of Oxidatively Modified Substances in Sports and Exercise*, Nutrition, 20: 728-30.

LARSSON, P.T., WALLEN,N.H. and HJEMDAHL,P., 1994, *Norepinephrine-Induced Human Platelet Activation in Vivo is Only Partly Counteracted By Aspirin,* Circulation, 89:1951-7.

MACKINNON, L. T., 2000, *Chronic Exercise Training Effects on Immune Function,* Medicine & Science in Sports & Exercise, *32(7):369-76.*

MOREIRA, A., KEKKONEN, R. A., DELGADO, L., et al., 2007, *Nutritional Modulation of Exercise-Induced Immunodepression in Athletes: A Systematic Review and Meta-Analysis,* European Journal of Clinical Nutrition, 61:443-60.

MOYNA, N.M., ACKER, G.R., WEBER, K.M., et al, 1996, *The Effects of Incremental Submaximal Exercise on Circulating Leukocytes in Physically Active Aand Sedentary Males and Females,* European Journal of Applied Physiology and Occupational Physiology, 74(3):211-8.

NATALE, V.M., BRENNER, I.K., MOLDOVEANU, A.I. et al, 2003, *Effects of Three Different Types of Exercise on Blood Leukocyte Count During and Following Exercise,* Sao Paulo Medical Journal, 121(1):

NIEMAN, D.C., 1997, *Exercise Immunology: Practical Applications*, International Journal of Sports Medicine*,* 18: 91-100.

NIEMAN, D.C., HENSON, D. A., SAMPSON, C.S., et al, 1995, *The Acute Immune Response to Exhaustive Resistance Exercise,* International Journal of Sports Medicine*,* 16(5) : 322-8.

NIKOLAIDIS, M.G., JAMURTAS, A.Z., 2009, *Blood as a Reactive Species Generator and Redox Status Regulator During Exercise*, Archives of Biochemistry and Biophysics, 490 : 77-84.

PLOWMAN, S. A., and SMITH, D. L., **2008**, Exercise *Physiology (2nd ed.)*, Lippincott Williams & Wilkins, Philadelphia.

POORTMANS, J.R., 2003, *Principles of Exercise Biochemistry (3rd rev.ed.)*, Medicine & Sports Science, v.46, Basel.

PYNE, D.B., (1994), *Regulation of Neutrophil Function During Exercise*, Sports Medicine, 17(4):245-58.

RADAK,Z., CHUNG, H.Y., KOLTAI, E., TAYLOR, A.W., GOTO, S., 2008, *Exercise, Oxidative Stress and Hormesis*, Ageing Research Reviews, 7: 34-42.

ROBSON, P.J., BLLANNIN, A.K., WALSH, N.P., CASTELL, L.M., CLEESON, M., 1999, *Effects of Exercise Intensity, Duration and Recovery on in vitro Neutrophill Function in Male Athletes,* International Journal of Sports Medicine, 20(2):128-30.

RONSEN, O., PEDERSEN, B.K., ORITSLAND, T. R., et al, 2001, *Leukocyte Counts and Lymphocyte Responsiveness Associated With Repeated Bouts of Strenuous Endurance Exercise*, Journal of Applied Physiology, 91: 425-34.

ROWBOTTOM, D.G., GREEN, K.J., 2000, *Acute Exercise Effects on the Immune System,* Medicine & Science in Sports & Exercise, 37(2):396-405.

SHINKAI, S., SHORE, S., SHEK, P. N., SHEPHARD, R. J., 1992, *Relationship Between Lymphocyte Activity and Changes in Subsets Counts,* International Journal of Sports Medicine*,* 13(6): 452-61.

SINGH, I., QUINN,H., MOK, M., SOUTHGATE, R.J. et al, 2006, *The Effect of Exercise and Training Status on Platelet Activation: Do Cocoa Polyphenols Play A Role?,* Platelets, 17(6): 361-7.

TAULER,P., AGUILO,A., CASES,N., et al.,2002, *Acute Phase Immune Response to Exercise Coexists with Decreased Neutrophil Antioxidant Enzyme Defences*, Free Radical Research, 36(10):1101-7.

TELFORD, R.D. and CUNNINGHAM, R.B., 1991, *Sex, Sport, and Body-Size Dependency Of Hematology in Highly Trained Athletes,* Medicine & Science in Sports & Exercise*,* 23(7):788-94.

THOMPSON,D., MCNAUGHTON,L., 2001, *Antioxidant Vitamins and Muscle Soreness in Humans*, Physical Therapy in Sport, 2(3) : 141-148.

TIMMONS, B.W., HAMADEH, M.J., DEVRIES, M.C. and TARNOPOLSKY, M.A., 2005, *Influence of Gender, Menstrual Phase, and Oral Contraceptive Use on Immunological Changes in Response to Prolonged Cycling*, Journal of Applied Physiology, 99:979-85.

WANG, J.S., 2004, *Intense Exercise Increases Shear-Induced Platelet Aggregation in Men Through Enhancement of Von Willbrand Factor Binding, Glycoprotein IIb/IIIa Activation, and P-Selection Expression on Platelets,* European Journal Of Applied Physiology, 91(5-6) 741-7.

WANG, J.S., JEN, C. J., KUNG, H.C. et al, 1994, *Different Effects of Strenuous Exercise and Moderate Exercise on Platelet Function in Men,* Circulation , 90: 2877-8.

WILMORE, J.H., COSTILL,D.I., and KENNEY, W.L., 2008, *Physiology of Sports and Exercise (4th ed.)*, Human Kinetics, Champaign.

YAKARYILMAZ,A., 2005, *Trombosit-Lökosit Fonksiyonel Etkileşiminin In-Vitro Koşullarda Incelenmesi,* Ankara Üniversitesi Tıp Fakültesi Mecmuası, 58:51-6.

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THE EVALUATION OF THE NUTRITION STATUS OF INDIVIDUALS WHO ASSIGNED TO DIFFERENT AREAS OF SPORT.

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ABSTRACT

Purpose, In this study, the status of the nutrition and physical activity of the individuals (such as coaches, masseurs, sport administrators, physical education teachers, referees, provincial sport branch representatives), who assigned to different areas of sport were identified.

Methods, This study was performed in five cities of Central Anatolia Region which had been visited for the purpose of nutrition education. Between the years 2008-2009, with total 311 participants (48 female, 263 male) who assigned to different areas of sport. A questionnaire with 35 questions about their personal knowledge, awareness of healthy nutrition /applications and their sport branches before education were conducted to participants. For statistical evaluation of data, that frequency distributions, t test, correlation and one-way anova tests were made by using SPSS 15.0 statistical package programme.

Results, 84.6% of the participants were male, 15.4% were female. The first three lines of profession groups were physical education teachers/university lecturers, coaches and club managers. According to body mass index (BMI) classification; 45.4% of participants were normal body weight (BMI 18.5-24.9), 35.0% were overweight (BMI 25-29.9), 11.6% were obese (BMI≥30), 8% were underweight (BMI<18.5). In the past, according to their sport branches (n=230), the first five lines of the most involved branches were football (20.9%), volleyball (9.3%), basketball (9.0%), running (6.8%) and fighting sports (5.1%), as to now the sports branches which were still active (n=265) the first five lines were football (32.5%), swimming (8.0%), basketball (7.1%), volleyball (6.8%) and jogging (6.1%). There is no significant relationship was observed between the involved sports branches in the past as well as now and the BMI values ($p>0.05$). It was found that the participant's (n=226) average sport ages were 15.4 ± 9.3 years. There were a strong and significant relationship between sport ages and BMI values of participants ($p;0.01<0.05$, r;0.2). Those who said that they were doing sport regularly were 82.3%, weekly average were 3.6±1.6 days, daily average was 2.4 ± 1.2 hours. There is a significant relationship observed between education level and the BMI values of participants ($p;0.00<0.05$). According to BMI classification, the individuals who had normal BMI values were predominantly university and high school graduates. There was a significant relationship between their assigned profession and the BMI values ($p;0.01<0.05$). The highest averages of BMI were respectively masseurs (28.2±6.6 kg/m^2), provincial representative of the sports branch (26.5±4.1 kg/m^2) and the administrators of sport clubs (26.4±3.4 kg/m^2). It was determined there was no significant difference between the BMI values and chronic disease with statistically, but BMI values of those who had no chronic disease were lower than average. For those who use nutritional supplements (12.5%), the first three lines were respectively; multivitamin (7.1%), omega-3 (3.5%) and iron tablets (1.6%.). When the distribution between the education level and distribution of the nutrition knowledge sources was examined the sources of knowledge were mainly gained at school for the university graduates, however for primary and high school graduates, they were mainly gained at the seminars, courses, books and newspapers.

Conclusion, According to the profession distribution, the BMI values were determined higher in some professional groups who had more passive work (such as province sport branch representatives and club managers). Most of the participants were involving in at least one sports branches and also they were spending time for the sports.

KEY WORDS: Nutritional status, sports, nutrition education

INTRODUCTION

At the present day that is an age of communication and information, apart from being an occupation which people do to have good time and a healthy life, sport is also a job that people do all their life to get money. Recently, it is observed that the number of the people who do sports as a job is on the increase (Ö. Şenel et al., 2004).Most athletes who want to get high successful on the competitions and the effective people at this branch are in search of increasing their successful to the highest level. The sources of knowledge are usually health specialists and sometimes friends, members of family, magazines, the media. Both athletes and the people who are interested in sports need to have more knowledge about weight control, supplement usage, the nutrition that is competition before, during and after, hydration, eating behavior disorders (LM. Marinaro et al., 2008; HM. Binkley et al., 2002). It is important to increase the people's knowledge level and also to provide behavior change with the nutrition education (I. Yıldıran et al., 2000). Adequate and balanced nutrition helps the individuals' cardiovascular compliance, muscle power, flexibility, endurance increase. It also decrease the risks of the diseases that are tied to obesity and inactivity (A. Baysal, 2007; G. Ersoy, 2007).In this study, the status of the nutrition and physical activity of the individuals (such as coaches, masseurs, sports administrators, physical education teachers, referees,

provincial sports branch representatives), who assigned to different areas of sport was tried to be identified.

METHOD

This study was performed in five cities of Central Anatolia Region that had been visited for the purpose of nutrition education. It was performed between the years 2008-2009, with total 311 participants (48 female, 263 male) who assigned to different areas of sport.A questionnaire which had 35 questions were conducted to participants about their personal knowledge, awareness of healthy nutrition applications and their sport branches before education.

In personal knowledge section, the individuals' disease cases, medicine/cigarette/alcohol consumptions were asked. Nutritional practices were determined according to the individuals' answers about total number of meals consumed in a day, skipping meals status, the source of the nutrition knowledge that the individuals have and the usage status of nutritional support products.Anthropometry measurements (body weight and height) were determined according to the individuals' answers.It was asked to the individuals whether they do sports or not in the past and now. The branches that they were active in, the frequency of sport activity and the period of sport activity were also asked to determine their physical activity status.For statistical evaluation of data, that frequency distributions, t test, correlation and one-way anova tests were made by using SPSS 15.0 statistical package programme.

RESULTS AND DISCUSSION

84.6% of the participants were male, 15.4% were female. 67% of the participants were graduated from university, 24.4% of them were graduated from high school and 7.7% of them were graduated from elementary school. According to sex, the averages of age, body weight, height and body mass index (BMI) were shown on Table 1. According to BMI classification; 45.4% of participants were normal body weight, 35.0% were overweight, 11.6% were obese, 8% were underweight.There was a significant relationship between the education level and BMI values of participants (p;0.00<0.05). According to BMI classification, the participants who had normal BMI values were predominantly university graduates and high school graduates. In another study that was done on trainers, athletes and managers, it was determined when the education level increased, BMI values decreased (r=-0.099, p<0.05). The results of studies were similar (M. Yıldırım et al., 2008).

Table 1: The personal characteristics of the participants

Characteristics	Gender	n (number)	Average (X) ± Standard deviation (SD)
Age (year)	Female	48	35.1 ± 7.7
	Male	263	40.0 ± 9.4
Height (cm)	Female	48	164.6 ± 8.3
	Male	263	175.9 ± 6.4
Body weight (kg)	Female	48	58.5 ± 8.9
	Male	263	79.9 ± 11.8
Body mass index (BMI) (kg/m^2)	Female	48	21.3 ± 2.7
	Male	263	25.8 ± 3.5

Most of the participants (36%) who joined the education were physical education teachers, university lecturers. In another study that was done on nutritional approaches of the trainers, athletes and the managers (n=430) who manage the sport activities in different cities, it was determined that most of the participants were physical education teachers (24.4%, n=105). The results of this study were similar. And this result showed us that teachers attached importance to nutrition education. (M. Yıldırım et al., 2008).

There was a significant relationship between the profession of participants and BMI values of them (p;0.00<0.05). (Table 2). It was determined that the highest averages of BMI were respectively masseurs (28.2±6.6 kg/m^2), provincial representative of the sports branch (26.5±4.1 kg/m^2) and the administrators of sport clubs (26.4±3.4 kg/m^2). The reason of this situation was the insufficient activity of people who worked in the jobs with limited activity and to waste insufficient energy.

Table 2: The relationship between BMI values and the professions of participants

Professions	n	BMI	F	p
		X ± SD		
Administrators of sport clubs	50	26.4 ± 3.4	4.39	0.000*
Physical education teacher, university lecturer	112	23.9 ± 3.3		
Trainer	73	25.6 ± 3.9		
Federation president	39	25.3 ± 3.8		
Provincial sports branch representative	27	26.5 ± 4.1		
Student athletes	2	22.3± 1.2		
Masseur	2	28.2 ± 6.6		
Football referee	4	22.5 ± 3.4		
Total	311	25.1 ± 3.8		

69% of the participants said that they do not smoke and 31% of them said they do. The average consumption rates of the ones who smoked were 13.7±7.8 unit/day. The rates of the ones who said they rarely consumed alcohol were 83%.78.5% of the participants (n=280) said that they do not have any chronic diseases. The first three diseases that were determined were diabetes, hypertension, heart disease (2.6%, 2.6%, 2.3%). It was determined there was no significant difference between the BMI values and chronic disease with statistically (F;2.31, p;0.07>0.05), but BMI values of those who had no chronic disease were lower than average (24.9±3.8 kg/m^2). In another study, it was determined that hypertension and hyperlipidemia rates were higher for the individuals who had high BMI values (AA. Bayram, 2006).In the past, according to their sport branches (n=230), the first five lines of the most involved branches were football (20.9%), volleyball (9.3%), basketball (9.0%), running (6.8%) and fighting sports (5.1%), as to now the sports branches which were still active (n=265) the first five lines were football (32.5%), swimming (8.0%), basketball (7.1%), volleyball (6.8%) and jogging (6.1%). There is no significant relationship observed between the involved sport branches in the past as well as now and the BMI values (p>0.05).It was found that the participant's (n=226) average sport ages were 15.4 ± 9.3 years. There were a strong and significant relationship between sport ages and BMI values of participants (p;0.01<0.05, r;0.2). BMI values were found lower at the ones whose sport age was high.It was determined that those who said that they were doing sport regularly were 82.3%, weekly average were 3.6±1.6 days, daily average was 2.4±1.2 hours. According to sex, there was no significant difference in weekly frequency of doing sports (t; 0.13, p;0.89>0.05).It was determined that the rates of the participants (56.9%) who had three meals in a day were more than the others, and the meal that was skipped mostly was lunch. It was also determined that the first reason of skipping the meal was "not to find an opportunity and to forget". The first three food that were consumed between meals were cake/biscuit varieties, fruit and juice (11.3%, 7.7%, 5.8%). The average water consumption was determined as 1.7±0.7 L/day.When the distribution between the education level and distribution of the nutrition knowledge sources was examined, it was determined that sources of knowledge were mainly gained at school for the university graduates, however for primary and high school graduates, they were mainly gained at the seminars, courses, books and newspapers. In the study that was done to determine nutrition knowledge and habits of overall elite basketball players, it was determined that 15.9% of them gained their nutrition knowledge from trainers, 28.9% gained from books, 34.8% gained from their atletes friends and 20.4% gained from dieticians (E. Süel et al., 2006). In another study that was done to research the attitudes of the olympic branch trainers, the rates of the ones who said they studied with books and school courses were respectively found as 45.7% and 39.9%. In study by Corley et al., it was determined that 70% of the trainers who were from different branches gave the right answers to the questions about nutrition (G. Corley et al., 1990). In another study that was done to determine the nutrition knowledge level of trainers, the rates of giving right answers to the questions were found as 67% (M. Smith-Rockwell et al., 2001). In the study that was done on physical education teachers, although 96.0% of the teachers thought they had enough knowledge about nutrition, it was determined that they needed more education and there was a significant difference between the sex (O. Çongar et al., 2004).

It was determined that there was no significant relationship between the sport ages of participants and the sources of nutrition knowledge (F;0.75, p;0.60>0.05). It also determined that there was no significant relationship between the sport age and chronic disease (F;1.18, p;0.31>0.05).82% of the participants (n=294) who answered the question "Do you use nutritional supplements?" said "no". The first three supplements of the ones (12.5%) who said "yes" were multivitamin (7.1%), omega-3 (3.5%) ve iron tablets (1.6%). It was determined that the duration of supplement use and the average amount were respectively 5.1±5.3 month, 1.6 ± 0.8 unit/day. 9.6% of the participants said that they started using supplements

with doctor's advice and 2.9% said they started using with coach/fitness instructor's advice. It was determined that there was no significant relationship between the education level of participants and nutritional supplement use cases (p;0.53>0.05). In another study that was done on 120 athletes from different branches, it was determined that 55% of the athletes used ergogenic product and the first three supplements were respectively vitamin, amino acids and creatine (I. Bayraktar et al., 2002). In another study in which the vitamin and mineral usage of 742 university athletes from different sport branches were researched, it was determined that families (36%), doctors (26%), trainers (14%), friends (10%), magazines/newspapers (9%), television/radio (7%) and teachers (4%) were effective on the supleman usage of athletes (J. Sobal et al., 1994). Yıldıran et al. in study that was done on 50 trainers from different sport branches and different cities, it was determined that 28% of the study group used protein powder and %64 used vitamin tablets. It was also determined that the vitamins that were prefered most were respectively multi-vitamin complex, B and C vitamins. (I. Yıldıran et al., 2000). In different study that was done on 236 university athletes, it was found that 88% of the athletes used one or more dietary supplements, the first nutrition knowledge source was trainers and the second knowledge source was dieticians (RD Burns et al., 2004).The questions that were asked to the participants to determine their eating habits and the answers of these questions are on Table 3. It was determined that there was a significant difference between the BMI values of participants who said "yes" and "no" to the question "Do you use olive oil at your home?" and the education level of them (p<0.05). It was also determined that there was a significant difference among the education level of participants who answered the question "do you consume rice and pasta more than five times a week?" (p<0.05).

To attach importance to consuming vegetables/fruits and fish whose protective effect on coronary heart diseases are known (A. Norday, 2001; K. Sidhu, 2003). In the end of the study, it was determined that the participants focused on consuming olive oil, legumes, dairy products. It was a positive finding. Most of participants wasn't eaten fish at least 2-3 times a week. In different study that was done on the trainers' nutrition knowledge, although the trainers gave the right answers at a rate 70% of questions that were asked to them, it was observed that they usually used protein weight and excess fat diets (CR. Juzwiak etal.,2004).

Table 3: The answers of participants to the questions about nutrition habits

Questions	Yes		No		BMI p	Education level p
	n	%	n	%		
Do you regularly eat vegetables-fruits 5 times a day?	90	28.9	213	68.5	0.12	0.66
Do you eat fish at least 2-3 times a week?	82	26.4	219	70.4	0.52	0.77
Do you eat more than 2-3 portions of red meat a week?	156	50.2	148	47.6	0.78	0.77
Do you go to fast food restaurants more than one time a week?	32	10.3	271	87.1	0.15	0.56
Do you eat legumes (haricot bean, pea) more than one time a week?	240	77.7	62	19.9	0.66	0.80
Do you eat rice and pasta more than five times a week?	106	34.1	192	61.7	0.28	0.04*
Do you eat nuts at least 2-3 times a week?	204	65.6	95	30.5	0.53	0.94
Do you use olive oil at your home?	264	84.9	37	11.9	0.04*	0.03*
Do you consume two cups of yogurt/milk and/or two matchbox cheese (60 g) two times a day?	252	81.0	53	17.0	0.55	0.41
Do you eat sweet or candy several times every day?	148	47.6	152	48.9	0.06	0.25

* p<0.05

CONCLUSIONS

When education level increased, both their BMI values and the risk of diseases was decreased and also their nutrition applications were done more accurately. Most of the participants nutrition habits weren't adequate. Distribution of the nutrition knowledge sources was examined, it was determined that sources of knowledge were mainly gained at school for the university graduates, however for primary and high school graduates, they were mainly gained at the seminars, courses, books and newspapers. According to the profession distribution, the BMI values were determined higher in some professional groups such as province sport branch representatives and club managers who had more passive work. BMI values were found lower at the ones whose sport age

was high. When asked about their still active sport branches that most of the participants were involving in at least one sports branches and also they were spending time for the sports.

REFERENCES

BİNKLEY, HM., BECKETT, J., CASA, DJ., KLEİNER, DM., PLUMMER, PE., 2002, *National Athletic Trainers' Association Position Statement: Exertional Heat Illnesses*, J Athl Train,; 37(3): 329–343.

BAYSAL, A., 2007, *Beslenme*, 11. baskı, , Hatiboğlu yayınevi, Ankara*1 university.* Int J Sport Nutr Exerc Metab Jun,; 11(2): 174-185

BAYRAM, AA., 2006, *Tanısı yeni konulmuş hipertansiyon, hiperlipidemi ile hipertansiyon ve hiperlipidemisi birlikte bulunan bireylerin diyet yağ asidi örüntüsü ve beslenme alışkanlıklarının değerlendirilmesi*. Hacettepe Üniversitesi Sağlık Bilimleri Enstitüsü Yüksek lisans tezi, Ankara.

BAYRAKTAR, I,, YAMAN, Ç., 2002, *Olimpik Branş Antrenörlerinin Beslenme Tutumlarının Araştırılması*. Türkiye Sosyal Araştırmalar Dergisi, 6(3): 144-161.

ÇONGAR, O., ÖZDEMİR, L., 2004, *Sivas İl Merkezinde Beden Eğitimi Öğretmenlerinin Genel Beslenme ve Sporcu Beslenmesi ile İlgili Bilgi Düzeyleri*. C. Ü. Tıp Fak Derg, 26 (3):113-118.

CORLEY, G., DEMAREST-LİTCHFORD, M., BAZZARRE, TL., 1990, *Nutrition knowledge and dietary practices. of college coaches*. J Am Diet Assoc,; 90(5): 705-709.

ERSOY, G., 2007, *Çocuk ve genç sporcular için beslenme*, Ata ofset, Ankara. *dietary recommendations by coaches of adolescent Brazilian athletes*. Int J Sport Nutr Exerc Metab, 14 (2): 222- 235.

BURNS, RD., SCHİLLER, MR., MERRİCK, MA., WOLF, KN., 2004, *Intercollegiate student athlete use of nutritional supplements and the role of athletic trainers and dietitians in nutrition counseling*. J Am Diet Assoc;, 104(2): 246-249.

JUZWİAK, CR., ANCONA-LOPEZ, F., 2004, *Evaluation of nutrition knowledge and*

MARİNARO, LM., 2008, *Nutrıtıon competency of certıfied athletıc traıners*, A Thesis, Presented to The Graduate Faculty of The University of Akron, In Partial Fulfillmentof the Requirements for the Degree Master of Science.

NORDAY, A., 2001, *Fish consumption and cardiovascular diseas,*. Eur Heart J Supplements, 3, 4-7.

ŞENEL, Ö., GÜLER, D., KAYA, İ., ERSOY, A., KÜRKÇÜ, R., 2004, *Farklı ferdi branşlardaki üst düzey Türk sporcuların ergojenik yardımcılara yönelik bilgi ve yararlanma düzeyler,* Spormetre Beden Eğitimi ve Spor Bilimleri Dergisi,; 2(2): 41-47.

SİDHU, K., 2003, *Health benefits and potential risks related to consumption of fish or fish oil.* Regul Toxicol Pharmacol, 38: 336-344.

SOBAL, J., MARQUART, LF., 1994, *Vitamin/Mineral Supplement Use Among High School Athletes*, Adolescence. 29 (116): 835-843.

SÜEL, E., ŞAHİN, İ., KARAKAYA, MA., SAVUCU, Y., 2006, *Elit Seviyedeki Basketbolcuların Beslenme Bilgi ve Alışkanlıkları*. Fırat Üniversitesi Sağlık Bilimleri Tıp Dergisi,; 20 (4):271-275.

SMİTH-ROCKWELL, M., NİCKOLS-RİCHARDSON, SM., THYE, FW., 2001, *Nutrition knowledge, opinions, and practices of coaches and athletic trainers at a division.*

YILDIRIM, M., ÖZDEMİR, G., ERSOY, G., 2008, *Çeşitli illerde spor faaliyetlerini yönlendiren yönetici, antrenör ve sporcuların beslenme yaklaşımları.* VI. Uluslararası Beslenme ve Diyetetik Kongresinde sunulmuş bildiri, Antalya.

YILDIRAN, I., BAYRAKTAR, I., 2000, *Antrenörlerin Beslenme Bilgi ve Alışkanlıkları*. Atletizm Bilim ve Teknoloji Dergisi,; 40(4):21-38.

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THE EVALUTION OF SOME PHYSCAL PARAMETERS WITH THE BIOELECTRIC IMPEDANCE ANALYSE AMONG THE MALE AND FEMALE BETWEEN THE AGES OF 12 AND 14

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ABSTRACT

Purpose.

The aim of this research is to evaluate some physical parameters of the students aged between 12-14 with Bioelectrical Impedance Analysis.

Method.

Total 301 private primary school students, 219 of which are male and 82 of which are female, took part in the research and these volunteers were chosen randomly. With the device of bioelectrical impedance analyses, the body fat, body mass index, basic metabolism rates, the rate of body fat, fat mass, fat free mass, total body water measurements of the students were determined and with band measure, the waist and hips are measured. The volunteers are evaluated according to their sex and their age group. Student test was implemented for the comparison between the statistical evaluations and independent groups while for the comparisons as to the age groups the variance analyses was used.0.05 was determined as the significance level.

Results.

When the physical parameters of the males and females are compared, statistical differences were realized between the age, body weight, fat free mass ($p<0.01$). At the same time statistical differences were seen between the height, Basal metabolic rate, the fat rate of the body, fat free mass and total body water rate and the rates of waist and hips between the female and male ($p<0.001$). When the male were compared according to their age groups the meaningful differences were seen in the values of height, body weight, the index of body mass, basal metabolic rate and the total body water ($p<0.001$), and ($p<0.05$) the meaningful differences were seen in the fat mass. No differences were found out in the values of the fat rate of the body, the fat free mass and the waist to hip ratio ($p>0.05$).

In the comparison of the female age groups, there have been considerable differences with the values of height, body weight, and fat–free body mass and in the total body water ($p<0.001$), and also in fat mass ($p<0.05$), as well as waist to hip ratio ($p<0.01$), but there has been no difference in the values of body mass index, basal metabolic rate and the body fat rate ($p>0.05$).

Conclusion.

Consequently; it has been found out that there is an increase in the values of height, body weight and body composition of the female with the age whereas the values of the male except height, body weight and body composition are stable or does not change much.

KEY WORDS: BIA, Physical evaluation, Adolescence

INTRODUCTION

Today, it is necessary to determine the physical capacities of children and young people because of the negative effect of hypo kinesis in these age groups. Physical activity, nutrition and the physical convenience are the important elements affecting the health of children and adults. Especially in the adolescence period some differences in the level of the physical activity and some physical and physiological changes coming with the pubertal growing-up attack shows how important it is to determine the psychical conveniences of the children in this period (M. Çolak and M. Maya 2007).

There are some methods like The Index of Body Mass, the measurement of skin curls and Bioelectrical Impedance Analyses to identify the body composition. Bioelectrical Impedance Analysis, in which the resistance to this stream is scaled after giving a low electricity current level with a frequency of 50 kHz, is an easy, cheap, effective and portative method, (500µA-800µA) (bio impedance) (BIA) . With the extra water and electrolytes included, (%73) the body tissues purified from the fat is a good conductor for the electricity current, whereas the fat tissue including less water and electrolytes is a weak atmosphere in conducting the current of electricity. With this method it is possible to calculate body tissues purified from the fat, total body water and body fat ratio in the body. But the circumstances like the changes in the eating and drinking habits, dehydration, exercise and menstruation causing the changes in the body water rate may affect the BIA evaluations (S. Karakaş, F. Taşer, Yıldız Y. 2005).

In evaluating the BIA body composition, with the help of electrolytes alternative currents are implemented to the tissue bearing with the different frequencies and the decline in the voltage of the current is called as 'impedance'. Impedance is the resistance the tissue reacted to the current of electricity and it is inversely proportional with the conduction. The rich liquids from the electrolytes show more resistance than the minerals in the fat and

bone tissues. The high currents like 50 kHz shows the quantity of the body water by passing from cell membranes, the low currents of 1 kHz cannot pass from the cell membranes and they only show extra cellular liquid quantity. The placement of the impedance value in the fixed equation, the values such as fat rate of body, fat quantity of body, the of fat free body, water rate of body, water quantity of body, water index of body are calculated (A.Sifil, C. Çavdar, Çelik A, 2001). BIA method is a more preferred method than the other complex methods in the evaluation of determining the components of the body because it is easy to measure, mobile and reasonable and countable.BIA is used among children, young people and adolescences with confidence (O. Özçelik, R. Çolak, Ayan V, 2002).This method may be easily effected from the water quantity in determining compositions of bodies (B. Guida, R. Trio, Nastası A, 2004).

The components such as bone and tissue of fat the specific resistance of which are high aggravate the current of electricity, whereas the components like bone muscles and visceral organs with low resistance let current pass easily. All the changes in the body and in the impedance have to do with the composition of the tissues (L.A. Moreno, A. Sarria, Fleta J, 2001). Because of this, the formulas have been improved which relate impedances of tissue water, liquids and related fat-free soft tissues (R.N. Baumgartner et al. 1990). Impedance is generally measured in 50 kHz and corrected according with the height representing the length of electrical path (L.A. Moreno, A. Sarria, Fleta J, 2001). Reactance and resistance determine the impedance and some systems are designed for the separate measurement of these–electrical tissue characteristics (R.N. Baumgartner, W.C. Chumlea, Roche A.F, 1990). Although the systems are designed generally for the usage in 50 kHz for the analyses of the total body fat, multiple frequency measurements are also possible. In many researches the body composition is determined with the method of bio-impedance analyses because of its characteristics of being easy, practice, cheap. This is a method in predicting the water rate of the body in the base of conduction of electrolytes dissolved in body water. The body mass index (BMI: body mass index) is generally used as a sign of body composition. With the help of BMI, the formulas have been improved to calculate the body fat of man and woman. “All fat is not equal”. As well as hip fats, the abnormal fat increase has a close relation with the complications of obesity (P.G. Kopelman and M. Dunitz 2003).

The individuals with normal body mass index have better and more qualified life durations than the ones with high body mass index. The relation between the body composition and cardio respiratory has been shown in the researches among the young people. The decline in the capacities of exercise and aerobic durability relating with the fat rate of the young people has been demonstrated (G. Koçoğlu, L. Özdemir, Sümer H, 2003).

In this research, it is aimed to evaluate the body weights, the body mass index, the basal metabolic rate, the fat rate of the body, total body water, the rates of waist-hip rates with the Bioelectrical Impedance Analysis among the children from the classes of 6, 7, 8. Aging between 12-14.

METHOD

The selection of subjects

In this study, the students who study in the classes of 6, 7, 8 in the primary school during 2007/2008 academic year in Kayseri. The volunteer students were chosen randomly. In this study it is determined that there are male(n=219), female volunteers (n=82).The distribution of the students as to their ages is ; the number of male students aged 12 : n=56, the number of female students are n=32, the number of male students aged 12 is n=68, the number of female students are n=29, the number of male students aged 14 is n=95, the number of female students is n=21 and totally the attendance were 301 volunteer students .

The weights, the total body index, the basal metabolic rate, the rate of body fat, the fat mass, the fat-free mass, total body water rates of the students were evaluated with the Analyses of Bioelectric Impedance and in measuring the waist-hip rates lineal meter were used.

The weight and body fat rate was evaluated with the bioelectrical impedance device (TANİTA BC-418 MA), the heights, sex, and fixed cloth tares (500 gr) were evaluated (500 gr) by taking them into analyzer only with their school uniform and with bare foot. Their height was measured with the tape on the wall. According to the VYY taken from BIA, to determine the overweight and obese children, the cardio vascular limits of children and adolescences and The standards declared by American Exercise Council was taken as standard (E. Zorba, 2005) According to this, in body fat percent values, the males 18-25, for female 25-30 is overweight, for males over 25, for female over 30 is accepted as fat.

STATISTICAL ANALYSES

The data was shown as mean ±standard error of mean. In the statistical comparison of males and females, independent sample test was used and in the comparison of age groups variance analysis was tested (ANOVA).To find out the groups which are statistically different, Tukey HSD test was used. The significance level was 0.05.

RESULTS

There have been found considerable statistical differences with the comparison of the parameters of age, weight, fat free mass of male and female students ($p<0.01$). There has been no statistical difference between the parameters of height, basal

metabolic rate, body fat percentage, fat free mass, total body water and waist to hip ratio between the male and female students ($p<0.001$) (Table 1).

In the age groups of males aged 12–13–14 there have been differences on their heights and weights ($p<0.001$).There have been no considerable difference in the values of body mass index of male students between the ones aged 12-13 and 14-15 ($p>0.05$), but in the age group of 12–14 there has been considerable differences ($p<0.001$), in the basal metabolic rate s there has been difference in the group of 12–14 ages ($p<0.001$). There has been found no difference between the ages 12–13 and 13–14 ($p>0.05$).In the percentage of body fat there has been no difference in three age groups ($p>0.05$). In the values of Fat Mass, there has been considerable difference between the ages 12–14 ($p<0.05$). No difference between the ages 12–13 and 13–14. ($p>0.05$). In the values of fat free body mass, there has been no difference in three groups ($p>0.05$). In the values of total body water there has been considerable statistical differences ($p<0.001$). In the values of waist-hip rates, there has been no statistical difference in three groups ($p>0.05$) (Table 2).

In the Table 3, it has been found out that there is considerable difference between the three age groups ($p<0.001$). In the weights there are differences between 12-14 ages ($p<0.001$), but in the ages of 12–13 and 13–14, there have been no difference ($p>0.05$). There has been no statistical difference in the body mass index, the basal metabolic rate and body fat rates of the females in the three age groups ($p>0.05$).

There have been differences in the fat mass, fat free mass and total body water of students aged between the ages 12–13 and 12–14 ($p<0.05$), whereas there has been no difference in the fat mass, fat free mass and total body water of the ones aged 13-14 ($p>0.05$).

In waist-hip rates, there have been no statistical difference between the ages 12-13 and 13-14 ($p>0.05$), whereas there have been difference in the age group of 12-14 ($p<0.01$) (Table 3).

DISCUSSION AND CONCLUSION

This study is aimed at measuring of bioelectrical impedance analysis, body weight, body mass index, basal metabolic rate, body fat percentage, fat-free weight, total body water, waist and hip ratio of elementary school students who are in the 12-13-14 age group.

The study shows that there is statically a considerable difference in the comparison of male and female body height parameter. (G. Massa 2002., A. Sherriff, C.M. Wright, Reilly J, 2009, M. Çolak and M. Kaya, 2007) have found statistically considerable differences between male and female body height parameter with their studies, in parallel with our study. Our study shows that male body weight is statistically more than female's. G. Koçoğlu, L. Özdemir, Sümer H, 2003, A. Sherriff, C.M. Wright, Reilly J, 2009) have observed statically considerable differences in the comparison of male and female body weight. The results in literature are similar with our results.

The study shows that there is not statistically a considerable difference between male and female mass body index. The other studies in literature show that there is statically a considerable difference between male and female mass body index (E.C. Rush, L.D.Plank, Davies P.S.W, 2003, M.Çolak and M.Maya 2007). According to us, this difference in literature may arise from regional and geographical differences.

Study results show that there is not statistically a considerable differences in the between-group comparison of basal metabolic rate parameter. B. Guida, R. Trio, Nastası A (2004) have not observed any considerable difference between basal metabolic rate of male children and female children's, in parallel with our findings.

With this study, it has been observed that there is statistically considerable difference between male body fat percentage and female's. In a similar study, N.Akış, K. Pala, İrgil E (2003) has observed that there is statically considerable difference between male body fat percentage and female's. This result shows that women have fattier body than men, and women are fattier than men at all ages, and this difference is not great until preadolescence.

Our study shows that there is not statically any considerable difference between parameter of male and female fat mass. G. Massa (2002), B. Guida, R. Trio, Nastası A (2004) has found statically a considerable difference in the comparison of male and female body fat mass. The study result is similar with concerning literature.

The study result shows that there is not statically any considerable difference between male and female fat free mass. In a similar study, G. Massa (2002) has found a considerable difference between male and female fat free mass. These acquired results are in parallel with G. Massa's (2002).

The study results show that there is a considerable difference between total body water of men and women's. B. Guida, R. Trio, Nastası A (2004) have found a considerable difference between fat mass parameter of male children and female children's, in parallel with our findings. It has been observed in the study that there is statically a considerable difference between male and female waist-hip ratio.

It has been observed that there is statically a considerable difference in the comparison of body weight and height of male students who are in the 12-13-14 age group. A. Sherriff, C.M. Wright, Reilly J (2009) has found that there is statically a considerable difference in the comparison of body weight and height of male students, parallel with our findings. Faster transition to adolescence and a faster growth period that male children in these age groups experience may be deemed as an evidence of the acquired result.

While a considerable difference has been observed in the rate of body mass index of male students who are in the 12-14 age group, there is not any considerable difference between 12-13, 13-14 aged male students'. In their study, E. Sivaslı, A. Bozkurt, Özçırpıcı B (2006) has found that there is a considerable difference between body mass index of 12-14 aged male students. The difference between the ages of 12 and 14, age 12 is in the period of preadolescence and 14 age in adolescence, can be important for body mass index.

While a considerable difference has been observed in the basal metabolic rate of male students who are in the 12-14 age groups, there is not any considerable difference between 12-13, 13-14 aged male students'. In a similar study, T. Sturmer, K.P. Gunther, Brenner H (2000) has observed a considerable difference between basal metabolic rate of 12-14 aged male students. This result is similar with our findings. This difference between 12-14 ages may arise from adolescence and preadolescence of male children in these ages.

Any considerable difference has been not found between rates of body fat percentage of male students in these there age groups. In their study, E. Sivaslı, A. Bozkurt, Özçırpıcı B (2006) have not found statically considerable difference between rates of body fat percentage of male students in the 12-14 age groups. It has been thought that any difference cannot be found in the rates of their body fat percentage in that testosterone and testosterone derivative hormones that are produced in the period of males' adolescence support mostly an increase of muscle weight.

A considerable difference has been found between total body water rates of male students in these there age groups. In a similar study, L.A. Moreno, et. al (2001) have found statically considerable difference in the comparison of parameter of total body water rates of male students' age groups. Our study results are similar with this result in literature.

While a considerable difference has been observed in the fat mass of male students who are in the 12-14 age groups, there is not any considerable difference between 12-13, 13-14 aged male students'. F. Şimşek, B. Ulukol, Berberoğlu M (2005) have found a considerable difference between fat mass of 12-14 aged male students, with a similar results to our study results.

A considerable difference has been not found between fat- free body mass and waist hip ratio of male students in these there age groups. In a similar study, L.A. Moreno, A. Sarria, Fleta J (2001)have not found statically considerable difference in the parameter of fat free mass of male students' age groups. It may be said that there is an increase in fat free mass during the transition to adolescence. In a similar study, L.A. Moreno, A. Sarria, Fleta J (2001) have statically found a considerable difference in the parameter of fat free mass of children. It can been said that there is an increase in fat free mass in the period of transition to adolescence. A considerable difference has been found in the comparison of body height of female students in these there age groups.

While a considerable difference has been observed in the parameter of body weight of female students who are in the 12-14 age groups, there is not any considerable difference between 12-13, 13-14 aged female students'. In a similar way, the reported result (N.Akış, K. Pala, İrgil E 2003) of the study on elementary school reveals that ratio of being overweight of female's children increases along with growth, and this report supports our findings.

Any considerable difference has been not statistically found in the analysis of body mass index, basal metabolic rate and body fat percentage of female students in these there age groups. B. Guida, R. Trio, Nastası A (2004) have not found any considerable difference in the body fat percentage of female children, in parallel with our findings. Moreover, P. Deurenberg, J.J.L.Pieters, Hautwast C (1990) have found a considerable difference in fat mass, fat-free weight and total body water of females in the period of adolescence. It is possible to say that there is not any change body mass index, basal metabolism and body fat percentage among female children in this age group.

While a considerable difference has been not statistically observed in the rate of fat mass of female students who are in the 13-14 age groups, there is a considerable difference between 12-13, 13-14 aged female students. In their study, B. Guida, R. Trio, Nastası A (2004) have found a considerable difference in the parameter of fat mass quantity of females. Permanent increase of fat mass quantity along with growth may deemed as the reason of this difference.

The study result shows that there is statistically a considerable difference in the parameters of fat free mass and total body water of females. P. Deurenberg, J.J.L.Pieters, Hautwast C (1990) have found a considerable difference in the parameter of fat mass, fat free mass and total body water of females who are in the period of preadolescence or first adolescence. It can be deemed that these differences arise from the period of adolescence and hormonal changes depending on menarche that is the first menstruation period.

While a considerable difference has been not statistically observed in the parameter of waist-hip ratio of female students who are in the 12-14 age groups, there is not a considerable difference between 12-13, 13-14 aged female students'. Increase of waist-hip ratio along with growth may deemed as the reason of this difference.

As a conclusion, while there is an increase in the height, weight and body composition along with growth, the rate of males do not change and are stable, except height, body weight and fat free mass. It has been concluded that especially females in these ages

groups experience a faster growth and development than males do.

Table 1: The comparison of physical characteristics of male and female

Variables	Sex	n	$X \pm S_x$	t	p
Age (year)	Male	219	13.18±0.05	2.98	0.003**
	Female	82	12.87±0.09		
Height (cm)	Male	219	161.76±0.72	4.14	0.000***
	Female	82	156.44±0.85		
Weights (kg)	Male	219	56.06±1.01	2.87	0.004**
	Female	82	50.81±1.27		
Body mass index (kg/m^2)	Male	219	21.15±0.28	1.23	0.221 ns
	Female	82	20.50±0.45		
Basal Metabolic Rate (kcal)	Male	219	1710.52±38.80	3.85	0.000***
	Female	82	1431.12±57.64		
Body fat (%)	Male	219	19.98±0.45	-5.68	0.000***
	Female	82	24.76±0.66		
Fat Mass (kg)	Male	219	12.29±0.63	-0.74	0.459 ns
	Female	82	13.11±0.64		
Fat-Free Mass (kg)	Male	219	45.56±1.58	3.00	0.003**
	Female	82	37.70±0.72		
Total Body Water (kg)	Male	219	32.37±0.49	5.56	0.000***
	Female	82	27.56±0.53		
Waist-to-hip ratio	Male	219	0.81±0.00	8.17	0.000***
	Female	82	0.74±0.01		

Values are expressed as mean±standard error of mean (SEM) (X±Sx) **P<0.01 ***p<0.001 ns: not significant

Table 2: The comparison of psychical characteristics of male according to the age groups

Variables	age	n	X_{Min}-X_{Max}	$X \pm S_x$	P
Height (cm)	12	56	140-173	152.84±1.07^{a}	0.000***
	13	68	140-181	160.04±1.04^{b}	
	14	95	145-190	168.24±0.92^{c}	
Weight (kg)	12	56	28.90-74.40	45.94±1.50^{a}	0.000***
	13	68	35-91.30	54.65±1.60^{b}	
	14	95	32.40-103.50	63.03±1.49^{c}	
Body mass index (kg/m^2)	12	56	13.70-31	19.57±0.55^{a}	0.001***
	13	68	14.80-33.50	21.13±0.47^{ab}	
	14	95	15.30-34	22.09±0.41^{cb}	
Basal Metabolic Rate (kcal)	12	56	1216-1898	1486.96±24.19^{a}	0.001***
	13	68	1262-7259	1711.24±86.74^{ab}	
	14	95	1223-6782	1841.78±59.27^{cb}	
Body fat (%)	12	56	9.90-34.60	19.78±0.93^{a}	0.639 ns
	13	68	9-43.40	20.61±0.89^{a}	
	14	95	8.10-36.20	19.64±0.62^{a}	
Fat mass (kg)	12	56	2.90-25.70	9.69±0.72^{a}	0.021*
	13	68	3.90-35.40	11.99±0.86^{ab}	
	14	95	3.40-110.60	14.03±1.23^{cb}	
Fat-Free Mass (kg)	12	56	3.70-355	41.43±5.80^{a}	0.052 ns
	13	68	28.60-61	42.68±0.93^{a}	
	14	95	29-70.30	50.06±0.95^{a}	
Total body water (kg)	12	56	19-37.60	26.53±0.66^{a}	0.000***
	13	68	20.90-44.70	31.25±0.68^{b}	
	14	95	21.20-51.50	36.63±0.70^{c}	
Waist-to-hip ratio	12	56	0.73-0.94	0.82±0.01^{a}	0.209^{ns}
	13	68	0.69-0.94	0.81±0.01^{a}	
	14	95	0.67-0.94	0.80±0.01^{a}	

abc^{i} The difference between the values in the same column with different letters is important.

Values are expressed as mean±standard error of mean (SEM) (X±Sx) *p<0.05 **p<0.01 ***p<0.001 ns: not significant, Xmin: Minimum value-X_{max}: Maximum value

Table 3: The comparison of psychical characteristics of female according to the age groups

Variables	Age	n	X_{Min}-X_{Max}	$X \pm S_x$	p
Height (cm)	12	32	135-165	152.31±1.39[a]	0.000***
	13	29	145-168	157.28±1.21[b]	
	14	21	155-173	161.57±1.15[c]	
Weight (kg)	12	32	27.40-68.10	45.73±1.77[a]	0.001***
	13	29	33.50-80.30	52.04±2.29[ab]	
	14	21	41.90-79.10	56.86±2.07[cb]	
Body Mass Index (kg/m^2)	12	32	4.60-28	19.33±0.76[a]	0.080 [ns]
	13	29	14.70-28.80	20.88±0.73[a]	
	14	21	17.40-30.10	21.78±0.77[a]	
Basal Metabolic Rate (kcal)	12	32	1025-1627	1306.53±26.50[a]	0.187[ns]
	13	29	1110-5837	1549.38±157.45[a]	
	14	21	1239-1681	1457.67±27.85[a]	
Body fat (%)	12	32	13.70-38.90	23.54±1.09a	0.287 [ns]
	13	29	16.30-37.50	25.14±1.09[a]	
	14	21	19.20-39.30	26.10±1.24[a]	
Fat mass (kg)	12	32	3.80-22.70	11.25±0.91[a]	0.038*
	13	29	5.60-26.80	13.59±1.11[b]	
	14	21	8-31.10	15.27±1.28[cb]	
Fat-Free Mass (kg)	12	32	23.70-45.70	34.49±0.99[a]	0.000***
	13	29	27.90-55.80	38.42±1.33[b]	
	14	21	33.90-48	41.60±0.96[cb]	
Total Body Water (kg)	12	32	17.40-33.50	25.25±0.72[a]	0.000***
	13	29	20.40-40.90	28.02±0.98[b]	
	14	21	24.80-35.10	30.46±0.71[cb]	
Waist-to-hip ratio	12	32	0.60-0.89	0.77±0.01[a]	0.004**
	13	29	0.65-0.86	0.74±0.01[ab]	
	14	21	0.63-0.85	0.72±0.01[cb]	

abc; The difference between the values in the same column with different letters is important.
Values are expressed as mean±standard error of mean (SEM) (X±Sx) *p<0.05 **p<0.01 ***p<0.001 ns: not significant, X_{min}: Minimum value-X_{max}: Maximum value

REFERENCES

AKIŞ, N., PALA, K., İRGIL, E., AYDIN, N., AKSU, H., 2003, "*Bursa İli Orhangazi İlçesi 6 Merkez İlköğretim Okulunda 6-14 Yaş Grubu Öğrencilerde Kilo Fazlalığı ve Obezite. "* Uludağ Ü. Tıp Fak. Dergisi; 29:17-20.

BAUMGARTNER, R.N., CHUMLEA W.C., ROCHE A.F., 1990, *"Impedance for Body Composition"* Exerc Sport Sci Rev; 18:193–224.

ÇOLAK, M., MAYA, M., 2007, *The Evaluation of Body Composition Concerning to Health-Related Physical Fitness Components of Girls and Boys Aged Between 12-14 Years Old in Erzincan,* Kastamonu Eğitim Dergisi: Ekim: 15 No:2.

GUIDA, B., TRIO, R., NASTASI, A., et al. 2004 *"Body composition and cardiovascular risk factors in pretransplant hemodialysis patients."* Clin Nutr: 23: 363-372.

KARATAŞ, S., TAŞER, F., YILDIZ, Y., KÖSE, H., 2005, *Comparison of Body Compositions Between Medical School Students and Physical Education and Sports School Students by Using the Bioelectrical Impedance Analysis* (BIA) Method, ADU.Tıp Fakültesi Dergisi: 6(3) :5-9.

KOÇOĞLU, G., ÖZDEMIR, L., SÜMER, H., DEMIR, D.A., ÇETINKAYA, S., POLAT, H.H., 2003, *"Prevalence of obesity among 11-14 years old students in Sivas-Turkey."* Pakistan Journal of Nutrition: 2(5): 292-295,

KOPELMAN, P.G., DUNITZ, M., 2003, *Obezite ve İlişkili Hastalıkların Tedavisi,* 1.Baskı, And yayıncılık, İstanbul.

MASSA, G., 2002, "*Body mass index measurements and prevalence of overweight and obesity in school children living in the province of Belgian Limburg".* Eur J Pediatr. Jun; 161(6):343-6. Epub 2002 Apr 26.

MORENO, L.A., SARRIA, A., FLETA, J., RODRIGUEZ, G.., GONZALEZ, J.M., BUENO, M., 2001, *Sociodemographic factors and trends on overweight prevalence in children and adolescents in Aragón (Spain) from 1985 to 1995.* J Clin Epidemiol; 54:921-27.

ÖZÇELİK, O., ÇOLAK, R., AYAN, V., ASLAN, M., 2002, *Determination of Body Composition in Adolescense Using Body Mass Index and Bioelectric Impedance Analysis Methods*, Fırat Tıp Dergisi: 7: 865-870.

SIFİL, A., ÇAVDAR, C., ÇELİK, A., YENİBİÇEROĞLU, Y., ERSOY, R., ÖZAKSOY, D., ÇAMSAN, T., 2001, *The Comparison of Dual-Energy X-Ray Absorbtiometry and bioelectric Impedance Analysis in Determination of Body Composition in Hemodıalysis Patients*, Türk Nefroloji Diyaliz ve Transplantasyon Dergisi: 4: 216-218

ZORBA, E., 2005, *"Vücut Yapısı Ölçüm Yöntemleri ve Şişmanlıkla Başa Çıkma",* Morpa Kültür Yayınları, İstanbul, (In Turkey).

SHERIFF, A., WRIGHT, C.M., REILLY, J., MCCOLL, J., NESS, A., EMET, P., 2009, *Age and sex standardised lean and fat indices derived from bioelectrical impedans anaysis for ages 7-11 year : fonctional associations with cardio – respiratory fitness and grip strength"* Br J Nutr 2009; 101 (12): 1753-60

RUSH, E.C., PLANK, L.D., DAVIES, P.S.W., WATSON, P., WALL, C.R., 2003, *"Body composition and physical activity New zeland Maori, Pacific and european children aged 5 – 14 years"* British Journal of Nutrition (2003), 90:1133-1139 Cambridge University Press

DEURENBERG, P., PIETERS, J.J.L, HAUTWAST, C., 1990, *"The assessment of the body fat percentage by skinfold thickness measurement in childhood and young adolescence",* British Journal of Nutrition (1990), 63:293-303 Cambridge University Press

GUIDA, B.,, ANGELO, P., ROSSELA, T., ROBERTA, L., CLAUDIO, F., NUNZIRA, R.P., SILVESTRE, P.,PIERLUIGI, P. 2008, *"Body Mass Index and bioelectrical vector distribution in 8 -year- old children"* Nutrition, Metabolism and cardiovascular diseases. 18 (133 – 141).

SİVASLI, E., BOZKURT, A., ÖZÇIRPICI, B., ŞAHİNGÖZ, S., COŞKUN, Y., 2006, *Body Mass İndex Reference Values For Children Aged 7-15 Years in Gaziantep Region*, Çocuk Sağlığı ve Hastalıkları Dergisi: 49: 30-35.

STURMER, T., GUNTHER, K.P., BRENNER, H., 2000, *Obesity, overweight and patterns of osteoarthritis: the Ulm Osteoarthritis Study.* J Clin Epidemiol;53:307-13.

ŞİMŞEK, F., ULUKOL, B., BERBEROĞLU, M., GÜLNAR, S., ADIYAMAN, P., ÖZAL, G., 2005, *Obesity prevalence in a primary school and a high school in Ankara*, Ankaa Üniversitesi Tıp Fakültesi Mecmuası: 58: 163-166.

THE EFFECTS OF THE APPLICATION OF GLYCEROL AND FATIQUE IN ACUTE EXERCISE AND ACID-BASE EGUILIBRIUM AND BLOOD GASES

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ABSTRACT

Objective: The aim of the research is to investigate the effect of the applied glycerol reinforcement in the accute exercise on the level of PH, PCO_2, PO_2, HCO_3, TCO_2, BEB and O_2S of the sportsmen and sedanter individuals.

Material: 10 healthy sportsmen, in their avarage age 18.20 ± 0.61, their avarage height 178.20 ± 1.78 cm and avarage body weight 65.17 ± 2.04 kg, intersted in athletism in an elite level and 10 healthy sedanter men, in their ages 19.70 ± 0.47, their avarage height 169.10 ± 2.21 cm and avarage body weight 71.09 ± 1.87 kg as a control group, that's to say, 20 people have participated in this research as tested people.

Method: <In the first day, the examples of blood have been taken from S and C's elbow veins before and after the shuttle run test. After 1 day break, in the 3rd day, before 2 hours of the same exercise test (GET), solution has been applied to both 2 groups by mixing it with 1 gr/kg glycerol water and the same test has been applied again. Before and almost after the applicated ET and GET throughout 2 days, the qualified parameter levels of taken blood examples have been determined.

Result: It has appeared the important differences ($p< 0.005$) in the levels of PH, PO_2, HCO_3, TCO_2, BEB of S and C before and after ET and GET, between 2 groups after ET, the important differences ($p< 0.05$) of the levels of HCO_3, BEB and TCO_2, but the losing of these differences after GET, between S and K in both 2 days after the applied ET and GET, the absence of these differences in the levels of PH, PCO_2, PO_2, the similarity of the levels of PCO_2 of S inside group, the absence of differences of ET in C, but after GET, the level of PCO_2 has decreased in an important level and after GET and ET of C group, the increase of the level of O_2S in an important level ($p<0.05$), after ET, the same increase in S after ET ($p<0.05$), but after GET, the absence of the important difference. Between S and C, there have been no important differences in the levels of O_2S. After and before ET and GET of S and C groups, it has appeared the decrease of the level of BEB ($p<0.05$) in an important level, but the absence of difference between groups.

Discussion and conclusion: In conclusion, it can be said that in the submaximal execise it has appeared metabolic asidosis in both 2 groups, but the applicated glycerol reinforcement together with this exercise protocol has no important effect in this quantity and period at least.

KEY WORDS: Exercise, Glycerol, Blood Gases.

INTRODUCTION

By increasing the intake of glycerol, it has been stated that the time of exercise tolarance will be able to be increased up to approxiamately % 24 percent. (R.A. Robergs and S.E. Griffin 1998, P. Montner, D.M. Stork, M.L. Ricdesel et al 1996). In addition, after the intake of glycerol, the rate of heartbeat has been decreased substantially during the exercise .(R.A. Robergs and S.E. Griffin 1998, P.Montner, D.M. Stork, M.L. Ricdesel et al 1996). Altough it is obvious that glyceol has increased stability. There is no study that its energy substrate function has caused the important develeopment in the exercise. It is interesting that glycerol supplemetation of athleths has been approved by Olympic Commitee in USA in 1997 after collected Works published by Robergs and Griffin (D.R.Robergs and S.E. Griffin 1998).

In the studies about glycerol, it has been suggested that the glycerol should be taken before 60-120 minutes out of competition and race according to environmental condition and this should be given by mixing 1 gr glycerol with 1.5 lt. water according to per kg of each body weight. However, thereis no risk about the intake of glycerol in terms of the health (D.R. Wagner 1999).

Human cells and organs can work in the existence of stabile inner medium, the supply of inner medium means homeostasis. Acids- bases have been continuously ordered for the phylaxis of their normal Ph. For the stabile fixation of its Ph, the essential regulations mean ph homeostatic. The dynamic regulation of ph is provided with the relationship between lungs, kidneys and tampon systems. Lungs and kidneys try to fixate the acid-base balance in the blood. The first task of tampon systems is also to prevent the important changes in blood ph in acid-base defect.

In the free H+, small changes can cause life-threatening results. Negative logarithm of concentration is ph. There is an adverse relationship between the amount of H+ and ph. When the level of H+ increases, ph decreases and when the level of H+ decreases, ph increases. The organism tries to fixate between 7.30 and 7.45 of the ph of tissues and circulatory system, lungs and kidneys with plasm. When the level of ph is 7.40, the amount of H+ is 40 nmol/L. Normal serum sodium concentration is 140 meq /L, it is one millionfold of this amount. (J.C.M. Chan and R.H.K. Mak 2004).

The agents having the capacity of the release of H+ ion have been known as acid. They mix with blood after free H+ releases from chemical agents. The more the amount and quality of acids are, the more the level of H+ is in the solution. There are different acids in the blood and they are free H+ resources, all resources releasing to the solution do not remain freely. Most H+ has relationship with other chemical agents. Chemical agents, being able to combine with H+ mean base. Blood ph is determined according to the balance between acids and bases. When this sensitive balance is destroyed, there is also the defect of acid-base balance.(L.A. Greenboun 2004). While chronic and small defects cause more definite levels of the results, acute and important changes can be fatal. The borders of life- threatening blood ph has been determined as < 6.85 and> 7.70.

In one day, avarage 15.000 milimal carbondioxyde has arised. It cause carbonic acid (H2CO3) by mixing CO2 with water. Free H+ ion arises with the dissolution of H2CO3. CO2 is a potential acid (R.M. Kliegman, R.E. Behman, H.B. Jenson 2007).

The decrease in the level of plasm HCO3 or the increase in the level of CO2 causes acidose, the increase in the level of HCO3 or the decrease in the level of CO2 causes alcolasis. The buffering of the extracellular fluid with bicarbonate, carbonic acid can be evaluated with measurementof blood ph, PCO2, HCO3 or total CO2 clinically. Free H+ or ph is related with the rate of PCO2 and HCO3. This relationship is normal ph's protection mechanism. If the first defect is the decrease in the level of serum bicarbonate, the subject is metabolic acidose. In this situation the increase in alveolar ventiltion compensation and the level of plasm CO2 decreases. Because of this compensation, blood ph is approached to the normal level, but it cannot remain in the normal level.(p<7.30)

If the first defect is the increase in the level of serum bicarbonate, the subject is metabolic alcalosis. In this situation, the decrease in alveolar ventilation happens as compensatris and the level of plasm increases. Because of this compensation, blood ph is approached to the normal level, but again it never remain in the normal level (p<7.45). If the first defect is the increase in the level of blood CO2, the subject is respiratory acidose. If the situation lasts more than 48-72hours (chronic respiratory acidose)the synthesis of bicarbonate in the kidneys increases as compensatris blood ph is approached to the normal level, but it cannot remain in the normal level. If the first defect is the decrease in the level of blood CO2, the subject is respiratory alcalosis. If this situation lasts more than 48–72 hours (chronic respiratory alcalosis), the synthesis of bicarbonate decreases in the kidneys as compensatris and blood ph is approached to the normal level, sometimes it can reach to the normal level.

RESULTS

Table. C and S Groups of Values Before and After Exercise

		B.S		A.S	
	G	***Rest*** Mean±SE	***Exhaustion*** Mean±SE	***Rest*** Mean±SE	***Exhaustion*** Mean±SE
	C	7,39±0,005 **a**	7,28±0,024 **b**	7,38±0,009 **a**	7,32±0,011**b**
PH	S	7,40±0,008 **a**	7,31±0,015 **b**	7,41±0,031 **a**	7,32±0,019 **b**
	C	46,02±1,22 **ab**	39,84±3,09 **b**	48,27±2,04 **a**	41,04±2,10 **b**
PCO_2(mmHg)	S	46,17±0,92	43,34±2,10	45,76±2,09	40,91±3,00
	C	28,15±1,72 **b**	50,58±4,50 **a**	31,68±2,16 **b**	45,62±5,41**a**
PO_2(mmHg)	S	27,47±1,87 **b**	39,87±2,52 **a**	28,84±1,33 **b**	41,31±4,52 **a**
	C	52,04±3,65 **b**	74,68±5,23 **a**	58,04±4,40 **b**	72,21±6,56 **a**
O_2 Sat(%)	S	52,90±4,45**b**	64,60±4,41**a**	54,84±3,82**ab**	67,72±7,24**a**
	C	29,27±0,63 **a**	**B** 19,60±0,75 **c**	29,74±0,68 **a**	22,52±0,84 **b**
TCO_2 (mmol/L)	S	29,91±0,48 **a**	**A** 24,85±1,37 **b**	30,10±0,97 **a**	22,10±0,91**b**
	C	2,27±0,45 **a**	**B** -7,77±0,72 **c**	2,31±0,30 **a**	-4,44±0,62 **b**
BEB(mmol/L)	S	3,01±0,50 **a**	**A** -2,44±1,26 **b**	3,32±1,45 **a**	-4,85±0,69 **b**
	C	27,84±0,59 **a**	**B** 18,38±0,68 **c**	28,25±0,60 **a**	21,24±0,79 **b**
HCO3(mmol/L)	S	28,48±0,48 **a**	**A** 23,14±1,34 **b**	28,68±0,99 **a**	20,84±0,83 **b**

AB: In the same column, the differences between avarage values are ($p<0.05$) important among the group carrying different letters.

abcd: In the same line, the differences between avarage values are ($p<0.05$) important within group carrying different letters.

C: Control group

S: Sportsman group

BS: Before supplementatıon

AS: After supplementatıon

It has appeared the important differences ($p< 0.005$) in the levels of PH, PO_2, HCO_3, TCO_2, BEB of S and C before and after ET and GET, between 2 groups after ET, the important differences ($p< 0.05$) of the levels of HCO_3, BEB and TCO_2, but the losing of these differences after GET, between S and K in both 2 days after the applied ET and GET, the absence of these differences in the levels of PH, PCO_2, PO_2, the similarity of the levels of PCO2 of S inside group, the absence of differences of ET in C, but after GET, the level of PCO_2 has decreased in an important level and after GET and ET of C group, the increase of the level of O_2S in an important level ($p<0.05$), after ET, the same increase in S after ET ($p<0.05$), but after GET, the absence of the important difference. Between S and C, there have been no important differences in the levels of O_2S. After and before ET and GET of S and C groups, it has appeared the decrease of the level of BEB ($p<0.05$) in an important level, but the absence of difference between groups.

MATERIAL

Total 10 sportsmen whose avarage ages are 18.20± 0.61 years, avarage heights are 178.20± 178 cm and body weights are 65.17±2.04kg and who are interested in the branch of athletism in the elite level and 10 healthy and sedentary men whose avarage ages are 19.70±0.47 years, avarage heights are 169.10± 2.21 cm and avarage body weights are 71.09± 187 kg as a control group, that's to say, 20 people have been participated in this study as experimentals.

METHOD

S: Sportsmen group (n:10)

C: Control Group (n:10)

ET: First day before exercise test

GET: Third day before exercise test

Before and after shuttle run test (ET) , in the first day S and C groups' blood samples have been taken from their elbow veins. After one day break in the third day before 2 hours out of the same exercise test (GET) they have been given to both 2 groups as solution by mixing 1 gr/kg glycerol with water and the same test has been applied again. Before and after ET and GET applied in every 2 day, the levels of bloof exemples (fatique) have been determined by using the device labelled with EIRMA point (USA) and CC cartridge.

Exercise Test

20 m mecic running test which applied to people being in experiment is multi-leveled test aiming getting tired of people and its first level is warming up tempo. People run first 20 m distance as coming and going. Running speed is controlled with a tape giving signal voice. People started running when they firstly heard signal voice and reached the line by second signal voice. When they heard second signal voice they were backed to starting line by turning back and the running went on with these signals.The people set their own tempos as being on the other side of the patch when they heard the signal. The running which was slow at the beginning is increased at ever 10 seconds. If a person can't reach the line before signal, but if she can

reach other signal, person went on the test. If person can't reach 2 signals after and after, test is finished. The tiredness is formed on people with this way.

STATISTICAL ANALYSISES

Avarage values and Standard errors of parameters of all experimentals have been counted. Indepented 't' has been used in the importance determination of differences among groups. The repetead measurement has been applied by analyzing variancein the determination of differences in the in-group. Paired 't' has been applied in the determination of differences.

DISCUSSION AND CONCLUSION

In this study, the decrease of PH, PCO2, HCO3 in the important rate below the normal level has shown the metabolic acidose ($p<0.05$). In addition, the important increase in PO2 and O2 sat after every 2 group and exercise has supported this idea. It has stated that glycerol supplementation applied with this exercise test also has shown no important effect.

(J.A. Zalods, A.J. Sergeant, J. Emmerich 1993) The important decrease in 4 marathon runners levels of PH, PHO3, BEB has been informed after applied exercise test in the elite level, in 5 –day run period by providing 2 min-break among periods and 6 min-period, 10 heartbeats in each period and it has shown that this decrease is much more in thelast period. J. Del Coso, N.Hamouti, R. Aguado Jiminez (2009). After 24 min-cycle exercise test applied to 10 trained cyclists and 10 untrained sedentary people in the low and high intensity, the levels of PH, HCO3 are similar in both groups, but after the high intense exercise , there is the decrease in the untrained sedentary people' levels of PH and HCO3, but there is no differences in the trained cylists. So stability exercises have been suggested to develop the tolarance to the low PH level and for the exercises to tampon the metabolic acidose J.D.Coso, N.Hamouti, R.Augoda Jimenez (2009). After short (4.5 min), avarage (6 min), high (9 min) exercises applied to 11 trained sportsmen when analyzing the levels of ph , the important decrease of ph have been informed according to avarage and short execise after high exercise I.I. Douroudos, I.G. Fotourus, V. Gourgoulis et al (2006). It has been informed that the intake of sodium bicarbonate will be able to increase aneaerobic exercise performance and prevent acid-bese defect S. Rojos Vega, H.K. Strüden, B.U. Wahmann (2006). It has been informed that intensive exercise will be able to decrease the levels of PH,HCO3 and BEB, the intake of bicarbonate will be more effective than placebo supplementation. J.C. Siegler and K.Hirschen (2009) It has been put forward that sodium bicarbonate supplementation has increased the capacity of the buffering of the blood and increased the fist performance in amateur boxers before the competition and exercise. Thus, it has appeared that the application of glycerol has no important effect in this study. In addition, F.E. Marino, D.Kay, J.Cannon (2003).It has been informed that the intake of glycerol or placebo has no important effect on body heat or exercise performance. Moreover, L.R. McNaughton, S. Kenney, J.Siegler (2007) before exercise, the intake of 15 ml. Superoxygenated water, PO2 and PCO2 has no effect on submaximal and maximal exercise performance.

Studies mentioned above have shown that the similarities with this research. But, S. Tubek, M.Rekowek, S.Skubis (1999) it has been informed that before and after exercise applied to 8 healthy sedentary people in 2 different days and hours, there has no increase in PCO2 and PO2 and decrease in BEB and change in HCO3 and the study in different hours and days has not changed the results.

Researhes have shown that the exerxise's period, intensity and type cause the change in the acid-base balance. Especially, in the studies, it has been informed that long-dated and high intense exercise will cause metabolic acidose, because of the exercise, the ailments of acid-base balance will be able to be arranged, the supplementations such as placebo, glycerol has no important effect on the ailment of acid – base because of exercise, the intake of sodiun carbonate also will be effective to reinforce the system of the buffering of the blood to prevent acid-base ailments (J.A. Zolads, A.J. Sergeant, J.Emmerich 1993), (J.D.Coso, N.Haumouti, R.Aguado Jimenez 2009), (J.Del Cosa, N. Hamouti, R. Aguado-Jimenez 2009), (I.I.Douroudos, I.G.Foutouros, V.Gourgoulis et al 2006), (S.Rogos Vega, H.K. Strüder, B.U. Wahmann 2006), (F.E. Marino, D.Kay, J. Connon 2003).

In conclusion, in this study shuttle run test has cause fatique because it is a submaximal test. The important decrease in PH, PO2 and PO3 has signed metabolic acidose in both groups. The differences in TCO2,BEB and HCO3 between 2 groups can also result from that S group contains sportsmen and trained people, their recovery periods are short, lungs givequick answer to decreasing PH by increasing ventilation as compensatuar effect, the change in PCO2 is more important in control group. It has been stated this exercise protocol has no effect in this period and amount at least with applied glycerol supplementation.

REFERENCES

CHAN, JCM., MAK, RHK., 2004, *Acid-base homeostasis. In Pediatric Nephrology. Eds.* Avner ED, Harmon WE, Niaudet P. 5th ed. Lippincott Williams&Wilkins. 189–208.

COSO, JD., **HAMOUTİ, N**., **AGUADO-JİMENEZ, R**., **MORA-RODRİGUEZ, R**., 2009,,Restoration of blood pH between repeated bouts of high-intensity exercise: effects of various active-recovery protocols. Eur J Appl Physiol.

DEL COSO, J., HAMOUTİ, N., AGUADO-JİMENEZ, R., MORA-RODRİGUEZ, R., 2009, *Respiratory compensation and blood pH regulation during variable intensity exercise in trained versus untrained subjects.* Eur J Appl Physiol.107(1):83–93.

DOUROUDOS, II., **FATOUROS, IG**., **GOURGOULİS, V**., **JAMURTAS, AZ**., **TSİTSİOS, T**., **HATZİNİKOLAOU, A**., **MARGONİS, K**., **MAVROMATİDİS, K**, **TAXİLDARİS, K**., 2006, *Dose-related effects of prolonged NaHCO3 ingestion during high-intensity exercise.* Med Sci Sports Exerc. 38(10):1746-53.

GREENBAUM, LA., 2004, *Pathophysiology of body fluids and fluid therapy*.In *Nelson Textook of Pediatrics*.Eds Behrman RE, Kliegman RM, Jenson HB. 17th ed.Saunders. 223–34,

KLİEGMAN, RM., BEHRMAN, RE., JENSON, HB., STANTON, BF.. 2007, *Nelson Textbook of Pediatrics.* 18th edition. Saunders Elsevier, Philadelphia, 291–309,

MARİNO, FE., **KAY, D**., **CANNON, J**., 2003, *Glycerol hyperhydration fails to improve endurance performance and thermoregulation in humans in a warm humid environment.* Epub Jul;446(4):455-62.

MCNAUGHTON, LR., **KENNEY, S**., **SİEGLER, J**., **MİDGLEY, AW**., **LOVELL, RJ**., **BENTLEY, DJ**., 2007, *The effect of superoxygenated water on blood gases, lactate, and aerobic cycling performance.* Int J Sports Physiol Perform. 2(4):377–85.

MONTNER, P., STARK, D.M., RİEDESEL, ML., MURATA, G., ROBERGS, R., TİMMS, M., CHİCK, TW., 1996, *Pre-exercise glycerol hydration improves cycling endurancetime*. Int J Sports Med,17, 27–33.

ROBERGS, RA., GRİFFİN, SE., 1998, *Glycerol. Biochemistry, pharmacokinetics andclinical and practical applications*. Sports Med, 3, 145–167.

ROJAS VEGA S., STRÜDER, H.K., WAHRMANN, B.V., BLOCH, W., HOLLMANN W., 2006, *Bicarbonate reduces serum prolactin increase induced by exercise to exhaustion.* Med Sci Sports Exerc.38(4):675–80.

SİEGLER, J.C., HİRSCHER, K., 2009, *Sodium bicarbonate ingestion and boxing performance*.J Strength Cond Res 23(4).

TUBEK, S., REKAWEK, M., SKUBİS, S., ZWOLİŃSKİ, D., WOJNAR, J., 1999,[Venous blood gas analysis sampled from the basilic vein before and afterexercise of the antebrachial muscles--preliminary evaluation of estimatedstability parameters], Pol Arch Med Wewn.101(1):29-32.

WAGNER, D.R., 1999, *Hyperhydrating with glycerol: Implications for athleticperformance***.** J Am Diet Assoc, 99, 207–212.

ZOLADZ, JA., SARGEANT, AJ., EMMERİCH, J., STOKLOSA, J., ZYCHOWSKİ, A., 1993, *Changes in acid-base status of marathon runners during an incremental field test.Relationship to mean competitive marathon velocity*. Eur J Appl Physiol Occup Physiol.67(1):71–6.

COMPAREMENT OF BURNOUT LEVELS OF MALE SPECIAL EDUCATION TEACHERS OF BLIND AND HEARING LOST HANDICAPPEDS

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ABSTRACT

The purpose. We aimed to compare burnout levels of male Special education teacher which are working with different handicaps

Methods. At this study, Special education teachers of 25 blindless and 23 hearing lost were joined volunteerly. Volunteers' working year was between 7 and 12 years. Volunteers were performed Turkish Type of Maslach Burnout Inventory

Data was recorded on computer by using Package programe which called SPSS. Trainers' burnout level was investigated according to their handicap groups which they work by using independent-t test.

Results. As a result of the study, while meaningful difference was found about depersonalization parametres in favour of Special education teachers of blind handicappeds'($p<0.05$), no meaningful differences were found about emotional exhaustion and personal accomplishment parametres ($p>0.05$).

Conclusions. We thought that while Special education teachers of blind handicappeds' sensitivity levels were more, Special education teachers of hearing lost handicappeds' burnout levels were more.

KEY WORDS: Handicaps, Special Education Teachers, Burnout Inventory

INTRODUCTION

Teachers often find themselves working well beyond a 40-hour week as they supervise student projects, coach career development teams, evaluate student work and prepare lessons. The long hours at work, coupled with the stress of teaching could eventually lead to debilitating health problems(Croom B. D., 2003). Handicapped is described as a person which loses one of their physical, mental, sensorial, and social abilities because of any reasons from birth or later, has difficulties about adapting to social life and daily necessity and needs protection, care, rehabilitation, counseling and support services (N.M. Çakmak, 2008).It is so clear that teachers should be patient and selfless as much as their families during handicapped children's education. On the other hand,

being teacher at handicapped children's education can be more stressful because of children's personal proporties like satisfying their necessity, being hard of controling, educating. These are risk factors for teachers at Special education teachers about burnout syndrome(G. Girgin., A.Baysala, 2005).Burnout can be found out almost every workers of every work types (AE., Çoban, Z. Hamamcı, 2008). Burnout syndrome can cause a general decrease of work quality and can be associated to important psychological effects, including depression, anxiety, conflicts with colleagues, indifference and cynicism with patients, increasing alcohol/drugs intake, family strain, relationship breakdown and increased irritability (BJ.Kelly, L. Todhumter L., B. Raphael 1996). Studies about burnout syndrome have mostly included people from certain works, age, groups, genders and ethnic origins. However, there have been few studies on Special education teachers. These few studies have enrolled that mental handicapped students' Special education teachers experience emotional burnout and insensitiveness in different levels depending on sex, socio-economic status, support from collegues, belief on status of their occupation, appreciation from the administrators (G. Girgin, A. Baysala, 2005). Another study is reporting a negative association between the MBI subscale Depersonalization and competence that may be attributed to a distancing mechanism in difficult human interactions (H.Pillay R. Goddard, L.Willss, 2005).At literature, we can find out studies about burnout levels of Special education teachers of menthal or blindness or hearing lost handicapped students but it is really hard to find a comparement about Special education teachers' burnout levels. The aim of this study is to compare burnout levels of Special education teachers of blindless and hearing lost handicapped students.

METHODS. Participants

At this study, 25 Special education teachers of blind handicapped and 23 Special education teachers hearing lost students were joined volunteerly. Volunteers' working year is between 7 and 12 years. Volunteers were performed Turkish type of the Maslach Burnout Inventory

MEASURE

Burn out was put forward as concept by H. Freudenberger at 1974. The Maslach Burnout Inventory (MBI) was developed by Maslach and Jackson (1981). (R. Balay, A. Engin A., 2007, H. Taşdöven, 2005). MBI has 3 dimensions. The three dimensions of the inventory are: Emotional Exhaustion (EE) consisting of 9 items, Depersonalization (D) consisting of 5 items and Personal Accomplishment (PA) consisting of 8 items (R. Balay R., A., Engin 2007, Dorman J.,2003).MBI is a type of likert scala (B. Çapri 2006) and Likert scala was used videly for evaluating personality, attitude and various behaviour (O. Pepe, 2006). These, three dimensions, constitute burnout that: emotional exhaustion, which refers to feelings of being depleted of one's emotional resources, representing the basic individual stress component of the syndrome; depersonalization, which refers to negative, cynical, or excessively detached responses to other people at work, representing the interpersonal component of burnout; and reduced personal accomplishment, which refers to feelings of decline in one's competence and productivity and to a lowered sense of efficacy, representing the self-evaluation component of burnout (C. Maslach, 1993)

Inventory's Validity And Reliability Studies:

MBI teacher form's validity and reliability coefficients were established by Maslach ve Jackson. Inventory's reliability coefficients were found 0.88 for EE, 0,83 for PA, 0,72 for D (C.Maslach, C., SE., Jackson, 1986). In Turkey, Maslach Burnout Inventory was used for teachers by Girgin and Baysal. While Girgin was found inventory's reliability coefficients as 0,87 for EE, 0,74 for PA, 0,63 for D, Baysal was found 0,74 for EE, 0,77 for PA, 0,75 for D (Y. Kayabaşı Y., 2008).

DATA ANALYSIS

Data was recorded on computer by using Package programe which is called SPSS13.0. Special Education Teachers' Burnout level was investigated according to their handicap groups which they work by using independent- t test.

RESULTS

Table 1: Comparement of Special Education Teachers' burnout levels

Parametres	Teachers	n	X_{min}-X_{max}	X±SD	Sx	t	p
Emotional Exhaustion (EE)	Blindless	25	8-29	20,12±5,97	1,19	0,369	$0,714^{ns}$
	Hearing Lost	23	8-29	19,52±5,19	1,08		
Depersonalization (D)	Blindless	25	7-18	11,76±3,36	0,67	-2,645	0,011*
	Hearing Lost	23	8-18	14,09±2,66	0,55		
Personal Accomplishment (PA)	Blindless	25	20-33	27,20±3,49	0,70	-1,639	$0,109^{ns}$
	Hearing Lost	23	24-34	28,61±2,41	0,50		

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

According to table, while, Special education teachers of Blindless handicappeds' EE, D and PA avarage points were found 20, 11 and 27, Special education teachers of hearing lost handicappeds' were found 19, 14 and 28 respectively. That was mean that burnout levels of EE and D parametres of Special education teachers' were high and PA parameter of them was low. There weren't meaningful differences at the parametres of EE and PA ($p>0.05$), meaningful difference were found at the D parameter ($p<0.05$).

DISCUSSION

As a result of this study which was about investigating burnout levels of teachers emplyed different Special education schools; Statistically meaningful difference wasn't found at EE parameter ($P>0.05$). similiar findings were found at article of Oruç(2007). It was seen that Special education teachers of hearing lost handicappeds' were living more emoutional exhaustion than Special education teachers of blind handicapped students. The underlying reason of that situation was thought that that Special education teachers of hearing lost handicappeds' had difficulties to commuicate with hearing lost handicapped students.Meaningful difference was found at D parameter of Special education teachers ($p<0.05$). Similiar findings were found at Çokluk's article (2007). The reason of that was thought that blind handicapped students' feedbacks were more than hearing lost handicapped students. This was created a less job satisfaction for Special education teacher of hearing lost handicappeds.Menaingful difference wasn't found at the PA parameter of Special education teachers ($p>0.05$). The underlying reason of that situation was thought that both of Special education teachers were not happy in the conditions which they were situated and this was created unsuccessful opinion in their mind and they weren't thought that they will be work satisfaction under these conditions.We thought that while, Special education teachers of blind handicappeds' sensitivity levels were more, Special education teachers of hearing lost handicappeds' burnout levels were more.

REFERENCES

BALAY, R., ENGIN A., 2007, *A Research To Determine The Burn Out Level of Elemantary School Supervisors Working in GAP Region.* Ankara University, Journal of Faculty of Educational Sciences, year:, vol: 40, no: 2, 205-232

ÇAKMAK, N.M., 2008, *An Analysis About Disability Definition in The United States of America*, AÜHFD, 57

ÇAPRİ, B., 2006, *Turkish Adaptation of the Burnout Measure: A Reliability and Validity Study* Mersin University Journal of the Faculty of Education, Vol. 2, Issue 1, June 2006, 62-77.

ÇOBAN, A.E, HAMAMCI Z 2008, *Effect of Stres Coping Program on the Level of Vocational Burnout of Counselors* Elementary Education Online, 7(3) :600-613

CROOM, B. D., 2003. *Teacher Burnout In Agricultural Education,* Journal of Agricultural Education Volume 44, Number 2

ÇOKLUK, O., 2001, *Burnout Levels Of Teachers and Managers Employed In The Special Education Schools.* Special Education Journal Vol:3 no:1, 35-47

DORMAN, J., 2003, *Testing a Model for Teacher Burnout* Australian Journal of Educational & Developmental Psychology. *Vol 3, 2003, pp 35-47*

GIRGIN, G., BAYSAL A., 2005, *An Example For Burnout: Special Education Educators' Burnout Level And Some Variables* TAF Prev Med Bull.; 4(4):172-187

KAYABAŞI, Y., 2008, *The Level Of Burnout Of Teachers (The Assessments In Terms Of Some Variations)* Social Sciences Journal Vol:20

KELLY, BJ., TODHUNTER, L., RAPHAEL, B., 1996, *HIV Care: The Impact On The Doctor.* MJA; 165:150.

MASLACH, C., 1993, *Burnout: A Multidimensional Perspective*. In W. B. Schaufeli, C. Maslach, & T Marek (Eds.), Professional Burnout: Recent Developments In Theory and Research. Washington, DC: Taylor & Francis. Pp. 19-32.

MASLACH, C., JACKSON SE., 1986, *Maslach Burnout Inventory*; Press Palo Alto; CA.

ORUÇ, S., 2007, *Examinig The Burnout Levels Of Teachers Employed In The Special Education Schools With Some Variables (The Sample Of ADANA)* Unpublished Master Graduation Thesis, Çukurova University. Social Science Instute, Adana.

PEPE, O., 2006, *Ilköğretim Birinci Kademede Görev Yapan Öğretmenlerin Beden Eğitimi Dersine İlişkin tutumlarının İncelenmesi (The Sample Of Antalya)Pp:18,* Unpublished Master Graduation Thesis, İnönü University, Social Science Instute, Malatya

PILLAY, H., GODDARD, R., WILSS, L., 2005, *Well-Being, Burnout And Competence: Implications For Teachers,* Australian Journal of Teacher Education Vol. 30, No. 2

TAŞDÖVEN, H., 2005, *A Study On Burnout Levels Of Police Officers Aspect Of Working Department* Turkish Journal Of Police Studies Vol:7(3) 43-48.

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NEW STUDY REGARDING THE PHYSICAL ACTIVITY LEVEL AND NUTRITIONAL STATUS OF HEALTHY OLD PEOPLE (60-70 YEARS OLD)

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ABSTRACT

Purpose. The main objectives of this study were to highlight the level of physical activity, nutritional status and the possible needs for intervention among old people in order to promote a successful aging.

Methods. Our study group was represented by 40 healthy people (N = 40), 22 women and 18 men, with different age, from 60 to 70 years old. For assessment we used specific inventory tools considering the age category and also different anthropometric measurements. Thus, we evaluate the level of physical activity using the International Physical Activity Questionnaire (IPAQ) for leisure time activity. Nutritional status was evaluated with an adapted version of Mininutritional Assessment, which offers a view on nutritional habits and anthropometric dimensions. We also used some anthropometric measurements like: height, weight, BMI, waist girth, mid-arm and calf circumference.

Results. From the total number of the study participants, 14 (35 %) didn't achieve a minimum level of 600 MET-minutes/week of free-time physical activities and they were catalogued as sedentary. The rest of the subjects (57, 5 %) had a moderate level of physical activity and respectively (7, 5 %) a high one. Considering the level of physical activity on sex groups, it seems that most of women have a moderate level (59 %), while more men are involved in intense physical activities (11,1 %). There was no case of malnutrition or risk of malnutrition, but in return more than one third of the subjects (35 %) had a high score of BMI and it represents a risk factor for their health. We also observed a positive correlation between the level of physical activity and the nutritional status of healthy old people aged 60 to 70 years.

Conclusions. Maintaining a high level of physical activity can help in reducing the consequences of aging on each person's nutritional status. More than this, the constant practice of different types of physical activity leads to cumulated health benefits and this represents the base of a successful aging.

KEY WORDS: Physical activity, nutritional status, healthy old people.

INTRODUCTION

Aging is a normal and physiological process which affects people since the day of born and it doesn't have to be an intrinsic obstacle to physical activity. There is still a great number of healthy, aged people who are not aware they can involved in different forms of physical activity as long as they are not extreme or requires excessive hard work. After the age of 50, the most important benefits of regular physical activity consist mainly in avoiding, minimizing and/or reversing many of the physical, mental and social vulnerability that often go along with advancing age. Increasing daily physical activity can be of great help in preventing a lot of the negative effects that aging induce on individual's functional ability and health. Also, it was observed that frequently active individuals are less likely to withdraw from society and more likely to actively contribute to social life (M. L. Booth, 2000).The recommendations of the World Health Organization (WHO) for older people physical activity are at least 30 minutes of physical activity daily. This amount can be distributed over the entire day, so that two or three sessions of 10 or 15 minutes each can offer significant health benefits. This is one of the reasons for older people to be as active as possible in their everyday lives (WHO, 2002).Despite all the information accumulated which back up the important positive consequences of physical activity, still very few people aged 50 and over achieve even the minimum amount of recommend physical activity. According to some studies, more than one third of those 60 and older are mostly inactive (Y. Schutz, 2001). Over the time there had been made some adjustments to the health agencies recommendations. The new guidelines promote also the benefits of shorter periods of activity (at least 10 minutes), performed several times a day, taking into account such activities as housework and gardening. Even so, the proportion of those who do not meet at least these requirements remains high. Physical activity for old adults can take many forms, from walking, swimming, stretching, to dancing, gardening, hiking, cycling or organized exercise sessions. Nevertheless, there are some significant considerations specific to the older adult group, with respect to physical activity recommendations. The intensity of aerobic activity should be established by taking into account the older adult's aerobic fitness.Activities that maintain or increase flexibility are also recommended. Older adults at risk of falls are suggested for balance training and older adults that have medical conditions or disabilities that may affect their capacity to be physically active should have first the consent of a doctor.

To be more specific, according to ACSM guidelines, older adults need at least (ACSM, 2000):

- 2 hours and 30 minutes of moderate intensity aerobic activity (brisk walking) every week, and
- muscle strengthening activities on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms), or
- 1 hour and 15 minutes of vigorous intensity aerobic activity (jogging or running) every week and
- muscle strengthening activities on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms), or
- an equivalent mix of moderate and vigorous intensity aerobic activity and
- muscle strengthening activities on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms).

Nutritional status suffers also changes by the time people aged. Undenutrition is known to be common and largely unrecognized in older patients; though, aberrations in indicators of nutritional status may only reflect effects of age and/or functional disability.

Without less importance, quality nutrition may contribute considerably to the health and well being of older individuals, and to their ability to recover from illness.

Considering all this, the main objectives of this study were to highlight the level of physical activity, nutritional status and the possible needs for intervention among old people in order to promote a successful aging.

METHOD

There are many conditions such as disability, acute and chronic diseases that may interfere with nutritional status in ageing patients and to isolate those we selected healthy old for our study. All the subjects had baseline assessment that included anthropometric, nutritional status and physical activity assessment.

Our study group was represented by 40 healthy people (N = 40), 22 women and 18 men, with different age, from 60 to 70 years old. Also, we must specify that all the subjects are retired from played work.

The anthropometrics measurements were performed by a single observer using standard methods with intra observer's differences assessed prior to the beginning of the study. We choose to do anthropometric measurements like: height, weight, BMI, waist girth, mid-arm and calf circumference.

A precise measurement of physical activity in a free-living population is complicated and can be time overwhelming both for participants and evaluators.

There are a great number of methods for assessing physical activity and energy consumption, each having its strengths and limitations. All these can be used in a variety of settings ranging from the laboratory to large population-based surveys (R. E. Taylor-Piliae et al, 2005).

Physical activity recall questionnaires typically assess the type, intensity, frequency, and duration of physical activity during the past day, week, month, or year. We evaluate the level of physical activity using the International Physical Activity Questionnaire (IPAQ) for leisure time activity.

The final results of this questionnaire validation suggest that it has acceptable measurements properties for use in many settings and in different languages and are suitable also for cultural adaptations.

The short form of this assessment tool is referring only to recreation, sport and leisure-time physical activity in terms of vigorous, moderate or no activity, days per week and hours per day.

At the end we can use numeric variables (METs/hour, day or week) or categorical variables (low-, moderate- or high level of physical activity).Nutritional status was evaluated with an adapted version of Mininutritional Assessment, which offers a view on nutritional habits and anthropometric dimensions.

RESULTS

Our study group had an average of 66 years and all of them reported that they are retired and with no health problem.

From the total number of the study participants, 14 (35%) didn't achieve a minimum level of 600 MET-minutes/week of free-time physical activities and they were catalogued as sedentary. The rest of the subjects (57,5%) had a moderate level of physical activity and respectively (7,5%) a high one.

Considering the level of physical activity on gender groups, it seems that most of women have a moderate level (59 %), while more men are involved in intense physical activities (11,1%). There was no case of malnutrition or risk of malnutrition, but in return more than one third of the subjects (35 %) had a high score of BMI and it represents a risk factor for their health.

We also observed a positive correlation between the level of physical activity and the nutritional status of healthy old people aged 60 to 70 years. From the total number of subjects, 65% met the national recommendations of 150 or more minutes/week of moderate- or higher-intensity activity.

Subjects meeting these recommendations reported an average 580 minutes/week of moderate- and higher-intensity activity, while subjects failing

to meet this criterion reported only 60 minutes/week ($p<0,01$).

Regarding the type of physical activity, it seems that walking is the activity of choice (68 % of men and women), then bicycling (12 %) and the rest of pecents are distributed between running, exercising or swimming.

DISCUSSION AND CONCLUSION

Ageing is accompanied by many changes which may impair food acquisition, digestion, and metabolism.

Health care systems must improve the counter-measures for the ascendant tendency of older people and to maintain their health, functionality and quality of life. Currently, the average person who exceed the age of 70 suffers from more than three chronic conditions that necessitate regular medical care and medication, which can bring with them disability and other expense.

The number of people over 60 years old is considered to double in the next 20 years. Most of these older persons will then be living in developing countries.

Reducing and delaying age-related disability is a crucial public health measure and physical activity can play an important role in inducing and maintaining well-being at all ages.

There is a growing recognition that age-related decrease of all body functions may be prevented or even stopped by regularly engaging in physical activities. Numerous evidence demonstrates a strong association between aging and nutritional status. In general, physical activity and lean body mass decrease with aging, while body fat, increases.

Maintaining a high level of physical activity can help in reducing the consequences of aging on each person's nutritional status.

More than this, the constant practice of different types of physical activity leads to cumulated health benefits and this represents the base of a successful aging.

REFERENCES

ACSM's guidelines for exercise testing and prescription, 2000, 6th ed., Philadelphia, PA: Lippincott Williams & Wilkins.

AINSWORTH, B. E., HASKELL, W. L., WHITT, M. C. et al., 2000, *Compendium of physical activities: an update of activity codes and MET intensities,* Med Sci Sports Exerc, 32(suppl): S498–504.

BONNEFOY, M., NORMAND, S., PACHIAUDI, C. et al., 2001, *Simultaneous validation of ten physical activity questionnaires in older men: a doubly labeled water study,* J Am Geriatr Soc, 49: 28–35.

BOOTH, M. L., 2000, *Assessment of physical activity: an international perspective,* Res Q Exerc Sport, 71(suppl): S114–20.

CONWAY, J. M., IRWIN, M. L., AINSWORTH, B. E., 2002, *Estimating energy expenditure from the Minnesota Leisure Time Physical Activity and Tecumseh Occupational Activity questionnaires—a doubly labeled water validation,* J Clin Epidemiol, 55: 392–9.

FORSTER, S., GARIBALLA, S., 2005, *Age as a determinant of nutritional status: a cross sectional study,* Nutritional Journal, 4:28.

GARIBALLA, S.E, 2004, *Nutrition and older people: special consideration for aging,* Clinical Medicine, 4: 411-413.

HASKELL, W. L., KIERNAN, M., 2000, *Methodologic issues in measuring physical activity and physical fitness when evaluating the role of dietary supplements for physically active people,* Am J Clin Nutr, 72(suppl): 541S–50S.

IRWIN, M. L., AINSWORTH, B. E., CONWAY, J. M., 2001, *Estimation of energy expenditure from physical activity measures: determinants of accuracy,* Obes Res, 9: 517–25.

LAMONTE, M. J., AINSWORTH, B. E., 2001, *Quantifying energy expenditure and physical activity in the context of dose response,* Med Sci Sports Exerc, 33(suppl): S370–8.

MARSHALL, A. L., SMITH, B. J., BAUMAN, A. E. et al., 2005, *Reliability and validity of a brief physical activity assessment for use by family doctors,* Br J Sports Med, 39: 294–7.

MATTHEWS, C. E., AINSWORTH, B. E., HANBY, C. et al., 2005, *Development and testing of a short physical activity recall questionnaire,* Med Sci Sports Exerc, 37:986–94.

PATE, R. R., PRATT, M., BLAIR, S. N. et al., 1995, *Physical activity and public health, A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine*, JAMA, 273: 402-7.

RICHARDSON, M. T., AINSWORTH, B. E., JACOBS, D. R. et al., 2001, *Validation of the Stanford 7-day recall to assess habitual physical activity,* Ann Epidemiol, 11: 145–53.

SANCHEZ-GARCIA, S. et al., 2007, *Anthropometric measures and nutritional status in a healthy elderly population,* BMC Public Health, 7: 2.

SCHUTZ, Y., WEINSIER, R. L., HUNTER, G. R., 2001, *Assessment of free-living physical activity in humans: an overview of currently available and proposed new measures*, Obes Res, 9: 368–79.

TAYLOR-PILIAE, R. E., NORTON, L. C., HASKELL, W. L. et al., 2005, *Validity of a*

new brief physical activity survey among older adults, Circulation, 111: e288.

WASHBURN, R. A., JACOBSEN, D. J., SONKO, B. J. et al., 2003, *The validity of the Stanford Seven-Day Physical Activity Recall in young adults,* Med Sci Sports Exerc, 35: 1374–80.

WENDEL-VOS, G. C., SCHUIT, A. J., SARIS, W. H. et al., 2003, *Reproducibility and relative validity of the short questionnaire to assess health-enhancing physical activity,* J Clin Epidemiol, 56: 1163–9.

YOUNG, D. R., JEE, S. H., APPEL, L. J., 2001, *A comparison of the Yale Physical Activity Survey with other physical activity measures,* Med Sci Sports Exerc, 33: 955–61.

U.S. PHYSICAL ACTIVITY STATISTICS, 2005, 2003 *state demographic data comparison, Atlanta, GA: Division of Nutrition and Physical Activity,* National Center for Chronic Disease Prevention and Health Promotion.

WORLD HEALTH ORGANIZATION, 2002, *A physically active life through everyday transport with a special focus on children and older people.*

ALTERATION IN BODY COMPOSITION OF FEMALE PLAYERS IN A THIRD LEAGUE VOLLEYBALL BOUT

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ABSTRACT

Purpose: In this study, we aimed to investigate the effects of single bout of volleyball on body composition in female players of third league.

Methods: Nineteen professional female players that play volleyball in two clubs in Turkish Third League were enrolled in the study. Prior to one league match (pre-exercise) bioelectric impedance analyzes (BIA) were performed using a bioelectric impedance analyzer. After the final period (3rd set) of match was ended, bioelectric impedance analyzes were repeated (post-exercise) in female players of two teams that are named as Diyarbakirspor and Diskispor. Seventeen bio-impedance parameters of body composition were measured. The results of each team before and after match were compared. Because the parameters measured by bioelectrical impedance analysis related to body water affected by water drinking during a match we investigated only some electrical parameters of BIA such as resistance, reactance, phase angle, body capacitance and basal metabolic rate.

Results: The results of the study showed that basal metabolic rate decreased in the Diskispor Team after the mathc ($p<0.05$). Other bioelectrical parameters such as resistance, reactance, phase angle, body capacitance were not found to be significant in Diskispor Team ($p>0.05$). However, only the reactance was found significant in the Diyarbakirspor Team, which is the winner of the match ($p<0.05$).

Conclusison: In conclusion, some bioelectrical parameters can be an indicator of the performance of the sportsman in teams.

KEYWORDS: Volleyball, sports, exercise, body composition, bioelectric impedance

INTRODUCTION

Contemporary sports imply huge training volumes, with thus an increasing danger of overloading. The timely detection of the state of overloading in the organism as a whole or in skeletal muscles presents a difficult and complicated problem[1,2]. In the last decades, the sport of volleyball
has become popular all over the world. During the normal conditions or exercise, body water and electrolyte balance are essential to optimal physiological function and health[2,3].

Bioelectric impedance analyze (BIA) is commonly used in clinical settings and field studies for estimating body composition parameters such as total extracellular, intracellular water compartments, fat mass, body mass, resistance, reactance, body capacitance and basal metabolic rate. However, it is possible to measure some electrical properties of matter such as resistance, reactance, phase angle, body capacitance and basal metabolic[2,4,5]. The application of the bioelectric impedance analysis (BIA) method is growing in popularity because it is safe, noninvasive, rapid, portable, inexpensive, easy to use, and amenable for laboratory, clinical, and field assessment of human body composition. Recently, great advances were made in the art of accurately measuring the electrical properties of matter[6]. However, giving the definition of some BIA parameters such as resistance, reactance, phase angle, body capacitance and basal metabolic rate would help to understand physics of BIA.Resistance and reactance are terms from physics which are part of the complex field of materials and their effects on electricity. Resistance is the ratio of electrical

potential (voltage) to the current in a material. A material with low resistance conducts well, while a material with high resistance conducts poorly. Phase angle is proportional to the ratio of reactance and resistance. Phase angle is an indicator of cellular health and integrity. Body capacitance is the total energy storage capacity of the body cell mass compartment. Basal metabolic rate (BMR) is the number of calories metabolized at rest during 24 hours.As it is known, approximately seventeen parameters can be measured by bioelectrical impedance analysis. However, most of the parameters are related to body water affected by water drinking during a match. Because of difficulties to prevent drinking water during a match analysis the parameters affected by water intake were not evaluated in this study. Therefore, the purpose of this study is to investigate some of the electrical parameters of BIA such as resistance, reactance, phase angle, body capacitance and basal metabolic rate in two third league volleyball team.

METHOD

Nineteen professional female players that play volleyball in two clubs in Turkish third league League were enrolled in the study. Informed consent was taken from each subject and, Helsinki Recommendations was regarded**.** These subjects were questioned about the performance and the health problems. Physical parameters such as age and height were noted. Prior to one league match (pre-exercise) bioelectric impedance analyzes were performed using a portable bioelectric impedance analyzer (Bioimpedance Analyzer, BIA 450, BIODYNAMICS, USA). After the final period (3rd set) of match was ended (post-exercise), bioelectric impedance analyzes were repeated for all subject that they participated in a period of match by substitution with each other. Just before impedance analyzes, subjects were weighed and then they lied face up on a bench in a supine position. Two pairs of sensor electrodes (ecg pads) were placed on the subject's right hand and wrist, and right foot and ankle. A cable was connected between the analyzer and the sensor electrodes. Using the analyzer's keypad, the patient's gender, age, height, and weight (determined at this time) are entered. 50 kHz alternating electric current was applied to current electrodes and, bioelectric impedance parameters were recorded by means of voltage electrodes in accordance with the manufacturer's instructions[2, 5]. When a test was performed, a printout was generated. From the recorded parameters, body mass index (kg/m2), body capacitance (pF), resistance (Ohm), reactance (Ohm), body cell mass (kg), extracellular mass (kg), lean body mass (kg), fat mass (kg), and basal metabolic rate (cal) were evaluated. All players had free access to water intake at the break times of match.

RESULTS

The results of the study showed that basal metabolic rate decreased in the Diskispor Team after the match ($p<0.05$). Other bioelectrical parameters such as resistance, reactance, phase angle, body capacitance were not found to be significant in Diskispor Team ($p>0.05$). However, only the reactance was found significant in the Diyarbakirspor Team, which is the winner of the match ($p<0.05$). The results of two teams are given in Table 1 and Table 2.

Table 1. The results of Diskispor Team Before and after the match

Diskispor Team					
Parameters		**N**	**MEAN**	**SD**	**P**
Phase angle	Before match	10	6,33	0,6	**P>0,05**
	After match		6,23	0,6	
Body capacitance (pF)	Before match	10	574,1	74,44	**P>0,05**
	After match		564,7	71,67	
Resistance (Ohm)	Before match	10	616,27	44,32	**P>0,05**
	After match		625,97	47,75	
Reactance (Ohm)	Before match	10	6872	5,71	**P>0,05**
	After match		69,74	5,76	
Basal metabolic rate (Cals)	Before match	10	1276,5	131,09	**P<0,05**
	After match		1254,6	136,84	

Table 2. The results of Diyarbakirspor Team Before and after the match

Diyarbakirspor Team					
Parameters		**N**	**MEAN**	**SD**	**P**
Phase angle	Before match	9	6,7	0,42	**P>0,05**
	After match		6,6	0,52	
Body capacitance (pF)	Before match	9	618,66	50,48	**P>0,05**
	After match		611,66	56,36	
Resistance (Ohm)	Before match	9	604,82	33,22	**P>0,05**
	After match		596,26	30,79	
Reactance (Ohm)	Before match	9	72,03	7,24	**P<0,05**
	After match		69,11	6,74	
Basal metabolic rate (Cals)	Before match	9	1559,55	190,42	**P>0,05**
	After match		1560,11	198,67	

DISCUSSION AND CONCLUSION

In the human body, low resistance is associated with large amounts of fat-free mass. High resistance is associated with smaller amounts of fat-free mass. Reactance is the effect on an electrical current caused by a material's ability to store energy. Reactance is seen as a time delay between an applied electrical potential and current. A material that stores energy readily has high reactance, and causes a large delay in the current. A material that stores energy poorly has low reactance and causes a small delay in the current. In the human body, high reactance is associated with large amounts of body cell mass (intracellular mass). Low reactance is associated with smaller amounts of body cell mass. Phase angle is an indicator of cellular health and integrity. Research in humans has shown that the relationship between phase angle and cellular health is increasing and nearly linear. A low phase angle is consistent with an inability of cells to store energy and an indication of breakdown in the selective permeability of cellular membranes. A high phase angle is consistent with large quantities of intact cell membranes and body cell mass. Body capacitance is the total energy storage capacity of the body cell mass compartment. A high capacitance is an indicator of large quantities of intact cellular membranes. A low capacitance indicates lower quantities of intact cellular membranes. Capacitance is determined by the number and quality of cell membranes contained within the body cell mass compartment. Basal metabolic rate (BMR) is the number of calories metabolized at rest during 24 hours (L.E Armstrong, AND Y. Epstein 1999,http://www.biodyncorp.com/product/450/450.HTml, S. Dasdag, M.Z Akdag, M.S., CElik 2008).In our study, because the parameters measured by bioelectrical impedance analysis related to body water affected by water drinking during a match we investigated only some electrical parameters of BIA such as resistance, reactance, phase angle, body capacitance and basal metabolic rate. However, the results of the study showed that basal metabolic rate decreased in the Diskispor Team after the match ($p<0.05$). Other bioelectrical parameters such as resistance, reactance, phase angle, body capacitance were not found to be significant in Diskispor Team ($p>0.05$). However, only the reactance was found significant in the Diyarbakirspor Team, which is the winner of the match ($p<0.05$). In conclusion, some bioelectrical parameters can be an indicator of the performance of the sportsman in teams.

REFERENCES

FERRETTI A, ZEPPILL P., 2003, *Volleyball: description, injuries, physiology, training*. Available at: http://www.sportsci.org/encyc/drafts/Volleyball.doc;

CERIT S, AKDAG MZ, DASDAG S, KARAKOC Y, CELIK M., 2009, *Alteration in Body Composition of Elite Professional Female Players in a Premier League Volleyball Bout*. Journal of International Dental and Medical Research. 2: 1; 33-36.

ARMSTRONG L.E, AND EPSTEIN Y., 1999, *Fluid-electrolyte balance during labor and exercise: concepts and misconceptions. Int. J.* Sport Nutr.; 9:1-12.

DASDAG S, AKDAG M.Z, CELIK M.S., 2008, *Bioelectrical parameters of people exposed to radiofrquency in workplace and houses provided to workers.* Biotechnol. and Biotechnol. Eq., 22:859-863.

HTTP://WWW.BIODYNCORP.COM/PRODUCT/450/450.HTml. *B*iodynamics Corp. (2007). Handbook of BIA 450,

LAFARGUE A.L., CABRALES L.B., LARRAMENDI R.M., 2002, *Bioelectromagnetics,* 23, 450-454.

❖ RECREATION

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ENTERTAINMENT AND SPORTS ANIMATION – EFFECTS AND BENEFITS

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ABSTRACT

Entertainment services are conceived to ensure a pleasant spending of the holiday time. The complex problem of agreement and the benefits of sport activities was approached by many authors such as: G. Stănciulescu, N. Lupu, G. Țigu, D., R. Minciu a.n.

The research was made during holiday at Vega Hotel on a group of 200 persons. Selected by the time spend on holiday and taking into consideration the importance of sportive activities practiced during the agreement programmes with the purpose of the improvement of functional capacity of tourists.

Hypothesis of the research - the implementation of certain sporting activities coordinated by license specialists as part of the entertainment hotel programme entails the improvement of the subjects' functional capacity, of their physical development parameters and of their psychomotor relaxation capacity.

The research results confirmed the hypothesis. The main conclusion is that the agreement and sport programmes have multiple benefits over the tourists.

KEY-WORDS: entertainment, sport animation, effect, benefits, functional capacity.

INTRODUCTION

The pleasant spending of the leisure time at the place of destination is also one of the main preoccupations for the holiday providers. The development of such activities/services that meet theses requirements depends, on the one hand, on the evolution of the holiday content which can no longer resume to offering tourists accommodation and meal conditions and, on the other hand, on the reconsideration of the free time value. The entertainment services are specific to the long- and medium-stay tourism units, the rest units and the high class units. For the purpose of performing such activities, one needs facilities that are adequate for the spending of the leisure time and for amusement: sports fields, pools, saunas, gym and fitness centres, slot machines, etc., but also qualified personnel to train and monitor tourists.The typology of the activities focusing on this objective varies greatly in accordance with the variety of the ways and places to spend one's holiday. They are generally defined as animation/entertainment and stand as a distinct and important component of the tourism product. The attainment of a holiday's main purpose – rest, recreation and fun, escape from reality - assumes, among other things, the creation of a relaxation environment. In the same time, the increase in the preoccupations for the materialization of the active rest desideratum – an essential characteristic of modern society holidays – stimulates the appearance and development of a certain category of specific services, namely the entertainment services.

Theoretical grounds.

Tourist entertainment may be defined as the set of means, equipments, events and forms offered by social groups with a view to create a state of well being and pleasure, to offer the sensation of a satisfaction, or a fulfilment, or to leave a favourable impression and memory (G. Stănciulescu, N. Lupu, G. Țigu, 1998). In its quality as main component of the tourist product, the entertainment also fulfils a series of functions; these functions are different according to the tourist and his physical and psychological needs, as well as according to the holiday providers (economic agent and resorts) and their problems.With respect to tourists, entertainment (animation) first of all takes into account the satisfaction of their physical needs for rest, relaxation, movement and even the development of their capacities. For this reason, the sporting activities, especially those which set the body in motion – starting with the mere walk and ending with the practising of complex sports – and their corresponding facilities: sports fields, tracks for wayfarers or mountaineering, ski slopes, swimming pools are encouraged. The second aspect concerns the psychological invigoration of tourists by means of relaxation, amusement, the creation of an atmosphere of communication and good humour and even by enriching tourists' knowledge. The satisfaction of these requirements implies the organization of cultural-entertaining and instructive-educational activities; this category includes trips, visiting different tourist objects, assisting to shows, meeting with representatives of different professions, taking part in contests, stimulating creation, etc.From the tourism organizers' point of view, entertainment appears first of all as a factor of competitiveness for resorts and units and of enhancing their attractiveness by the differentiation of the tourism supplies. In the same time, it is a way to individualize products and destinations having stimulating effects on the tourist traffic. The existence of the entertainment and the variety of its forms stir up tourists' interest in a certain area and ensure, for most of the times, their return. Entertainment also stands as an important source of revenues and of economic efficiency growth. Generally, entertainment holds around 10-15% of the total holiday spending from the tourist industry, though the percentage significantly varies from one form of tourism to the other; thus, skiing, hunting, yachting or the extreme sports assume the allocation for this type of activities of sums of money that shall materialize in the increase of the total volume of receipts and, accordingly, in the modification of the place assigned to these activities in the holiday budget.The recognition of the increasingly important role of the animation as part of the tourism supply translates in

the new approaches regarding the arrangements of the tourist areas and resorts, which turn the entertainment facilities into one of the main components of the tourism facilities. The entertainment activities are - as shown – of a great diversity, arising from the need to meet as much as possible the individual and group requirements, the specific character of the resorts and the reasons that generated the trip.One of the most expressive and complete ways of classifying the entertainment services takes into consideration its content, namely (R. Minciu).

Table 1. Types of tourist animation

Types of animation	Characteristics	Forms
The animation for pure relaxation purposes	this category comprises activities such as sunbaths and baths in the sea, walking-wayfaring, sight-seeing, meeting with friends and relatives.	Shopping Trips Walks
The recreational animation	general (facilities for amusement and/or populated with characters from fairy-tales or comic strips), thematic (nautical, planetarium, zoological), reservations and casinos.	Trips
The commercial animation	usual or specific shopping (presents, souvenirs, handicraft items) which appears as a pleasant way to spend free time.	Shopping
The animation oriented at achieving optimal body shape	the spread typology of the treatments - from the balneal treatment, as medical product, to the weight loss, beauty treatments and fitness - as well as practising different sports as a way to maintain good health.	Practising sports
The cultural animation	Its objective is to get to know the tourists, to form and educate them, focusing on the moral side of their personality. It is one of the most widespread types of animation and one of the most accessible to tourists, irrespective of their level of education and their convictions (political, religious).	Visits to museums and memorial houses, taking part in various cultural events, circuits related to the life and work of certain literature, music, national and universal art personalities, scholarships, trips for the purpose of learning foreign languages, visits to places of worship (churches, monasteries, cathedrals, mosques) and pilgrimage.
The show animation	is characterised by a variety of forms; among these, nature trips for its landscape diversity, as well as the richness of its flora and fauna.	Theatrical events, cinemas, musical, art and folklore events, sports competitions – national or international championships Olympics, rallies, contests.
The gastronomic animation	usually addresses a specialized type of audience	Fairs and exhibitions, congresses, circuits with an industrial, agricultural content.
The professional animation	Addresses a specialized public, generates an important volume of tourist spending for the business tourism, focuses on developing specific skills of the employees	Reunions, congress events, conferences, seminars Fairs and exhibitions

Source: [1] Rodica Minciu *The Economy of Tourism*, 3rd edition revised and enlarged, Uranus Publ. House, Bucharest.

In order to entertain its clients, the Vega Hotel offers the possibility to rent ski-jets and water wheelers, and the hotel beach has 3 volleyball courts, a football court and a playground for children under Kindergarten supervision.

This is why Vega created on the first floor of its hotel an intimate atmosphere area for relaxation where hotel guests may benefit from the assistance of specialists in body harmony: Sauna (2 persons), Jacuzzi (4 person-capacity), massage salon, body treatment salon, fitness room.

The purpose of the research

Is to underline the effects of practising sports under the coordination of a specialist on the workload of each individual that takes part in such entertainment programmes during his holiday.

Hypothesis of the research

The implementation of certain sporting activities coordinated by license specialists as part of the entertainment hotel programme entails the improvement of the subjects' functional capacity, of their physical development parameters and of their psychomotor relaxation capacity.

The procedures and methods of research

The research was carried out during the summer holidays (June 1st - September 1st, 2009) at the Vega Hotel on a number of 200 persons aged between 25 and 65 years old (100 women, 100 men). These persons have been selected based on the criterion of the duration of their stay, meaning that only persons with a stay of at least one week and who agreed to daily participate in the sporting

activities of the entertainment programme have been selected.

Each participant in the experiment was subject to the Ruffier test. The Ruffier test is a sub-maximal stress test based on the measurement of the heart rate during the period of recovery from effort. The Ruffier index (RI) is calculated from formula:

$$\text{RUFFIER INDEX} = \frac{(P2 - 70) + (P3 - P1)}{10}$$

The interpretation is done according to the value of the Ruffier index: 0 – 2.9 good index; 3 – 6 average index; over 6 – deficient index.

Animation programmes

One of the animation programmes offered by the Vega Hotel during 09.06-11.06 included the following:

09.06.2009

Clients shall check-in at 12:00, at the Vega Hotel;
Between 12:00 and 14:00 clients may have lunch at the Akolade restaurant;
Between 14:00 and 17:00 they can still have coffee, tea, cookies, snacks, sandwiches or fruits served in the Violet Lounge;
Dinner is served between 18:30 and 21:00 in the Akolade restaurant;
Between 21:00 and 21:30 children may go to the hotel disco. The entertainers organize different games for children and teach them how to dance.
After 21:30, the entertainers prepare a hypnosis show for adults and a disco programme with a DJ.
All inclusive: 10:00-22:00, drinks served after 22:00 shall be charged.

10.06.2009

Sporting activities:

Between 10:00 and 12:00 – aqua gym programme, football games for boys and girls; water gymnastics for ladies and water wheeler contest for gentlemen.
Between 14:00 and 18:00 volleyball games and water aerobics for adults, football games for children; train rides in Mamaia;
Between 10:00 and 18:00 – Mini club type of activities for children. Children activities include stories, puppet theatre, etc.
From 21:00 to 21:30 children may have fun and dance at the children disco under the careful supervision of the entertainer. At the end, children shall be awarded the certificates for their performances during that respective day.
Starting with 21:30, clients may attend a pantomime and amusement show. The Violet Lounge Bar is equipped with a telescope that hotel guests can use to look at the constellations and where they can find interesting information related to the sky.

Meal and drinks

Between 08:00 and 10:00 clients may have breakfast in the main restaurant;
Between 10:00 and 11:00 the hotel guests may have hot drinks, snacks and fruits served in the Lounge Bar;
Between 12:00 and 14:00 tourists may have lunch in the Akolade restaurant.
Between 14:00 and 17:00, they may still have coffee, tea, cookies, snacks, sandwiches or fruits served in the Lounge Bar;
Dinner is served between 18:30 and 21:00 in the Akolade restaurant;
Between 21:00 and 21:30 children may take part in the programme prepared by the entertainers which includes dancing and game playing.
All inclusive: 10:00-22:00, drinks served after 22:00 shall be charged.

12:00 to 15:00 Buffet type of Festive Lunch served in the Akolade restaurant, amusement programme, show, DJ disco;

Between 15:00 and 17:00, tourists may have coffee, tea, cookies, snacks, sandwiches or fruits served in the Delice gelateria.
Hotel guests may have dinner between 19:00 and 21:00 in the Akolade restaurant;
After 21:00 – amusement programme, DJ disco for tourists. The entertainers invite famous dancers and they teach tourists different Latin, folk and other types of dance movements.

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Sporting activities:

Between 10:00 and 12:00 – aqua gym programme, swimming contest at the pool for children and football or volleyball games for adults.
Between 10:00 and 12:00 – Mini club type of children activities.

Meal and drinks

Between 08:00 and 10:00 hotel clients may have breakfast in the Akolade restaurant;
Between 10:00 and 11:00 the hotel guests may have hot drinks, snacks and fruits served in the Akolade restaurant;
12:00 - check out. The guests' stay is over.
Entertainment and sports:

- indoor pool, lounge chairs, sun shades and towels - 09:00 to 20:00;
- sporting activities: fitness centre, tennis table, water gymnastics, aerobics, darts, pool volleyball – 09:00 to 20:00;
- according to the day or evening programme: life music, evening shows, folk shows and other types of shows, animation, prize contests, dances, DJ, various games, dance lessons, karaoke;
- supervised activities for children: children's club, playground for children, egg painting, etc. 10:00 – 18:00;
- children's disco according to the animation programme – 20:00 – 20:30;

  part of the activities are available on a weather-permitting basis.

Animation programme:

- daily sporting activities: football, volleyball, basketball, tennis, gymnastics, aerobics, pilates, Windsurfing, aqua gym, darts, tennis tables, etc.
- entertainment show every night;
- disco with pro DJs;

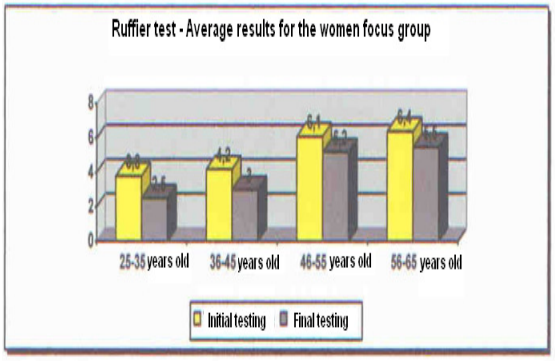
- children's mini club: entertainers, face painting, children's party, mini disco.

Sports and relaxation: fitness centre, 2 open air pools: one for children and one for adults, lounge chairs, sun shades and towels for pool, beauty salon, Spa, massage, sauna, Jacuzzi procedures;

Table 2. Centralizing the results of the research

Ruffier Test				
Focus group / Age		X – Initial test	X – Final test	X – Diffe-Rence
Women's focus group	25-35 years old	3.8	2.5	1.3
	36-45 years old	4.2	3	1.2
	46-55 years old	6.1	5.2	0.9
	56-65 years old	6.4	5.5	0.9
Men's focus group	25-35 years old	2.8	1.4	1.4
	36-45 years old	3.1	1.9	1.2
	46-55 years old	4.2	3.5	0.7
	56-65 years old	5.8	5	0.8

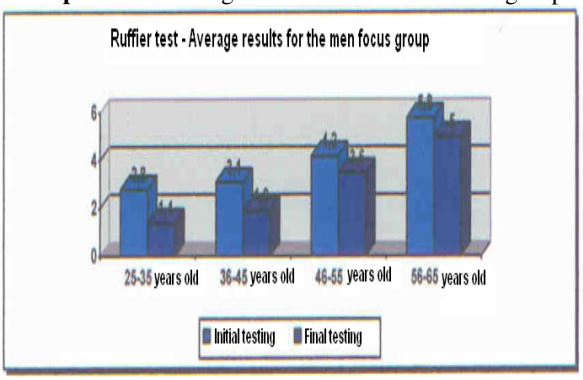
Graphical 1. Average results for the women focus group



Result interpretation

This function test indicates that the initial testing of the women's focus group registered values that are inferior to the ones of the final testing. The focus group aged between 25-35 years old registered an IR average value of 3.8, while the final one was of 2.5. The average result thus improved from a medium index to a good one. In the other focus groups, an important improvement of the functional capacity can be noticed; thus, the final IR testing was under 6, which determines a medium range IR.

Graphical 2. Average results for the men focus group



RESULTS

In the case of the men's focus group, an amelioration of the functional capacity can be noticed in all the age categories as a result of practising the motor activities included in the entertainment programme implemented for the purpose of the research. The improvement of the functional capacity between the two tests was higher for the 25-35 years old and the 36-45 years old categories as compared to the 46-55 years old and 56-65 years old categories for which the increase was inferior to the first two categories, though significant. It is to be noticed that in the 25-35 years old category the IR turned from a medium one to a good one as a result of the motor activity programme, this increase being the highest of all the age categories.

Conclusions. The results of the research confirmed the hypothesis, proving that the participation in the motor activities designed for the holiday-specific entertainment programme triggers the improvement of the participants' functional capacity, as well as the increase in the attractiveness of the holiday-specific activities.

The entertainment development strategy – as a major preoccupation of the tourism organizers – is defined, in this context, according to tourists' motivations, aspirations and expectations (and varying according to age, education, proneness, character), as well as to the profile, structure and characteristics of the resorts involved. With respect to the objectives, the following should be achieved:

- ensuring suitable facilities (sport fields and centres, transportation means, entertainment means, sports materials renting centres, showrooms, etc.);
- hiring specialized personnel: entertainers, trainers, etc. and having centres (schools) for their period training;
- developing programmes (actions) with an entertainment-recreational character (trips, contests, shows), as well as activities and client information means with respect to these activities.

Generally, a good organisation and progress of the entertainment, together with the attractive content of its related actions, stands as an additional way to attract tourist flows and to encourage trips.

BIBLIOGRAPHY

BĂDĂU, D, 2009, *Motor, somatic and functional evaluation,* course notes, University George Baritiu, Braşov

STĂNCIULESCU, G. LUPU N., ŢIGU,G., **1998,** *Multilingual Dictionary of Tourism Terms*, All Publishing House, Bucharest

MINCIU, R., **2000**, *The Economy of Tourism*, 3rd edition revised and enlarged, Uranus Publishing House, Bucharest

CAMARDA, A., 2007, *The Economy of Tourism*, 3rd edition revised and enlarged, Omnia Uni S.A.S.T. Publishing House, Braşov.

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INVESTIGATION OF PHYSICAL PARAMETERS OF TURKISH FOLK MALE DANCERS WHO PLAY DIFFERENT REGIONAL DANCES

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ABSTRACT

The purpose of this study is to investigate the male and female halay, horon and zeybek Turkısh fok dancers' charectirictis and compare them according physical parameters .

Totaly 118 voluntary male dancers at least 5 years experience in halay, horon and zeybek had participated to the study.

In this research age, height, weight, anaerobic power, speed, flexibility, reaction time, leg force and body fat percentage of the groups had measured. The statistical analysis of data had calculated in the computer by SPSS 10.0 package program. The significant level had taken as 0.05 and 0.01 ($p<0.05$ and $p<0.01$)

In the study it had found out that there's significant importance in the speed, anaerobic power, flexibility, reaction time, leg force and body fat percentage in the level of significant difference in grops. ($p<0.05$)

As a result; at the and of dances exercises, it had found out dancers that playing halay and horon, which practicing physical activites more intensively, have more positively afected values of flexibility, speed, body fat percentage and reaction time according to zeybek dancers.

KEY WORDS: Turkish Folk Dances, Halay, Horon, Zeybek

PURPOSE

Have different cultures in social structures, the nature, the climate and the geographical conditions has been seen the diversity which it has added to the folk dances clearly. (Ş. Baykurt, 1996, R.Su, 2000) There are different species at Turkısh Folk dances)halay, horon, zeybek) This dances figure features are different than each other. The movement with respect to diversity, Turkish folk dances which have a very rich constructions, according to playing time and playing speed, the can live on the players' some physical features. However, based on skills and a high degree of difficulty of movements of the game, uninterrupted, back to back and made a long time, motoric characteristics of the players has been also contributed to the development (A. Mis, 2001) In order to be able to make the movements which the games has necessitated the players' physical appropriateness is suitable of their levels necessary. Physical appropriateness developes with the regular exercises. (A. Ünveren, 1997) Consisting of complex movements, such as folk dance aerobic and anaerobic exercise is effective in the development of physical fitness. (G. Baltacı,1996). Incorporates many different features of the regional diversity of Turkish Folk, can show different effects in terms of physical and physiological on players who plays this sites. The existing literature on information that is not enough requires such a study. In the study, it is aimed determining the physical features of the man players who plays the games "horon", "zeybek" and "halay" at least five years and comparing the physical parameters of them.

METHODS

In the study, 118 volunteers who are male spotmen from three different regions were selected. Before the measurements, the pre-warm up exercises was performed for 15 minutes by the players.

Measurements of height and body weight: Volunteer of the body weight was measured with the weighing instrument which has 0.01kg sensitivity. During the measurements,it was considered that the athletes were being barefoot and the shorts and t-shirts on them. In this case, volunteers were allowed to stand upright and the height of the volunteers received tapes with.

Measuring vertical jump: This study has been done to find the maximal anaerobic power of the legs of the volunteers. Volunteers, while in the upright position by extending one arm above the point where the fingertips touch the marked. After the jump with all the force and can jump straight to the top spot has been marked (N. Akgün, 1994) As a result of the test, using the formula given below Liwis'in anaerobic power of the legs was calculated.(E, L Fox,1998) P=Anaerobik power W= Body weight D= Vertical jumping distance (m) $P= \sqrt{4.9} \times W \times \sqrt{D}$

Speed Measurement: Volunteers waited in 30-meter track at the starting line. By the giving mark, the sportsmen run the 30 meters course

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light, mixed sound from right or left side) 10 times for each of volunteers during the measurement.

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RESULTS. Results are shown in table 1.

Conclusıons.Aerobic power between the ages of 18-25 has the highest levels. A gradual decrease is observed after this age. (T. Bompa, 1986) Skip, jump, roll and downfall, as such actions are implemented mandatory in Turkish Folk Dance. Anaerobic power system is therefore significantly affected. (Ş. Ünal, 1992) It is think that the often used movements downfall and jumping in Halay may affect the anaerobic power of the players. It is thought that the contribution of falk dance training at the speed of development is very small, however it is thought that it supplies a positive contribution on the side of physical and physicolical for players during the training. (Z. Gerek, 2007) Despite the training speed is less developed. It is thoght that Folk dances are not for speed work don't supply an important contribution.

The joint properties and the structure of muscle can affect flexibility. (S. Muratlı,2005) Ünveren have found that an increase in the flexibility of folk dance group with regular three months training (A. Ünveren, 1997) In the study, there is a significant difference in favor of the players who play Horon region. Having a lot of movement which affect the flexibility in Horon region Folk dance and recurrence of this actions can increase the flexibility of the players. Leg strength in the people who play Folk dance is more advanced than players who do not. This is because of the people play Folk dance as active and are working at high speed. (Ş. Ünal, 2004) Having the figures such as jump, skip or downfall which perform the leg muscles Folk dance training and the recurrence them in training can affect the leg strength of the players. (Ş. Günay 1992) It is thought that Halay and Horon Folk Dances which have particularly more movements perform the leg muscles increase the leg strength more than Zeybek Folk Dace. In literature, there have not been a study about aneorobic flexibility of Horon , Zeybek and Halay Folk dances. According to obtained data the anaerobic endurance of horon players are more positive than other local players. Horon dances are played for a long time at a high tempo so that it is a very forcibly structure in terms performance for the players. The more physical activity and the more speed of the game cause a decrease of body fat. (A. Gupta, 2005) Adiloğulları and his friends has found that the players of the Horon Dances have less body fat than Halay Dances. (İ. Adiloğulları, 2007). The training time, the frequency of training and the force of the training are the factors of decreasing the percent of body fat. (Ö. Şenel,1991). Because of the speedy structure of Horon and Halay the players who play these dances may have less percent of body fat. Whereas it is thought that the players of Zeybek with low tempo may have more percent of body fat.

Table 1:The comparison of physical properties of the group

Variable	Halay N=34 X ± SD	Horon N=45 X ± SD	Zeybek N=9 X ± SD	F	p
Year (yıl)	23,5 ± 6.04^{ab}	21,1 ± 2.46^{a}	25,1 ± 3.99^{b}	9,460	**,000****
Height (cm)	1,76 ± 0.64^{a}	1,75 ± 0.48^{a}	1,75 ± 0.48^{a}	2,110	,115
Body weight (kg)	68,4 ± 12.0^{a}	65,6 ± 6.54^{a}	75,4 ± 11.5^{b}	10,144	**0,00****
Anaerobik Power (kgm/sn)	126,4 ± 16.7^{a}	108,3 ± 16.7^{b}	103,8 ± 22.6^{b}	14,48	**0,00****
Speed (sn)	4,73 ± 0.36^{a}	4,86 ± 0.41^{a}	5,56 ± 0.83^{b}	22,43	**0,00****
Flexibility (cm)	5,07 ± 4.64^{a}	7,32 ± 3.37^{b}	4,56 ± 3.31^{a}	6,391	**,002****
Leg force (kg)	90,6 ± 19.7^{a}	68,5 ± 18.4^{b}	75,1 ± 11.1^{b}	17,186	**,000****
Anaerobik Endurance (sn)	17,9 ± 3.42^{ab}	17,0 ± 1.74^{a}	18,9 ± 2.70^{b}	5,151	**,007****
Percent body oil (%)	15,0 ± 2.47^{a}	11,4 ± 1.60^{b}	17,7 ± 2.98^{c}	71,706	**,000****
The reaciton time of right hand (ms)	207,64 ± 33.8^{ab}	187,50 ± 18.3^{a}	212,60 ± 41.2^{b}	2,498	,087
The reaciton time of left hand (ms)	209,00 ± 33.6^{a}	199,09 ± 11.6^{a}	240,15 ± 51.7^{b}	12,988	**,000****
The reaciton time of right hand for the light (ms)	198,35 ± 16.2^{ab}	191,84 ± 16.6^{a}	232,72 ± 42.4^{b}	9,737	**,000****
The reaciton time of left hand for the light (ms)	229,64 ± 22.7^{a}	217,31 ± 16.5^{b}	243,42 ± 42.8^{a}	20,666	**,000****
The mixed reaciton time (ms)	262,23 ± 37.4^{ab}	255,00 ± 18.5^{a}	297,63 ± 53.3^{b}	7,809	**,000****

****P<0.01 **p<0.001** abc: If two cells in each row of the table contain the same letters (a,b,c) you can not say that there is difference between groups

Ünveren has determined that the pretest avarage value of reaction time of hands againest the sound by working three months with a group of folk dances is 18.611 + 2.033, the avagrage value of post-test is 17.444 + 1.653, the pretest avarage value of reaction time of hands againest the light is 19.056 + 2.014 and the avarage value of post-test is 17.167 + 1.043. (A. Ünveren, 1997). The reaction time is associated with alert and also it is related to situation in the activity. In many studies, regular physical activity is known to have developed a simple and choice reaction time. (S. Karaküçük, 1996) When the Black Sea region folk dances are considered as being

physical, it is seen that they are consist of fast, swift and sudden movements. It is thought that Horon folk dances which are more speedy and more rapid than Halay and Zaybek as being physical and rytmic may affect the reaction times of the players positively.

As a result; Turkish folk dance has a structure at different physical activity level for each region. In this context, the games of halay and horon region has a faster structure than the region of Zeybek in terms of musical rhytmic and figure. It is concluded that the physical parameters of male players who play the Horon and Halah folk dances may be affected more more positive than the region of Zeybek folk dances.

REFERENCES

ADİLOĞULLARI. İ, KARACABEY. R, DURGUN. R, SÖNMEZ. E, ÖZMERDİVENLİ. R, 2007, *Determınıng and comparıng the antropometrıc measurement of the folk dancers of anatolion folk dance and horon regıons,* Fenerbahce Club 100 Year of Sport Science Congress, November 29-December 1, Lütfi Kirdar International Congress and Exhibition, İstanbul

AKGÜN, N., 1994, *Exercise and Sports Physiology, 2. Print, Ege University publishing house,* 2.Print ege university publishing house, Bornova, İzmir, 66

BALTACI, G, ERGÜN, N., 1996, *Evaluatıon of Physcal Fıtness Parameters of the State Folk Dance Players,* Gazi University BESBD, 11-17.

BAYKURT, Ş., 1996, The Folk Dance Seminar in Turkey, *Structure of Bank Loans for Culture and Arts Publications,, Ankara, 49*

BOMPA, T., 1986, *Theory and Methodology of Traning Dubugue, 240-9*

FOX, E L, MATHEWS, D K, 1988, *The Physiological Basic of Physical Education and Ahletics, New York, 422-423*

GEREK, Z., 2007, *Folk Dance and Sports Field Study of University Students wit h Physical Eurofit Comparison of eligibility if,* Ph.D. Thesis, Gazi University Institute of Health Sciences, Ankara

GUPTA, A., FERNİHOUGH, B., BAİLEY, G., BOMBECK, P., CLARKE A., HOPPER, D., 2004, *An Evaluation of Differences in Hip External Rotation Strength and Range of Motion Between Famela Dancers and Non-Dancers,* Br J Sports Med. Dec; 38(6): 778-83

GÜNAY. Ş., 1992, *Exercise Physiology and Folk Dances on the Importance of, Master Thesis, Yüksek Lisans Tezi,* Istanbul Technical University, Institute of social sciences, İstanbul

KAKAKÜÇÜK. S., KÜÇÜK. V., KOÇ. H., 1996, *Balkan Badminton Championships 1995 athletes participating in the reaction time, Gazi* University*BESBD;1(2):11-17,Ankara*

KİBER BEN W., 1998, *The Sport Prepartıcpatıon Fıtness Examınatıon, Human Kinetics Boks s: 44, 45*

MİS, A., 2001, Turkish folk dances of the Biyomotorsal Properties Development, *Ege University Institute of Social Sciences, İzmir*

SEVİM, Y., 1995, *Training information,* Gazi University publishing house Ankara, 215

SU, R., 2000, Turkish Folk Dance, *Ministry of Culture Publications, Ankara, 6*

ŞENEL. Ö, 1991, *Effect of Continous and Invertal Runnig Programs on Aerobic and Anaerobic Capacities of High-scool Aged 14-16 years, Master Thesis,* Middle East Technical University, Institute of social sciences, Ankara **ÜNVEREN, A., 1997**, *Folk Dance of the Physical and Physiological Characteristics of Mmale University Students Training Eeffect,* Fırat University Graduate School of Health Sciences

TAMER, K., 2000, *Performance Measurement in Sport and Physical-Physiological Evaluation.,* 2. Print, Bağırgan publishing*,, Ankara, 47-48-49*

URATLI, S., 2005, *Training and Events,* Yaylım publishing, İstanbul, 409-410

ÜNAL, Ş., 1992, Turkish Folk Dance Physiological and Psychological Effects on Individuals, Ph.D. Dissertation, Marmara University, Health Sciences Institute, İstanbul

ÜNAL, Ş, ANLIATAMER F., 2004, Selected the Theory and Practice of folk dance, İstanbul, 16

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ABSTRACT

The purpose of this study is to investigate the female haly, horon and zeybek Turkısh fok dancers' charectirictis and compare them according physical parameters. Totaly 99 voluntary female dancers at least 5 years experience in halay, horon and zeybek had participated to the study. this research age, height, weight, anaerobic power, reaction time, speed, flexibility, leg force and body fat In percentage of the groups had measured.

The statistical analysis of data had calculated in the computer by SPSS 10.0 package program. The significant level had taken as 0.05 and 0.01 ($p<0.05$ and $p<0.01$).In the study it had found out that there's no significant importance in the height, anaerobic power, flexibility,leg force and anaeorobic endurance in the level of significant difference $p<0.05$ in female groups.There's a significant difference had found out in age, reaction time, speed and body fat percentage at the $p<0.05$ level in males. As a result; at the and of dances exercises, it had found out dancers that playing halay and horon, which practicing physical activites more intensively, have more positively afected values of flexibility, speed, body fat percentage and reaction time according to zeybek dancers.

KEY WORDS: Turkish Folk Dances, Halay, Horon, Zeybek

INTRODUCTION

It is called Folk Dances which consist of life styles, beliefs, joys,grief of community and is played with the tradational rytmic music There are different species at. (C. Demirsipahi, 1979) Turkısh Folk dances (halay, horon, zeybek) the figure features of this dances are different than each other. (İ. Ekmekçioğlu, 2001) Folk dances consist of two elements which are movement and music. (V. Aymaz, 1998) The movement is harmony with music at falk dance. Turkish folk dances which have a large Structure in terms of quality of movement, moves all organisms at the same time. (A. Ünveren, 2005) However, based on skills and a high degree of difficulty of movements of the game, uninterrupted, back to back and made a long time, motoric characteristics of the players has been also contributed to the development (A. Mis, 2001) Consisting of complex movements, such as folk dance aerobic and anaerobic exercise is effective in the development of physical fitness. (G. Baltacı,1996).In the study, it is aimed determining the physical features of the famele players who plays the games "horon", "zeybek" and "halay" at least five years and comparing the physical parameters of them.Incorporates many different features of the regional diversity of Turkish Folk, can show different effects in terms of physical and physiological on players who plays this sites. The existing literature on information that is not enough requires such a study

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RESULTS

Results are shown in table 1.

CONCLUSIONS

Baltacı and his friends has determined the avarage value of anaerobic strength as 100.62 ± 22.68 kg.m/sn for the Falk dance players of the goverment. (G. Baltacı, 1994) Gerek has found the the avarage value of anaerobic strength 69,23 ± 8,68 kg.m/sn for the male players. (Z. Gerek, 2007) The movements of jumping, spining and falling down is applied forcedly in Turkish falk dances. (Ş. Ünal, 1992) In the women's games figures are performed with standing and walking. It is thought that the figures on standing doesn't affect the development of aneorobic strength. In the studies, the diversity of aneorobic strength for each group supports our opinion.The exercies of women's Falk dances are not training for speed work Ünveren has determined that the pretest avarage value of speed is 7.147 ± 0.401sn. the post-test avagrage value of speed is 7.061 + 0.739sn. (A. Ünveren, 1997). It is thought that the training of Folk dances has a less affect for development of anaerobic strength but during the training it has a positive contribution for person in terms of physical and physolojical. (Z. Gerek, 2007) .Cicioğlu and his friends have determined that the pretest avarage value of flexibility is 33.13 ± 4.11 cm , the post-test avagrage value of flexibility is 38,13 ± 3,52cm during the regular 12 weeks aerobic dance training for a women group. (İ. Cicioğlu, 2005) Göçgeldi has determined that the pretest avarage value of flexibility is 31,1 ± 6,9 cm, the post-test avagrage value of flexibility is 32,1± 5,9 cm during the regular 5 weeks for aerobic dancers. (İ. Göçgeldi, 2004)

In spite of there is no diversity in flexibility findings for each group, it is thought that the folk dance trainings could be increase the flexibility. The existing literature supports this situation. The movements in training of turkish Folk dances consist of skipping,jumping and falling down. (Ş. Ünal, 2004) the repeat of this movements in trainings affects the leg strength of the players. (Ş. Günay 1992) But in women's games this movements are performed less than men's. So that the leg strength of the women may be less affected. İn the literature, there have not been found any study about the aneorobic filexibility of halay, horon and zeybek. However, ın our study there have not been determined a meaninful differences in each groups horon, halay and zeybek. The folk dances are the games which are done with aerobic system. Beccuse of this it is thought that there is no affect on aneorobic flexibility. Angioi and his friends has found the avarage value of body fat is 20,1 ± 3,3 for the Professional women dances. (M. Angioi, 2009) namaraslı and his friends has found that the avarage value of body fat is 20,1 ± 3,3 for professional women dances. (D. Namasarlı, 2004).The reason of activity and rytmic property of the Halay and Horon folk dances cause more energy for players. So that the training of halay and horon with high tempo can decrease the the percent of body fat. And also it is thought that the trainings of zeybek with slower tempo could not be affected on the percent of body fat.Alpkaya and Mengutay have found that the pretest avarage value of reaction time of hands againest the light is 35,.5 ± 45,9ms the post-test avagrage value is 319,3 ± 30,9ms for regular 10 weeks training. (U. Alpkaya, 2004) Ünveren has determined that the pretest avarage value of reaction time of hands againest the sound by working three months with a group of folk dances is 18,611 ± 2,033ms, the avagrage value of post-test is 17,444 ± 1,653ms. (A. Ünveren, 1997).Generally, it is known that the regular physical activities developes the reaction time. (S. Karaküçük, 1996) the Black sea region folk dances consist of active and speedy movements and played higher tempo than Halay and Zeybek. So that it is thought that the reaction time of Horon could be develope. As a result: each sport has a special structure. The movements in the sports may cause differencies on the physic of the players. turkish folk dances has different pyhsical properties so that it can affect the pyhsical parameters of the players.

Table 1:The comparison of physical properties of the group

Variable	Halay N=34 X ± SD	Horon N=45 X ± SD	Zeybek N=9 X ± SD	F	p
Year (yıl)	23,61 ± 2.18[a]	18,81 ± 3.55[b]	22,30 ± 3.7 [a]	19,322	**0,00****
Height (cm)	1,66 ± 0.003[a]	1,61 ± 0.007[a]	1,63 ± 0.007[a]	1,239	,294
Body weight (kg)	53,91 ± 3,4[a]	56,06 ± 8,0[a]	55,25 ± 6,1.5[b]	1,041	,357
Anaerobik Power (kgm/sn)	74,32 ± 8,25[a]	79,80 ± 9,75[b]	77,67 ± 1,4[b]	1,69	,146
Speed (sn)	6,29 ± 37,9[a]	6,03 ± 34,3[b]	6,70 ± 38,5[c]	27,205	**0,00****
Flexibility (cm)	6,31 ± 3,42[a]	5,00 ± 2,63[a]	4,97 ± 2,86[a]	2,149	,122

Leg force (kg)	39,62 ± 9,94[a]	41,81 ± 7,77[a]	38,16 ± 10,7[a]	1,190	,309
Anaerobik Endurance (sn)	20,53 ± 1,86[a]	19,48 ± 1,59[a]	19,70 ± 2.73[a]	2,181	,119
Percent body oil (%)	11,12 ± 1,99[a]	11,99 ± 1,63[a]	15,12 ± 1,36[b]	51,418	**,000****
The reaciton time of right hand (ms)	207,64 ± 33.8[a]	187,50 ± 18.3[b]	212,60 ± 4.2[a]	5,367	**,005****
The reaciton time of left hand (ms)	209,00 ± 33.6[a]	199,09 ± 11.6[a]	240,15 ± 51.7[b]	12,988	**,000****
The reaciton time of right hand for the light (ms)	198,35 ± 16.2[a]	191,84 ± 16.6[a]	232,72 ± 42.4[b]	9,737	**,000****
The reaciton time of left hand for the light (ms)	229,64 ± 22.7[ab]	217,31 ± 16.5[a]	243,42 ± 42.8[b]	20,666	**,000****
The mixed reaciton time (ms)	262,23 ± 37.4[a]	255,00 ± 18.5[a]	297,63 ± 53.3[b]	7,809	**,000****

***P<0.01 **p<0.001 **abc:** *If two cells in each row of the table contain the same letters (a,b,c) you can not say that there is difference between groups*

REFERENCES

ALPKAYA. U., MENGUTAY. S., 2004 Reaction Time Analysis of the Effect of Physical Activity**,** *Gazi Üniversity, BESBD 9(3):49-58*

AKGÜN, N., 1994, Exercise and Sports Physiology, 2. Print, Ege University publishing house, *2.Print ege university publishing house, Bornova, İzmir, 66*

ANGİOİ. M.,. METSİOS. S., KOUTEDAKİS. Y., TWİTCHETT. E.. WYON. M., 2009 Physical Fitness and Severity of Injuries in Contemporary Dance**,** *Medical Problems of Performing Artists: Volume 24 Number 1: Page 26, March*

AYMAZ. V., 1998, Turkish folk dances According to structural features and the region*, Master Thesis, Istanbul Technical University, Institute of Social Sciences, İstanbul*

BALTACI, G, ERGÜN, N., 1996, Evaluatıon of Physcal Fıtness Parameters of the State Folk Dance Players, *Gazi University BESBD, 11-17.*

BALTACI. G., ERGUN. N., TOKGÖZOĞLU. L., BAVAR. V,. 1994, Folk Dancers in the VO2 max and maximal exercise cardio-respiratory answers*, IV. Proceedings of the National Sports Medicine Congress, 207-212*

CİCİOĞLU. İ., SÖKMEN. T., MANSUR. O., 2005,Aerobic dance in the Middle Age Women's Physical - Physiological parameters and Coronary Heart Disease Risk Factor Effects, *Gazi Üniversiyt BESBD; 10(1):9-16.*

DEMİRSİPAHİ, C., 1979, Turkish Folk Dance**,** *Turkey job bank culture publications,, Ankara, 8-9*

EKMEKÇİOĞLU. İ., BEKAR, C., KAPLAN, M., 2001, Turkih Folk Dances**,** *Esin publishing, İstanbul, 18*

FOX, E L, MATHEWS, D K, 1988, *The Physiological Basic of Physical Education and Ahletics, New York, 422-423MİS, A., 2001, Development of Turkish folk dances Biyomotorsal Features, Master Thesis, Ege University Institute of Social Sciences, İzmir*

GEREK, Z., 2007, Folk Dance and Sports Field Study of University Students with Physical Eurofit Comparison of eligibility if, *Ph.D. Thesis, Gazi University Institute of Health Sciences, Ankara*

GÖÇGELDİ. İ., 2004, *The Effects of Dıfferent Dancıng Actıvıtıes on Same Physıcal And Physıologıcal Parameters of Danceres***,** Abant İzzet Baysal Üniversity, Institute of Health Sciences , Master thesis, Bolu.

GÜNAY. Ş., 1992*, Exercise Physiology and Folk Dances on the Importance of, Master Thesis***,** Master thesisi, Istanbul Technical University, Institute of social sciences

KAKAKÜÇÜK. S., KÜÇÜK. V., KOÇ. H., 1996*, Balkan Badminton Championships 1995 athletes participating in the reaction time*, Gazi University BESBD;1(2):11-17,Ankara.

KİBER BEN W., 1998, *The Sport Prepartıcpatıon Fıtness Examınatıon,* Human Kinetics Boks s: 44, 45

NAMASARLI. D., ŞAHİNKAYA. T., SAY. Ö, ÜNAL. M., KAYSERİLİOĞLU. A., 2004, *In the professional ballet dancers, and Anthropometric Measurements*, 8. International Conference of Sports Sciences i, 17-20 Mirage Park Resort, Antalya

SEVİM, Y., 1995, *Training information,* Gazi University publishing house Ankara, 215

TAMER, K., 2000, *Performance Measurement in Sport and Physical-Physiological Evaluation.*, 2. Print, Bağırgan publishing,, Ankara, 47-48-49

ÜNAL, Ş., 1992, *Turkish Folk Dance Physiological and Psychological Effects on Individuals*, Ph.D. Dissertation, Marmara University, Health Sciences Institute, İstanbul

ÜNAL, Ş, ANLIATAMER F., 2004, Selected the Theory and Practice of Folk Dance, İstanbul, 16

ÜNVEREN, A., 1997, *Folk Dance of the Physical and Physiological Characteristics of Mmale University Students Training Eeffect,* Fırat University Graduate School of Health Sciences

ÜNVEREN. A., 2005, *Determination of Physical Activity Levels of Turkish Folk Dances,* Ph.D. Thesis, Gazi University Institute of Health Sciences, Ankara

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MORE THAN A GAME

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ABSTRACT

Among other Man's activities a game can be considered a great gift bestowed on him by God Almighty. This activity, that we simply call a *game*, enables him regardless of his age to fill in his " spare time ".

Time is obviously " all encompassing form of our lives" (Smeman, 195). For we always live within time boundaries and try as we might we can not escape our time. We can not escape the dawn or spring heralding nor the end of our time. And Man thus weaken is most scared of the end of his time. That is why he among other things got *a game* as a present to fill in " his time ". But not for ever, just for a short time until he matures as a personality when he will be able to think abot the sacredness of his time.

Thus a *game* is seen as a spontaneous activity, an urge which is pleasant, in physical culture almost always dinamic. Because of these characteristics and reflecting on its essence this Man's activity is his blessed activity. And using this blessfulness is a real heroic act directed at the salvation of his personality.

INTRODUCTION

1.This term *a game* contains a lot of different conceptual nuances. The same goes for the terms such as sport, culture, civilization, metahphisics... Anyway, that is the case with all the complex concepts. Looking at the game from different angles it will always reveal something new to discuss and add to it. It is possible to consider a game as a symbol of the world and a phenomenon of the Man's existance (E.Fink), or to attribute to it a power to determine Man as a playing being (J.Hewising), or that a Man is really a Man only when he is playing (F. Schiller), or that a Man picks all the game's charms from its depths and heights and chooses either to compete, to get fascinated, to imitate or to get drifted by the stream (R. Kajoa).

In physical culture a game is also a point of interest and numerous experts have dealt on this topic and published extensively. Many a theoretician has perceived a possibility, as was the case of North America in the first half of the 20th century, to base the whole system of physical education on the game. At that time concept of physical education in Europe stemmed in gymnastics. Only the British made an ecxeption and based the physical education on sport.

In theory of physical culture for the sake of easier analysis and understanding of this activity games were originally devided into elementary and sports games depending on their complexity, but some other classification criteria were used as well.

But the main focus of this paper are sports games, more precisely football.[11] We narrowed it down to a footballer and his hand used in this game. Because his manner of hand playing has fulfilled "its time ". That was the game in a sports game where the strict rules forbid such manner of *hand playing*. That football game which is said to be *the most important trifle thing in the world,* or almost the whole world, revealed all its complexities. That one hand playing has unveiled foremost its socio-psychological dimension. For that hand playing of one famous footballer (T.Henry) taking place in specific football circumstances and in front of the enormous audience of the TV viewers worldwide, considering the very circumstances this hand playing happened was not the " common " game . That was the **game of the games**.

This syntagma *sports game* [12], defining the term is composed of two main words – an entry *game* and an entry (determinitive) *sports* that more precisely determines the meaning of the main word. Both words belong to the category of the complex concepts.

Thus a *game* was said to be a spontaneous activity, an urge which is always pleasant (while it lasts as a game). In physical culture a game is almost always a dinamic activity. Its features are freedom of acting and a possibilty to express skills and creativity in the organization of the game and also a freedom to create its rules. [13] A game fosters perseverance, joy

[11] In classifying sport by combined criteria one recognizes : athletics sports, gymnastics sports, martial art sports, nautical sports, team sports, equestrian sports, cycling sports, aerial sports and of course, sports games. Sports games include football, baketball, handball, volleyball, tennis, table tennis, rugby, golf, bowling.

[12] 1. Sports game is a common name in competing where one of the requisites used is a ball, small ball, tack, full shots, etc. They are divied into individual sports games (single or pair games in badmintone, golf, table tennis, tennis, etc.) and team sports games (ice hockey, grass hockey, basketball, football, volleyball, handball, rugby, waterpolo, etc.) (Sports lexicon)

2. Sports games originated from the elementary games that over time got their hard and fast standard rules and organization with strict role of the players. They are divided into collective, team games (football, basketball, handball, volleyball, waterpolo, ice hockey) and individual that is those having individuals as competitiors either single or in pairs (badmintone, table tennis, tennis). All of them contain the elements of sport becasue great physo-physical exertion of each individual is manifested, in collective matches between the two teams and in individual between two persons of two pairs of persons with the aim to win. (Janko Leskosek)

[13] Freely creation of the game rules at the same time means sticking to thus created rules.

but also spite, outwitting and a wish to incorporate varied motor activities. A game is never organized for the sake of the results but for the emotions that are aroused during its course. And it goes without saying that it is not a working activity.

Sport as well as the game can be defined in various ways.[14] But no matter how we define it sport is always based on agonystics which means that victory, i.e. result is of the prime interest. But even the first civilizations [15] can boast of the forms of professional sport that made equations between sport and working activity. Thus sport started losing a component of joy and amusement and got closer to the classical and more cruel working reality.

William Shakespear considered sport at the end of 16th and the beginning of 17 century a kind of game, sporting and pastime because that was the time when sport was a substitute for work for the feuds spanning between the old-fashioned beliefs and the new era demands imposed on them.

But with the emergence of the civil sport during 18th and 19th century sport loses this joyful characteristics. Sports results are more used to reach some aims, mostly political and economic ones. The same holds true nowadays and it is so obvious. Although today's sports are wrapped in patriotic layers of different colours depending on the current situation cruel professionalism of sport can not be hidden.

So the atributes of sport long moulded and perfected during the centuries such as health, socialization, and amateurism have changed in the 20th century and today only professionalism and profit count. All complying to the spirit of the modern times we live in where everything has its own price and has to be paid.

In the long run and quite expectedly sport is now devoid of game. And *sport without game* is not just the title of the good book (Kokovic, 1986) but reflects our current times. This cruel reality was recognized by the world when only a few decades ago the Olympic motto – it is important to participate , was annihilated.[16] Instead, the North American continent at the moment of liberal capitalism aspiring to Man's fall promoted in blaze and shine a new motto –it is important to win, only to burn and outshine the old one. And so sport was left without game and without its essential attributes that in sport took Man as a personality– one and only and unique.

2.During a football match between the selections of France and Ireland in the qualifications for the World Championship,[17] Thierry Henry, French player hold the ball with his hands to prevent it to go out of the playing court, passed the ball to his playmate and scored a goal. That was a draw goal for the French that took them to the finals of the World Championship.

Of course, the Irish players protested, a million of TV viewers saw the handball incident thanks to the TV cameras that have recorded this "hand playing". Everybody saw, everybody but the referees that Thierry Henry hold the ball with his hand. On the previous oversight, on the irregular position of the French footballer nobody wanted to comment. Because hand playing was a hot issue of the protest and later on of the debate. The press mused on it, TV discussions were organized, football and layman audience pondered it. The Irish were angry, they begged, threated. But nothing happened. The referee's decision was obeyed because his decision like the emperor's is not to be desputed. Especially, when the problem in question is the problem of the "big and important" and the "small and insignificant".

Explanations given were in accordance with the times we live in where all means serve the final end. You could hear and read the explanations conveying the same message: it is true, it was an offense and illegal game but since the refereee did not see the offense at that very moment everything is perfectly all right. Anyway footballers always simulate and try to use illegal means to win. So hand playing is an offense that does not differ from the foul or simulation.

[14] Here are some definitions of sport:

1. *Sports: All kinds of bodily exercises, games of skills or strength, horce racing, water games,horse and dog hunting, gymnastics. fencing, autoracing…(Dictionary of the French Academy)*
2. *"Each type of the bodily exercises or activity meant to do an action based on the theory of fighting some element: distance, time, obstacle, material obstacles, danger, animals, opponent, and above all oneself". (Herbert Eber)*
3. *Sport is a form of bodily exercise determined by the obtained score of the individual or the team on the basis of some evaluation of the performance". (Sports Council UNESCO-)*
4. *"Sport is a voluntary and usual cult of the intensive muscle exercise based on a wish to advance even to the hazard ".(Pierre de Cueberten)*
5. *"The notion of sport worldwide and locally means physical activities (exercising) of a pleasant, dynamic and specifically agonistic characteristic".(Encyclopedica of physical culture)*
6. *Sport is organized system of bodily exercise, of the agonistic character, aspiring to perfect the personality so as to reach maximal sports results".(Nenad Zivanovic)*

[15] In the ancient Egiptian civilization professional athletes were: wrestlers, acrobats, stick fihgters and dancers. Later on in the the Old Age professionals were traced as well. In Cretomicenic culture these were bull fighters, in Greeks in the period of the destruction of the Olympics some of the participants of the OG, in the Romans chariot drivers in the Circus games.

[16] "Comforting" motto "it is not important to win but to take part ", which is quite by mistake attributed to Pierre de Cuiberten is the" authorship " of a clergyman at a mass organized for the Olympics participants in London in1908 uttered by the Pensilvanian archbishop Etelbert Talbott.
Also the famous saying Citius, altius, fortius! (Faster, higher, stronger*!)is a message of Henrie Didone, a French priestman.*

[17] Second match for the 2010 Football World Championship took place in Paris on18th November , 2009. French needed adraw result. This goal was scored in the last minutes of the match.

If ethics means "personal applications of a certain set of values that an individual has acquired to realize the objective set byhimself and considered correct" (Kokovic , 2004, 129), and it is considered correct, than one should not be suprised with this decesion. Because the individual can take his decisions about what is wrong and right for him so can the State which enacts its laws that regulate what is to be respected. That is how we reach the formula: "Ethics is first of all a personal matter, a law is first of all a matter of the society " (Ethwel & Anderson, 2001, 392).

The same way the state passes its laws, that is the prescribed regulations that each individual should comply with so the sports associations, in this case football one, generate the rules of the football (sports) game. And these rules must be obeyed. Therefore the task of the football referees is to try to make all : footballers, experts, audience to respect and obey the rectified rules.

This case again confirms time and again the fact that footballers are assigned to win – at any cost, meaning they can use all allowed and illegal means, and the referees that is, institutions are given a task to allow that victory only if the prescribed rules of the game are obeyed.

Generally, this means that all means are allowed- in a great desire to realize the set objective, in this case a football victory, and referees, that is institutions are given a task to prevent lies, theft, simulation. If this is not prevented then a victory is declared, the objective is reached, though it is obvious that it is realized by the breaking of the fixed rules, that is laws.[18] This "delocalization" (Milanovic, 2009) of the respect for the ethical norms from the individual to the institutions foresees the fall oHe Man and the rise of the institutions.

And since these institutions are made up of the individuals that do not have to respect enacted and adopted ethical norms – *until caught*, it is hard to expect such institutions, i.e. the State to be able to defend at all times adopted norms of behaviour.[19] Assumption that a social theory is a good one but that individuals (within us) are bad obviously is not a valid one. The football example as well as the daily published examples in the media set by the politicians in all spheres of life discuss the fallacy of such a concept of the society. It must be noted – that this strikingly resembles the old Roman culture when the *gladiators and circus games* were in full swing. And when the Juvenals motto "*Panem et circenses*" was a guideline for the establishment of the Roman state.

If we constantly nurture not only in sport but in sports games and other spheres of social life as well, this idea that says " bread and games" are sufficient and that "everything is allowed", then one should not wonder our *"messing with our own culture "*(Zunic, 2009).

Our " game " has obviously tresspassed the limits and has become too *"playfull"*.

3.In this playfullnes and playing with us football sports game has once more proved and the play of Henry's hand has undoubtedly shown, that what happened was not the exception but the rule itself. From the hand play in Paris to the foot play in international institutions that determine the destiny of the world there are no differences. This equation - from the Wallstreet to pyramid financial inventions to Paris, all this shows that the notion of ethics and its governing rules can be – and really are lethal for the humankind.

Politics and those deciding on the destiny of the world have transformed football into the "political sport ". And ""political sport " has fabricated "serious sport ", that is sport without game in which for its new attributes - professionalism and profit usual qualities are: hatred, to a playmate, and even bigger one to an opponent, jealousy, envy, gladness for someone other's pain and misfortune and violence. Thus this *sports game* has become an example to follow in other spheres of social life as well. This becomes a matrix of desirable social conduct.

This matrix shows that ethics has been stripped of love. Such an ethics without love and let us remind that God is Love, is an evil that will stray the humankind into the selfdestruction. Contrary to the generally accepted ethics without love Christian anthropology state that " ethics is not ethics of the mind but the ethics of the deeds."[20] (Spektorsky, 1992). Christian ethics says that Man is to be approached with peagent legs because Man created to an image of God is meant to keep and not spoil it. At the same time Man is entitled to keep and multiply all the gifts and talents bestowed on him by his Creator [21]. This task to keep and preserve the talents only a personality – one and unique.

If Thierry Henry aftet hand playing and short joy just as children do in similar situations, had admitted that he had played with his hand and thus

[18] In a society that allows everything to an individual and where everybody steals and the thief is the one caught red-handed by the state or the institutions it is evident that the picture on ethical norms is crooked one. And it is evident that they are to be obeyed only by institutions which leads directly to the destruction of the essential civilization values.

[19] Recently (at the beginning of 2010), misfortunatelly for all the actors in this sad game absurdness of such a view of the ethics and law was shown. Namelly, using the official car of the Assembly for private purposes both a secretary and a driver have committed a serious crime and caused a bad crach but their offence was greater in a moral sense. Becasue of their arrogance they were detected but if there weer not such a behavior people would not find out that they used official car for the private affairs. And this offense was made by people working in the highest state institution. So, the breakers of the adopted norms or the thieves are real thieves only when get caught.

[20] "My beloved, do not love each other by words but by deeds and truth " (Rome . 2,21)

[21] "... and masses are different but only one is God ' (I Cor.op. 12.5)

helped a referee who had not seen this breach of rules to change his decision and declare scored goal ivalid, he would certainly had shown that he had a personality and was not just an individual. He would have shown that he was not a tiny atom or just a pin in the hay but a selfcontained cosmos belonging to spiritual and ethical category. Because "man is not a number, for he is bigger than the multitude "(Bergaev: according to Markovic, 1996, 24).

But Thierry Henry did not act this way. Educated that realization of the objective is the most decisive part he took sides and showed which rules of conduct were "useful ". Soaring towards the sky and becoming " universal star " he had thus justified the money invested into his rising.

So this hand playing at that particular moment and that particular place has once again shown the true picture of *time* of our fallen world. It has also shown generally accepted idea of life where everything is allowed although not all is not to our advantage. (Ap. Paul).

And this idea verified as the axiom of the modern world does not care for the generations to come and to judge our deeds – justified by the fact that we will all be deceased when our deeds would be questioned.

It is of no use to tell a story, morale or the reminding that there appeared someone above death and yet within our time (Smeman, 1992, 197). Someone who has resurrected and given a sense to our living is of no use because today our time takes some other course towards death and nothingness; towards the "games above games " where any set objective justifies the applied means and even public scheme performed in front of the millions of people. Thus we confront numerously the imposed ideology of the western civilization - *all for profit and profit for nothing.*

All this is in the spirit of the Horatio's message ***"Carpe diem".***

But if instead of nihillism as the basic to the theology of absence we accept **Love** – as the basis of the Christian theology, then this "game " of hand will be a game with the full meaning of the word. We will again see Man's personality– which is unique and unrepeatable. We shall etndevaour to respect and be careful not to hurt anyone. In a word *we shall try to be humans*

REFERENCES

HEWUL, D., ANDERSON, A. (2001). *News writing and press release for today's media*. Belgrade. : Media center

KOKOVIC, D. (1986). *Sport without game*. Titograd: University word

KOKOVIC, D. (2004). *Sport and media*. Novi Sad: Faculty for business studies

MARKOVIC, M. (1996). *In the footprints of the Christ.* Belgrade: Monastery of Hilandar

MILANOVIC, B. (2009). *Anry and Kant*. Belgrade: Politics, 18.12.2009.

SPECTORSKY, E. (1992). *Christian ethics*. Vrnjacka Banja: St. Simeon Peacuful

SMEMAN, A. (1992). *Liturgy and life*. Cetinje. Eparchy of Montenegrin and Skenderian Zivanovic, N. (1997). *More than a game*. Nis: Bysantine mirror

ZIVANOVIC, N. (2000). *A Contribution to the Epystemioloy of Physical Education.* Nis: Panoptikum

ZIVANOVIC, N., BOGDANOVIC, N. (2009). *A game and a word* . Nis:Panoptikum

ZUNIC, D. (2009). *Traditional esthetic culture V: game*: Nis , Invitation letter of the Centre for Scientific Research SANU and University of Nis

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❖ VARIA

DRAMATIZATION AND REPRESENTATION OF THE BODY IN THE DEVELOPMENTAL AGE

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ABSTRACT

For many years iconic representation has been at the centre of studies and reflection on its meaning in the evidence of the relationship existing between a child's drawings and personality. A child's drawing, in fact, tells a story through a whole of signs consisting of images (Biancalana V. 1994)and represents a form of expression, perhaps unique, which can be placed between playing and language. It can be considered as a motor activity in all respects, which, in making itself explicit, gives a voice to one's imagination and creativity, permitting the illustration of one's internal impulses.

KEY WORDS: Dramatization, Draw, Development

INTRODUCTION

The first test created for this type of research, known as the little man's test, makes reference to F. Goodenough, who elaborated it in the 1920's and gave it an important interpretative value in psychology. Soon after, above all in the 1950's and 60's, other tests were spread, even if each one had different viewpoints, all agreed on interpreting drawings of humans as a representation of oneself or of one's body in the environment. Obviously, all the interpretive theories are regardless of the knowledge of different phases that the child goes through in constructing his or her representational capacity. Children's drawings, in fact, undergo an evolution through the subsequent and introductory phases with either. The first, called *casual realism*, arises around two years of age and has the peculiarity that the child attributes a particular meaning to a sign made, as with a holophrastic language in which a single word takes on the meaning of an entire phrase. This is followed by the *lacking realism* phase, from 2 1/2 years to 4-5 years of age, in which an adequate ability to synthesize is still missing and brings the child to represent the human figure joined with various elements, without taking into consideration their spatial relations. The third phase is that of *intellectual realism*, from about 5 to 8 years of age, in which the child, even in virtue of greater control of gestures, is able to much better represent what he or she intends. Instead, the last stage, called *visual realism*, is when the apparent attempt is to draw things as they effectively appear. Naturally, the described phases and their temporal differentiation in the graphic-iconic genesis are subordinate to the individual pace of one's psychophysical growth.

THE EVOLUTION OF DRAWING

For M.Wallon, 1950, "At its origins the drawing is a simple consequence of gesture: it is the gesture that leaves a mark of its trajectory on a surface capable of recording it. But these relationships between gesture and its mark are verified on different levels. They must not be unilateral. There cannot be the origin of the drawing if the mark or the marked do not become the reason for the gesture, when initially they had evenbeen casual. There must be a reaction of the effect on its cause; the effect must become the cause in its turn".The human figure test permits having an approximate idea, yet reliable enough, of psychophysical maturity and the level of graphical evolution reached by the child. Table 1 shows the stages of this evolution based on a study carried out by Ferrari-Ferrari:

3.6 years	4 years	5 years	6 years
			Finger
		Hands	Hands
		Nose	Nose
	Feet (nose)	Feet	Hair
	Hair	Hair	Feet
Legs (nose)	Legs	Legs	Legs
Hair	Arms	Mouth	Mouth
Eyes	Mouth	Arms	Arms
Mouth	Eyes	Eyes	Eyes
Trunk	Trunk	Trunk	Trunk
Face	Face	Face	Face
6.5	**8.5**	**10**	**11**

Table 1

From the data reported it can be noted how a total of 6.5 features at 3.6 years passes to 8.5 features at 4, a considerable increase if we consider the fact that we are dealing with only 6 months of maturity. Another interesting consideration concerns the distinctions between the two sexes in the percentage of features reproduced, which is in favour of females (table 2).

Age	3.6	4	4.6	5	5.6	6
Female features	6.7	8.5	9.1	9.8	10.2	10.8
Male features	6.3	7.4	9.4	9.4	0.9	10.6
Difference	0.4	1.1	0.4	0.4	0.3	0.2

Table 2 (O. Ferraris—R. Ferraris 2000)

Initial hypothesis and research phases

Up to 5-6 years of age we know that the child draws only what he or she knows, while after 6 years a child starts drawing what he or she sees. From this knowledge we can connect the drawing of the human figure to the awareness one has of oneself. Therefore, we will use the little man test (drawing of one's own body) to examine not so much the child's personality or intelligence, as the perception he or she has of his or her own body.The study was conducted on a group of 18 children attending the last year of nursery school. Two tests were proposed: one in October and the other at the end of the following February. Between the two tests, naturally, specific games and motor activities were proposed, in this case with theatre activities described in the following. In both tests the children were asked to draw themselves on a sheet of "A4" format paper and all representations were evaluated keeping in mind a series of indicators, such as age, sex, graphic space used, proportions, and, obviously, the number of features represented. The final purpose of the research was to be able to pick on changes through the drawing that could have a certain meaning in the structuring of the body in progress.

As a point of reference the indication related to the number of *features* drawn by children, and in particular the datum related to 5 / 6 years, was used, by O. Ferrari – R. Ferrari, 2000. (Table 3.)

Table 3

	Average Age	N° Features
Males	5.4	11.7
Females	5.4	12

Our starting data, related to the first drawing in October, confirm the previous table and highlight a substantial homogeneousness between the two groups, male and female. Table 4 reports the specific percentages for each feature in detail. The quantity of features perceived is very high and although age varies even by nine months, the children showed good ability in graphically representing their own bodies. Consequently, since the drawings are very complete on the whole, it will be interesting to evaluate how much the drawings are enriched by details, apart from an increase in features used, in the second drawings.

Table 4

Features	%	Males	Females
Face	100	9	9
Eyes	100	9	9
Pupil	50.0	5	4
Eyelashes	5.5	-	1
Eyebrows	22.2	1	3
Nose	100	9	9
Nostrils	5.5	-	1
Mouth	100	9	9
Teeth	-	-	-
Hair	94.4	8	9
Ears	61.1	8	3
Neck	83.3	8	7
Body	100	9	9
Arms	94.4	8	9
Elbow	-	-	-
Hand	88.8	7	9
Finger	5.5	1	-
Nails	-	-	-
Legs	100	9	9
Feet	100	9	9

The experience of theatre activities

The obvious need to be brief limits us to presenting a general outline of the activities, therefore omitting the entire descriptive part of the games and how they were carried out. The project included 22 different types of activities, each one with a particular psychomotor objective, which range from fine coordination to gross motor coordination, from balance to lateralization, and so on. The theatre activities were proposed through the viewing of a fantasy story, "The adventures of Joe" presented on videocassette. In this story the protagonist, an animated puppet named Joe, becomes smaller and smaller and goes to discover the world of ants. Accompanied by two friends, Bin and Ben, he discovers the life inside the anthill in a series of more or less dangerous situations the children can identify with. The story becomes the leitmotiv of numerous school activities, in which the various fields of experience can be found. The first is "the body and movement". The children, in fact, after each viewing of the film or a part of it, are stimulated to relive the adventures of Joe and his friends, through the body using imagination and representational strength. The value of this activity is not only identifying themselves with the characters; the element of "pretending", in fact,

permits also taking advantage of the projective channel and enables each child, in his or her own way, to interpret the different emotional experiences, even from an emotional point of view. This experience was proposed one day a week and lasted for about 100 minutes.

CONCLUSIONS

Comparing the drawings of the 18 children from the month of October with those from February shows significant progress, which can be quantified in a half percentage point for the males and a point and a half for the females. (tab5)

Table.5

	First test	Second test	Difference
Males	12.1	12.6	0.5
Females	12	13.3	1.3
Difference	0.1	0.7	

The greater perception of some features is tied in particular to experiences that are more typical of girls than boys; in fact, the most common features are female characteristics such as eyelashes and eyebrows. Overall, the children had already gained a satisfactory graphical perception of their bodies in October and, after five months, greater perception is noted in the physical characteristics of each child: from hair, which, unlike before, is now loose, tied, long, short, different colours, to hands and arms, which are represented in 100% of the cases. Apart from this, an enrichment of elements outside the body is clear, but they also are part of the representation of oneself, such as tops, buttons, etc. Furthermore, an increase in "external" features was found, which highlight another aspect related to the body, that is its contextualization in the environment. The body, in fact, is by definition the mental representation of one's body *also* with regard to space and time. The inclusion of elements concerning the space one's body is contextualized in indicates precisely this. Table 6 reports the elements in addition to the body.

Table 6

	Test I	M	F	Test II	M	F
Only oneself *	14	7	7	5	3	2
Apart from oneself	2	1	1	13	6	7
Sun, sky, ground	3	1	2	14	6	8

* children who did not include things or animals (only is considered under the category: things.)

In conclusion, Table 7 below reports the features in distinct percentages for the two tests in October and February.

Table 7

Features	October %	February %
Face	100	100
Eyes	100	100
Pupil	50.0	72.2
Eyelashes	5.5	27.7
Eyebrows	22.2	33.3
Nose	100	100
Nostrils	5.5	11.1
Mouth	100	100
Teeth	-	-
Hair	94.4	100
Ears	61.1	44.4
Neck	83.3	94.4
Body	100	100
Arms	94.4	100
Elbow	-	-
Hand	88.8	100
Finger	5.5	11.1
Nails	-	-
Legs	100	100
Foot	100	100
Line for round	5.5	72.2
Line for sky	16.6	50.0

The body, in conclusion, is therefore as basic as the expression of our personality, so movement education takes on the meaning and importance of a complete preparation for the whole person. Movement has a fundamental importance starting from intrauterine life. Furthermore, as Wallon writes, "in the ontogenesis functions are outlined with the development of corresponding tissues and organs, before being able to justify them through use". Therefore, a large part of an individual's psychological functions develop from his or her biological functions, and, in particular, as Piaget asserts, "verbal and cognitive intelligence is based on practical or motor intelligence. Therefore, a certain continuity exists between intelligence and the purely biological process of morphogenesis and adaptation to the environment". The body acts as an intermediary between itself and the external world and as defined by D. Winnicott, 1974, the first self "is a self made at the origin of bodily experiences" or a bodily self that is formed mainly on the basis of sensation and perceptions (bodily phenomena, but outside the body).

BIBLIOGRAPHY

BIANCALANA V, 1994, *La pratica natatoria. Nell'ansia nell'adulto.* Nella personalità del bambino" Battelli Edit. Urbino.

FERRARI OLIVEIRO A., 1996, *Il significato del disegno infantile,* Bollati Boringhieri, 1996, Turin.

FERRARI A., FERRARI R., 2000, *Il linguaggio grafico del bambino,* Edit. La scuola Brescia.

WALLON M., 1967, *Les origines de la pensée chez l'enfant* La nuova Italia, Florence.

WINNICOTT D., "Playing and reality", Armando, Bologna,1974

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COMPARISON OF RECREATIONAL BEHAVIOURS OF INDIVIDUALS WITH REGARD TO DEMOGHRAPHIC VARIABLES

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ABSTRACT

Purpose

The present study aimed to determine and compare recreational behaviours of individuals with regard to some demoghraphic variables.

Methods

The survey conducted in Ankara which is the capital city of Turkey. The questionnaire administrated 212 male (59.1%) and 142 female (40.1%) a total of 354 participants aged between 18-54 ≥. Descriptive statistics (f, %) were used to determine participation rates and types of activities in the last one year and also activities that the groups willing to try. Chi-square analysis were used to test the differences between individuals spend their leisure time with whom and marital status. X^2 test also used to test the differences between income level and where they spend their leisure time. **Results**

The results indicated that while reading newspaper (63.7%), doing sports (40.6%) and reading books (33.5%) is the three top activities that males do, the most three top activities for females reading books (40.1%), newspaper (36.6%) and fancy work (26.1%). Walking (61.9%) is the most frequently listed of all activities that the individuals participated in the last one year and they would like to try a wide range of activities from swimming (7.1%) to horse riding (6.6%). Chi-square analysis revealed significant relationship in spend their leisure time with whom according to marital status ($p<0.05$). There was also a significant relationship between income level and where they spend their leisure time ($p<0.05$).

Conclusions

As a result, it can be concluded that participants prefer to participate recreational activities in the private sectors' facilities with the increase in their income level.

KEY WORDS: Recreation, behaviours, leisure time, demographic variables.

INTRODUCTION

Leisure is an important aspect of individual development, family life, social relationships, and culture (J Rubin., N.M Flowers., D.R Gross., 1986). Therefore it is so considerable point what people choose in their leisure time. In literature rewiev, it is seen that many factors influence our choice of how we spend our time for leisure (Torkildsen G., 2005). Major influences on recreation and leisure in contemporary society are the sociocultural factors of gender, sexual orientation, race and ethnicity, and socioeconomic status (R.Kraus, 2008). Reviews of the leisure time activity correlates literature identify a range of modifiable psychological, social, and environmental factors
associated with recreational activity participation (A King., S.N Blair., D.Bild, R.K Dishman., P.M Dubbert., B.H Marcus., 1992; R.K Dishman., 1993). Researches consistently demonstrates a strong association between socioeconomic status and leisure time physical activity participation. Socio-economic status, commonly measured by household income, educational attainment, or occupation (National Research Council, 1999). Individuals with lower levels of education, income, and occupational prestige typically report lower levels of activity (C Iribarren., R.V., Leupker P.G Mc.Govern., D.K Arnett., H.Blackburn, 1997; U.S. Department of Health and Human Services, 1996).However, our knowledge and understanding of the factors contributing to this relationship is limited (N.W Burton., G Turrell., B.Oldenburg, 2003).According to these factors this study aimed determine and to compare recreational behaviours of individuals with regard to some demoghraphic variables.

METHOD

This research study was conducted with the participation of a total number of 354 participants consisting of 212 male (59.1%) and 142 female (40.1%) from Ankara. In this study, a questionnaire form developed by researcher through searching literature (A. J Veal., 1984; G Cushman., 2005; I.Nilsson, A. G Fishers., 2006) and the suggestions of instructors who studies on leisure and recreation. The data instrument consist of two part; first part was about demographic questions, second part was about leisure time-related questions. Researchers were provided individuals with the necessary information about the purpose of the research study as well as the questionnaire used in the research. The questionnaire form was applied to the participants during November of 2009. The average time spent for application of the questionnaire to each participant was about 10-15 minutes. In the evaluation of data before all else the questionnaire applied to the

participants were checked and it was determined that 354 scales were available for use.

In the phase of evaluation of data, frequency (f) and percentage (%) were calculated for the evaluation of the demographical information pertaining to the participants. Descriptive statistics were also used to determine participation rates and types of activities in the last one year and also activities that the groups willing to try. Chi-square analysis were used to test the differences between individuals spend their leisure time with whom and marital status. X^2 test also used to test the differences between income level and where they spend their leisure time.

RESULTS

When the findings obtained from the study are examined, it was observed that 40.4% of participants were in the group between 18-24 years of age, 62.4% of single, 37.6% of had completed university-postgraduate education, and 41.0% of participants's income were 601-1250 € per month.

Table 1. Demographic Characteristics of Participants

Variables		f	%
Gender	Male	212	59.9
	Female	142	40.1
Age	18-24 years of age	143	40.4
	25-34 years of age	101	28.5
	35-44 years of age	56	15.8
	45-54 years of age	54	15.3
Marital Status	Married	133	37.6
	Single	221	62.4
Education	Primary education	47	13.3
	Secondary education	42	11.9
	High school	132	37.3
	University and postgraduate	133	37.6
Income	Less than 200 €	8	2.3
	201-300 €	26	7.3
	301-400 €	42	11.9
	401-600 €	78	22.0
	601-1250 €	145	41.0
	1251 € and over	55	15.5

When Table 2 is examined, it is seen that participants mostly prefer watching TV (71.8%), listening music (65.3%) and reading book-newspaper (50.7%) etc. The other activities as visiting friends and relatives, computer games, shopping, diner outside that participants prefer appear in Table 2.

Table 2. Recreational Participation Rates of Participants (Top Ten Activities)

	Variables	f	%
Activities	Watching TV	254	71.8
	Listening music	231	65.3
	Reading Book-Newspaper etc.	179	50.7
	Visiting Friends and Relatives	153	43.2
	Computer Games	123	34.8
	Shopping	114	32.2
	Dinner outside	102	28.8
	Ball related physical activities	87	24.6
	Tourism activities (long vacations)	84	23.7
	Picnic	79	22.3

* Each is the percentage value taken (n=354).

When the results indicated, it is determined that individuals participate several activities in last one year. In Table 3, it's shown that last one year individulas participate walking (66.0%), swimming (48.2%), football (42.5%), jogging (20.2) and trekking (16.3%) most. The other activities that individulas participate appear in Table 3.

Table 3. Leisure Time Physical Activity Participation Rates of Participants in Last 1 Year (Top Ten Activities)

	Variables	f	%
Activities	Walking	219	66.0
	Swimming	160	48.2
	Football	141	42.5
	Jogging	67	20.2
	Trekking	54	16.3
	Basketball	54	16.3
	Volleyball	52	15.7
	Biking	49	14.8
	Table Tennis	35	10.5
	Fishing	33	9.9

* Each is the percentage value taken (n=354).

When the results examined, it is determined that individuals would like to try and learn quite a few activities. In Table 4, the favorite activities of individulas indicated like; trying and learning different sports (18.2%), swimming (7.4%), horse riding (6.6%), mountaineering (5.5%) and paragliding (5.2%) most. The other activities that individulas would like to try exist in Table 4.

Table 4. Activities which individuals would like to try and learn

	Variables	f	%
Activities	Trying&Learning different sports	71	18.2
	Swimming	26	7.4
	Horse Riding	22	6.6
	Mountaineering	19	5.5
	Paragliding	18	5.2
	Travel the world	13	4.2
	Diving	14	4.0
	Playing an instrument	18	3.5

* Each is the percentage value taken (n=354).

When chi-square results analyzed in Table 5, statistically significant relationship indicated on spending leisure time with family related to marital status towards married individuals ($p<0.05$) and spending leisure time with friends related to marital status towards single individuals ($p<0.05$). There are not significant relationship between groups in terms of other variables.

Table 5. Chi-square results of spending leisure time with whom related to marital status

	Married		Single		
Variables	**N**	**%**	**N**	**%**	**p**
Alone	18	13.5	57	25.8	.006
Family	94	70.7	66	29.9	.000
Relatives	18	13.5	29	13.1	.091
Friends	40	30.1	180	81.4	.000
Other	3	2.3	8	3.6	.047

When chi-square results indicated in Table 6 statistically significant relationship determined on the place-area that individuals spending leisure time related to income is in Public Areas-Places towards the group 1251 € and over ($p<0.05$) and Home-Based towards the group 201-300 € ($p<0.05$) and
finally Natural Places towards the group Less than 200 € ($p<0.05$). There are not significant relationship between groups in terms of other variables.

Table 6. Chi-square results of the place-area that individuals spending leisure time related to income

	Less than 200 €		201- 300 €		301- 400 €		401- 600 €		601-1250 €		1251€ and over		p
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Public Areas	-	-	-	-	5	11.9	17	21.8	27	18.6	17	30.9	.001
Private Sector	1	12.5	6	23.1	10	23.8	18	23.1	47	32.4	26	47.3	.030
Home	2	25.0	19	73.1	25	59.5	56	71.8	63	43.4	28	50.9	.000
Naturel Areas	6	75.0	7	26.9	14	33.3	20	25.6	60	41.4	30	54.5	.003
City-Town	2	25.0	-	-	6	14.3	9	11.5	20	13.8	6	10.9	.035
Other	-	-	-	-	-	-	3	3.8	11	7.6	-	-	.064

CONCLUSION

The purpose of this study to determine and compare recreational behaviours of individuals with regard to some demoghraphic variables.When the demographic findings obtained from the study are examined, it was observed that 40.4% of participants were in the group between 18-24 years of age, 62.4% of single, 37.6% of had completed university-postgraduate education, and 41.0% of participants's income were 601-1250 € per month.According to the results in this study, it is seen that participants mostly prefer watching TV (71.8%), listening music (65.3%) and reading book-newspaper etc. (50.7%) in their leisure time. The other activities were visiting friends and relatives, computer games, shopping, diner outside, ball related physical activities, tourism activities (long vacations) and picnic that individuals prefer to participate.Similar findings were found in the study (A.S., Özdemir, S Karaküçük., M Gümüş., S. Kıran, 2006) as workers mostly prefer watching TV, listening to music, reading newspapers-magazines, playing with children and gardening among home-based activities. Also M.E Beck. and J.E Arnold. (2009) approach in their study a similar result as families prefer TV (49.8%) and reading (20.5%) most. When the results indicated, it is determined that individuals participate several leisure time physical activities in last one year. These activities were walking (66.0%), swimming (48.2%), football (42.5%), jogging (20.2) and trekking (16.3%)

most.When the results examined, it is determined that individuals would like to try and learn quite a few activities. The favorite activities of individulas indicated like; trying and learning different sports (18.2%), swimming (7.4%), horse riding (6.6%), mountaineering (5.5%) and paragliding (5.2%) most. Another activities were travel the world, diving and playing an instrument.In comparative analyses regard to marital status, statistically significant relationship indicated on spending leisure time with family related to marital status towards married individuals ($p<0.05$) and spending leisure time with friends related to marital status towards single individuals ($p<0.05$). Many discrete and complex, and often interrelated factors, condition people's choice and participation in leisure activities. Furthermore, there are the strongest links between leisure and other elements of life. A person's age and stage in the family life-cycle, such as marriage affect opportunity and participation (G Torkildsen., 2005).In comparative analyses regard income, statistically significant relationship determined on the place-area that individuals spending leisure time related to income is in Public Areas-Places towards
the group 1251 € and over ($p<0.05$) and Home-Based towards the group 201-300 € ($p<0.05$) and finally Natural Places towards the group Less than 200 € ($p<0.05$). General Household Surveys have examined household income. They show that income levels are closely linked to participation rates, and for almost all the leisure activities they examined, the proportion participating rose with income. Even where little or no financial outlay is incurred, such as walking, participation rates were also higher (G Torkildsen., 2005). In 1953, households with a per capita income of 50 rubles or less had 116 hours of free time a month according to a Krasnoiark study, while those with more income had 188 hours. In four of the five categories of leisure listed in the study, the consumption of leisure goods rose with income (Moskoff Wm., 1984). Similar finding for income as data from the United Media Study (1983) show that households with incomes of $40.000 or more have 70% book readers, incomes of $15.000 or less were 35% book readers (United Media Enterprises, 1983). Income is a greater cause of variation than the factors of gender, ethnicity, and age (H İbrahim., 1991).In conclusion, it is seen that individuals of having different socio-demographic characteristics have different habits, chocies, and needs about leisure time and recreational activities (Karaküçük S., 2008). This is because, leisure has a subjective nature (S.Karaküçük, , B.Gürbüz, , 2007). Our data showed that individuals prefer to spend their leisure time with passive and home-based activities most. And also they participate the physical activities mostly walking, swimming, football, jogging and trekking instead of several extreme sports or different sports like horse riding, paragliding, mountaineering, climbing, diving etc. Altough our findings also showed that individuals would like to try and learn the activities as swimming, horse riding, mountaineering, paragliding and diving most. All these results and situation showed and support the importance of leisure education, public and private leisure services and their awareness-promotion, recreational areas-centers and their accessibility and impact of income level in community leisure and recreation experiences and living.

REFERENCES

BECK M.E., ARNOLD J.E., 2009, *Gendered time use at home: an ethnographic examination of leisuretime in middle-class families.* Leisure Studies. Vol. 28, No. 2, 121–142

BURTON N.W., TURRELL G., OLDENBURG B., 2003, *Participation in Recreational Physical Activity: Why Do Socioeconomic Groups Differ?* Health Education & Behavior, Vol. 30 (2): 225-244.

CUSHMAN, G., 2005, *Free Time and Leisure Participation: International Perspectives.* Wallingford, Oxfordshire, UK: Cabi Publishing.

DISHMAN, RK: Exercise adherence, in Singer RN, Murphy M, Tennant LK (eds.), 1993. *Handbook of Research on Sport Psychology*. New York: Macmillan, pp. 779-798.

IRIBARREN C., LEUPKER R.V., MC.GOVERN P.G., ARNETT D.K., BLACKBURN H., (1997). *Twelve-year trends in cardiovascular disease risk factors in the Minnesota Heart Survey: Are socioeconomic differences widening?* Arch Intern Med, 157(8):873-881.

IBRAHIM, H., 1991, *Leisure and Society: A Comparative Approach,* Wm.C. Brown Publishers, Dubuque, IA, United States of America.

KARAKÜÇÜK, S., 2008, *Rekreasyon Boş Zamanları Değerlendirme*, 6. Baskı, Ankara, Gazi Kitabevi.

KARAKÜÇÜK, S., GÜRBÜZ, B., 2007, Rekreasyon ve Kent(li)leşme, Gazi Kitabevi, Ankara.

KİNG A, BLAİR SN, BİLD D, DİSHMAN RK, DUBBERT PM, MARCUS B.H., (1992). *Determinants of physical activity and interventions in adults.* Med Science Sports Exercise, 24: 221-236.

KRAUS R., 2008, *Recreation and Leisure in Modern Society*, 8nd edt, Sudbury, MA., Jones&Bartlett.

MOSKOFF, WM., 1984, *Labour and leisure in the Soviet Union.* New York: St. Martin's Press.

National Research Council, 1999, *Toward environmental justice: Research, education, and health policy needs.* Washington, DC: National Academies Press.

NILSSON I., FISHERS A. G., 2006, *Evaluating leisure activities in the oldest old.* Iscandinavian Journal of Occupational Therapy. 13: 31_ 37.

ÖZDEMİR, A. S., KARAKÜÇÜK, S., GÜMÜŞ, M., KIRAN, S., 2006, *Determination of Underground Mine Workers' Leisure Time Habits Who Work in Turkey Hard Coal Institution General Headquarters*, 4th International Scientefic Congress: Sports, Stres, Adaptation, Book of Abstracts, p. 161, Sofia.

RUBIN, J., FLOWERS, N.M., & GROSS, D.R. 1986, *Adaptive dimensions of leisure.* American Ethnologist, *13*(3), 524–536.

TORKILDSEN G., 2005. *Leisure and Recreation Management,* 5th Edition, London: Routledge.

United Media Enterprises, 1983*. Where does the time go.* New York: Newspaper Enterprise Association

U.S. Department of Health and Human Services, 1996. *Physical Activity and Health: A Report of the Surgeon General*. U.S. Department of Health and Human Services, Centers for Disease Controland Prevention, National Center for Chronic Disease Prevention and Heath Promotion, Atlanta, GA.

VEAL, A. J. 1984, *'Leisure in England and Wales',* Leisure Studies, 3:2, 221 – 229.

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METHODICAL ASPECTS REGARDING THE USE OF RECREATIONAL KAYAK

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ABSTRACT

Due to the technique that is easy to assimilate, the accessibility of the materials and the minimum water traveling conditions, kayak has turned in a very short period of time into competition tests. Thus, during modern times, the kayak competitions have greatly contributed to the promotion of this sport on world level. The sports competition has transferred quickly on the scientific level and caused the initiation of some studies in order to create the best hydrodynamic forms for increasing the rate of travel, but also for finding some cheap, light and easy process able materials. Recreational kayak has become widespread especially due to the constructive features, the satisfaction of the adventure spirit, the movement freedom, the need for physical effort and for water traveling. People have grown fonder of it as it is regarded as a high risk sport because it can capsize easily. The use of kayak at its maximum possibilities: traveling on all kinds of water (lakes, slow and mountain rivers, sea), easy maintenance of balance, as well as the possibility to return to the initial position, through different techniques, after capsizing from various reasons. The main learning areas refer to: creating the abilities for linear traveling, making turns, stopping and righting after capsizing (overturning), conquering fear and becoming aware of the position of the body in a capsized kayak.

KEY WORDS: Kayak, learning, capsizing, methods

INTRODUCTION

Known since the oldest times, invented as a need of men to travel by water, kayak is a fast, cheap and easy means of locomotion that uses only the individual abilities. The name "kayak" comes from the Inuit tribe from Canada that used boats that resembled more closely the boats that we use today. Later on, the European colonists from the American continent built boats from tree bark in order to navigate on the running waters from North America. The historical sources mention the use of these boats by the Eskimo tribes along the Greenland coast, in the present day North Norway and Canada, on the habitable coasts of Antarctica, by the native population from the North-West Pacific and in many other places on earth. The Aleut Tribe and other arctic populations built kayaks from a strength structure made of whale bones and cork wood, over which they stretched sea lion skin treated with whale fat. The boats were extremely important for the survival of the Eskimos; they needed the boats for fishing and hunting. (M. Chirazi, 2008). Due to the fact that the technique is easy to assimilate, the materials are accessible and the water conditions must be minimum, kayak has quickly turned into a competition. Thus, during the modern age, the kayak competitions greatly contributed to the promotion of this kind of sports on international level. As a sports branch, it determined the beginning of some studies in order to create the best hydrodynamic forms so as to increase the shifting speed, but also finding some cheap materials that were light and easy to process. The competitional kayak reached extraordinary shifting performances due to the high training level but also to the constructive performances: hydrodynamic forms, extremely light materials, modern training methods. Due to the fact that the aspects specific to competitional kayak regard only a small segment of the population, it is not included in our field of activity. On the competitional level is also the slalom kayak event, a competition that requires special abilities; it is more spectacular than the speed race but it requires special arrangements (artificial routes). Due to the popularity enjoyed as a sports event, the satisfaction given by the water shifting, the manageability it enjoys, more and more people have become interested in practicing this sport as a maintenance activity. For this reason, the builders have faced the need to create models as stable as possible and with features specific to remaining for a long time in the boat, characteristic to lake and running water expeditions. Thus, models for one person, for two persons or several persons, for children and for adults (provided with adjustments depending on the somatic parameters), for calm waters (lakes), for the sea, have been built. (M.Epuran,1994). The desire of men to live life at full speed has determined the builders of these boats to create special models for the running whirling waters specific to mountain regions (whitewater). Thus, in a short period of time, it transformed from a need to travel into a leisure activity greatly enjoyed by the public and into one of the most spectacular extreme sports event. The equipment for this sports branch includes elements that protect the exposed areas of the practitioner (specific helmet, special neoprene costume, life-saving jacket), protection elements for the boat (cover against water infiltration, rubber parts for some exposed areas, etc.) and still accidents happen.

Accidents happen due to the great risk that the amateurs expose themselves to by going into extremely rapid waters, with big obstacles (rocks), high debit, great level differences. There is a high risk every time someone gets into the water, especially in unknown waters, without visibility, to which it is added the use of some abilities specific to kayak shifting, as well as unpredictable situations resulting from the use of this equipment.

In order to prevent accidents and transform the leisure activity into something spectacular, some of the abilities from the slalom kayak have been taken over.

Thus, we have the returning from:

a. – capsizing with the paddle parallel to the body
b. – capsizing with the paddle parallel to the kayak.

a. The first returning is specific to big calm waters (lakes, seas), where the capsizing can be predicted. It is a returning that takes a longer time, it requires letting a grasp of the paddle (grasp of the hand on the opposite side of the capsizing), but it is safer and it can be executed only on the side where the capsizing took place. From the methods of teaching, we present some stages:

1. learning to let the grasp and placing the paddle on the extension of the body;
2. placing the paddle on the surface of the water;
3. hitting the water with the paddle maintained with a part parallel with the body;
4. capsizing at 90° and hitting the water with the paddle maintained in the best position;
5. capsizing preparing simultaneously the paddle, on the spot.
6. capsizing preparing simultaneously the paddles, from shifting.

It is recommended to learn the procedure on both sides (left-right).

b. The second returning is specific to running, rapid waters where the capsizing can happen in a fraction of a second, in a moment of losing the concentration or the incorrect positioning of the kayak on the water current. It is a fast returning that does not require the letting of the gasps of the paddle, that is relatively safe, it allows the returning to the initial position on the desired side (best known). From the methods of teaching, we present the following learning algorithm:

1. lateral capsizing with a partner in order to get used to the sensation resulting from the position;

2. lateral capsizing on a floating surface in order to learn the movement of the pelvis; it can be executed even with a partner in order to feel more secure;

3. learning the position of the paddle and working with the arms, without capsizing;

4. capsizing with the paddle in the prepared position;

5. capsizing with the paddle parallel to the kayak and returning;

6. capsizing with returning on the opposite side of the kayak (360°).

It is recommended to learn the two returning procedures in a swimming pool with the water at the best temperature or at least clean water in order to view the movement and to correct them. From the spectacularity point of view, the second one is more spectacular. From the difficulty point of view, it is recommended to learn the first returning (returning with the paddle parallel to the body) at the beginning of the training**.** (E. Dimitriu, 1982) Knowing one of the two returning procedures decreases the level of fear of the practitioners and increases the pleasure related to the water traveling by these boats.

BIBLIOGRAPHY

CHIRAZI, M., **2008** - *Kaiakul – necesitate, competiţie, sport extreme*, Revista Sport şi Societate nr. 1/2008, pag. 23-27

DIMITRIU, E., 1982 - *Psihologia proceselor de instruire*, Edit. Ştiinţifică şi enciclopedică, Bucureşti, 1982

EPURAN, M., 1994 - *Metodologia pregătirii psihologice în sport*, Bucureşti, Edit. A.N.E.F.S.

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COMPARATIVE STUDY REGARDING THE INFLUENCE OF PAIN MANAGEMENT ON LABOR DEPLOYMENT

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ABSTRACT

Purpose. For most women, pain and labor are equivalent. Pain during childbirth is considered by the pregnant woman the most concerning aspect they have to face during pregnancy. However, if we take into account the functions of pain during labor, we can say that pain is a necessary evil which can be ameliorated until it becomes bearable through specific methods and means.

Anxiety and stress are very common during pregnancy, but not a good side effect of it. Pain is a big issue that pregnant women handle with, when arrive the big moment – the delivery.

The aim of this study is to determine the role of directed or passive relaxation and breathing exercises on labor deployment. We also want to determine the relationship between these exercises, pain level and drugs administration.

Methods. The study group consist of 70 pregnant women, in the third trimester, 35 from them having a relaxation and breathing exercises program. In order to asses the presence and the severity of anxiety and also it's evolution during pregnancy, the State – Trait Anxiety Inventory (STAI) (Robu, Viorel, 2009) was completed.

Results. In their majority, the outcomes are statistically representative (0<0, 01) and that's means that the anxiety episodes are really reduced in pregnant women practiced both relaxation and breathing exercises. We also found that, the duration of labor was significantly reduced in women that practiced relaxation and breathing exercises. Drugs administration has a

Conclusions. These results comes to emphasize the fact that pregnant women does not have to be afraid about their pain during pregnancy, because, as this paperwork shows, there are efficient methods of pain management. Pregnant women should know that a natural birth came with a pain that became important for their following relation with their baby.

KEY WORDS: labor, delivery, pain management, function of pain

INTRODUCTION

We live in a century in which information passes through in various forms of manifestation through seen and unseen channels, in codes and signs sometimes difficult to be understood by the human mind. The most severe mistakes and least excusable, in any activity or interaction domain, are those caused by lack of information or poor information.The basic need for reproduction is unfortunately often inhibited because of lack of information regarding what this thing means. The balance between the joy of having their own child and "the cost" of this happiness inclines for giving up, being shadowed by the future mother's concerns regarding the childbirth pains.As Dr, Chitulea (2001) well emphasized, the "fear of childbirth pains" has been transmitted from mother to daughter for almost 2000 years. Ignorance and disinformation generates anguishes to young women who represent for themselves in a terrifying manner the delivery of the baby, perceived as big and aggressive, through the genital ways, appreciated as incompetent for this phenomenon. (P.Chitulea, 2001). The unknown factor represented by not knowing the way in which labor happens, as well as the lack of information regarding the functions of pain during labor and the way in which the woman can face this painful challenge, will determine the mother to prefer the cesarean operation or epidural analgesia.

Women and babies have been interrelated since the very beginning. For many of them, pregnancy and delivery are often times of worry: how will the mom herself change, how painful the labor will be, can she handle it (J Teixeira,; D;Martin, O Prendiville,; V Glover,., 2005)? Anxiety attacks in pregnant women can have a physical as well as psychological aspect. This happens because during pregnancy, women's hormones go haywire, blood sugar levels fluctuate rapidly and there is lot of action going on inside the mother's body (Miu Andreea, 2008). Women can feel anxious over the actual birth process. They may be afraid that they will not know what to do once the baby is here. Pregnancy is a life-changing event. It is natural for woman to feel anxious. Sometimes these feelings turn into a full-blown anxiety or panic attack. Anxiety and panic attacks are more common in the last months of pregnancy (Getting Along with Anxiety Treatment in Pregnancy, 2009). This anxiety state determines to future mother the impossibility to relax its body during labor. That made it more and more painful, causing a vicious circle: fear – impossibility to relax – pain – fear… etc.This paper represents a plea in favor of natural birth which the young mother should be prepared to face."Worldwide, there are nowadays two categories of psychosomatic "management" of childbirth. The first represents the complex preparation during the

entire pregnancy period containing: information ("darkness creates monster"), conditioning the pregnant woman to perceive the pregnancy and delivery as a physiological and deeply positive phenomenon, as well as a wide variety of techniques (from respiratory gymnastics to autogenous training etc.), of focusing attention on something else than painful uterine contractions" (P.Chitulea, , 2001).

A. Physical functions of pain

A.1. Pain as a guide in the on-going of labour and as a protector of mother and child

The physiological function of pain is to protect the body by sending signals regarding possible aggressors so as we should be able to act in order to protect ourselves from danger.

Action is the key (L., Chertok, M. Bonnaud and D. Graham., 1969)

Child delivery is a physiological paradox. The woman, in order to bring a new life into the world, has to oppose her own body. She has to endure a visceral attack from her own body, fact which stands against any self-preservation principle.

This attack perceived upon her integrity, sets the woman's body in a state of alarm, signalling the presence of danger through pain and inducing physiological defence reactions.

Pain becomes thus a very valuable guide in warning the mother and the baby about a danger, providing the woman the possibility to correct possible dangerous situations by triggering an instinctive response. (R Melzack., 1973)

In the context of labour, each action of the woman is translated through "attack", move against something, against "danger". From the feminine perspective of physiology, fight means abandon, opening. (S Taylor,.,2002).

A.2. Pain as an endocrine stimulant

The oxytocin necessary to trigger labour is produced first by the foetus, as a result of foetal and placenta hormonal modifications, being then produced by the mother as well. The cervix stimulation, caused by foetal and uterine activity, will determine the initial elimination of oxytocin. In this moment, the prodromal contractions are still irregular and inconsistent. (Enkin, M., M. Keirse; Chalmers I., 2000).

So that the body should get in the most active phase, characterized by long and strong contractions, it needs regular stimulation, in relation with the constant and increasing production of oxytocin. This regular stimulation is provided by intermittent pain. Pain creates momentary peaks of acute stress for the woman.

Her body will react by increasing the production of catecholamines which, produced during these peaks, will determine a paradoxical response of oxytocin production, stimulating in the same time the production of endorphins.

This process triggers the gradual increase of contractions, together with a greater tolerance to pain. When the catecholamines, on the other hand, are produced constantly, they inhibit the production of oxytocin and endorphins. This could have as an effect the slowing down of labour and prolongation of prodromal contractions (Cass Pam, 2009), without determining an active labour, thus accentuating pain.

Oxytocin stimulates the secretion of prolactin, with important role in protecting foetal metabolism during labour, making easier the passage towards extra-uterine life. Prolactin also stimulates endorphin secretion. Therefore, the woman has four endorphin sources (endogenous calming): catecholamines, oxytocin, prolactin and parasympathetic nervous system, all interacting with the woman's body during the breaks between contractions.

Because endorphins stop contractions, they are responsible with labour rhythm. Harmonious cooperation between the two autonomous systems is important especially during labour. The sympathetic system is actually responsible with the triggering of uterine contractions while the parasympathetic system regulates the distension of the lower segment of uterus and cervix. When the two systems do not act harmoniously, there occurs the increase risk of spastic contractions which do not produce dilation; it occurs the risk of dystocia between body and cervix, as well as uterine hypotonia with the so-called "passive dilation" and unproductive pain. Harmonious alternation of the two systems is favoured by the correct alternation between pain and relaxation.

Another important aspect of pain as endocrine stimulant refers to endorphin production.

The function of endorphins is not only to reduce pain, but also to induce, during the second part of dilation, an altered state of acknowledging, similar to hypnosis. This state facilitates the inhibition of the cortical-rational side of the brain, allowing the functions of the autonomous system to take control. Moreover, it allows the woman to completely abandon her ego and hr own limits, leading to full dilation and foetus delivery. In the climax of delivery, when the foetus is eliminated and pain stimulation stops, the level of endorphin in the maternal body I so high that the woman will experiment moments of ecstasy.

To endorphins it is owed the quality of formation of dependence and connection between mother and child. Attachment is the ground where the child is enrooted, grows and lives. Physiological delivery establishes in this way the foundation for the child's ulterior survival and development.

B. Psychic functions of pain

B.1. Psychological functions of pain as expression of separation psychic pain

One of the most demanding moments of delivery is separation from the child. The child is

perceived by the woman both as a part of her own and a separate individual. The separation from a part of us or from a beloved person will always be a painful process. At child birth, this separation is partly desired, partly feared. (B Lieberman Adrienne., 1992)

In this context, pain has a double role. On one hand, it forces the woman towards a necessary separation, leaving no place for hesitations. As many women will probably never willingly assume this separation, pain helps them acknowledging the inevitable necessity of delivery, focusing all their attention towards that part of the body which is involved in the process (J.P Relier,. 1993). On the other hand, psychological pain becomes the expression of emotional pain caused by separation.

The intermittent pain, the rhythm of labour with transitory accelerations and slowing down, mark the passing of time. In the separation process time is important and individual.

C. Affective functions of pain

The high level of endorphins produced by labour and the profound emotional experience induced by pain stimulates the limbic system of the primary brain which is responsible with the affective functions of the brain. The endorphins will induce to the mother a "sensitive state" towards delivery and child. They will allow the woman to focus all her instincts and senses upon the imminent delivery, thus allowing her to instinctively meet her child. This type of connection does not happen in the case of deliveries under analgesics. The sensitive state is very similar with "being in love". Actually, the woman is programmed "to fall in love" with her baby. In conclusion, we can notice how the pleasure of having a baby and caring for it comes from this psychological experience of pain, as well as the desire to have another baby.

HYPOTHESES

Pregnant women who are practicing relaxation and breathing exercises during their pregnancy will have an increased capacity of cooping with labor pain, in that way reducing drugs administration and having a shorter labor and delivery period.

There is a significant difference between the level of pragnant women's anxiety as state and trait from the initial assesment and the level of anxiety from the begining of labor, inside the experimental group and the control group.

SUBJECTS

Participants were 70 pregnant women in the third trimester, having their first baby, attending 5 private obstetric consulting rooms in Oradea. Pregnant women had ages between: 21 – 25 years old (20%); 26 – 30 years old (50%); 31 – 35 years old (22%); 36 – 40 years old (8%). Most of women came from urban environment (74%) and the rest from rural environment (26%). 56% of women have high education, the rest of 44% having a college education.

The subjects were separated in two groups:

- experimental group - consist of pregnant women who followed an exercise program, in order to be fit for delivery
- control group – consist of pregnant women who choose not to follow an exercise program.

The pregnant women from experimental group (50%) followed a relaxation and breathing exercises program for a period of 12 weeks.

MATERIAL AND METHODS

From a physical point of view, pregnant woman learn how to lead the breathing, muscles and relaxation. The main advantage of these exercises is that allow to pregnant woman to be fit during pregnancy, to learn a correct breathing and a convenient relaxation. A pregnant woman who exercise is learning basic elements of relaxation, breathing, is capable to reduce her tension to a minimun level, strenghten the muscles, and when is time for birth, she can have an active participation to the birth process. Even so, a woman who done no exercise, but know how to deploys a labor, will bring the child to life in an easier manner than a pregnant woman with an athletic body and is ignoring exerithing about birth.

The exercise program consists of: exercise for learning the correct breathing; types of breathing specific to labor stage; types of breathing specific to delivery stage; exercises for mental and physical relaxation.

Breathing technique implies breathing with a certain number of repetitions and amplitudes. Some women prefer deep breathing, using the diafragma in order to fill their abdomen with air. Some of them prefer easy breathing, inhailing air as much as they fill their chest.

The purpose is that woman to find that breathing technique that help her to relax and to cool her down. Breathing must have a comfortable rhythm, do not shorten the breathing and do not induce dizziness. As much as knowledge about labor and delivery woman has, as much she will see all types of breathing techniques used in the different phases of labor.

Woman must learn how to use her breathing in order to concentrate, in that way, each contraction becoming a productive part of the labor. Breathing techniques are useful when woman is trying out different types of pain, discomfort, anxiety or fear. She will be able to use them in any day or stressful situation (Paterned Breathing durin Labour, 2007).

The pregnant woman's training consisted of the following means for fighting off the peripheral pain factors:

- deep breathing with prolonged exhale; vocalize (with open throat);
- pelvis mobilizations
- capacity to make the difference between tension and relaxation state;
- capacity of quick relaxation of tensioned segments: a relaxed muscular tone will sedate the painful signals sent to the brain, in this way closing the control door of pain, localized in the posterior horn of the medulla.

Painful stimulation is perceived by the brain at an inferior level:

- the movement during labor;
- massage, heating pillow, showers and hot bath in labor
- respecting the labor's physiological laws

The pregnant woman's training consisted also of the following means for fighting off the central pain factors:

- cultural deconditioning: changing the perception about the value of pain, creating the motivation and the possibility to choose;
- personal deconditioning: expressing personal experiences, positive conditioning in order to reduce fear and pain and creating some individual expectations;
    - working on the rhythm and on the actives and passives attitudes in the relationship with pain or other events;
    - knowledge of the existence of the pauses between contractions;
    - favoring the instinct and intuition;
    - positive affective communication with the partner and/ or other supportive persons;
    - the support of a midwife, known before labor;
    - maintaining the intimacy and the protection of the labor's place, in order to stimulate the instinctive behavior and to cut out any aggressive or disturbing factors;
    - stimulating the endorphins synthesis.

Traffic crowd, headache and daily chores are a good opportunity to pregnant women for exercising the different breathing technique, in that way becoming a daily routine. In order to simulate the labor, some prenatal physical educators suggest to pregnant women to hold an ice cube in her mouth, for an effective execution of breathing techniques, during the momentary pain that appear. (Bosomworth A, Bettany-Saltikov J., 2006).

Deep abdominal breathing can be practiced anytime: when reading, driving, at workplace, watching TV or in any other stressful moment etc. This kind of breathing is benefic not always in labor, but anytime in life.

It is important exercising the other breathing too, so that pregnant woman to be used to them and to be able to use them about 2 minutes and to not left out blast. If the dizziness occur, will be made a deep purifying breath, and that can remaking other breathings. If necessary pregnant woman can breath in with both hands close to the mouth and nose or in a paper bag. This breathing will be exercised from different positions: sitting, lied on a side, stand, on the knee and hands.

In order to not forgetting breathing techniques, pregnant woman can make some links, as: at the red light will do "hi-hi" type of breathing. When are commercials TV, she will do "hi-hi-huuu" breathing (S Downe, Trent Midwifery Group, C Young, et al., 2004).

Practicing the breathing techniques has many payoffs: breathing became an automatic response to pain. A mother more relaxed will respond in a positive manner to pain. The breathing rhythm will remain normal/ calm. Breathing techniques determine a wellbeing status and became a measure of control, will secure more oxygen in order to have strength and energy for mother and child; brings a purpose for each contraction, making them more productive.

Physically speaking, relaxation is not representing a decreasing of muscular tone, but a correction of it. Therefore, an esential element from training lessons is represented by having the capacity to voluntary relax of all body parts.

During relaxation program, woman must concentrate on the different parts of her body. She must induce a calm status by attention orientation.

Breathing and relaxation techniques become usual campaigners for stressful factors of daily living (*Simkin, Penny, 2001).*

MEASUREMENTS

In order to investigate the outcomes of exercise relaxation and breathing techniques on labor deployment, have been monitored: duration of labor, duration of delivery, pain intensity level, drugs administration. The labor and delivery duration was established in hours, respectively minutes.

For the assessment of duration of labor and delivery and drugs administration, we used a questionnaire consist of questions regarding these parameters. This questionnaire was applied to women, in the first day after natural birth. They were asked to complete a 4 items questionnaire, referring to: duration of labor (hours, minutes), duration of delivery (minutes), pain killers administration (yes/ no) and antispastic medication (yes/ no).

For the assessment of pain level was used the Pain Rating Scale.

A pain scale is a mean used by physicians and other health care providers to measure patient's pain, so that they can help plan how best to control it. Most pain scales use numbers from 0 to 10: 0 means no pain and 10 means the worst pain the person has ever known or felt.
The patient is asked to use the list below to find the number that best
describes his/ her pain.
0 = No pain
1 to 5 = Mild pain
6 to 7 = Moderate pain
8 to 9 = Severe pain
10 = Worst pain possible (Jan Nissl, RN, BS, 2009)

Data distribution for both experimental group and for the control group has no normal distribution, and that make us to use the nonparametric tests. In order to make a comparison between the two study groups, we used the Mann-Whitney U test for independent test specimens.

"Represented by faces with expressions, this scale follows the same guideline as the numerical scale. Zero is represented by a smiley face, while 10 is represented as a distraught, crying face.

This scale is also useful when rating pain in children, or for adults with mild cognitive impairments." (Jacques Erica, 2010). Subjects were asked to point the face that fits the most with the level of their pain.

In order to asses the level of anxiety, was used The Anxiety State and Trait Inventory (STAI) (V. Robu, 2009). This inventory is a self-report instrument that differentiates between the temporary condition of state anxiety and the longstanding quality of trait anxiety so that appropriate treatment can be developed. The STAI consists of two scales, both containing 20 items, with a range of four possible responses to each.. One scale addresses to a temporary condition - state anxiety (S-Anxiety) while the other scale addresses to a more general and long-standing condition - trait anxiety (T-Anxiety). The total score indicates which type of anxiety is prevalent. (Spielberger, C. D., Gorsuch, R.L., and Lushene. R.E., 1970).

The results of this questionnaire can be sinthetized on the following levels of anxiety (state, trait), as follows: low level (scor between 20-34), mild level (scor between 35-49) and high level (scor between 50-60).

Informed consent from the pregnant women was obtained before data collection.

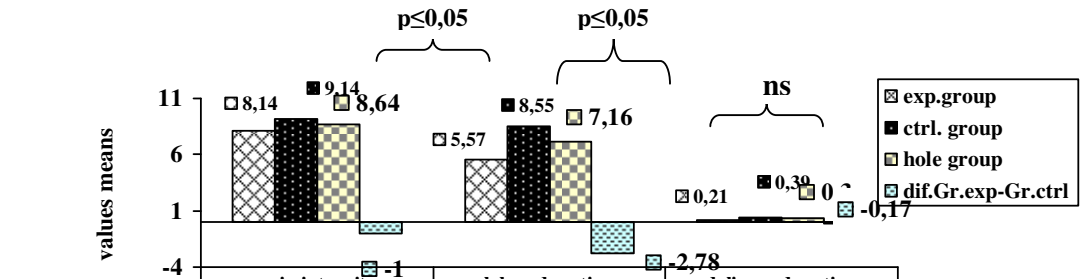
RESULTS

SPSS soft was used in order to do the statistical data analysis. Table nr.1 consist the initial characteristics (mean, std. dev.) of the entire studied group and separate, and both for the group of women who practiced relaxation and breathing techniques and the group of those who didn't. Also, the table presents the characteristics for the duration of labor and delivery and the level of pain.

In order to establish any association between the level of pain and the drugs administration, was used the Chi^2 test of associaton (independency).

Table nr. 1. Comparison betwen experimental and control groups for the initial characteristics (mean±std. dev.)

Initial assesment	Entire group (70)	Exp. group (n = 35)	Ctrl. group (n = 35)	p
labor duration (hours)	**7,16±2,71**	**5,57±2,72**	**8,55±2,49**	**ns**
delivery duration (hours)	**0,30±0,42**	**0,21±0,35**	**0,39±0,53**	**ns**
pain intensity level in labor (score)	**8,64±0,94**	**8,14±1,95**	**9,14±0,823**	**ns**



	pain intensity	labor duration	delivery duration
exp.group	8,14	5,57	0,21
ctrl. group	9,14	8,55	0,39
hole group	8,64	7,16	0,3
dif.Gr.exp-Gr.ctrl	-1	-2,78	-0,17

Diagram. nr.1 Comparison of the labor parameters betwen experimental and control group (pain intensity, labor and delivery duration)

Mann-Whitney U Test for independent test specimens show that the evolution of observed parameters was different on experimental group towards control group, for: duration of labor and pain intensity level. Experimental group presented a low levels for pain intensity towards control group.

Delivery duration has not a diferent evolution between two groups.

Pregnant women from experimental group presents a pain level significantly decreased towards control group. This can be explained by the fact that pregnant women from experimental group learned to control their pain by knowing and practicing the relaxation and breathing tehniques used during labor. Also, knowing everything about labor, they will not have that „fear of unknown", in that way being breaked that vicios circle: fear – incapacity of relaxing – strong contractions – pain – fear... etc.

Pregnant women from experimental group scored their pain level in average with score 8, towards those from control group, who scored their pain level, in average with 9 score. (p = 0,000)

Pregnant women from experimental group had a labor duration (5h şi 57 min.) significantly decreased (p = 0,000) towards pregnant women from control group, who had 8h şi 55 minute of labor duration.

Pregnant women from experimental group had a delivery duration (21 minutes) significantly decreased (p = 0,000) towards pregnant women from control group, who had 39 minutes of delivery duration.

Reducing the pain level, labor and delivery duration are very important objectives in followed in labor deployment, because this stage is very demanding both for mother and child.

Where the statistical analisys provided, we can affirm that breathing and relaxaion techniques are very important in a correct and efficient orientation of labor and delivery deploymemt, so that can be benefiting for both mother and child.

Chi^2 test of associaton (independency) indicate a strong association between the level of pain during labor and pain killers administration (diagram nr.2). The same association is present in case of antispastic medication, too. (diagram nr 3).

Pregnant women who had a decreased level of pain got significantly less pain killers administration (p 0,000) towards pregnant women with a high level of pain and allot more painkillers administration. We may say the same thing about the antispastic medication administration, wich was less for experimental group, towards the control group.

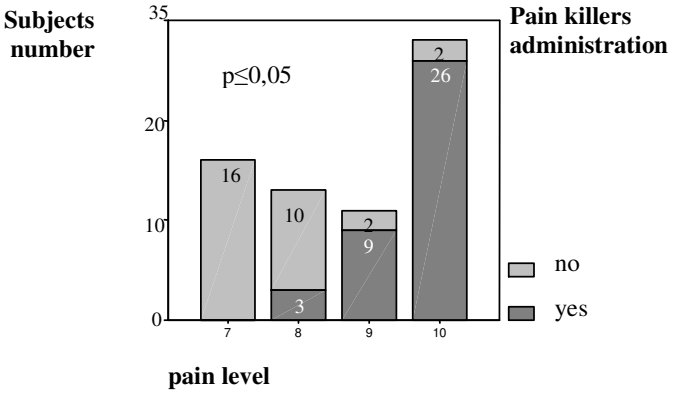


Diagram.nr.2 Associaltion between level of pain and drug administration

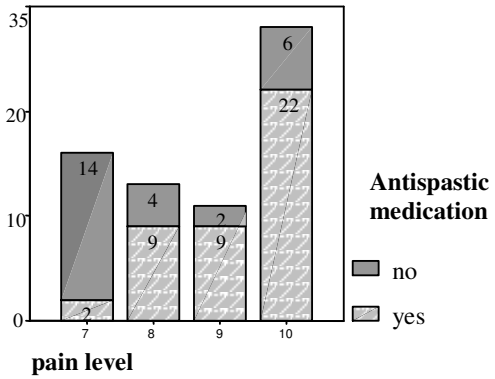


Diagram.nr.3 Associaltion between level of pain and drug administration

Table nr. 2 Comparison between experimental and control group regarding the characteristics of ordinal variables (mean± st. deviation, Kolmogorov-Smirnov)

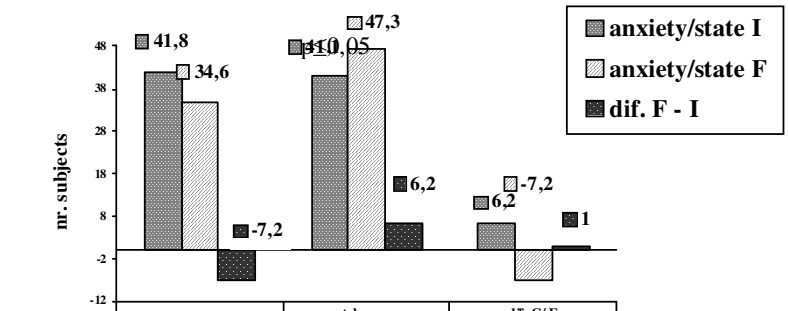
	Experimental group (n = 35)			**Control group (n = 35)**		
	Mean±.Std. Dev.	**K-S***	**p**	**Mean±Std. Dev.**	**K-S***	**p**
State anxiety (scor)	44,83±7,24	0,234	**0,015**	46,77±6,16	0,155	**0,032**
Trait anxiety (scor)	44,80±9,89	0,211	**0,000**	50,06±7,53	0,191	**0,002**

This variables (state anxiety and trait anxiety) have a normal distribution ($p > 0,05$). In that case, for data analisys, the inferential statistics will be used.

The comparison of initial data reveals that there are no significant differences between the characteristics of experimental group and control group, for anxiety as state and trait (p>0.05). This will allow us to compare the characteristics of both groups final data.

Regarding the initial level of anxiety as state and trait, with a scores mean of 44,83 for experimental group, respectively 46,77 for the control group (table nr.2), both groups have a mild level of anxiety, for anxiety as state and trait also (mild level - scor between 35-49).

After following the exercise program, this parameter was improved especially for experimentla group, as follows.



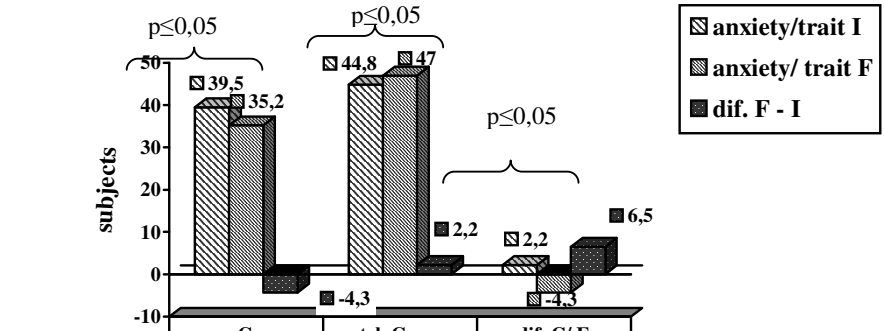
	exp. group	ctrl group	dif. C/ E
anxiety/state I	41,8	41,1	6,2
anxiety/state F	34,6	47,3	-7,2
dif. F - I	-7,2	6,2	1

Diagram.nr.4 Comparisonthe level of anxiety as state (mean): initial/ final/ difference(exp. group/ ctrl. group)

Intragroup analisys (sign test: **0,021≤0,05 for anxiety as a state and 0,002≤0,05 for anxiety as a trait)** confirm the hypothesis that there is a significant difference between the anxiety level as a state and as a trate, from the beginning and the end of pregnancy, for both groups.

However, the anxiety scores of the experimental group enrolls in a low/ medium level of anxiety (as state: 34,6 and trait: 35,2). The anxiety scores of controll group reaches the upper limit to a high level of anxiety (as state: 47,3 and trait: 47). This result highligt the importance of exercising in pregnancy.

The Wilcoxon Test for pears test specimens: initial/ final – **0,007 ≤ 52 (critical value p = 0,05**) for anxiety as state and **0,052≤ 52** confirm that there is a significant diference between the anxiety level from the begining and the end of pregnancy, for both test specimens.



	exp. Group	ctrl. Group	dif. C/ E
anxiety/trait I	39,5	44,8	2,2
anxiety/ trait F	35,2	47	-4,3
dif. F - I	-4,3	2,2	6,5

Graf.nr.41 Anxiety as trait initial/ final/difference exp. group/ ctrl. group

The Mann-Whitney U Test for independent test specimens (experimental group/ control group) allow itragroup analysis. Has been observed that pregnant women from experimental group have a mean level of anxiety at the end of pregnancy (mean score 34,6 for state and 35,2 for treat). Pregnant women from control group presents a tendency of increasing the anxiety level (mean score 47,3 for state and 47 for treat.).

There is a significant difference between anxiety level, both state and treat, of the experimental group and the one of the control group, at the end of pregnancy (Mann-Whitney U score **15 ≤ 23,** critical value **Mann-Whitney U for p = 0,05**, for anxiety as state and **17 ≤ decât 23** for anxiety as trait).

The anxiety level is low for the experimental group (a diference of - **7,2p** and **- 4,3p** for anxuety as state. Although these values are low, they are very important because are pointing the reducing of anxiety level from medium to low.

This will have a great impact on pregnant woman behavior durinf labor, because of the reducing of fear state, responsable for the incapacity of pregnant woman to relax and secondary on labor duration.

The anxiety level is significantly increased in control group (a diference of **6,2p** and **2,2p** for anxiety as treat) with a negative impact on labor development.

This finding allow us to assert that by having an active life and a program of exercising, pregnant woman will be able to maintain her anxiety level on a normal level, she will learn to relax and control her pain more efficient, in that she will be inn for delivery.

DISCUSSION AND CONCLUSIONS

Maternity is a special condition of woman, due to the fetus development in the uterus and to the changes of maternal body, pursuant to the presence of conception product and to the necessity of assuring appropriate conditions, which will secure a normal development and delivery. It is necessary a screening of the most efficient means and methods of physical assistance, in order to help the maternal body for an easier take over pregnancy, labor, delivery. After following the exercise program, the results are indicating an upgraiding of testing parameters, on experimental group. This will have a postive impact on labor delivery for experimental group toward control group, showed by decreasing drugs administration.

Regarding labor parameters assessed, they were upgraded for experimental group, translated trough the reduction of labor and delivery duration, the reduction of drugs administration, and reducing pain level.

Regarding the labor parameters, they showed an improvment in labor deployment to the pregnant women from experimental group, translated through decreasing of labor and delivery period, a decreasing of drugs administration (pain killers and antispastic madication) and a decreased level of pain.

Research data showed a significant association between the level of pain and painkillers and antispastic medication administration, and also between the length of labor ald delivery and the state of fetus at birth. The anxiety level as state and treat, even if was medium at the begining of labor, in case of two groups, have been reduced into the end of pregnancy, unlike control group, where anxiet[level increased hereinafter.

This finding allow us to affirm that carrying of an active life style, by participating to a physical trainig and preparing for birth, pregnant woman will be able to maintain her anxiety in normal limits, she will learn to relax herself and to control her pain with more efficiency, which will allow her an active participation in the delivery process.

REFERENCES

CHERTOK, L., M. BONNAUD AND D. GRAHAM. **1969,** *Motherhood and Personality: Psychosomatic Aspects of Childbirth.* London: Tavistock Publications

CHITULEA P. 2001, *Orizontul psihosomatic şi social al medicinii perinatale. Aspecte psihosomatice şi culturale ale parturientei*, EdituraDuran´s, Oradea, pp.23

ROBU, V. 2009, *Test Anxiety Inventory (STAI) Standardization on a Group of Romanian High School Students*, Journal of School Psychology, issue 03, pp.58 - 47

TEIXEIRA, J; MARTIN, D; PRENDIVILLE, O; GLOVER, V., 2005, *The effects of acute relaxation on indices of anxiety during pregnancy*, Journal of Psychosomatic Obstetrics and Gynecology, 2005, vol. 26, n°4, ISSN 0167-482X, pp. 271-276

MIU ANDREEA, **2008**, *Importanţa exerciţiului fizic în perioada sarcinii*, publicat în Săptămâna Medicală, 09. iulie, Etichete : Jurnal de sarcină

Getting Along with Anxiety Treatment in Pregnancy, http://www.squidoo.com,ANXIETY/TREATMENT-IN-PREGNANCY, reviewed on 10.08.2009

MELZACK, R. 1973. *The Puzzle of Pain. Harmondsworth:* Penguin Education

TAYLOR, S.,2002, *The Tending Instinct: Women, Men and the Biology of our Relationships*, New York: Times Books Henry Holt Company

ENKIN, M., M. KEIRSE; CHALMERS I., 2000, *A Guide to Effective Care in Pregnancy and Childbirth*, New York: Oxford University Press.

CASS PAM, 2009, *What hapens during labour?*, http://www.childbirthsolutions.com/articles/birth/whatlabor/index.php

SCHMID VERENA, 2009, *The meaning and functions of labour pain, http://www.catpress. com/verenaschmid/* quattordici.htm

LIEBERMAN ADRIENNE B., 1992, *Easing labour pai: The Complete Guide to a More Comfortable & Rewarding Birth*, Editor: Harvard Common Press, 1992, ISBN 1558320431, 9781558320437

RELIER, J.P. 1993, *L´aimer Avant Qu´il Naisse*. Paris: Editions Robert Lafond

BOSOMWORTH A, BETTANY-SALTIKOV J., 2006), *Just take a deep breath… A review to compare the effects of spontaneous versus directed Valsalva pushing in the second stage of labour on maternal and fetal wellbeing*. MIDIRS Midwifery Digest 16(2): 157-165.

DOWNE S, TRENT MIDWIFERY GROUP, YOUNG C, ET AL., 2004, *The early pushing urge: practice and discourse. In: Downe S. ed. Normal childbirth:* Evidence and debate London: Churchill Livingstone: 121-40.

SIMKIN, PENNY, 2001, The Birth Partner: Everything you need to know to help a woman through childbirth*, Second Ed.., Ch. 4., Boston, The Harvard Common Press, ISBN 1-55832-195-0*

JAN NISSL, RN, BS, 2009, *Pain Rating Scale,* http://www.health.com/health/library/mdp/0,,stp1 310,00.html

JACQUES ERICA, 2010, *Using Pain Scales to Effectively Communicate Pain Intensity*, By, About. com Guide, updated January 06, 20 10

SPIELBERGER, C. D., GORSUCH, R.L., AND LUSHENE. R.E., 1970, *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press

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IMPACTS OF GLOBALIZATION ON SPORT AND COACH EDUCATION FIELDS – (LITERATURE REVIEW)

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ABSTRACT

Purpose, The purpose of this research paper is to present an overview of how the coach education field has become a global need by examining, in depth, the globalization phenomenon and its impacts on sport performance (generally) and on coach education (specifically).

Methods, literature review provides access to some of the most recent research on globalization, and a global review of coach education systems, moving to a discussion of the processes and impacts of globalization on sport and coach education.

Results and Conclusions, the main section in this paper is about globalization and coach education which indicates that there are impacts of globalization on coach education systems by providing more qualification opportunities for sports coaches. For example, international coaching courses that are provided by international sports organizations provide opportunities for sports coaches to meet in one place to share coaching ideas and experiences. Therefore, these international courses perpetuate centralization and globalization of coaching theories and practices.

KEY WORDS: Globalization, Sport, Coach Education.

INTRODUCTION

Sociologists have empirically studied long term processes of change in sport by identifying some terms such as sportization, internationalization, professionalization, and globalization. The question in this case is, to what extent these processes have affected the developments of sport generally and coach education specifically.

Globalization is a long term process that moves the world towards increasing similarities where people are increasingly interconnected and barriers between countries and ethnicities are removed. Outcomes include the fast and free flow of people, capital, goods and ideas (Naim, 2009; World Bank Group, 2009). Commonly, globalization has been magnified, disparaged, applauded, and often blamed for global problems.

This research paper exams globalization and its impacts on sport generally and on coach education specifically. The paper starts with exploring the concept of globalization, providing access to some of the most recent research on globalization, moving to a discussion of the processes and impacts of globalization (in general). Then, the paper will discuss (in depth) the impacts of globalization on education, sport and coach education.

The Concept of Globalization

Globalization has been one of the most hotly-debated topics over the past few years (The World Bank Group, 2009). Globalization has indeed flattened the earth, opened new international possibilities, paving the way for new ideas and refreshing the way of thinking about the world (Mahbubani et al. 2008). It is no longer possible or even instructive to view the world through the simple prism of right and wrong, good and bad, guilty or innocent (Sethi, 2009). However, what does globalization mean?

Some argue that, the term "globalization" describes the increased mobility of goods, labor, and technology all over the world (The Canadian Economy, 2009; Naim, 2009; World Bank Group, 2009). The term "globalization" was quickly applied to political and cultural changes that affect in common ways large segments of the world's peoples and one of these common global phenomena is education (Spring, 2008). Giulianotti and Robertson (2007) note that the period from the 1870s to the mid-1920s has been termed the 'take-off' period of globalization, when transnational relations expanded massively (notably through transport, trade, communications, education and migration), and the world underwent intensified 'sociocultural compression'. To sum up, globalization is the growing integration of economies and societies around the world (Mahbubani et al. 2008).

There are many definitions of globalization. For instance, Investor World Organization (2009) offers a definition of globalization as 'the process of increasing the connectivity and interdependence of the world's markets and businesses'. This process has speeded up dramatically in the last two decades as technological advances make it easier for people to travel, communicate, and do business internationally. Indeed, globalization may refer to the universal tendency for a market society and to the universalization of a certain model of market society, characterized as open and private. Accordingly, globalization is considered as a direction or trend in global development (Girón and Correa, 2009). Globalization, is also defined as 'the worldwide diffusion of practices, expansion of relations across continents, organization of social life on a global scale and growth of a shared global consciousness' (Giulianotti and Robertson, 2007).

Clearly, the concept of free movement of people, ideas, goods, ideologies and technologies around the

world is taken into account in any definition of globalization. Another important key to globalization is that globalization is a continuous process and therefore, any definition for globalization is a continuous, constantly changing one.

In the midst of many definitions of globalization offered by many authors and international organizations, many forms of globalization have appeared. Carson (2008 p. 157), for instance, describes three forms of globalization operating in the world today:

- Globalization one is "the dominant form arising from what can broadly be called the revival of radical liberalism, or neo-liberalism."
- Globalization two "represents the way various people around the world are responding to Globalization one through acts of accommodation or resistance."
- Globalization three speaks to "a new kind of dialogue regarding sustainable human futures".

In the midst of above arguments about the concept of globalization, the question that arises is, to what extent has globalization affected sport and coach education fields?

Impacts of Globalization on Sport

The spread of modern sport is considered an interesting consequence of globalization (Horne, 1996; Rowe, 1996; Bernstein, 2009). It constitutes one of the most dynamic, sociologically illuminating domains of globalization. Sport constitutes a vital site for the theorization and empirical exploration of the multidimensional and long-term process of globalization (Giulianotti and Robertson, 2004). This section explores the relationship and impact of globalization on sport. It starts with some historical events that are considered as the start of sport's globalization. Then, it moves to explore how some sports have become global games, followed by an investigation of how the media have affected sport to become a global phenomenon today.

The Olympic games provides one example for analyzing the relationship between globalization and sport. In 1892, Baron de Coubertin considered international sporting events to have the potential to promote peace and understanding between nations. He proposed a revival of the Olympic Games of Ancient Greece. An international sport congress in Paris in 1894 led to the foundation of an International Olympic Committee, which proposed that the first Olympics of the modern era to be staged in Athens in 1896 (Smart, 2009; Bernstein, 2009). De Coubertin campaigned around the world to gather support for the idea of nations joining together to engage in a global competitive sport event. He intended the modern Olympic games to be on a global scale. Over the years, the games transformed into the most prominent regular global sporting event, constantly changing in nature with most radical transformations taking place in the past 20 years (Bernstein, 2009). For example the advent of TV coverage, commercialization of the 1984 Olympics, sponsors, spectacularisation, (opening and closing ceremonies), etc. Currently, the global status of the Olympics has been attributed to its media coverage, especially that of television (Bernstein, 2009; Giulianotti and Robertson, 2004).

Historically, one of the first modern sports to go international and begin to develop a global profile was tennis. Introduction of the game in America was in 1874. Tennis rapidly grew in popularity and in 1881 the United States Lawn Tennis Association was formed (Cooper, 2004). An early semi-official international tennis tournament, including players from America, Canada and England, was staged in 1878 in Newport USA by Dr James Dwight. The tournament was a forerunner to the first international team tennis competition established in 1900, officially called the International Lawn Tennis Challenge Trophy, donated by American doubles champion Dwight Davis, and subsequently known as the Davis Cup. The competition was open to all nations that had established official tennis associations to govern the organization and development of the sport (Smart, 2009). In 1913 the International Lawn Tennis Federation was established and when America joined in 1923 the championships of the four leading member states, England, France, Australia and the USA, were raised to the status of 'official championships' and later to become known colloquially as the Grand Slam tournaments (Smart, 2009). In addition, it has been argued that lawn tennis developed as a result of the interweaving of a number of complex social processes. It bridged the gap between upper and middle classes and was a game that could be played by people of all ages and both sexes was instrumental in its development (Cooper, 2004).

In cultural terms, modern sport affords a rich study of globalization processes. For example, the football game gives rise to a compelling relativization of social identities alongside concrete socio-political frameworks. Historically, football, as a cultural form, has undergone different kinds of globalization, such as an initial rejection or transformation in some societies, a more common development of highly particularistic identities among participants, and an institutional organization of the game into distinctive political tiers (Giulianotti and Robestson, 2009; Frick, 2009; Giulianotti and Robertson, 2004). Transnational processes in football have increased massively through intensified migration and advanced mediatization. Most football clubs have greater interconnections with other nations, such as through the recruitment of migrant players (global players market) and the attraction of foreign fans (Giulianotti and Robertson, 2007). Consequently, sport is highly popular and a globally networked cultural form. For instance, the secretary general of the United Nations subsequently

endorsed this view when he remarked of one sport, football, that it is more universal than the UN and that the FIFA World Cup brings the family of nations and peoples together celebrating common humanity in a way that few other cultural events can equal (Frick, 2009; Smart, 2009; Giulianotti and Robertson, 2007).

Another good example of a sport that has been affected by globalization is gymnastics. Benn and Benn, (2004) argue that processes of globalization have been recognizable in the development of gymnastics field. The influential part played by globalizing trends in the rapid development of gymnastics knowledge and demands on coaches has been recognized. For example, in coach knowledge transfers as Eastern bloc sports coaches were able to travel to other countries to offer their coaching services after 'glasnost'. Many of the coaches who had produced top champions in the sport became economic migrants and gymnastics knowledge began to be shared globally. They became global commodities. Such developments have been an essential part of the globalization of gymnastics knowledge.

As illustrated, globalization has affected sport and as a result, the number of participating countries in sports events has increased. To give a numerical example, in Athens, in 1896, more than 200 male athletes drawn from 13 nations participated in 43 events in eight sports which are track and field, weightlifting, rifle and pistol shooting, tennis, cycling, swimming, gymnastics and wrestling. The Summer Games has been held every four years since then, with the notable exception of the war years of 1916, 1940 and 1944. By 2008, the number of countries participating has increased steadily, reaching 205, in excess of the 191 state membership of the United Nations (Smart, 2009).

The impact of the media on sport has enabled it to become a globalized industry. As mentioned above, the global status of the sport has been attributed to its media coverage (Bernstein, 2009; Giulianotti and Robertson, 2004). From the mid-twentieth century, television broadcasting media have created a cultural-commercial force field that has radically transformed sport. The FIFA World Cup tournament and Olympic Games are excellent examples. The FIFA World Cup was televised for the first time in 1954 and the Summer Olympic Games in 1960. Television coverage has significantly increased the global popularity of both events and competitive bidding for broadcasting rights has radically transformed the political economy of these and other sporting events (Smart 2009).

Accordingly, the Summer Olympics ranks alongside the FIFA World Cup as one of the world's most popular sporting festivals. Both are truly global sporting events that attract substantial interest from the public, broadcasting organizations and commercial corporations alike. The 2004 Athens Olympics exceeded all broadcasting expectations with 3.9 billion people accessing television coverage of events. Given the scale and reach of global television coverage it is not surprising to find that the Olympic Games is now regarded as one of the most important events for commercial corporations seeking to promote their brands, particularly as consumers tend to associate Olympic sponsors with leadership in their respective product fields (Giulianotti and Robertson, 2004; McCall 2004 cited in Smart, 2009).

The Football media has become similarly transnational for various reasons. Transnational media corporations provide the technical and business infrastructure for the global flow of football information, and for the exponential increase in specialist television channels and magazines devoted to the game. Interconnecting ties between football clubs, associations and media broadcasters have become increasingly complex since the late 1980s. Yet clubs are increasingly equipped to establish their own media outlets such as notably television channels and websites to control information outputs and reach directly their global audiences (Giulianotti and Robertson, 2007; Mahbubani et al. 2008; Bernstein, 2009). In terms of electronic media, the World Cup has reached larger cumulative global television audiences, rising from 13.5 billion in 1986 to 33.4 billion in 1998 (Giulianotti and Robertson, 2007). In fact, football has become increasingly transnational, in terms of player migration, team competitions, supporter association, and the educational backgrounds and global connectivity of football's various stakeholders. Accordingly, football is not only the world's most popular sport, but also probably its most globalized profession (Giulianotti and Robertson, 2007; Milanovic, 2009).

Thus, since the late nineteenth century, the development of modern professional sport has been bound up with a succession of communications media that have reported on sporting events and the deeds of sports participants. The growth in global television coverage and the increasing commercialization of sports has provided the corporate sponsors of sports events with a compellingly persuasive platform to achieve a global profile for their brands. Press, radio and television have not only communicated information and images about sport to the fans; they have also served to promote sport to a wider public. Developments in television technology, particularly the emergence of satellite television broadcasting, have contributed significantly to the globalization of sport (Smart, 2009).

Impacts of Globalization on Coach Education

Successful coaches are those who can learn new skills, who are flexible enough to change old ways when change is needed, who can accept constructive criticism, and who can critically evaluate themselves (Martens, 2004, 4).

Sport is continually changing: rules, techniques, equipment and coaching methods are refined, including

the development of application of sports science. Consequently, sports coaches must keep abreast of these changes and adapt their coaching accordingly. Thus, one of the significant challenges facing sport organizations is finding ways to improve its coaches. One of these ways is by providing coach education programs. This section will examine the impacts of globalization on the coach education field.

As mentioned above, there are many impacts of globalization on sport, and one of these is its impact on coach education. Currently, coach education is moving towards a globalized position, where there is now an International Council for Coach Education (ICCE). The ICCE was established by delegates representing fifteen countries on the 24th of September 1997. The mission of the ICCE is to promote coaching around the world as a profession, and to improve the quality of coaching at all levels of sport. The ICCE aspires to accomplish this mission by creating a global community of coaching practice comprising organizations and individuals responsible for coach education and coaching (ICCE, 2009; Trudel & Gilbert, 2006).

In addition, other international organizations and projects have appeared to help in building coach education systems. They are providing an international platform for advocacy, organizational support and quality assurance of the training and development of community level coaches. One of these projects is the International Community Coach Education Standards (ICES). The ICES gives advice in the best way for sports coaches to develop, so they can meet the needs and entitlements of the participants. The ICES project tries to ensure standardized coaching programs, and to ensure that they are designed to meet internationally accepted standards. The project provides support for building or improving existing community level coach education and development systems on a local, national or regional level. In fact, it aims to bring all qualification opportunities together in a fit-for-purpose, agency or country level framework that can be referenced against international benchmarks (Dudfield, 2009).

The coach education program offered by The International Olympic Committee's Olympic Solidarity is also example of international programs which are available for all sports coaches around the world. The main objective of this program is to offer coaches access to high level further training, knowledge and experience, which they will then use to benefit their respective national sports structures. The program also offers supports to develop national sports and coaching structure (IOC, 2009; Robinson and Schneider, 2009; Yousfi et al, 2009)

Undertaking training as a coach is an important step in ensuring coaches are providing quality coaching to the participants they are working with. Any sports organizations must ensure that the delivery of the program and course content are consistent with the stated goals and objectives of the organization's educational program for coaches. Today, there are different coach education programs and systems around the world and the structure of these systems are designed to meet the needs of the coaches in each country or sports organizations. For example, there are coach education systems that are provided by international sports federations to improve the knowledge of coaches. There are also international coach education programs that are provided in some developed countries. In addition, there are coach education systems provided for one continent, such as coaching qualification system in Europe (ECC, 2009). Additionally, there are also coach education systems that are provided in a single country for the local coaches, such as the Hungarian coach education program. Some countries, (such as the USA) also have adopted several qualification programs, so that each single state implements a different program.

The international coach education programmes are considered as an impact of globalization on sport and give coaches around the world an opportunity for continuing education. For example, Athletics coaches in Oman have opportunities to join the IAAF educational program (O.A.A, 2009).

As mentioned above, international sports federations provide coach education programs to qualify their coaches. However, there are other global international coaching programs. Some of these programs are offered for any coach around the world and others are offered for coaches from only developing countries. These programs are not only in one sport, but they are designed to accept coaches from different sports (to provide generic skills) and also provided in different languages. For example, there is an international coaching course in Leipzig University in Germany that is offered for coaches from developing countries. Financial resources for the program come from the Ministry of Foreign Affairs of Germany. The participants come from different countries to spend 5 months together to get knowledge in many areas of sport sciences (Leipzig University, 2009).

Another example is the International Coaching Course organized by Institute of Coaching and Sport Education (ICSE) in Hungary. Since its establishment in 1971, 1084 coaches have participated in this course from more than 80 countries and from all continents of the world (ICSE, 2009). This course is designed to train and educate coaches worldwide. The course provides coaches with a systematic way to improve their knowledge and skills in the theoretical, technical and practical aspects of coaching. The course is organized in half-year intervals starting every March and September, and usually 10-15 sports are offered. The course is given exclusively in the English language. As a result of the long term activity in international coaching education this course has been recognized by the International Olympic Committee which gives scholarships for coaches from developing

countries to attend the course to meet other coaches from developed countries.

CONCLUSION AND PROPOSALS

The main task of this paper was to examine impacts of globalization on sport (in general) and on coach education (specifically). Regarding globalization and sport, the spread of modern sport is considered as a good consequence of globalization (Horne, 1996; Rowe, 1996; Bernstein, 2009). Sport is epicentral to contemporary globalization processes. The analysis of football's globalization –for instance- can advance both the sociology of the game and our theoretical understanding of globalization (Frick, 2009; Giulianotti and Robertson, 2004). For example, televised Olympics and World Cup soccer championships reach a billion people, bringing diverse populations closer (Mahbubani et al. 2008; Bernstein, 2009). The development of modern sport is bound up with processes of a cultural transformation associated with the global diffusion of capitalist forms of consumption (Smart, 2009). Finally, global sport is now a serious and increasingly financially rewarding business. Sport is now an established part of a globally extensive entertainment industry and sportsmen and sportswomen have eagerly embraced the notion that they have a responsibility not only to be successful in competition but also to entertain spectators and viewers by participating in the promotion of sport as spectacle (Smart 2009; Horne, 1996; Rowe, 1996; Bernstein, 2009).

Regarding the impact of globalization on the qualification of sports coaches, international coaching programs are considered an evident impact of globalization on coach education. The greatest advantage of these international coaching courses is that they bring many coaches from different nations to one place to share coaching ideas. Therefore, they perpetuate centralization and globalization of coaching theories and practices. As there are difficulties for coaches from developing countries to update coaching knowledge, these programs are good way to exchange new coaching knowledge. In addition, as English has become a global language (Hobson, 2009), such courses give a good opportunity for coaches to improve English for sport, opening new knowledge transfer opportunities for them.

However, many considerations should be taken into account when organizing such international coach education programs. For example, coaches should be prepared to face a new educational system that is most likely different from the educational system in their own countries. Also, coaches should be prepared to meet many coaches from different cultures. Finally, as all coaches in the course study one curriculum level, all coaches are presumably expected to have the same level of knowledge in order to benefit from attending such programs.

In addition to building good global qualification opportunities for sports coaches, it is essential to organize all provided opportunities. There are many qualification programs provided whether by national or international sports bodies and institutes, however, how are these programs related to each other, and are they ever evaluated or monitored?

The mentioned advantages in this section have proved that it is beneficial to work towards a global qualification framework or standard. Consequently, there is a need to increase cooperation and reduce redundancy between all the above qualification programs. For example, there is a need to coordinate and recognize the qualification roles of national and international sectors. Nationally, the co ordination and recognizetion the roles of non-university and university sectors are also encouraged. In addition, providing general guidance to countries, institutions and federations in order to develop coach education programs is also needed (Bales, 2007).

REFERENCES:

BENN, T AND BENN, B., 2004, *Developments in Women's Artistic Gymnastics following the 1972 'Olga Korbut Phenomenon'.* In Dunning, E., Malcolm, D and Waddington, I. (2004) *Sport Histories: Figurational Studies of the Development of Modern Sports.* Routledge: London.

BERNSTEIN, A., 2009, *Things You Can See From There you Can't See From Here*. Journal of Sport and Social Issues 2000; 24; 35.

CARSON, T., 2008, *Internationalizing Curriculum: Globalization and the Worldliness of Curriculum Studies.* The SAGE Handbook of Curriculum and Instruction, pp. 369–389.

COOPER, I., 2004, *Game, set and match*: *Lawn tennis, from early origins to modern sport*. In

DUNNING, E. MALCOLM, D AND WADDINGTON, I. *Sport Histories: Figurational studies of the development of modern sports*. Routledge; London.

DUDFIELD, O., 2009, *International Development in Coaching: International community Coach Education Standards (ICES)*. ICCE Global Coach Conference: http://www.icce. ws/conference/index.htm (Accessed December 7, 2009).

ECC., 2009, *European Coaching Council*. (Accessed July 23, 2009).

FRICK, B., 2009, *Globalization and Factor Mobility: The Impact of the ''Bosman-Ruling'' on Player Migration in Professional Soccer.* Journal of Sports Economics Volume 10 Number 1 February 2009 88-106.

GIRÓN, A AND CORREA, E., 2009, *Emergent markets and fragility.* Instituto de Investigaciones Económicas-UNAM.

GIULIANOTTI, R AND ROBERTSON, R., 2009, *globalization and football*. London. SAGE

GIULIANOTTI, R AND ROBERTSON, R., 2007, *Recovering the social: globalization, football and transnationalism*. Global Networks 7, 2 (2007) 144–186. ISSN 1470–2266.

GIULIANOTTI, R AND ROBERTSON, R., 2004, *The globalization of football: a study in the globalization of the 'serious life.* The British Journal of Sociology 2004 Volume 55 Issue 4.

HOBSON, N., 2009, *The Globalization of English*. http://www.webpronews.com/topnews /2005/03/07/the-globalization-of-english. (Accessed May 1, 2009).

ICSE., 2009, *International Coaching Course*. http://www.tfti.hu/en/icc/. (Accessed April 24, 2009).

ICCE., 2009, *the International Council for Coach Education*. http://www.icce.ws/. (Accessed May 3, 2009).

IOC., 2009, *Olympic Solidarity*. http://www.olympic.org/content/The-IOC/Commissions/ Olympic-Solidarity/. (Accessed December 7, 2009).

INVESTOR WORLD., 2009, *Globalization*. http://www.investorwords.com/. (Accessed April 27, 2009).

LEIPZIG UNIVERSITY., 2009, *Coaching International Course*. http://www.uni-leipzig.de (Accessed May 1, 2009).

MAHBUBANI, K. CHANDA, N AND MA, Y., 2008, *Post-Globalization*. SPRING: NPQ.

MARTENS, R., 2004, *Successful Coaching*. (3rd ed) The USA: ISBN.

MILANOVIC, B., 2009, *Learning About Globalization By Watching A Soccer Game*. http://www.carnegieendowment.org/publications/index.cfm?fa=view&id=18064&prog=zgp&proj=zted. (Accessed May 1, 2009)

NAIM, S., 2009, *Human Rights and Globalization***.** http://www.countercurrents.org /ahmed210407.htm (Accessed May 2, 2009).

PETROVIC, L ., 2009, *Structural Changes to Coach Education in Hungary*. ICCE Global Coach Conference:http://www.icce.ws/conference/index.htm (Accessed December 7, 2009).

ROBINSON, M. AND SCHNEIDER, J., 2009, *The Development, Monitoring and Evaluation of an Olympic Solidarity Coaching Education Program.* ICCE Global Coach Conference: http://www.icce.ws/conference/index.htm (Accessed December 7, 2009).

O.A.A., 2009, Omani Athletics Association. Muscat.

THE CANADIAN ECONOMY., 2009, *Globalization*. http://canadianeconomy.gc.ca/english/econ omy /globalization.html. (Accessed April 27, 2009).

THE WORLD BANK GROUP., 2009, *Globalization. http://www1.worldbank.org/economicpolicy /globalization/.* (Accessed April 27, 2009).

SETHI, S., 2009, *Globalization and the Good Corporation.* Journal of Business Ethics (2009) 87:1–2.

SMART, B., 2009, *Not playing around: global capitalism, modern sport and consumer culture*. Global Networks 7, 2 (2007) 113–134.

SPRING, J., 2008, *Research on Globalization and Education*. Review of Educational Research June 2008, Vol. 78, No. 2, pp. 330–363.

YOUSFI, Y. DUDFIELD, O. FERREIRA, A. JACQUES, F. ROBINSON, M., 2009, *Building sport and coaching systems in developing countries.* ICCE Global Coach Conference: http://www.icce. ws/conference/index.htm (Accessed December 8, 2009).

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FORMATION AND EARLY WORK OF "MACCABI" SPORTS ASSOCIATION ORADEA

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ABSTRACT

Purpose. This paper aims to present the conditions and the key events that led to the establishment of Maccabi Oradea sports association.

Methods. The paper was carried out based on the study of monographic works regarding Oradea, the history of sports in this town, a series of documents from the National Archives of Romania, Bihor County Sports Directorate, in particular articles of sports publications in "Sporthirlap, Nagyvárad" relating to the establishment and sports activity among the Hebrew community in Oradea, in the period 1920 to 1925.

Results. Based on the analysis of information contained in the sources consulted there are presented the actions of the representatives of Zionist movement in Oradea, and other Hebrew community representatives that preceded the establishment of the sports association, people who have contributed decisively to this process. Also, the paper refers to a number of organizational aspects of the association, the involvement of the local leaders in supporting the Department of football, results in local and national competitions during the period studied.

Conclusions. The establishment of Maccabi Oradea sports association was done under the influence and leadership of the Zionist movement as an expression of the will of the local Hebrew community.

Maccabi, through the work of its members, through their results, honorably represented the Hebrew community of Oradea, helping the sports education of the Hebrew ethnic population and helping to promote the Hebrew national spirit.

KEY WORDS: sport association, Jewish community, Maccabi Oradea

INTRODUCTION

In the last years of the nineteenth century, under the influence of Nathan Birnbaum, Zionism was founded, a nationalist movement that had proposed, among other things, raising a new generation of Jewish that can propagate the Jewish nationalist spirit and can act for the cultivation of Hebrew as language of the Jewish and will promote Jewish culture and the return of Jews to Palestine. (G. Colţescu, 2005) Inspired by this principle in the Second Congress of the Zionist movement, held in 1898 in Basel, dr. Max North launched the idea that sport is "an effective means to serve the Zionist movement, to promote nationalist Jewishspirit. (http://www.maccabiworld.org/nconfigout.asp?psn=306&tcat=60). Convinced that people must be trained and educated not only spiritually but also physically, representatives of the Zionist movement have campaigned to establish a greatest number of sports associations among Jewish population. Thus, in the European countries there were established the first sports association whose members were ethnic Jew: Jew Sports Club in Turkey, Bar Kochba in Germany, Haarlem in Holland, Blue Star in Switzerland, Hakoah in Austria, Fencing Athletic Club of Budapest in Hungary, Cechie Karolinentalt in Czechoslovakia. (P. Adorjan, 1922). Most of these names remind of glorious past, the power and heroism of the Jewish people. The principle that was the basis of founding these clubs was that Jews, wherever they lived, are not only a religious entity but they have a common history and a common culture, which determines them to be strongly attached of the community that they belong to.

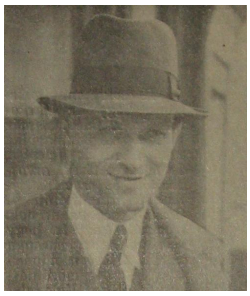
An important moment in terms of organizational point of view was the formation of Maccabi World Union at the XII World Jewish Congress, held in 1921 at Carlsbad (Karlovy Vary), Czechoslovakia. This was an international body that encompassed all Jewish sports clubs in the world and had objectives as "boosting physical education, strengthening faith in the homeland and Jew people, work and fight to restore the Jew state".(http://www.maccabiworld.org/nconfigout.asp?psn=306&tcat=60)

Establishment of Jewish sports associations in Transylvania.

In this context, the leaders of the Zionist movement in the main cities of Transylvania had conducted a laborious activity for the sport to be used as "a propaganda tool for awakening Jewish consciousness" (D. Fehér, 1937). Thus, since 1920, with the support of Zionist cultural committees of the National Federation of Jews from Transylvania, in villages in Banat Crişana, Maramureş and Transylvania, the first sports associations were formed among Jewish population, with organizations already existing on cultural, religious, professional, social assistance, the charitable women. Thus, Hagibor was founded in Cluj, the first Jewish sport association from Transylvania, at the initiative of the writer Giszkalai János, of the doctor Knopfler Bernát and lawyer Weinberger Chain. In the coming months, in the main cities of Transilvania more Jewish sports associations were started: Hakoah in Arad, Ivria in Brasov, Oradea Maccabi, Kadima at Timişoara, Samson in Sighetul Marmaţiei, Bar-Kochba in Satu Mare (L. Erös, 1996)

Formation of Maccabi Oradea sports association

The members of the local Zionist organization, particularly dr. Markovits Ignác, dr. Bárdos Imre Váradi, dr. Odon Gábor Kohn and Rabbi Goldstein Mor, have made extensive preparations to establish a Jewish sport association in Oradea. (S. Friedlander, 1921) As a result of these efforts, under the presidency dr. Markovits Ignace, in front of a large number of participants, they established the Maccabi Oradea Sports Association on June 5, 1921. Those present elected the initial board consisting of: President Löblé László, Executive Chairman Andor Sonnenfeld, Vice-President Lóránd János, Secretary Polgár András, the chief of football department Morgenstern Zsigmond, notary Zoltán Lukács, cashiers dr. Imre Horváth József Manhardt, dr. Balogh, doctors dr. Vertes and dr. Goldman and storekeeper Gond Sándor.



Dr. Markovits Ignác (D. Fehér, 1937)

At the initial meeting they also approved the emblem, the flag and the colors of the association. The stylized Star of David was included on the emblem also the Juvenal's dictum, both in Romanian (Minte sănătoasă, în corp sănătos and in Hungarian (Ép testben, ép lélek).

The emblem of the sports association Maccabi Oradea (D. Fehér, 1937)

The flag had white and blue colors in equal measure and also on diagonal the name of the association, Maccabi. They have also adopted the colors of the sports association: blue and white (Sporthirlap, June 6, 1921)

The flag of the sports association Maccabi Oradea (D. Schon & al., 1981)

The first years of activity

In less than a month from the establishment, the first training of the football team was held on a heavy rain on Tuesday, June 28, 1921, between 14.00 and 16.00 on the fields Banya –sori telep. Before the beginning of the training, the players - Winkler, Grünfeld, Goldstein II, Lowy, Lowenstein, Abraham, Izyák, Deutsch, Grünbaum, Goldstein I, Goldstein III and Schwartz - along with coach-player Markovits Mozsi and football department responsible Morgenstern Zsigmond received the blessing from the Rabbi Goldstein Mor. (Sporthirlap, 4 July 1921)

In addition to the support received from sionist local organizations and Jewish community in Oradea, the team had the support of local leaders such as Nuszbaum Samuel, dr. Kovács Gyula, dr. Blatter Sándor, dr. Janos Marton and others.

An important moment in Maccabi Oradea's activity was in December 1921, when together with other Jewish sports associations in Transylvania and Banat they affiliate to the Maccabi world union. Following this event, the subcommittee for Transylvania of the Maccabi world union was formed. (Uj Kelet, December 6, 1921, quoted by Gido, 2002).

Despite the inherent early difficulties, the football team was strengthened with two valuable players: Markovits, transferred from Athletic Club Oradea, and Breier, transferred from the Fencing Athletic Club of Budapest. Since the first year, the football team has played in the second league of the Regional Championship, where they honorable represented the Jewish community of Oradea. They won the preliminary matches and they were promoted in the first league of the Oradea Regional Championship.

Oradea Maccabi team won national consecration and recognition after they managed to get the first place at the first edition of the Cup Stalter, a competition organized in Arad and reserved for Jewish teams competing in Transylvania and Banat. Maccabi won the first game 2 – 0 with Hagibor Cluj (the best football team in Cluj at the time), and finished tied, 1 to 1, in the second game, with Kadima Timişoara (D. Fehér, 1937).

CONCLUSIONS

The establishment of Jewish sports associations, including those of Transylvania and Banat, was done under the influence and support the Zionist movement.

Maccabi Oradea sports association was established as an expression of the will of the local Jewish population supported by Zionist cultural committee of the National Federation of Jews from Transylvania and Banat, in which an important role was played by dr. Markovits Ignace, dr. Bárdos Imre Váradi dr. Odon, Gábor Kohn and Rabbi Goldstein Mor.

Since the first years of activity, Maccabi has honorably represented the Jewish community of Oradea. In addition to sporting results, which were the reason for national pride, the association has also contributed to promoting the National Jewish spirit educating the people of Jewish ethnicity.

REFERENCES

A brief History of Maccabi World Union , http://www.maccabiworld.org/nconfigout.asp?psn=306&tcat=60 08.02.2010

ADORIJAN, P., 1922 *Express karier* [Carieră rapidă], în: Sporthirlap, 21 august, nr. 35, anul III: 2

A Makabi elsö edzése [Primul antrenament a lui Maccabi], Sporthirlap, 4 iulie 1921, nr. 23, anul II: 4

COLȚESCU, GABRIELA, (coord.), 2005 „Vocabular pentru societăți plurale", Editura Polirom, Iaşi,: 220

Egy uj sport egylet Nagyváradon. Megalakult *a Makabi* [O nouă asociație sportivă la Oradea. S-a constituit Maccabi], Sporthirlap, 6 iunie 1921, nr. 19, anul II: 3

ERÖS, L., 1996 *Minicrocronica unei asociații sportive din perioada interbelică*, în: Dialog interetnic, nr. 21, aprilie: 3

FEHÉR, D., 1937 „*A Biharmegye, Nagyvárad kultúrtörténete, Öregdiákjainak Emlélkönyve* [Istoria culturii județului Bihor şi Oradiei. Volumul omagial al elevilor bătrâni], Nagyvárad: 229.

FRIEDLANDER, S., 1921 „*Nagyváradi Makabi*" [Maccabi Oradea], în: Sporthirlap, 24 mai, nr. 17, anul II: 3

GIDO, A., 2002 „Erdélyi zsidó intézmények a két világháboru kőzőtt" [Instituții evreieşti din Transilvania între cele două războaie mondiale], în: Korunk, aprilis: 44; 50

SCHON, D & al, 1981 A Tegnap városa. Nagyváradi zsidokság emlekkönyve, [Oraşul de ieri. Volumul omagial al evreilor din Oradea] Societatea Grosswardein, Tel Aviv:230 – 234.

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IDENTIFY APPLICABLE MODELS AQUATIC THERAPY IN POSTTRAUMATIC RECOVERY

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ABSTRACT

To obtain optimum efficiency, aquatic therapy plans must include required elements derived from the swimming motion. As already mentioned, the introduction of these elements required for learning was preceded full and correct at least two styles of swimming and subject to stringent measures of compliance safety and first aid for work in the swimming pool.

Swimming is an activity "total" combined movements involving the upper and lower extremities with the trunk. Also there have exemplified the principles by which we lead in introducing these changes, the styles of swimming.

Almost all processes can provide swimming pool movements perfectly suited to our intended therapeutic purpose. Most often I used the stamp of the crawl process (free), in its original form or slightly modified. In addition you can use movement styles breaststroke legs, butterfly and even sideways.

Conclusion: As an extreme change, we practiced restraint in the extension of the legs, while forward thrust is achieved only on the upper limbs. Is a variant of the hanging position in deep water, but it has an advantage that the active component, represented by the upper limb traction, which can be changed continuously and without leaving the pool. Immobilization can be done by attaching weights to the ankles tied to each other or restraining elastic ankles with rope.

KEY WORDS: swimming items, supine, freestyle, backstroke.

INTRODUCTION

Elements of swimming with application programs recovery of the lower limbs

To obtain optimum efficiency, aquatic therapy plans must include required elements derived from the swimming motion. As already stated above, the introduction of these elements was preceded compulsory learning correct and complete at least two styles of swimming and put stringent measures of compliance safety and first aid for work in swimming pool.

Swimming is an activity which combined movements involving the upper and lower extremities with the trunk. Also there have exemplified the principles by which we lead in introducing these changes, the styles of swimming. Outlined below are the movements that we included in our programs for aquatic therapy, physical segment and with respect for basic movement style applied.Almost all processes can provide swimming pool movements perfectly suited to our intended therapeutic purpose. Most often I used the stamp of style crawl (free), in its original form or slightly modified. In addition you can use the styles breaststroke leg movements, and even sideways butterfly

1. Enforcement positions Although

practically swimming motion movements of the feet can run in any position submerged (floating supine on belly, side, or down), getting a perfect postural alignment is done only in those positions where the momentum generated stamp it comes to compromise the request of the spine with extra charge.For this reason we have removed almost completely from care plans stamp in vertical position, with or without support from the basin edge, this position, although they preferred because of convenience, calls exaggerated cervical spinal floors (always kept outside the water) and the lumbar (main receiver impulse propellant).Since postural alignment is inversely proportional to the degree of load / request of the spine, the most effective postures and so with a good alignment of the spine are lying (dorsal, ventral and right side).

Lying on his stomach, with or without support, eliminates most requests on the back. (D Antonescu., M. Buga, COnstantinescu I., N.Iliescu 1986)

But once the feature is the need of breath, either by removing the head surface with increased degree of torsion, or by keeping it permanently above water, with increased cervical extension.

Increased support is possible through support provided by a raft of upper limbs and a belt floats in the pelvis. Requests to increase the level of thoracic and scapular belt, I put the float in the upper limbs outstretched extremity. Moreover, its buoyancy will keep head above water, providing a breath without further extension or twisting of the cervical spine.

Supine position, with or without support, offers many advantages, particularly regarding postural alignment. The first and most obvious issue is the possibility of airway breathing without the need to be permanently float. Another advantage is the possibility of placing the elements at any level floats from head and neck and ending with the pelvis, which shows a higher postural alignment without increasing unwanted applications.

Fluctuation prevent excessive hip and spine, upper limbs can stretch over your head, in submersion. As disadvantage we mention that this position requires the provision of increased buoyancy and perfect mastery of

style, especially behind.Lying on its side, with or without support, requires placing the main scoliotic condition spine with convexity of a superior curve .În this position the upper airways are placed under water and so the mere act of breathing becomes a therapeutic time, involving lateral flexion of head and neck, with a tendency to reduce bias scoliotics. Moreover, there is always beating feet under water, so efficiency is almost doubled year.It is a very advantageous position for curves greater amplitude but requires a fairly high degree of training and then some practical experience in swimming. We applied this position in subjects already depicted correct procedures and crawl back in later stages of the therapeutic plan as an exercise for toning, strengthening and maintaining the progress already achieved.Due to specific conditions and characteristics of its execution, not the postures recommended for double curves (scoliosis of the "S"). When seeking the perfect spinal alignment and a neutral tone, so in advanced stages of programs Recovery is recommended position lying on belly, with swimming goggles and breathing tube, keeping the head and neck submerged, thoraco-lombar spine in extension.

These devices allow perfect alignment of the spine and also cancels the need for respiration by twisting or lifting (extension) head, which remains submerged and thus decreases twisting or extension cord at cervical and upper thoracic. 2. Swimming styles applied Regarding legs are practically beating four basic styles that can be used in therapeutic programs namely:

- stamp of style crawl (free and / or rear)
- stamp of style breaststroke;
- dolphin stamp of style (butterfly)
- Side stamp of style.

2. Stamp of style crawl (free and / or rear)

Movement occurs in the thigh and involves alternating up and down (flex-extension) of the entire leg. Plantar ankles and legs are bent, with slight internal rotation. If free movement style is flexible thigh main engines (beating to the bottom of the basin), with knee slightly bent, it becomes perfectly flat to move up. Heels may come partly from the water, but only for short periods.If the situation is reversed style rear part, movement of the main engines are increasingly flexing thigh, but leg lifting to the surface. In this situation allows the fingers exit the water, also for short periods.If the situation is reversed style rear part, movement of the main engines are increasingly flexing thigh, but leg lifting to the surface. In this situation allows the fingers exit the water, also for short periods.Cadence leg movement in relation to the arms of time varies from 2-6 beats. Amplitude of movement will not exceed 30 cm and is not allowed complete removal of feet of water. Motion is maximum efficiency when running from the thigh and knee.If scoliosis involving the lower spinal segments (back), especially in the early stages of treatment, we introduced a slight modification of this type of move which consisted of performance beat feet to the thigh and partly bent knee (somewhat similar to cycling) due to lower lever arm and segment length submersible power needed to produce movement is reduced significantly, while reducing the request to the trunk.Obviously in this situation, due to lower volumes and decreased submerged buoyancy, which led to the need for belt floats. Special attention we gave her a degree of scoliosis with vertebral rotation. In these cases, breathing is made by rotating the head to the water surface was obligatory by turning the rotation opposite vertebral bodies.

3. Breaststroke style stamp of bilateral

symmetry is a movement whose starting position is lying on stomach with legs outstretched. Begin by simultaneously flexure of copse and knees, with gradual abduction of the thighs, while environmental and heels to buttocks.

By its very structure for deployment, the stamp generates pulses breaststroke style staple propellant, turned clear and the trunk. To reduce this level of demand, we introduced a slight modification which consists in reducing the medial hip rotation, which will automatically decrease the propulsion phase applications. In addition, educational reasons and / or convenience of the subject, you can run and move from a lying back, neck support and basin

Even in these circumstances by its bilateral symmetry, if scoliosis therapeutic contribution of this type of movement is relatively small. We used the stamp of style bras predominantly supine position, especially in the final stages of each microcircuit training for active recreation and relaxation post fort

4. Stamp of style dolphin (butterfly)

Is the movement of swimming with the highest attractiveness to the torso, directly relying on flexibility, strength and resistance lower back regions, abdomen, buttocks and legs.

Legs describe virtually the same motion as in crawl style, except that they move simultaneously throughout the motion. The movement has its origins in the torso and thighs, most of the impetus being provided by the rapid extension of the legs. Knees are slightly bent throughout the movement and lowering deployment perfectly stretched to climb. Ankles remain relaxed throughout the movement.

Structure, style dolphin stamp involving the whole body, being subject to more flexible spine than the lower limb muscle strength. Which is why I used it extensively in peak phases of therapy programs. Limiting the application of this style is based on its complexity, it is a challenge even for experienced swimmers.

Extreme demands appear lying on her tummy and can be much reduced by changing the position back or side. These are facts and positions applied in the early stages of therapy, or at the beginning of each microcircuit. (N., Bogduk, 1991).

All therapeutic reasons have changed downward movement execution rate, the relaxation of the knee joint to decline the request, and particularly of the 'beat' strong in a curling motion type, involving the whole body, much less demanding. This style does not apply to associated malformations of the spine gibozitate type.

5. Stamp lying on side.

Is a bilateral lower limb movement that starting position is lying on its side, with upper limb extended overhead and submerged at opposite aligned along the body.It begins with simultaneous flexion of knees and thighs, followed by dorsiflexia ankles. When thigh is the trunk at an angle of about 450, is placed underneath and start thigh flexion extension of the above, so that is placed over the leg above and below the posterior trunk.Water is pushed positioned above the plant foot and dorsum of the site put back. At the end of propulsion, both knees are fully stretched and bent the ankles, after which the cycle repeats.As a general rule, we positioned subjects so scoliosis curve is always oriented convexity (APEX) higher. To increase buoyancy devices can be placed to increase buoyancy, fixed in the armpit of the surface water and / or the ankle. Not applicable as floats in the pelvis to compel the subject to remain active and thus compensate for permanent alignment curve scoliosis.

CONCLUSION

Position is more effective, but has always been subject to a fairly high degree of training, it is a position not recommended for multiple curves. As a variant of it, with questionable effectiveness, however, may reverse the position of the two States so the lower leg to be placed above the rear and vice versa.

Leg immobilization

As an extreme change, we practiced restraint in the extension of the legs, while forward thrust is achieved only on the upper limbs. Hanging position is a variation in deep water, but has the advantage that they have an active component, represented by upper limb traction, which can be adjusted continuously and without leaving the pool. Immobilization can be done by attaching weights to the ankles tied to each other or ankles with rope. (M.Cordun, 1999).

REFERENCES

ANTONESCU, D., BUGA, M., CONSTANTINESCU, I., ILIESCU, N. 1986, *Metode de calcul şi tehnici experimentale de analiza tensiunilor în biomecanică* – Edit. Tehnică, Bucureşti,.

BOGDUK, N., 1991, *The lumbar disc and low back pain.* Neurosurgery clinics of North America, 2 (4),

BLANCHI, J.P. 2000, *Biomécanique du mouvement et APS*., Ed. Vigot, Paris,

CORDUN, M., 1999, *Postura corporală normală şi patologică*. – Edit. ANEFS, Bucureşti.

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ASSESSMENT OF MULTILATERAL PHYSICAL TRAINING LEVEL OF GYMNASIUM PUPILS THROUGH ATHLETICS POLYATHLON

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ABSTRACT

Multilateral physical training at gymnasium pupils level is a priority objective of education since it ensures a balanced and harmonious development of all motor qualities.

The formation of a wide background of motor skills that are specific to athletics by assimilating the techniques of running, jumping, tossing as well as by participating in competitions in both individual events and polyathlons creates the pre-conditions of orientation toward performance athletics practices of an increased number of pupils.The deficiencies ascertained regarding the level of physical preparation as well as in assimilating the athletics motor skills can be corrected through adequate action instruments during both physical education at school as well as in athletics class. By means of a multi-lateral physical training with a focus on speed and take-off, we will provide improved sports results at the athletics polyathlon events.

KEY WORDS: assessment, pupils, physical training, athletics polyathlon.

INTRODUCTION

The poor level of multilateral physical training and insufficient development of athletics motor skills along with decreasing numbers of sports practitioners opting for performance athletics as well as reduced participation in local competitions of athletics teams from county general schools (12) constitute arguments in favour of the **topicality of this approach**.

The hypothesis: we assumed that optimizing the planning of training of athletics polyathlon teams at gymnasium level would result in optimum multilateral physical training along with higher levels of athletics motor skills oriented toward performance athletics in both individual events as well as in polyatlon events, in accordance with the pupils' age. **The research purpose** consists in assessing the level of multilateral physical training along with athletics motor skills in association with an optimized planning for pupils' training in order to achieve higher performances and allow their orientation towards performance athletics practicing. The research was conducted during the county phase of the school athletics tetrathlon boys' team contest.After analyzing the results obtained by the members of the 12 teams participating from Braşov county, we found out that neither team succeeded in obtaining a number of over 1000 pts, the closest score being achieved by the pupils team from General School Zărneşti, while the individual phase showed that a single competitor was able to achieve a score of in excess of 300 pts (315), namely C.M. from the General School Rupea (Annex 1), 12 competitors achieving in excess of 200 pts, while 6 pupils scored less than 150pts.

In the 60 m sprint race with crouch start were 48 participants: 3 pupils achieved a score of 85 pts with a performance better than 8.0 s, 14 pupils obtained results better than 8.7 s, evaluated at over 60 pts, while a number of 6 pupils reached a more 9.0s, the equivalent of 50 pts. In running long jump with 1 m marked take-off zone, three of the pupils succeeded in achieving jumps of over 5 m evaluated at more than 65 pts, 10 pupils succeeded in performing 4.5 m jumps evaluated at 50 pts, while a number of 10 competitors performed jumps below 4 m.In oina ball momentum toss, 2 competitors achieved tosses of over 60 m evaluated with over 70 pts, 20 succeeded in obtaining at least 50 pts the equivalent of 46.5 m, while 6 competitors placed themselves below the 40 m limit. In the 800 m endurance race, only 3 competitors obtained results better than 2'30'' evaluated at 49 pts, 12 competitors attained results better than 2'40'', while 12 competitors either failed to obtain results below 3' or abandoned.By correlating the obtained results, we conclude that the greatest number of points achieved by one team of all four events was obtained in at the 60 m sprint race (307 pts) with the highest average number of points achieved by the competitors (63.58 pts) in the sprint race. In the running long jump the greatest number of points is achieved by a single team (258 pts), while the average number of points referred to the number of competitors is 47.54 pts, 27 pts less than in sprint race. (Mihailescu, L,. 2006, Săvescu, I., 2007)The oina ball momentum toss showed an average number of points referred to the number of competitors of only 49.08 pts, a modest value for this category of age.The endurance race revealed an extremely poor level of performance and the highest rate of abandon (6) as well as the lowest average of points number referred to the total number of competitors (23.27 pts).

In order to optimize the training of pupils and enable participation in athletics polyathlon

competitions as well as encourage orientation towards performance athletics practicing, we propose a training pattern which is supposed to eliminate the observed shortcomings (Table 1).The number of training sessions that must be attended by the athletes will be 1800 – 2000 during physical education at school and in athletics class over a number of 40 week cycles consisting of 4 – 6 training sessions every week.Knowing that endurance is the most neglected motor quality, we planned a total distance of 600 km of flat and bumpy ground racing, around 60 km/month between 14 to 16 km each week.Considering the oina ball toss, we have planned a number of 1000 attempts of which 600 with variable momentum and 200 with full momentum since the viewings performed during the competition have revealed an extremely unsatisfying level of assimilating the skills required by oina ball toss. For the long jump, we planned 400 attempts with variable momentum and 200 attempts with full momentum since, for an acceptable level of the ascertained speed qualities, performances can be considerably improved and implicitly the number of points collected both individually by teams will increase as well.

CONCLUSIONS:

1. Participation in the county phase of the school athletics tetrathlon has recorded an increased number of participants compared with the previous years, namely 12 teams and almost 50 competitors.
2. The pupils' training level was, in many cases unsatisfactory, with a great number of pupils who abandoned the endurance race event or the long jump event.
3. A great number of schools lack school athletic training classes, which is most frequently caused by the absence of a minimum of basic infrastructural facilities.

Table 1. Planning of the main training indicators

INDICATORS	AGE	**12-15 years Boys**
		Proposed Pattern
Number of training /year		180-2000
Number of cycles /week		40
Number of trainings/week		4-5
Long duration race (km)		600
Distances, rhythms	Up to 60-80m 95%	70
	More than 80m 85%	30
	More than 80m 80%	35
	More than 80m 75%	22
	Cross-country (km)	600

Table 1. Planning of the main training indicators (continued)

INDICATORS \ AGE		**12-15 years Boys**
	Proposed Pattern	230
	hurdles	200
R Long jump (numbers)	with variable momentum	400
E	with full momentum	200
Oina ball toss (numbers)	without momentum	400
	with momentum	600
Strength		x
Take-off (numbers)		4000
Sports games (hrs)		34
Contests	basic events	2-3
	other events	5

RECOMMENDATIONS

1. Planning of a sufficient number of lessons and means during the training phase in order to ensure the improvement of training quality especially in deficient events and motor qualities that are specific to athletics tetrathlon.
2. Pupils training and selection for performance athetics should be permanent, both during mandatory physical education lessons as well in school athletics classes.
3. Pupils should be encouraged to participate at least in 4 – 5 contests of which 2 – 3 in athletics polyathlon.
4. Organizing a basic infrastructure at school level and providing the minimum equipment necesssary to create the conditions for athletics tetrathlon.

REFERENCES

MIHAILESCU, L,. 2006 "*Atletismul în sistemul educaţional",* Edit. Universităţii din Piteşti
SĂVESCU, I., 2007 "*Educaţie fizică şi sportivă şcolară",* Edit. Aius, Craiova.

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ANNEX 1

NATIONAL OLYMPICS OF SCHOOL SPORTS
INDIVIDUAL TETRATHLON

COUNTY PHASE — V-VIII GRADE BOYS — PLACE:BRAŞOV — 29.03 2010 — TRACK LPS

PLACE			SCHOOL	grade	Yr. of birth	60 m		Long jump				Oina ball toss				800 m		Total ind	Total teams
						result	pts.	Results 1	Results 2		pts.	Results 1	Results 2		pts.	result	pts.	pts.	pts.
1		C.G	ŞC.1 ZĂRNEŞTI	VIII	1996	8.0	86	4.65	5.18		73	52.0	X		58	02:31	56	273	
1		M.A	ŞC.1 ZĂRNEŞTI	VIII	1996	8.3	75	4.55	4.17		52	X	55.0		62	02:39	40	229	
1		D.M	ŞC.1 ZĂRNEŞTI	VIII	1995	8.4	71	4.37	4.18		47	X	59.0		68	02:37	44	230	
1		N.L	ŞC.1 ZĂRNEŞTI	VIII	1994	8.3	75	4.77	4.95		65	56.0	58.0		67	02:29	60	267	999
							307				237				255		200		
2		C.M	RUPEA	VIII	1996	7.9	89	5.48	5.32		82	60.0	56.0		70	02:23	74	315	
2		PW	RUPEA	VIII	1996	8.4	71	4.65	5.00		66	44.0	45.5		48	02:40	38	223	
2		S.B	RUPEA	VII	1995	8.6	65	4.72	4.87		62	49.0	X		53	02:53	19	199	
2		I.F	RUPEA	VIII	1994	8.7	61	4.43	4.31		48	X	44.0		46	02:45	30	185	922
							216				258				217		161		
3		M.D	L.T.FELDIOARA	VI	1995	8.4	71	4.60	4.90		63	42.0	X		43	02:35	46	223	
3		M.T	L.T.FELDIOARA	VIII	1997	8.5	68	4.30	4.70		56	53.0	X		59	02:39	40	223	
3		B.R	L.T.FELDIOARA	VII	1995	8.8	58	4.08	X		39	X	45.5		48	03:14	1	146	
3		S.A	L.T.FELDIOARA	VII	1996	8.5	68	4.70	4.20		56	X	55.0		62	02:37	44	230	822
							265				214				212		131		
4		B.I	ŞC.27 BV	VI	1994	7.8	93	4.50	4.20		50	38.5	39.5		40	02:38	42	225	
4		T.I	ŞC.27 BV	VIII	1994	8.7	61	4.70	4.43		57	54.0	55.5		63	AB		181	
4		O.S	ŞC.27 BV	VII	1995	8.4	71	3.86	X		35	X	39.5		40	02:3	42	188	
4		G.R	SC.27 BV	VI	1995	8.8	58	4.17	3.97		42	45.0	X		48	02:52	20	168	762

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					result	pts.	Results 1	Results 2		pts.	Results 1	Results 2		pts.	result	pts.	pts.	pts.
1	C.G	ŞC.1 ZĂRNEŞTI	VIII	1996	8.0	86	4.65	5.18		73	52.0	X		58	02:31	56	273	
1	M.A	ŞC.1 ZĂRNEŞTI	VIII	1996	8.3	75	4.55	4.17		52	X	55.0		62	02:39	40	229	
1	D.M	ŞC.1 ZĂRNEŞTI	VIII	1995	8.4	71	4.37	4.18		47	X	59.0		68	02:37	44	230	
1	N.L	ŞC.1 ZĂRNEŞTI	VIII	1994	8.3	75	4.77	4.95		65	56.0	58.0		67	02:29	60	267	999
						307				237				255		200		
2	C.M	RUPEA	VIII	1996	7.9	89	5.48	5.32		82	60.0	56.0		70	02:23	74	315	
2	PW	RUPEA	VIII	1996	8.4	71	4.65	5.00		66	44.0	45.5		48	02:40	38	223	
2	S.B	RUPEA	VII	1995	8.6	65	4.72	4.87		62	49.0	X		53	02:53	19	199	
2	I.F	RUPEA	VIII	1994	8.7	61	4.43	4.31		48	X	44.0		46	02:45	30	185	922
						283				184				191		104		
5	C.B	L.T. ZĂRNEŞTI	VIII	1996	9.0	52	3.95	3.70		37	47.0	46.0		50	02:46	29	168	
5	L.A	L.T. ZĂRNEŞTI	VIII	1996	9.3	44	4.28	4.33		46	44.0	45.5		48	02:42	35	173	
5	M.R	LT.ZARNESTI	VII	1996	8.8	58	X	4.32		45	X	55.0		64	2.41	37	204	
5	P.R	L.T. ZĂRNEŞTI	VII	1994	8.8	58	X	4.38		47	49.0	48.0		53	03:01	10	168	713
						212				175				214		111		
6	A.E	ŞC 9 BV	VIII	1996	8.3	75	4.38	4.35		47	45.0	X		48	02:43	33	203	
6	S.D	ŞC 9 BV	VIII	1995	8.9	55	4.23	4.59		53	45.0	47.5		51	03:01	10	169	
6	N.C	ŞC 9 BV	VIII	1994	8.7	61	4.28	4.30		45	X	46.5		50	02:50	11	167	
6	N.L	ŞC 9 BV	VIII	1996	9.3	44	4.15	4.20		42	46.0	46.5		50	02:47	27	163	702
						235				187				199		81		

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					result	pts.	Results 1	Results 2		pts.	Results 1	Results 2		pts.	result	pts.	pts.	pts.
1	C.G	ŞC.1 ZĂRNEŞTI	VIII	1996	8.0	86	4.65	5.18		73	52.0	X		58	02:31	56	273	
1	M.A	ŞC.1 ZĂRNEŞTI	VIII	1996	8.3	75	4.55	4.17		52	X	55.0		62	02:39	40	229	
1	D.M	ŞC.1 ZĂRNEŞTI	VIII	1995	8.4	71	4.37	4.18		47	X	59.0		68	02:37	44	230	
1	N.L	ŞC.1 ZĂRNEŞTI	VIII	1994	8.3	75	4.77	4.95		65	56.0	58.0		67	02:29	60	267	999
						307				237				255		200		
2	C.M	RUPEA	VIII	1996	7.9	89	5.48	5.32		82	60.0	56.0		70	02:23	74	315	
2	PW	RUPEA	VIII	1996	8.4	71	4.65	5.00		66	44.0	45.5		48	02:40	38	223	
2	S.B	RUPEA	VII	1995	8.6	65	4.72	4.87		62	49.0	X		53	02:53	19	199	
2	I.F	RUPEA	VIII	1994	8.7	61	4.43	4.31		48	X	44.0		46	02:45	30	185	922
7	A.F	ŞC.7 BV	VI	1994	7.8	93	5.25	5.23		75	X	X			02:30	49	217	
7	P.M	ŞC.7 BV	VII	1994	9.4	41	3.27	3.40		26	33.0	38.0		38	03:02	9	114	
7	S.P	ŞC.7 BV	VII	1995	8.8	58	4.23	4.50		50	42.0	44.5		47	03:10	4	159	
7	S.A	ŞC.7 BV	VII	1995	8.8	58	4.70	4.75		58	62.0	58.5		73	AB		189	679
						250				209				158		62		
8	B.A	L A. MUREŞAN	VI	1994	8.4	71	4.40	4.62		54	47.0	49.0		54	AB		179	
8	D.A	L A. MUREŞAN	VIII	1994	8.2	78	4.48	4.14		49	41.0	37.0		42	02:47	27	196	
8	T.C	L A. MUREŞAN	VII	1995	8.9	55	3.70	3.95		37	29.0	X		26	02:59	12	130	
8	D.G	L A. MUREŞAN	VII	1994	8.9	55	3.92	3.88		36	40.5	39.0		42	02:49	24	157	667
						259				176				164		63		
9	A.G	ŞC.PURCĂRENI	VI	1995	8.6	65	3.70	4.10		42	58.0	43.0		67	AB		174	
9	C.B	ŞC.PURCĂRENI	VII	1995	8.9	55	3.57	3.40		30	39.0	38.0		39	AB		124	

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					result	pts.	Results 1	Results 2		pts.	Results 1	Results 2		pts.	result	pts.	pts.	pts.
1	C.G	ŞC.1 ZĂRNEŞTI	VIII	1996	8.0	86	4.65	5.18		73	52.0	X		58	02:31	56	273	
1	M.A	ŞC.1 ZĂRNEŞTI	VIII	1996	8.3	75	4.55	4.17		52	X	55.0		62	02:39	40	229	
1	D.M	ŞC.1 ZĂRNEŞTI	VIII	1995	8.4	71	4.37	4.18		47	X	59.0		68	02:37	44	230	
1	N.L	ŞC.1 ZĂRNEŞTI	VIII	1994	8.3	75	4.77	4.95		65	56.0	58.0		67	02:29	60	267	999
						307				237				255		200		
2	C.M	RUPEA	VIII	1996	7.9	89	5.48	5.32		82	60.0	56.0		70	02:23	74	315	
2	PW	RUPEA	VIII	1996	8.4	71	4.65	5.00		66	44.0	45.5		48	02:40	38	223	
2	S.B	RUPEA	VII	1995	8.6	65	4.72	4.87		62	49.0	X		53	02:53	19	199	
2	I.F	RUPEA	VIII	1994	8.7	61	4.43	4.31		48	X	44.0		46	02:45	30	185	922
9	O.R	ŞC.PURCĂRENI	VIII	1995	9.0	52	4.25	4.38		47	X	43.5		45	AB		144	
9	G.F	ŞC.PURCĂRENI	VIII	1995	8.8	58	4.32	4.25		45	37.0	34.0		36	02:40	38	177	619
						230				164				187		38		
10	J.B	ŞC.8 BV	VIII	1996	9.0	52	3.95	4.08		40	47.0	36.5		50	03:03	9	151	
10	I.I	ŞC.8 BV	VIII	1994	8.8	58	4.30	4.50		50	44.0	44.0		46	02:52	20	174	
10	R.G	ŞC.8 BV	VIII	1995	9.4	41	4.05	4.00		39	X	40.5		41	03:13	2	123	
10	B.C	ŞC.8 BV	VIII	1995	8.3	44	3.90	X		36	44.0	41.0		46	02:49	24	150	608
						195				165				183		55		
11	P.A	ŞC P.MĂRULUI	VIII	1996	8.7	61	X	X			46.0	43.0		49	02:55	16	126	
11	P.M	ŞC P.MĂRULUI	VI	1996	9.0	52	4.03	4.20		42	41.0	44.5		46	02:51	21	161	

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PLACE			SCHOOL	grade	Yr. of birth	60 m		Long jump				Oina ball toss				800 m		Total ind	Total teams
						result	pts.	Results 1	Results 2		pts.	Results 1	Results 2		pts.	result	pts.	pts.	pts.
1		C.G	ŞC.1 ZĂRNEŞTI	VIII	1996	8.0	86	4.65	5.18		73	52.0	X		58	02:31	56	273	
1		M.A	ŞC.1 ZĂRNEŞTI	VIII	1996	8.3	75	4.55	4.17		52	X	55.0		62	02:39	40	229	
1		D.M	ŞC.1 ZĂRNEŞTI	VIII	1995	8.4	71	4.37	4.18		47	X	59.0		68	02:37	44	230	
1		N.L	ŞC.1 ZĂRNEŞTI	VIII	1994	8.3	75	4.77	4.95		65	56.0	58.0		67	02:29	60	267	999
							307				237				255		200		
2		C.M	RUPEA	VIII	1996	7.9	89	5.48	5.32		82	60.0	56.0		70	02:23	74	315	
2		PW	RUPEA	VIII	1996	8.4	71	4.65	5.00		66	44.0	45.5		48	02:40	38	223	
2		S.B	RUPEA	VII	1995	8.6	65	4.72	4.87		62	49.0	X		53	02:53	19	199	
2		I.F	RUPEA	VIII	1994	8.7	61	4.43	4.31		48	X	44.0		46	02:45	30	185	922
11		B.F	ŞC P.MĂRULUI	VIII	1995	9.1	49	3.90	4.04		39	36.0	36.0		35	02:51	21	144	
		B.B	ŞC P.MĂRULUI	VII	1994	8.8	58	4.18	4.30		45	42.5	45.5		48	02:58	13	164	595
11							220				126				178		71		
12		L.R	SC.HOGHIZ	VI	1995	8.5	68	X	4.85		61	48.0	X		52	02:59	12	193	
12		B.A	SC.HOGHIZ	VIII	1996	8.8	58	4.17	3.95		41	47.0	49.5		53	02:02	9	161	
12		U.A	SC.HOGHIZ	VII	1995	8.9	55	4.30	4.33		45	44.0	48.5		53	03:03	8	161	
12		B.V	SC.HOGHIZ	VII	1995	9.2	46	3.60	4.12		40	40.0	X		40	02:59	11	137	515
							220				187				198		40		
			TOTAL PTS.			3052					2282				2356	1117			
			ARITH. AVERAGE			63,58					47,54				49,08	22,37			

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CARL DIEM AND THE OLYMPICS

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ABSTRACT

Carl Diem (1882-1962) was an important sports bureaucrat of his century. He was a planner and principal organizer of the Berlin Games. He served to the Olympic movement from the 1912 Stockholm Games until the year of his death. He was an energetic sports educator and traveled all around the world for consulting to various countries about sports. The purpose of this study was to examine Carl Diem's life and his creative projects about sport and the Olympics. The subject was searched based upon the literature. As a result, it could be said that Carl Diem is one of the most important people in German sport history and in the Olympic history.

KEY WORDS: Olympics, German Sports.

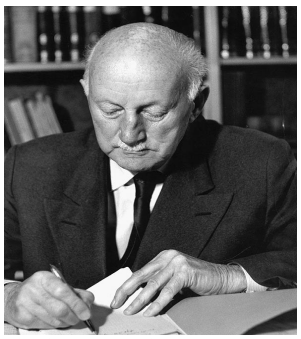
INTRODUCTION

No critical biography of Diem (1882-1962) has been published to date, although many sport historians presented studies on the occasion of Diem's 100th anniversary in 1982 when there was a colloquium in his honor. Hajo Bernett published a lengthy study in 1987, but Diem can still be considered one of the most disputed figures in the history of modern German sport (H. Ueberhorst, 1990).

Much is known of Carl Diem, one of the most noted figures, if not the most noted name, in German Olympic history. He was an avid athlete as a young man. Denigrating the value of his country's powerful but archaic Turner Sport Movement, an institution entrenched in the Fatherland for over a century, Diem became a dedicated enthusiast and advocator of a German sporting movement parallel to those developing rapidly in Anglo-Saxon nations. Diem followed a career path in teaching and sport administration, rising rapidly to head what became known as the German National Sports University, founded in Berlin in 1920 and moved to Cologne following World War II. He traveled widely, became a prolific lecturer and writer, and often consulted on sport and Olympic matters, particularly in Europe. As it is well known, he was a driving force behind the organization of the Games of the 11th Olympiad in Berlin, an event bathed in the glory of a "new Germany," a nation destined to lead, as Diem himself put it, "a victory charge for a better Europe" (R. K. Barney & G. Paton, 2002).

His accomplishments were various, grandiose and so numerous as to seem in retrospect impossible of carrying out for an ordinary mortal. He was a consultant to several European nations besides his own on government sports policy. He was the inspirer and partial financier for the German excavations at ancient Olympia which re-commenced in 1937. Some of his many friends compared Diem to Goethe. But unlike that other German titan whose personality soured as he aged. Diem was dynamic, accessible and cheerful to the end. The climax of Carl Diem's life was his successful staging of the Olympic Games of 1936. Not only did he manage a huge staff in a time of great political turmoil, he was a diplomat who eased the fears of foreigners and launched novel artistic trappings for the Olympics, including the first torch run from Olympia. He also wrote or edited most of the more solid publications that appeared on the occasion of Germany's first international sports festival (R. D. Mandell, 1974).

By 1938 Diem was director of the International Olympic Institute in Berlin. In 1940 he declared that "the reorientation of European sport has its geographical and spiritual center in Germany." In 1941 he proposed a stadium capable of holding 200,000 spectators so that Berlin would become "the crossroads of world sport." In 1942 he gave a lecture in Paris titled "The Olympic Idea in the New Europe" (J. Hoberman, 1995).


Carl Diem (V. Kluge, 2002)


Establishing of Sports University in Cologne (1947) (V. Kluge, 2002)

Diem's self-proclaimed goal was to involve as many people as possible in sports, and to convince them that sport was important to their lives and could be practiced well into old age. He was able to achieve this by being elected to responsible positions such as the presidency of the *Deutsche Sportbehörde für Athletik* (1908–1913, the predecessor of the German Track and Field Federation), as the full-time paid secretary general of the organizing committee of the 1916 Olympic Games, and as a member of the German Olympic Committee. As the head of the German Sport Federation (1917–1933, *Deutscher Reichsausschuß für Leibesübungen—DRA),* he was responsible for many initiatives on behalf of sport during the Weimar Republic. Although the ground had been prepared by others prior to World War I, without Diem the rapid growth of the sports movement would not have taken place in this way. His initiatives included the *Reichsjugendwettkämpfe,* an athletic triathlon (sprinting, jumping, throwing) for all school children; the *Reichssportabzeichen,* a multi-performance badge for everybody specifying differing performances by age and sex; and a *Reichsspielplatzgesetz,* a bill to standardize the available space for sport. In addition, he lobbied for a daily gym class, and for the inclusion of physical education into the *Abitur,* the final high school exam. He was the main organizer of the *Deutsche Hochschule für Leibesübungen,* the first German College of Physical Education, responsible for the preparation of sports (not gymnastics) teachers, and research into the scientific foundations of sport. In 1922 he created the *Deutsche Kampfspiele,* National Olympic Games for the period Germany was excluded from the International Olympic Games (1920-1924) (H. Ueberhorst, 1990).

Developments ın hıs perıod

Germany was to have staged the 1916 Olympics in Berlin. There were even negotiations to have the first ever Olympic Winter Games in Berlin and on the Feldberg in the Black Forest in the same year. The job of selecting and preparing the athletes and first full-time administrator for the German Olympic Committee and Sports Federation was given to Carl Diem. In 1921 a Sport Badge was introduced for men, women, and young people. It created considerable interest and has been in existence ever since. Daily physical education lessons were demanded but a small increase was all that could be achieved. A Reich's school conference for physical education in 1920 helped to strengthen the role of sport versus *Turnen* in the school system and eventually in the rest of society. A *Turnen* and sport duty year was demanded to replace compulsory military training banned after the war. Although it did not become mandatory, it increased the public awareness of sport. Annual school championships were successfully introduced for both sexes emphasizing mass participation and athletic quality in a wide range of track and field events. Tax deductions and reduced railway fares for sports clubs were introduced. A Sports Space Bill demanding 5 sq.m. of space for everyone was brought in—and failed. But it encouraged cities to increase considerably the amount of sports space available for everybody (A. Krüger, 2001).

In 1933 no one really had known the Nazi position in sports. Thus, the first half of 1933 was replete with action by traditional leaders of the bourgeois sports movement to jockey for a good position under the new circumstances. Carl Diem even applied for the job of the *Reichssportführer* (Empire's Sport Leader), supported by military, his old friend and training pal Walter von Reichenau, who later became an IOC-member. Despite such "jockeying," Nazis chose Hans von Tschammer und Osten to be responsible for all sports in the newly created office of *Reichssportführer.* Tschammer und Osten was a brutal regional Storm Trooper *(SA)* leader and elected as a member of parliament for the central German district of Anhalt. His storm troopers had killed several workers, sportsmen, and children. At the same time Tschammer und Osten was made a government official in the Ministry of the Interior - where elite sport was bureaucratically arranged in Germany. He eventually rose as high as under-secretary of state. From the start the Nazis developed two main strategies: 1-to assure propaganda within Germany, and 2-to break the cultural isolation of the Reich's government by propaganda abroad. To achieve these functions a Propaganda Committee was formed under the chairmanship of a *Propaganda Ministry* official called Haegert. He had easy access to Goebbels and kept his boss informed of all matters related to the Olympic Games. This Committee functioned as part of the Olympic Games Organising Committee (OC) chaired by Lewald and for which Diem, as Secretary General, took central responsibility. Represented on the OC, were the city of Berlin, the German Railway Office (as official German travel agency abroad), and all other official German institutions that might be affected by the Olympics. The Propaganda Committee of the OC, chaired by Haegert, became most influential in the struggle for the soul of the German people at home and the image of Nazism abroad. It was this concerted propaganda effort that made the Olympic Games of Berlin the first truly modern Games (A. Krüger & G. August, 1998).

Whereas the Nazi regime showed itself relatively well behaved in the days prior to and during the Berlin Games, it sought immediately afterwards to extend systematically its influence over the Olympic Movement, not altogether unsuccessfully, as borne out, for example, by the following: 1-the founding of the International Olympic Institute in Berlin (it was financed by the Ministry of the Interior and placed under the authority of the Reichssportführer), 2-the incorporation of the IOC's official bulletin into Carl Diem's Olympische Rundschau, 3-the award of the Olympic Cup to the *Kruft durch Freude* association, 4-

the presentation of the Olympic Diploma to Leni Riefenstahl for her film about the 1936 Games, and 5- Werner Klingeberg's assumption of the position of IOC Secretary General. The IOC was obliged to look on helplessly as the half-Jewish Theodore Lewald, whose prestige within the Committee had reached its apogee with the splendour of the Berlin Games, was forced to resign on the instructions of the National Socialists in order to make way for a party member, Walter von Reichenau, who, by an irony of fate, became a "resident" of Baillet-Latour's country in May 1940 as Commander of the Germany's 6th Army. Lewald's successor on the IOC's Executive Committee was the convinced National Socialist Karl Ritter von Halt (K. Lennartz, 1994).

From 1938-45 Diem was director of the International Olympic Institute, an honorary appointment with little political influence. He was also, however, the director of the foreign affairs section of the *NS Reichsbund für Leibesübungen* [National Socialist Association for Physical Culture] (1939–1945), but he was also close to *Reichssportführer* Hans von Tschammer und Osten, and was his frequent traveling companion. V. Tschammer made Diem responsible for the German team to the *Lingiade* in Stockholm (1939) and the preparation of the European Sports Conference in Munich in 1942. An European Sport Federation under Italian and German leadership was to be formed with Carl Diem as its secretary general. V. Tschammer also asked Hitler's help in getting a full professorship for Diem at the University of Berlin. This did not materialize due to opposition to the Minister of Education (H. Ueberhorst, 1990).

Carl Diem and the olympics

The symbols of the Olympics – the five rings, the torch relay, the flame, the oath, the hymn, and the anthems – which were introduced in the inter-war period, reflect the ultranationalism of the time, and have political overtones. In 1936, Carl Diem initiated the torch relay to symbolize international 'connection' and 'communication'. It was none other than Spiridon Louis who presented Hitler with a sign of peace, an olive branch from Olympia (N. Crowther, 2004). The Olympic symbols which are displayed, during the Games; for it is precisely these ceremonies, rituals and symbols, and the festival character which they confer on the Games, which distinguish the latter, as a four-yearly festival of youth, from an ordinary world sports championships- which is what the Games would be without those ceremonies, rituals and symbols. Carl Diem expressed the same idea with even deeper feeling when he wrote in 1961: *"The Olympic Games cannot be considered as an assemblage of sports competitions; neither can they be considered as events designed to test the limits of human capacity. On the contrary, they are especially concerned with the development of the aesthetic dimension and of the beauty which emerge on the occasion of these festivals and form an integral part of it* ". It may thus be inferred that both Pierre de Coubertin and Diem were seeking to develop the game aspect within sport and to create a festival and a celebration in an atmosphere of excitement and emulation. They created modern symbols designed to assist direct understanding among people and they shaped the Olympic Games into a major element of universal culture (C. Durantez, 1985).

The first modern Olympics had no torch relays and this can mean that we overlook the fact that this element of Olympic symbolism also stems from ancient times, although not only in Olympia. Ancient torch races, *lampededromia* (λαμπαδηδρομια), were initiated in Greece on a religious basis even before the first Olympic Games were staged. But it was precisely during this same first ancient Olympic Games in 776 B.C. that torch races were introduced. When pilgrims arrived at Olympia to worship Zeus they competed for the privilege of lighting the flame for the great sacrifice in Zeus's honor. In order to select such a person there was a race of nearly 200 meters, ending at the spot where the High Priest waited, holding the torch in his hand. Then the torch was passed to the winner of the race and he was awarded the honor of lighting the fire at the altar. This is the basic difference between the ancient and contemporary Olympic flames – the ancient one was used in the temple, while the modern one is lit directly at the stadium (W. Liponski, 2008).

During the Olympics of Antwerp (1920) and Paris (1920) there was no Olympic flame above the stadium. There was one however in Amsterdam (1928) and Los Angeles (1932). Those torches were lit without any greater ceremony and without, of course, any relay. It was in 1936 during the Berlin Olympic Games that the Olympic Torch, as suggested by Carl Diem, was initiated and continued until today, finally linking the modern tradition with ancient *lampaderomia* (W. Liponski, 2008). According to Diem, these races (lampas, lampadedromia) must originally have developed as competitions in connection with funerals, and their initial purpose must have been to transport a flame from a sacred fire to some place in the hills. Subsequently devotional races of this kind must gradually have taken on a more general ritual significance, but they always started at one altar and ended at another. Relay races with torches were not always conducted on foot; in The Republic of Plato we find a passage referring to races of this kind on horse-back. In Athens the famous relay races were held over a distance of 1,600 metres, from the altar to Eros standing in the Plato Academy - where the fire was lit to the honorary necropolis of Kerameicos, whither it was taken. Diem makes the following comment on the bas-relief in the British Museum in London, which depicts the Thracian deity Artemis Bendis - represented by the goddess Artemis-receiving the victor with a torch: "At *the goddess's side there are two bearded athletes, dressed in tunics, one of them handing over a torch. He is followed by eight other athletes in two teams of four. The first one is also carrying a torch. Thus we have two torches, two instructors and two*

teams of four men, representing a 4 X 400 meter race over a *distance of 1.6 kilometers"* (C. Durantez, 1985). According to Henri Pouret, the Olympic Torch is a symbolic gift which Greek antiquity has passed to us. Pouret rightly associates the Olympic flame with the myth of Prometheus: "the symbol of the Hellenic legend teaches us that fire was stolen from the Gods and offered to the humans". And he continues: "What a beautiful symbol for men and for Olympism, this relay-race, which becomes reality, a connecting link between the athletes (W. Liponski, 2008).

While the Olympic flame was introduced at the 1928 Olympic Games, a torch relay did not precede the lighting of the flame cauldron. However, at the Closing Ceremony, an "unknown hand spelled out on the scoreboard "May the Olympic torch pursue its way through the ages". This may have given ideas to the organisers of the 1936 Olympics to introduce a torch relay ceremony at those Games. Whilst Borgers (1996) concedes that it has not been possible to determine who should be given credit for the introduction of the flame at the 1928 Olympic Games, Carl Diem is generally given credit for the idea of introducing the torch relay at the 1936 Olympic Games. Another theory proposed by Borgers (1996) and Müller (1996) is that the idea of such an event may have been sown in the minds of the German NOC by Pierre de Coubertin as early as 1912, and may have also influenced the organisers of the 1928 Amsterdam Olympic Games (J. Cahill, 1998).

An interesting case happened in the summer of 1996. After having consulted the relevant sources properly and intensively, Walter Borgers, member of the Diem-Archives in Cologne, published a documentation on the torch relay on behalf of the IOC (Olympic Torch Relays, Kassel, Fuhr 1996). He was able to prove in detail that the idea had been developed by Carl Diem in the 1920s and that it had become consolidated since 1934. On the occasion of the IOC-Session 1934 in Athens, Lewald in his office as president of the Berlin organizing committee and IOC-member, proposed to stage a torch relay from Greece to Berlin. The IOC agreed to this proposal. After this session, on a trip of the IOC from Athens to Olympia, this plan was discussed during a siesta in Tegea on 22 May (K. Lennartz, 1994).

As indicated earlier, the details, the symbolism and the aesthetic character of the Flame ceremony were all imagined by Diem. With the assistance of a Greek (John Ketseas), he studied the development of the ceremony of taking the first flame in the enclave of the Sacred Altis. He himself worked out in Germany the designs for the instruments to be used. The general lines of the ceremony were worked out by the International Olympic Committee (IOC) at successive meetings. The torch used in Berlin looked like a metal rod; the handle was shielded by a plate or guard. The model was conceived by Diem on the basis of designs on ancient pottery; it was executed by the artist Lemeke and manufactured free of charge by Krupp (C. Durantez, 1985). The torches were encased in a reinforced covering in order to give them the required durability. The length of the torch including a cone-formed grip was 27.7 inches, its diameter 1.15 inches and its weight 1.5 pounds. The top of the torch consisted of a special inflammable substance so that it could be rapidly ignited when the flame was transferred from runner to runner (OCOGs. 1937).

The Olympic Torch Holder (OCOGs. 1937)

The first torch relay to be found in connection with Carl Diem was staged by students of the Deutsche Hochschule für Leibesübungen in 1922 to commemorate his 40th birthday and simultaneously the beginning of the Deutsche Kampfspiele which were a kind of national Olympics. In Diem's estate there are various documents relating to the beginning of the planning for an Olympia-Berlin torch relay (K. Lennartz, 1987). The entire ceremony was conceived by Diem as a simple and moving progression of steps of great aesthetic purity, carried out in an atmosphere of deep spirituality. While on the way from Olympia to the seat of the Games, the runners generally stop at nightfall. Diem had imagined that halts or rest breaks of this kind might be made in places where there were ancient monuments or buildings in which the flame could be deposited in bowls specially placed there for the purpose. Diem hoped that in this way the inhabitants of the city in question might feel the call of the spirit of the ancient world which gave birth to the Games - a call symbolised by the fire crackling in the great bowl in the shadow of the night. The practical development, and the aesthetic dimension, of the ceremonial of the bringing and the lighting of the Olympic fire, were conceived and worked out in detail by Carl Diem to a high degree of appropriateness and perfection. The ceremony of the fire, which has taken place in Olympia every four years since 21 July 1936, and all the ceremonial surrounding its onward journey-relays, festivals, protection of the flame, etc.-have remained practically without change in the form in which the German professor of genius originally formulated them. He had a thorough knowledge of the practice of sport in classical times, and he built up the modern ceremony on the basis of acts with a similar content performed in ancient times. Thus to light the fire initially a parabolic mirror is used which concentrates the sun's rays on the fuel and sets it alight; this recalls the old conical bronze vessel which the winner of the first race at Olympia used to bear away the flame from the altar of Hestia; the flame was subsequently kept burning in the Prytanea until the next Olympiad, when the fire was allowed to go out, the altar was cleaned and fresh wood was placed on it, to be lit from the flame brought by the new Olympic victor (C. Durantez, 1985).

Coubertin was deeply attracted by the new Olympic symbol which had come into being thanks to the imagination of "my great friend, that genius Carl Diem". At the closing ceremony he addressed the runners who had brought the fire from Olympia as follows*: "And you, athletes, remember the fire, lit by the rays of the sun, which you brought from Olympia to give light and warmth to your time. Be careful to keep that fire alight in the bottom of your hearts so that it may still be burning brightly at the other end of the earth when you meet in four years' time to celebrate the 12th Olympiad on the distant shores of the great Pacific Ocean!"* (C. Durantez, 1985).

The German organising committee made a great effort to provide a worthy form of Olympic ceremony and on the trip to the IOC session in Athens (1934) discussed a uniform and other paraphernalia that would distinguish IOC members. Diem, who regarded the IOC as "the high court of body culture", reasoned that such distinguishing paraphernalia ought to resemble a university chancellor's official garb, if not a robe, then a large golden chain. The IOC agreed. The Berlin sculptor Walter E. Lemcke, who also designed the Olympic bell for the 1936 Games, was commissioned to design the chain in cooperation with the president of the Berlin Games Organising Committee, Theodor Lewald. Six medallions representing ancient Greek athletes are embedded in the bronze gilded chain. At the 1937 session in Warsaw it was decided that the chains were to remain at the site of the last Games (similar to the storing of the Olympic flag) and then presented to the IOC members at the session directly preceding the following Games. It was decided that the Olympic chains should be worn only at official events during the Olympic Games and not at normal sessions. The city in which the Olympic Games are held stores them until the next Olympic Games in the same manner as the Olympic flag. Following the 1936 Games, the chains remained in Berlin and on the day after the Games closed, were presented to Berlin's Mayor, Lippert, together with the Olympic flag (K. Lennartz, 1997).

On the eve of the opening of the Games, before this very backdrop, Carl Diem staged a spellbinding choral performance entitled "Olympic Youth". The performance was a *mises en scene* of the link between the ideas of "youth" and of "dying for the Fatherland", ideas which at the same time were embodied in the architecture. Whereas the first three acts offered themes featuring the colorful and playful hustle and bustle of children and youths, the fourth and final act revealed "the true meaning" (Carl Diem) of the Games. It showed the "struggle of heroes" and the "lamentation of death". A solitary speaker dressed in white, rhapsodized: The holy meaning of all play: triumph of the Fatherland! The Fatherland's highest commandment: self sacrifice and death in times of crisis (T. Alkemeyer & A. Richartz, 1995).

IOC President Baillet Latour (L) and Theodor Lewald (R) at Berlin Games (K. Lennartz, 1997)

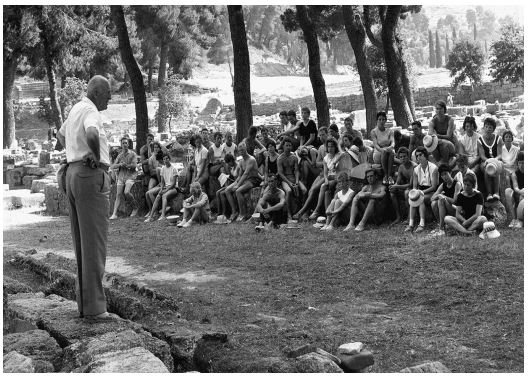
The Chancellor's Chain-German Sport University (K. Lennartz, 1997)

In 1938, Diem had been successful in beginning to publish and edit *Olympic Bulletin* (formerly and presently, *Olympic Review).* Renamed *Olympische Rundschau,* it was printed only in German and circulated without cost to all members of the Olympic family throughout the world, Diem published the Baron's last letter to him in the first edition under his editorship. In 1938, too, Diem was successful in carrying out another of Coubertin's last wishes, transferring from Lausanne and establishing in Berlin, the concept of an International Olympic Institute. Luckily for the survival of the early archival record of the Modern Olympic Movement under the aegis of Pierre de Coubertin, Diem was not immediately able to effect the transfer to Berlin of the Modern Olympic Movement's archival records and papers. But this act he fully intended to accomplish at a future date (R. K. Barney & G. Paton, 2002).

The concept of "Olympic Studies Centre" was actually formulated by Pierre de Coubertin shortly before his death in 1937: "I think that an Olympic Studies Centre […] would help more than anything in the maintenance and progress of my project and in protecting it from the diversions that I fear may affect it". Following on from this initiative, Carl Diem created the International Olympic Institute in 1938. In this early stage, "Olympism" referred to a blend of three main values: Greek classicism (humanism), the value of sport in the education of young people (education) and new international relations of industrial

society (modernity), thus transferring the early experiences of the universal expositions to the Olympic Games (M. Moragas, 2006). Pierre de Coubertin, who was bitter and tired of being ignored during that period and encouraged by Carl Diem, proposed that an Olympic Institute be created in Berlin. He intended to donate to it all his personal archives concerning Olympism. The Institute was established in 1938, after Coubertin's death in 1937, but Coubertin had since decided to bequeath his archives to the IOC. The Carl-Diem archives in Cologne now contain a large proportion of the archives of German Olympic history (C. Bianchi, 2002).

The practical manifestation of the educational vision of Pierre de Coubertin was the creation of the International Olympic Academy in Ancient Olympia, on a site a javelin's throw from the ancient stadium, due to the efforts of Carl Diem and Jean Ketseas. The International Olympic Academy (IOA) was established in 1961. At its first Session, thirty students from twenty-four countries took part. This occasion coincided with the end of the excavation of the ancient stadium at Olympia - an idea of Carl Diem's in 1957 - and its opening to the public. The entire IOC, after holding its Session in Athens, came to Olympia for the event. Participants in the early years lived and worked in tented accommodation, but there is now on the IOA premises a substantial campus, including accommodation for over 200 people, large lecture hall with multi-translation facility, a library, study rooms, and many sporting and social facilities. The centrepiece of IOA activity was to be a yearly meeting of the Main International Session for Young Participants, which would be the place from which the Olympic ideals would be renewed and taken out into the world (J. Parry, 2003).



Olympic Academy (1961) (V. Kluge, 2002)

80 year old Carl Diem with students from the Sport University (1962) (V. Kluge, 2002)

CONCLUSION

As the founding rector of the German College of Sport in Cologne (he received the title and position of a full professor) Diem was honored by many clubs, organizations, federations, and by the Federal German Government, receiving the highest decorations. It can truly be said that no other person in this century has provided German sport with as many fruitful ideas as Carl Diem. That a man like Diem was attracted to the movement is hardly surprising; as we have seen, Coubertin's potent combination of sport, international competition, pagan ritual, and body cultism had long appealed to sports-minded German males for whom racial nationalism and a right-wing military outlook were wholly compatible with devoted service both to the Olympic movement and to the Nazi regime (J. Hoberman, 1995). He was invited to the London 1948 Olympics as a guest of honor—the only German at the Games—and was very active in founding the International Olympic Academy at Olympia on behalf of the IOC. He also made the organizational and

technical preparation for the excavation of the ancient stadium at Olympia (H. Ueberhorst, 1990).

Diem, who enlisted in the German army on August 1, 1914, the first day of The Great War, served in Belgium and France during the entire period of the war. He was seriously wounded at St. Quentin, recovered, and fought courageously in the bitter battles at Champagne and the Argonne (R. K. Barney & G. Paton, 2002). He also survived the II.World War and became the "Nestor" of postwar West German sport, his political past either ignored or unknown. As a self-styled cosmopolitan in the German nationalist sense of the term, Diem regarded himself and was seen by many others as a German humanist, a "homo universalis," in the tradition of Goethe. At the same time, his political record has been concealed or falsified by sympathetic German colleagues within the sports studies establishment. A contributing factor to the successful reinvention of Carl Diem has been his image as a deep thinker and even an anti-Nazi. In 1957 the publicist of the German Gymnastic Federation called him "the first and perhaps the last universal spirit produced by modern physical culture." Fifteen years later, the same official called Diem one of the "great cultural figures of our century". In 1962, Willi Daume, the other grand old man of the postwar West German sport revival and a longtime IOC insider, called Diem "the most creative and far-reaching personality" of modern sport. As late as 1986, the newly elected president of the German Sports Federation (DSB) hailed Diem's alleged resistance to the Nazi takeover of German sport". In 1961, Diem served as cofounder of the International Olympic Academy in Greece (J. Hoberman, 1995).

Carl Diem possessed the most active and most creative mind in the sports movement (A. Krüger, 2001). He maintained that all of his actions were in the best interest of sport and of no political significance. By claiming that sport was outside the political sphere he was able to disclaim responsibility for this chapter of German history. To quote from his *Ein Leben für den Sport* (A Life for Sport): "In summary, one may say that sport was able to preserve itself almost completely from the political corruption of the Nazi era. Sport succeeded in this better than other spheres of culture. The rise of sport, particularly the athletic successes of the 1936 Olympic Games, has been the result of the systematic work of the Weimar Republic. Under National Socialism a system which had been already growing developed further". In this *World History of Physical Education and Sport* (1960), he even claims that Hitler allowed the sport movement to function independently (H. Ueberhorst, 1990).

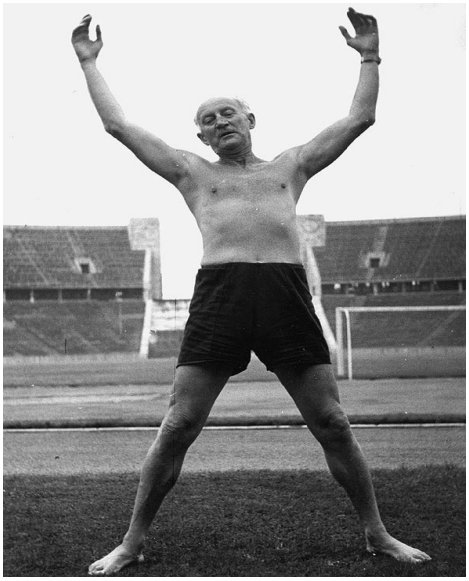
The Olympic Games of 1936, notwithstanding the political situation at the time, will go down in the history of sport as an Olympiad in which the organisation approached perfection, which was most deeply impregnated with the Olympic spirit and at which the spectators were most enthusiastic, most open in the expression of their feelings and most numerous. Carl Diem played an important and decisive part in ensuring the success of the Games as a sporting event; he succeeded in coping with difficulties and incidents of all kinds and managed to keep the Games within the framework of festivity and spirituality he had imagined for them (C. Durantez, 1985). Although Diem's role in the Third Reich is still disputed today, there is no doubt that he organized the Olympic Summer Games the way the Nazis wanted them. His drama *Olympische Jugend* (Olympic Youth) was staged at the Olympic Stadium on the evening of the opening day, featuring the themes of heroic struggle and death (H. Ueberhorst, 1990).

The established, aging disciples of Diem have held to the view that Diem's sports education was and essentially humanistic. They support Diem's contention, (after 1950 or so) that the Olympic Games of 1936 were an oasis in a difficult time. Indeed, Diem's triumphs and the resultant applause and other rewards, he received in the first years of Adolf Hitler's Reich seem to have led him into an apparent personality transformation. He tended to see the Nazis as respectable heirs to the grand traditions of German culture. His rhetoric picked up the pseudo-Nietzschian enthusiasm favored by the official propagandists. In fact, one might believe from much of Diem's writing in the period 1937-1941 that his plans for sport had always been paramilitary, super-patriotic and totalitarian (R. D. Mandell, 1974).

Diem needed a solid base from which he could strengthen the German sports movement, so he founded the *Deutsche Reichshochschule für Leibesübungen* (Central Institute of Physical Education and Sport). An ardent fan of everything in American sport, he copied the American way of running their physical education and athletic departments. He became the head administrator and lecturer for organizational theory. It was here that sport-related research was ahead of its time. The athletic heart, previously considered a physical risk, was thought to be an asset. The American spirit of the roaring twenties was inspired by behaviourism and so the athletes were considered "Mortal Engines" (A. Krüger, 2001). The debate sawulders and occasionally flares up. Carl Diem dedicated his great World History of Sport to Willi Daume, later to be the president of the organizing committee of the Summer Olympics of 1972. On the magnificent site in Munich, streets, squares, and boulevards were named after great sports heroes of the past. There Pierre de Coubertin, Spiridon Loues, Jesse Owens and even Helene Meyer, the half-Jewish fencer in 1936, are immortalized. But so equivocal is the reputation of Germany's great sports philosopher that Dauae decided he could not be celebrated at an international sports festival offered by the Germans of our time. Significantly and perhaps sadly, there is no Carl-Diem-strasse at the site of Germany's second Olympic Games (R. D. Mandell, 1974).

Carl Diem's Life & Activities
24th June 1882 Was born in Würzburg
1887 Moved to Berlin
1899 Founder of the Sports Club Marcomannia Berlin
1903 Secretary of the German Sports Authority for Athletics
1904 Founder and 1905-1920 Chairman of the Association of Berlin (later Brandenburg) Athletic Associations (VBAV)
1906 Team coaches and journalist at the Athens Olympic Games
1907-1913 Editor of the newspaper publisher Scherl
1908 Organizer of the 1st Indoor Sporting Event and 1st Large-relay Race Potsdam-Berlin
1908-1913 Chairman of the German Sports Authority for Athletics
1911 Draft "Law Playground", 1st Text
1912 Head of Delegation of the athletes and journalists during the Olympic Games in Stockholm
1912/13 Introduction of the Reich Sports Badge
1913-1916 Secretary-General for the Olympic Games in Berlin 1916
1913 First visit to Baron Pierre de Coubertin Study in the U.S.
1914 Head of the German team at the Baltic Games in Malmö Participation in the Olympic Congress in Paris
1916 Draft "Sports Compulsory Law"
1917 Draft "Playground Law", 2nd Text Memorandum introduction of daily gym class Proposal for the appointment of a committee for scientific Research
1917-1933 Secretary General of the German Reich Physical Education Committee (DRAfL)
1919 Application for the National Youth Competitions Imperial Playground Law Memorandum to the German National Assembly Memorandum German University for Physical Exercise
1920 1st Reich Youth competitions
192-1933 Vice President of the German College of Physical Berlin (DHfL)
1921 Honorary Doctorate from the Medical Faculty of the University of Berlin
1922 Implementation of the Germans Fight in Berlin
1923 Head of the German team at the Gothenburg Fighting games 11.06.-15.07. (within the city 300th anniversary)
1924 Organization of the First German Conference on Physical Education in Berlin Plan for a German Sports Forum
1925 Secretary of the German Olympic Committee Organization of the Conference of Physical Education of Women in Berlin Delegate to the Olympic Congress in Prague
1926 Memorandum to the daily gym class Reichstag
1928 Accompanied the German team at the Winter Olympics in St.Moritz Organization of the session for gymnastics teacher in Berlin Chef de Mission at the Olympic Games in Amsterdam
1929 Head of a German track and field team (Trip to Japan / China) Study in the U.S.
1930 Marries Liselotte Bail (the couple were born four children Diem) Organization of the Olympic Congress in Berlin
1930-1933 Lecturer at the University of Berlin
1931-1937 Secretary of the Organizing Committee for the XI. Olympics in Berlin
1932 Chef de Mission at the Olympic Games in Los Angeles Guest lectures at the University of Los Angeles Representative of Germany at the International Congress for Recreation
1933 Adviser of the Turkish Government to draw up guidelines for the youth and school sports 1st May released from all teaching careers Dissolution of the German Reich Committee for Physical Exercise
1934 memorandum Olympic Torch Relay Berlin Implementation of the 1936 Olympic Games in Berlin Design Tokyo Olympic Torch Relay (Continued) 1st Draft on the establishment of the Olympic Academy in Greece Advising the Bulgarian Government to draw up guidelines for the youth and school sports Corresponding member of the American Academy of Physical Education
1938-1945 Director of the International Olympic Institute (IOI) in Berlin
1939 Secretary of the Organizing Committee for the planned Olympic Winter Games in 1940 in Garmisch-Partenkirchen 1939 Appointment as provisional leader of the Gau of the National Socialist Reich League for overseas Gymnastics
1939-1945 Lecture tours to the soldiers at the front
1939 Organizer of the German Riding Team
1940 Member of the German Archaeological Institute
1945-1947 Director of the Institute of Physical Education and School Hygiene at the University of Berlin 1947-1962 Co-founder and principal of the Sports University in Cologne (from 1965: German Sport University Cologne)
1938-1945 Director of the International Olympic Institute (IOI) in Berlin

1939 Secretary of the Organizing Committee for the planned Olympic Winter Games in 1940 in Garmisch-Partenkirchen 1939 Appointment as provisional leader of the Gau of the National Socialist Reich League for overseas Gymnastics
1948 Honorary Professor at the Faculty of the University of Cologne Second memorandum on the establishment of the Olympic Academy in Greece Guest of honor at the Olympic Games in London
1949 host of the 2nd Lingiade Founding member and secretary of the National Olympic Committee (until 1952) 1949-53 Voluntary Adviser at the Federal Ministry of Sports, Interior introduction of the Federal Youth Games 1949-54 1st Chairman of the Rhenish Gymnastics Federation
1951 Co-founder of the German Olympic societies (DOG)
1952 Head of the first Olympic Youth trip to Helsinki
1954 Adviser of the Icelandic government on matters of sport Initiative to establish the practice outpatient facility of the German Sports University in Cologne at the Sports DOG-leader of the first study trip to Greece
1955 ten-year plan for the Übungsstättenbau Adviser to the Indian government in matters of sport
1956 Member of the German team for the Olympic Games in Melbourne. Awarded the Diploma of the IOC Olympic The first initiative to found the World Council for Physical Education and Sport (ICSP), later Council of Sport and Sport Science (CIEPSS)
1959-1961 Advisor to the Japanese Olympic Committee for the Games in Tokyo and Sapporo in 1964
1960 Advisor to the Government of the Union of South Africa in matters of sport Co-founder of the World Council for Physical Education and Sport in Rome Guest of honor at the Olympic Games in Rome Beginning construction of the Sports University in Cologne
1961 Opening Session of the International Olympic Academy (IOA) and handing over of the exposed ancient Stadium at Olympia Adviser to the Argentine Government in matters of sport Honorary doctorate from the George Williams College Chicago Honorary Citizen of Olympia
Died in 1962, 17 December in Cologne (V. Kluge, 2002)



Carl Diem is in Olympic Stadium in Berlin (V. Kluge, 2002)

Diem with teachers of the University in the early 50s (V. Kluge, 2002)

REFERENCES

ALKEMEYER, T., RICHARTZ, A., 1995, *The Olympic Games: From Ceremony to Show*, Olympika: The International Journal of Olympic Studies, Vol. 2, p. 79-89.

BARNEY, R. K., PATON, G., 2002, *Adolf Hitler, Carl Diem, Werner Klingeberg and The Thousand Year Reich: Nazi Germany and Its Envisioned Post-War Olympic Word*, 6th International Symposium for Olympic Research, p. 93-104.

BIANCHI, C., 2002, *Memoria Olympica*, 6th International Symposium for Olympic Research, p. 227-238.

CAHILL, J., 1998, *The Olympic Flame and Tourch: Running Towards Sydney 2000*, 4th International Symposium for Olympic Research, p. 181-190.

CROWTHER, N., 2004, *The State of Modern Olympics: Citius, Altius, Fortius*, European Review, 12(3), p. 445-460.

DURANTEZ, C., 1985, *The Tourch: The Great Olympic Symbol*, Olympic Review, 216, p. 620, 627.

HOBERMAN, J., 1995, *Toward a Theory of Olympic Internationalism*, Journal of Sport History, 22(1), p. 1-37.

KRÜGER, A., 2001, *The Role of Sport in German International Politics 1918-1945*, Sport and International Politics, Ed: Pierre ARNAUD, James RIORDAN, Spon Press, p.79-95.

KRÜGER, A., AUGUST, G., 1998, *The Ministry of Popular Enlightenment and Propaganda and The Nazi Olympics of 1936*, 4th International Symposium for Olympic Research, p. 33-47.

KLUGE, V., 2002, *Carl Diem 1882-1962*, Kurier Informationen der Deutschen Sporthochschule Köln Forum, 2(25), p. 1-4, 2002.

LENNARTZ, K., 1987, *The Genesis of Legends*, Journal of Olympic History, 5(1), p, 8-11.

LENNARTZ, K., 1994, *Difficult Times: Baillet-Latour and Germany 1931-1942*, The International Journal of Olympic Studies, Vol 3, p. 99-105.

LENNARTZ, K., 1997, *More on The Olympic Chains: Setting The Records Even Straighter*, Olympika: The International Journal of Olympic Studies, Vol. 6, p. 65-72.

LIPONSKI, W., 2008, *The Humanistic Symbolism of Olympia: A Message from Antiquity for Modern Times*, 48th Session of the International Olympic Academy, p. 1-20.

MANDELL, R. D., 1974, *Carl Diem on Sport and War*, Canadian Journal of History of Sport & Physical Education, 5(1), p. 10-13.

MORAGAS, M., 2006, *Academic Institutions and The Olympic Movement* [online article]. Barcelona: Centre d'Estudis Olímpics UAB. [Consulted: 05/03/2010] http://olympicstudies.uab.es/pdf/wp106_eng.pdf

OCOGs., 1937, *The XIth Olympic Games Berlin 1936 Official Report*, Organizing Committee for the XIth Olympiad Berlin 1936 E.V., Wilheim Limbert Publishment, Volume 1, p. 513.

PARRY, J., 2003, *The Olympic Education in Practice*, The Centre d'Estudis Olímpics (CEO) Universitat Autònoma de Barcelona (UAB) Publishment, p.2-14.

UEBERHORST, H., 1990, *The Importance of The Historians' Quarrel and the Problem of Continuity for The German History of Sport*, Journal of Sport History, 17(2), p. 232-244.

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OBSERVATION OF PERSONAL TRAITS ACCORDING TO DIFFERENT VARIABLES

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ABSTRACT

The aim of this study is to investigate the personal traits of School of Physical Education and Sports and Primary Education Department students by using different variables. In this research, descriptive scanning technique was used. This study's work group was 8 groups in each 20, a total of 160 students who were students of Ahi Evran University's Physical Education and Primary Education Departments in 2006-2007 Academic year. Data of this work collected by using Personal Information Form and Eysenck Personality Questionnaire prepared by researcher. On this data, aritmetic mean, Standard deviation, t test and one-way variance analysis were used($p<0.05$). Results were discussed by comparing with literature and offerings were made according to that.

KEY WORDS: Personality, Socio-Economic Status, Education.

INTRODUCTION

The period of higher education, which constitutes an important part of life, is a process occurs just after the critique adolescence age. With an another expression, it is a critique process comes after childhood and in which you have to decide on your future and start being an adult. In this aspect, detecting the necessities and problems of university students is important to make their decisions for future more considerable. One of the most important variables of these ones is personality.Personality stems from the work "persona". In Latin, persona means the masks and the roles of theatre players.(Hjelle and Ziegler,1982) There is not a definition of personality on which all researchers agree. Therefore, it is possible to see different definitions in this area. Personality is a term consists all the concerns, attitudes, talents, appearance, talking style and adaptions of a human being. All this characters create a special and suitable integrity on an human being. All these traits differ the person from others.(Savran,1993; Yüksel,2006) Personality is the appropriate reactions showed in time by less or much static internal factors and these reactions show obvious differences from other people's reactions.(child,1968) Personality is an appropriate and structured interactions style which differs the person from the ones whom he had relations with. (Cüceloğlu,1997) Personality as a term refers to a huge diversity of phenomenon. There are different ideas in some traditional combinations with regards to the common usage of the word "personality". It is not surprising that there are so many research strategies and findings with regards to the personality studies made up to now.(Caprara,2002).Eysenck assessed the structure of personality as an independent two horizontal and vertical dimensions. On one side of the horizontal there is introversion, and on the other side there is extroversion. On the higher side of the vertical, there is neurotism, and on the lower side there is normal personality. All the personal structures of the mankind are placed somewhere between these sides. This place, detected by observation, graded scale and tests. The elements placed in horizontal and vertical dimensions and create personality, placed in 4 different but connected levels. (Googworth,1988) Eysenck made a dimensional approach to personality in the concept of personality. Eysenck claimed that personality could be defined in four dimensions and that this dimensions could be calculated in a reliable way. Whether people have psychotic sickness or not, they get place in all of these dimensions and the structure of personality can be defined as the composite of specific and only. The dimensions are:

1)Psychotism(P): In this theory, psychotism is defined as a psychiatric sickness. It is simply a personal trait exists in all people. A person who has a higher rate of psychotism, is a misanthropic,lonely,angstful and discordant being. They can have a hostile attitude through his/her relatives and friends as well as other people. They love to make people sad and silly, and they do not care the dangers. (Koç,1994).

2)Extroversion(E): Eysenck defined the extroverts and introverts as " A common extroversion is enjoying social lifes, living spontaneously, having fun of making bad jokes, being reckless and optimistic, having difficulties in curbing their sentiments, getting easily upset, not being reliable all the time and having too many friends.(Koç,1994; Aydın, 2006) A common introversion is being silent and shy, liking books rather than humans, not showing closeness to anyone but his friends, not doing a business before thinking, taking daily things seriously, living a normal life, controlling sentiments, being relying and pessimistic and considering moral things important.(Koç,1994)

3.Neurotism(N): Eysenck defines this experiment as same as erratic, sentimentalness and sentimental erratic experiments. A person who has got a high neurotism point, is usually anxious,

unbalanced and depressed. They have sleeping impediments and indigestion. A typical neurotic, anxious and doubtful, depressive,sentimental and reacting too strong to most of stimulators.(Yavuzer,1982)

4.Lying(L): The lie scale aims at preventing the deceptions could be made by respondents. People tent to show themselves as what they wanted to be, not what they are.(Eysenck,1978)

The aim of this study is detecting the personal status of School of Physical Education and Sports(PES) and Primary Education Department(PED) students. Fort his aim, answers for these questions searched:

1)How are the general personal traits of the students?

2)Does the type of school have an effect on personal traits?

3)Does the gender have an effect on personal traits?

4)Does the personal traits of students differentiate according to class levels?

5)Does the personal traits of students differentiate according to their socio-economic status?

METHOD

Research Design

This descriptive study observed the personal traits of PES and PED students.This study is made by using screening model. Screening models are researches that made on broad groups chosen from the universe, and aims at observing pas tor present situations as they happened. The situations or people who are the subjects of these researches, are tried to be defined exactly as they happened.(Karasar,1994)

Workgroup

This study's workgroup was 8 groups in each 20, a total of 260 students who were students of Ahi Evran University's PES and PED in 2006-2007 Academic year. The distribution of students according to their schools, genders, class levels and socio-economic status(SES) is illustrated in Table I.

Table 1: Workgroup

Class Level	Primary Education Dept.					Department of Phy. Edu.				
	Gender		SES			Gender		SES		
	Female	Male	Low	Mid	High	Female	Male	Low	Mid	High
1	9	11	6	14	0	9	11	7	13	0
2	16	4	9	11	0	8	12	10	10	0
3	15	5	10	9	1	14	6	6	14	0
4	17	3	12	8	0	7	13	6	14	0
Total	**57**	**23**	**37**	**42**	**1**	**38**	**42**	**29**	**51**	**0**

Data Collecting Tools

Personal Information Form developed by researcher was used to detect students' demograpichal status. This form consists of their genders, ages, schools, class levels, homelands, family's monthly income, parents' educational status and parents' occupation. Students' socio-economic status was calculated by observing their homeland, family's income,parents' educational status and occupations. For calculating SES points, these scales were used.

- Homeland: (1)Rural areas (2) Towns (3) Suburbans (4)Urbans
- Monthly Income: (1)0-500 TL (2)501-1000 TL (3) 1001-1500 TL (4) +1500TL
- Mother's and Father's Educational Status(separately): (1)Primary School (2) Mid-School (3) High-School (4)University
- Mother's Job: (1)Housewife (2)Retired (3)Clerk (4)Worker
- Father's Job: (1)Retired (2)Clerk (3)Worker (4)Free

According to these scales, the minimum level can be calculated as 6, the maximum as 24. 6-12 point shows low socio-economic status, 13-18 shows middle status and +19shows high status.

Eysenck Personality Questionnaire was used to detect the characteristics of Physical Education and Primary Education students. The questionnaire was translated into Turkish by Topçu(1982) also some transcription studies were made. Topçu made this test to 1092 Turkish people(526 women,566 men) and found that the Turkish forms are significantly reliable.All of the security exponents were found significant in p<0,01 level. All of the scales of this test were explained to be used securely. EPQ is a 101 questioned Yes-No test which consist of psychotism, extroversion,neurotism and lying. Psychotism section has 25 questions,extroversion-introversion has 21, neurotism has 23 and lying has 21.(Cantez,1984) If one scores above 13 in extroversion, 11 in neurotism, 14 in lying, you can say that the signs are developing rapidly(Uluğ,1990).

DATA ANALYSIS

In charts which aim at producing defining informations about respondents, statistics like aritmetic mean, standart deviation, min-max value were used. After that, the points of psychotism,extroversion, neurotism and lying gathered by EPQ, were tested by using t test an done-way variance analysis for detecting whether

they show differences with regards to school types, genders, class levels and socio-economic status or not. In analysis, 0.05 has seen adequeate as expression level.

FINDING AND COMMENTS

1)Findings on Students' Personal Traits

The general findings on students' personal traits were summarized in Table 2.

Table 2.Students' Personal traits

	N	$\overline{X}$	Sd.	Min.	Max.
Psychotism	160	17,45	3,31	9	24
Extroversion		7,14	3,38	1	15
Neurotism		8,66	4,22	1	22
Lying		8,99	3,24	1	18

In chart 2, the rates of psychotism is $\overline{X}$ > 6 ($\overline{X}$=17.45), and it leads to high psychotic behaviours. Rates of Extroversion is $\overline{X}$ < 13 ($\overline{X}$ =7.14), and it results in not showing extroversion. The rates of lying $\overline{X}$ < 14 ($\overline{X}$=8.99) and it brings about not telling lies, and at last the rates of neurotism is $\overline{X}$ < 11 ()$\overline{X}$=8.66 and it leads to show neurotic behaviours. In a study made by Uluğ mentions that scoring more than 6 in 25 at psychotism, scoring +13 in 21 at extroversion, +11 in 21 at neurotism and +14 in 21 at lying are the clues for detecting these ailments. Therefore, we can say that the students have high psychotic,middle extrovert,neurotic and lying behaviours.**2.Findings on Differentiations in students' personal traits according to school types.**Findings on personal traits according to the type of school were summarized in Table 3.

Table 3. Students'personal traits according to school types

School Type		N	$\overline{X}$	Sd.	t	sd	p
Psychotism	PES	80	17,24	3,15	-,812	158	,418
	PED	80	17,66	3,47			
Extroversion	PES	80	7,14	3,29	-,023	158	,981
	PED	80	7,15	3,50			
Neurotic	PES	80	8,21	4,0	-1,332	158	,185
	PED	80	9,10	4,4			
Lying	PES	80	8,45	3,1	-2,118	158	,036
	PED	80	9,53	3,27			

There weren't any significant differences detected PES and Education Faculty students in psychotism[$t_{(158)}$=-.812, p>.05], extoversion [$t_{(158)}$=-.023, p>.05], neurotism [$t_{(158)}$=-.1.332 p>.05]. However, in lying section, there was a significant difference [$t_{(158)}$=-2.118, p<.05]. Education Faculty students ($\overline{X}$=9.53) are more likely to tell lies than Physical Education students($\overline{X}$=8.45). This finding can be interpreted as Education Faculty students are more tent to tell lies, but according to other factors, there weren't any significant differences.

3.Personal Traits according to Gender

Findings on personal traits according to their genders were summarized in table 4.

Table 4. Students' personal traits according to their genders

School Type		N	$\overline{X}$	Sd.	t	sd	p
Psychotism	Male	65	16,91	3,38	-1,726	158	,086
	Female	95	17,82	3,25			
Extroversion	Male	65	6,85	3,05	-,919	158	,359
	Female	95	7,35	3,60			
Neurotism	Male	65	9,35	4,48	1,739	158	,084
	Female	95	8,18	3,99			
Lying	Male	65	8,95	3,04	-,108	158	,914
	Female	95	9,01	3,39			

There weren't any significant differences detected in psychotism[$t_{(158)}$= -1.726, p>.05], extroversion[$t_{(158)}$= -.919, p>.05], neurotism[$t_{(158)}$= 1.739, p>.05] and lying[$t_{(158)}$=- .108, p>.05]. Although there weren't any differences, when we study chart 4, we can say that girls are more tend to show psychotism, extroversion and lying traits, and boysa re more likely to show neurotic behaviours.

4.Findings on personal traits according to class levels. Findings on personal traits according to class levels were summarized in Table 5.

Table 5. Students' personal traits according to their class levels

Personal Traits		N	$\bar{X}$	Sd.
Psychotism	1,00	50	17,88	3,16
	2,00	44	17,86	3,02
	3,00	49	16,80	3,66
	4,00	17	17,00	3,29
	Total	160	17,45	3,31
Extroversion	1,00	50	7,38	3,40
	2,00	44	6,64	3,34
	3,00	49	7,47	3,46
	4,00	17	6,82	3,32
	Total	160	7,14	3,38
Neurotism	1,00	50	8,76	3,88
	2,00	44	8,52	3,88
	3,00	49	8,67	4,58
	4,00	17	8,65	5,24
	Total	160	8,66	4,22
Lying	1,00	50	9,20	3,30
	2,00	44	8,34	2,74
	3,00	49	9,43	3,50
	4,00	17	8,76	3,54
	Total	160	8,99	3,24

When Table 5 studied, the highest rates in psychotism chapter detected among first class students, and the lowest is among third grade. In Extroversion, the highest is among third grade, the lowest is among second grade. In Neurotism, the highest among first grade, the lowest among second grade. In Lying, the highest among third grade, the lowest among second grade. The results of variances and Scheffe analysis made to see whether these differences are significant or not, were summarized in Table 6.

Table 6.ANOVA results of student characters scale points according to class levels

Source of Variance		Total of Squares	sd	Mean of Squares	F	p	Scheffe
Psychotism	Between Groups	41,179	3	13,726	1,261	0,290	n/a
	In Groups	1698,421	156	10,887			
	Total	1739,600	159				
Extroversion	Between Groups	21,057	3	7,019	,608	0,611	n/a
	In Groups	1800,636	156	11,543			
	Total	1821,694	159				
Neurotic	Between Groups	1,339	3	,446	,025	0,995	n/a
	In Groups	2834,755	156	18,172			
	Total	2836,094	159				
Lying	Between Groups	31,030	3	10,343	,982	0,403	n/a
	In Groups	1642,945	156	10,532			
	Total	1673,975	159				

When Table 6 studied, an important difference couldn't be discovered according to students' class levels in psychotism[$F_{(3-156)}$=1.261, P>.05], extroversion [$F_{(3-156)}$=.608, P>.05], neurotism[$F_{(3-156)}$=.025, P>.05] and lying [$F_{(3-156)}$=.982, P>.05]. With an another expression, it can be interpreted as there weren't any significant differences between students' personal traits with regards to their class levels.

5.Findings on students' personal traits according to their socio-economic status

Findings on students' personal traits according to their socio-economic status were summarized in Table 7.

Table 7. Characters of students according to their socio-economic status

Kişilik Özellikler		N	$\bar{X}$	Ss.
Psychotism	low	121	17,79	3,16
	mid	37	16,24	3,60
	high	2	19,50	0,71
	total	160	17,45	3,31
Extroversion	low	121	7,14	3,32
	mid	37	7,27	3,68
	high	2	5,00	0,00

	total	160	7,14	3,38
Neurotism	low	121	8,67	4,10
	mid	37	8,24	4,21
	high	2	15,50	9,19
	total	160	8,66	4,22
Lying	low	121	8,81	3,25
	mid	37	9,73	3,11
	high	2	6,00	4,24
	total	160	8,99	3,24

When Table 7 studied,with regards to students' socio-economic status, the highest rates in psychotism are detected among high levels(X=19,50), and the lowest rates are detected among students who have middle status(X=16,24). In extroversion, highest among high status(X=5,00), lowest among low status (X=7,14). In Neurotism, highest among higher status(X=15,50), lowest among middle status. (X=8,24). In lying, highest among middle status (X=9,73), lowest among high status(X=6,00). The results of variances and Scheffe analysis made to see whether these differences are significant or not, were summarized in Table8.

Table 8.ANOVA results according to students'personal trait scale

Source of Variance		Total of squares	sd	Mean of squares	F	P	Scheffe
Psychotism	Between Groups	75,876	2	37,938	3,580	,030	Low-Mid
	In Groups	1663,724	157	10,597			
	Total	1739,600	159				
Extroversion	Between Groups	9,785	2	4,892	,424	,655	n/a
	In Groups	1811,909	157	11,541			
	Total	1821,694	159				
Neurotic	Between Groups	100,006	2	50,003	2,869	,060	n/a
	In Groups	2736,088	157	17,427			
	Total	2836,094	159				
Lying	Between Groups	42,050	2	21,025	2,023	,136	n/a
	In Groups	1631,925	157	10,394			
	Total	1673,975	159				

When Table 8 studied, an important difference couldn't be discovered according to students' socio-economic status in extroversion[$F_{(2-157)}$=.424 P>.05], neurotism [$F_{(2-157)}$=2.869, P>.05] and lying[$F_{(2-157)}$=2.023, P>.05]. On the other hand, important differences discovered in psychotism[$F_{(2-157)}$=3.580, P>.05] according to their SES. According to the results of Scheffe test made to find out the

sides among which there is differentiations, the differentiations occur among the students who have low and middle status. When the means studied, the mean of the group with low status is $\overline{X}$=17.79, and the mean of the group with middle status is $\overline{X}$=16.24, thus, we can say that this important difference is on the side of the students with middle socio-economic status.

RESULTS AND DISCUSSION.

Students have seen although they didn't have extroversion,neurotism or lying characters, they have psychotic characters. Primary Education Department and School of Physical Education students didn't show differences in psychotism,extroversion and neurotism. However, Primary Education Department students have more tendency to tell lies than Physical Education students. Therefore, we can say that Primary Education Department students need lies more than Physical Education students. That can be caused by their theoric lesson obligations and considering their friends as their rivals with regards to their occupational anxiety. As a matter of fact, a study made by Allin and his friends detected high levels of extroversion in prematures according to Eysenck Personal Questionnaire. However, there weren't any significant differences between two groups.Although the genders don't affect psychotism,extroversion,neurotism and lying characters, this study detected that females reflect more psychotism,extroversion and lying, and males reflect more neurotism. A study made by Arslan and Bayraktar studied the personal traits of Gazi University's School of Physical Education and Sports and Gazi Education Faculty by considering sexual factors. That study aimed at examining whether there were any differences caused by genders between School of PES and EF students. As a result, they found some significant differences in psychotism,extroversion,neurotism and lying with regards to genders and departments, and it is thought that conditions like sports, competitions,rivalry et cetera have an effect on personality.It is seen that the characters don't change according to class levels. Although extroversion, neurotism and lying characters don't change according to class levels, socio-economic status, it is detected that the students who have a lower SES are more likely to show psychotism traits then the middle ones. The Difficulty in subsisting can be considered as the main reason for this.

BIBLIOGRAPHY

AKDOĞAN,S.,ARSLAN,F.,BAYRAKTAR,G.2007, *Gazi Üniversitesi Beden Eğitimi ve Spor Yüksekokulu Öğrencileri ile GaziÜniversitesi Eğitim Fakültesi Öğrencilerinin Cinsiyet Değişkenine Göre Kişilik Özelliklerinin İncelenmesi*".Çukurova Üniversitesi 5. Ulusal Beden Eğitimi ve Spor Öğretmenliği Sempozyumu. Adana.

ALLİN, M., ROONEY, M., CUDDY, M. WYATT,J., WALSHE,M., RİFKİN, L., AND MURRAY, R. 2006, Pedıatrics, Personality in Young Adults Who Are Born Preterm, London.

AYDIN, A.2006, G*elişim ve öğrenme psikolojisi.* 7. BASKI. ANKARA:TEKAĞAÇ EYLÜL YAYINLARI.

CANTEZ,E.1984,*türkiyede kullanılan bazı testlerin uygulamalarından elde edilen sonuçla*r.İstanbul Edebiyat Fakültesi Matbaası.

CAPPARA, C.V. 2002*, Personality psychology: Filling the gap between basic process and molar functioning*. C. Von Hofsten ve L. Bäckman Eds., *Psychology at the turn of the millennium: Volume 2: Social, developmental and clinical perspectives* s.201-224. Florence, KY: Taylor and Frances.

CHILD, I.L. 1968, *Personality in culture*. E. F. BORGATTA & W. W. LAMBERT Eds., *Handbooks of personality theory and research*. Chicago: Rand McNally.

CÜCELOĞLU, D. 1997, *İnsan ve Davranışı: Psikolojinin Temel Kuramları*, Remzi Kitapevi, İstanbul.

EYSENCK,H.J., EYSENCK,B.G. 1978. *Eysenck Personality Questionnaire*, London.

GOODWORTH, C.1988, *The Secrets Of Succesful Leadership And People Management*. London: Heinemann Pub.Ltd.

HJELLE, L.A. ZIEGLER, D.J., 1982, *Personality Theories Basic Assumptions Research and Applications*, Second Edition, McGraw-Hill İnternational Book Company, U.S.A.

KARASAR, N. 1994, *Bilimsel Araştırma Yöntemi: Kavramlar, İlkeler, Teknikler, Ankara*: 3A Araştırma Eğitim Danışmanlık Ltd.

KOÇ,Ş. 1994,*Spor Psikolojisine* Giriş.İzmir: Saray Medikal Yayıncılık.

SAVRAN, C. 1993*, Sıfat Listesinin Acl Türkiye Koşullarına Uygun Dilsel Eşdeğerlilik, Geçerlilik, Güvenirlilik, Norm Çalışması ve Örnek Bir Uygulama Yayınlanmamış* Doktora Tezi. Marmara Üniversitesi, Sosyal Bilimler Enstitüsü, Eğitim Bilimleri Anabilim Dalı. İstanbul.

TOPÇU S 1982, *Çocuk ve yetişkinlerde kişilik boyutları ile bu boyutlarda kültürler-arası ayrılıklar*. Basılmamış doçentlik tezi, Hacettepe Üniversitesi: Ankara.

ULUĞ, B.1990 *Depresif Bozukluklarda Kişilik Özellikleri*". Uzmanlık Tezi. Hacettepe Üniversitesi Tıp Fakültesi Psikiyatri Anabilimdalı. Ankara.

YAVUZER, H., 1982, *Çocuk ve Suç. 2. Baskı*. İstanbul: Altın Kitaplar Yayınevi.

YÜKSEL, Ö.2006, *Davranış Bilimleri*. Ankara: Gazi Kitapevi.

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VISUAL PERCEPTION SUCCESS OF FAST BALL GAME PLAYERS DURING SACCADE

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ABSTRACT

The purpose. Saccadic eye movements are rapidly moving of eye balls to an interesting point within the visual field. Even if the image on the fovea is suppressed by the mechanism of "saccadic suppression", the image can be detected voluntarily during saccade. Visually guided saccades are reported to be faster in fast ball game players. In this study, it is intended to measure the success of catching the perceived image of fast ball game players.

Methods. 15 athletes in our study (mean age. 21.20 ± 1.32) 15 sedentary (mean age. 20.46 ± 0.91) participated voluntarily. Measurements were made using a Biopac MP-30 system. Participants tried to capture the sine wave on a CRT oscilloscope 40cm front of them.

Results. Fast ball game players and sedentaries' sine wave catching average were 10,73±2,86 and 5,60±2,50 respectively.Visual perception success score were found significant between two groups (t=-5,23, P<0,01).

Conclusion. According to results, it was found out that fast ball game players' visual perception abilities are better than sedentaries during saccade.

KEY WORDS: Saccadic suppression, fast ball games

INTRODUCTION

Saccadic eye movements are rapidly moving of eye balls to an interesting point within the visual field.

The aim of voluntary saccades is to bring the image of a target from the periphery onto the fovea. Saccades can be done voluntarily or reflexive with or without a visual target.

Christenson et al have reported the visual system of athletes to be superior to that of non-athletes, especially with respect to motor reaction time (Christenson GN, Winkelstein AM., 1988).

Some studies have found fast ball game players have faster visually guided saccades and shorter latency of antisaccade task (Lenoir M, Crevits L, Goethals M, et al, 2000, Jafarzadehpur E, Aazami N, Bolouri B., 2007).

Visual perception during saccade is subjected some recent studies. These studies usually focused on shape of perceived objects or perception of time during saccade (Hamker FH, Zirnsak M, Calow D, 2008). We experienced that one cannot perceive visual scene during every saccade. This study prepared to determine perception success during saccades of fast ball game players and sedanteries.

METHODS

Participants

15 athletes in our study (mean age. 21.20 ± 1.32) 15 sedentary (mean age. 20.46 ± 0.91) participated voluntarily. All of the athletes were player of any fast ball game. The athlete participants were comprising: 3 tennis players, 5 table tennis players and 7 volleyball players. All participants were male.

Measurement

Eye movements of participants were recorded via Biopac MP-30 system's electrooculography method. Only binocular horizontal eye movements were recorded.

Two disposable electrodes which were placed outer canti of participant's eyes and one reference electrode was placed onto middle of forehead. Visual target generated by a CRT monitor was located 40 centimeter away of volunteers.

Participants were free about timing, direction and amplitude of saccade. Every participant made twenty separate saccades, and each saccade trial they were asked to define waveform of target if they saw. To determine a perception as successful participants had to define accurately waveform of target.

RESULTS

Table 1. Perception success and saccade velocity values of athletes and non-athletes.

	Athletes (mean±SD)	Non-athletes (mean±SD)	n	t	P
Successful perception	10,73±2,86	5,60±2,50	15	-5,227	<0,01
Saccade velocity	265,87±30,89	260,73±28,05	15	-0,48	0,64

Perception success and saccade velocity values illustrated in table 1. As seen in the table, mean perception success of athletes were 10,73±2 86 and mean perception success of sedanteries were 5,60±2,50.

The differences between athletes and sedanteries perception success values were significant statistically.

Saccade velocity mean values of athletes and sedanteries were 265,87±30,89 and 260,73±28,05 respectively.

Saccade velocity values of two groups were not significantly different.

DISCUSSION

We found significant differences in the perception success between athletes and sedanteries. We are not aware of any studies that investigated perception abilities during saccade.

Many of these studies connected with shape of percieved objects or percieved visual scene while saccadic movements (H. Awater, M. Lappe,2004, R J. Babu, L. Lillakas, E. L. Irving, 2005).

Our findings showed that fast ball game players conspicuously superior in perception during saccade. Because of the first finding about perception success during saccade in this study, we could not compare our result with any similar studies.

Our second important finding is about saccadic velocity.

There are a few studies about saccade velocity in which is compared athletes with non-athletes (M. Lenoir , L, Crevits , M. Goethals , 2000, E. Jafarzadehpur, N. Aazami, B. Bolouri, 2007). According to these studies athletes have faster prosaccades and shorter antisaccade latencies (M. Lenoir, L. Crevits M. Goethals 2000).

At first view it seems as our results are not compatible with these studies reported faster prosaccade of the athletes.

We consider about this situation in two reasons; 1- in the case of we did not use any visual stimulation and we cannot be sure these saccades are prosaccades, 2- because of our participants made saccades voluntarily, it was impossible to measure latencies of saccades.

Due to the ballistic nature of saccadic movements it is well known that visual perception during saccade does not affect saccade itself.

Visual perception abilities of fast ball game players may stem from training that they have to follow fast moving object such as ball or opponent players.

REFERENCES

CHRISTENSON GN, WINKELSTEIN AM., 1988, *Visual skills of athletes versus nonathletes: development of a sports vision testing battery*. J Am Optom Assoc 59:666–75.

LENOIR M, CREVITS L, GOETHALS M, WILDENBEEST, MUSCH E., 2000, *Are better eye movements an advantage in ball games? A study of prosaccadic and antisaccadic eye movements.* Percept Mot Skills 91:546-52.

AWATER H, LAPPE M., 2004, *Perception of Visual Space at the Time of Pro- and Anti-Saccades* J Neurophysiol 91: 2457–2464.

BABU R J, LILLAKAS L, IRVING E L., 2005, *Dynamics of Saccadic Adaptation: Differences Between Athletes and Nonathletes*. Optometry and Vision Science, 82: 1060–1065.

JAFARZADEHPUR E, AAZAMI N, BOLOURI B. , 2007, *Comparison of saccadic eye movements and facility of ocular accommodation in female volleyball players and non-players.* Scand J Med Sci Sports 17(2):186-90.

HAMKER FH, ZIRNSAK M, CALOW D, LAPPE M., 2008, The *Peri-Saccadic Perception of Objects and Space*. PLoS Comput Biol 4(2): e31. doi:10.1371/journal.pcbi.0040031

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COMPARISION OF UNIVERSITY STUDENTS AGANIST TO ANATOMY LESSON

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ABSTRACT

The aim of this study is to evaluate that approach of Karamanoglu Mehmet Bey University Physical Education Sports High school and Nursing students to anatomy lesson. Study which is descriptive is carried out in Karamanoglu Mehmet Bey University 2008-09 academic year during fall. The type of descriptive study was made in Karamanoglu University Education Mehmetbey in the fall semester in the 2008-2009 school year. Totally 272 students studying in the first, second, third and fourth classes in nursing and physical education and sports have constituted the universe of research. While the datum's were being collected, age and sex from socia-demographic datum's were put into practice for students, for measurement devotion to anatomy lesson, negative and positive behaviors which are performed during anatomy lessons, prejudice for anatomy lesson and the equal periodic liker anatomy attitude criterion in which the belief for necessity of anatomy lesson is discussed were put into practice. While analyzing the datum's number percent distribution and T test were used. Students whose branches is nursing (X= 78.94) are more positive than the students whose branch is physical education and sport teaching (X=67.35) in the view of attitude to anatomy lesson. Students' attitude to anatomy lesson has a difference according to students' different branch. In this research, nursing students have higher attitude to anatomy lesson than Physical Education Sports High school students. This difference may be derived from requirement to anatomy lesson of two distinct professions.

KEY WORD: Students, nursing, physical education and sport teaching, anatomy lesson attitude criterion.

INTRODUCTION

Societies try to make individuals have desired features by means of education. The desired features change with the education. The more they change, the more they change the envirenment (J. Lacknet, 1998), because education is an interaction. Knowledge, ability and attitudes change and improve with the interaction. In this duration the individuals' different features called *learning* can effect the duration of the behavioural change in a positive or negative way (M.S. Adegbenga, 2001).

One of the features effecting the learnings of the individuals is cognitive entry behaviours (S.H. Randall, 1992). Cognitive entry behaviours can be explained as a degree of having preconditional behaviours necessary for the individual **(**A.M. Aladwani and P.C. Palvia, 2002). During the learning another feature effecting the learning of the individual is sensual entry features (R.N. Caine and G. Caine, 1991).Attitude is seen as an important explanatory of the bahaviour with the cognitive, sensual and behavioral dimensions. Determining the attitudes aimed at defined activities is essential to determine the success of these activities (G. Ekici, 1996). Biological studies, in which alternative evaluating systems are used, are carried out in order to teach the evolution and circulation system notions and to identify attitudes related to the sex difference and the effect of interpretation ability (J. Lacknet, 1998).Occurance, change or replacement and measurement of attitudes are important issues of psychology in general, but in particular they are social psychology's issues. Attitude, as many other psychological variables (intelligence, motivation etc.) is variant, not directly observed theoretical variable with some observed behavioral indicators by default (A. Erkuş, 2003). According to Anderson, attitude is an excitement having medium level of intensity and providing individuals tendency or readiness to respond in an appropriate manner or inappropriate manner when encountered with a specific object (A. Erkuş, 2003). Allport described the attitude in that wa; attitude is a mental or neural preparation case which has dinamic or router effect on individual's reaction related to relevant situation or objects (C. Kağıtçıbaşı, 1988; A. Erkuş, 2003). Allport pointed out that attitude is not an observable behavior. Doob described the attitude as an incentive and covered reaction which is taught to be important in society where the individual lives. (E. Tavşancıl, 2002). According to another description, attitude is a case which is gained by learning, directs the individual's behavior and causes the bias in decision-making process (E. Tavşancıl, 2002). Attitude is in the individual's mind and constitutes the basis for a lot of thoughts and behaviors. Philips has indicated that attitude can occur in two ways. Individuals constitute their own behaviors by interacting with an attitude object or being affected by others' attitudes (S.L. Phillips, 2003). When taken into consideration Philips' definition of forming an attitude, it is reached that attitudes are created at the end of the experiences and are directed with them. When all these definitions are examined, it can be seen that attitudes may change or may be changed. According to this negative attitude can change as positive attitude and positive attitude can change as negative attitude. When it is taken into consideration that attitudes provide a basis and direct for thoughts and behaviors, necessity of developing positive attitude for the individual's

success can be seen directly (E. Tavşancıl 2002).The aim of this study is to measure the attitudes of the students having anatomy lesson and attending to the nursing and physical education and sports teaching departments in Karaman oğlu Mehmet Bey University.

MATERIAL AND METHOD

The kind and place of the research: The type of descriptive study was made in Karamanoğlu Mehmetbey University in the fall semester in the 2008-2009 academic year. *The working group of the research:* Totally 272 students studying in the first, second,third and fourth classes in nursing and physical education and sports have constituted the universe of research. At first stage the aim was to reach all of the students in the institutions of higher education. 112 students attending to the department of physical education and sports and 160 student attending to the department of nursing participated in the research. As there are two departments in the university having anatomy lesson, only these schools has been taken into the scope of the research.*Method and tools of collecting data:* while getting the datum, age and sex which are social demographic datum, were applied to the students. And also, to question the devotion to the lesson, positive and negative behaviours acted in anatomy lesson, prejudices related to the anatomy lesson and the belief in the need of the anatomy lesson, the equal periodic likert anatomy attitude criterion was applied to the students.Bahçeci (2006) said in the doctorate thesis that 34 sentences thought to have effected the attitude of the student towards the lesson were defined and they were converted the Likert criterion (same- spaced five-branched classification criterion). The criterion was decreased to 27 items in order to evaluate the structure and scope validity and while the statements of some items were changed, some were removed completely by the help of the views of the experts. After the factor analysis of the materials had been made, the statements showing the material load below 0,40 were removed and then there were 24 items at the criterion. The rest of the materials were attached to the 24 items. These are;

Factor 1: devotion to Anatomy lesson

Factor 2: positive and negative behaviours acted in Anatomy lesson

Factor 3: prejudices related to the Anatomy lesson

Factor 4: the belief in the need of the Anatomy lesson.

The inner consistency of the criterion was calculated as Cronbach alfa(α)=0,75, and as it provided enough reliability, the criterion was used in the research (D. Bahçeci, 2006). The research datum were collected as a group in the classroom on 12-25, January 2009 and based on the student's own-decleration as a researcher-controlled with the survey method.

Independent variants: Age, sex, department and which grade at university

Dependent variants: 24 questions directed at the scale.*Statistical analysises:* In data analysis the range of the number percentage and t test were used. While being evaluated datum, SPSS 10.0 programm was benefitted.

FINDINGS AND DISCUSSION

The age average of the students joining the research is 22.79. 66.2 % of the students is female and 33.8 % is male. 58.8 % of the students is in the department of nursing; 23.0 % in the second class, 18.5 % in the third class, 17.3 % in the fourth class; 41.2 % of students in department of the physical education and sports, 16.7 % of students in the second class, 11.7 % of students in the third class and 12.8 % of students in the fourth class.

Table 1. T Test Results of Anatomy lesson attitude points of Nursing and Physical Education and Sports Departments

Measurement	Method	N	*X(ort)*	S	sd	t	P
Attitude	physical education teaching	112	71.98	11.34	274	8.76	**0.000***
	Nursing	160	87.34	7.43			
	Total	**272**	**79.66**	**10.46**			

*p<0,01 meaningfulAs seen in Table-1, attitudes of the students towards anatomy lesson show a meaningful difference as they are attending to the different departments [t (274)=8,76, p<,01]. The attitude of the nursing students (X = 87.24) is more positive than than the physical education and sports students' (X =71.98). This situation can be interpreted as a meaningful relation between the department and the attitude to the lesson.

Table 2. According to the Departments of Students' Attitude Points Towards Anatomy Lesson to the Factors

Attitude factors	Group	N	*X*	S	Sd	t	P
1-Devotion to the anatomy lesson	physical education teaching	112	67.35	11.75	274	4.08	**0,001***
	Hemşirelik	160	78.94	6.87			
	Total	**272**	**73.15**	**9.78**			
2-Behaviours in the anatomy lesson	physical education teaching	112	69.78	14.98		6.77	**0,000***
	Nursing	160	83.76	7.06			
	Total	**272**	**76.74**	**11.86**			
3-Prejudices related to the anatomy lesson	physical education teaching	112	77.84	14.83		3.92	**0,003***
	Nursing	160	69.70	8.58			
	Total	**272**	**73.77**	**10.38**			
4-Belief in the need of the lesson	physical education teaching	112	73.86	9.82		1.64	**0,001***
	Nursing	160	84.36	13.48			
	Total	**272**	**79.11**	**10.96**			

*p<0,01 meaningful

The first factor effecting the attitude related to anatomy lesson is "Devotion to Anatomy Lesson". As seen in the first part of the Table-2, because of having training in different departments, there is a meaningful difference in this stage[t(274)=4,7 , p<,01]. With regard to the devotion to anatomy lesson (X = 78.94) the nursing students are more positive than the physical education and sports students (X=67.35). This situation can be interpreted as a meaningful relation between getting training in different departments and the devotion to anatomy lesson.The second factor effecting the attitude related to anatomy lesson is "Attitudes in Anatomy Lesson". As seeen in the second part of the Table-2, the attitudes of the students have meaningful differences due to being in different departments [t (274)=6.77, p<,01]. The attitudes of the students in nursing department (X =83.76) are more positive than the students' in the physical education and sports (X =69.78). The third factor effecting the attitude related to anatomy lesson is "Prejudices Related to Anatomy Lesson". As seeen in the third part of the Table-2, the attitudes of the students, because of getting education in different departments, show a meaningful difference [t (274)=3.92,p<,01]. The prejudice attitudes related to the lesson of the students in nursing department (X = 69.70) are less than the students' in the physical education and sports (X=77.84). The fourth factor effecting the attitude related to anatomy lesson is "The Belief in the Need of the Lesson". As seeen in the fourth part of the Table-2, owing to being in different departments, in terms of the belief in the need of the lesson, there is a meaningful difference [t (274)=1.64, p<,01]. The attitudes of the students in nursing department (X = 84.36) are more than the students' in the physical education and sports (X =73.86) in the way of the belief in the need of the lesson.Daniş and Genç (2007) show in their research that there is a link between the attitudes of students to the lesson and the importance they give to the lesson. In this study the attitudes of nursing students show meaningfulness when compared to the physicaL educaiton and sports students. This situation may be attributed to the usage of the lesson among the departments.

CONCLUSION

Lesson enjoyment is a good start for the active learning (Ozer, 1999). People usually want to be more engaged in the topic they interested in and therefore, they will be more successful in that area. If a student develops a good attitude towards a lesson he acts in the same way to that lesson. Not seeing a lesson as a need and thinking "where and how these issues will be useful for our business" may cause student to be bored and show negative attitudes towards lesson (M. Demirbaş and R. Yağbasan, 2006). For the students studying in nursing and physical education, the

importance of anatomy lesson is as important as not to be discussed. Besides many factors, this is closely related with the attitude towards anatomy lesson. Anatomy lesson is essential for Nursing profession because Nursing department students graduate from their departments and start to work and while they are performing their professions in many areas such as injection, signs of life, first aid practices, they will need anatomy information a lot. Students, training in physical education department and sport teaching, will also need the anatomy information against the accidents which may occur during the training or different sitiuations. It can be said that the students' attitudes towards anatomy lesson at the nursing occupation are higher than the students' attendig to the physical educaiton and sports training because of the the fact that there is a difference between the jobs according to the need.

REFERENCES

ADEGBENGA, M.S., 2001, *Developing a scale for measuring the barriers to condom use in Nigeria.* Bull World Health Organ ,v. 79, n. 10, pp. 926-932.

ALADWANI, A.M., PALVIA P.C., 2002**,** *Developing and validating an instrument for measuring user-perceived web quality ,Information & Management ,*Volume 39, Issue 6. pp.47-56.

BAHCECI, D., 2006**,** *Anatomi Dersinde Portfolyo Kullanmanın Öğrencilerin Bilişsel ve Duyuşsal Özellikleri Üzerine etkisi.* Yayınlanmamış Doktora Tezi, Gazi Üniversitesi, Ankara.

CAINE, R.N. and CAINE, G., 1991, *Making Connections: Teaching and Human Brain. Alexandria,* VA: Association for Supervision and Curriculum Development.pp.37-51.

DEMIRBAS, M. and YAGBASAN, R., 2006, *Fen Bilgisi Öğretiminde Sosyal Öğrenme Teorisine Dayalı Öğretim Etkinliklerinin, Öğrencilerin Akademik Başarılarına Olan Etkisinin İncelenmesi*, Kastamonu Eğitim Dergisi, C. 14, No: 1, Mart , pp. 113–128.

DANİS, H. and GENC, H., 2007, *Çevre bilimi dersi alan ve almayan sınıf öğretmenliği öğrencilerinin Çevreye ilişkin tutumları ve çevre bilimi dersindeki başarılarının Karşılaştırılması,* Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi, Haziran.

EKİCİ, G., 1996, *Biyoloji Öğretmenlerinin Öğretimde Kullandıkları Yöntemler ve Karşılaştıkları Sorunlar.* Yayınlanmamış Yüksek Lisans Tezi, Ankara Üniversitesi, Ankara,

ERKUS, A., 2003, *Psikometri Üzerine Yazılar,* Türk Psikologlar Derneği Yayınları No: 24, Ankara.pp.86-94.

KAGITCIBASI, C., 1988, *İnsan ve İnsanlar*, İstanbul Matbaası, İstanbul. pp.113-26.

LACKNET, J., 1998, 12 *Design Principles Based on Brain-Based Learning Research.* http: // www.designshare.com/research/brainbasedlearn98 .htm. pp.3-5.

OZER, R., 1999, *Öğrenci Başarısı, Rize Rehberlik ve Araştırma Merkezi* Yayınları Yayın No: 7, Rize.pp.16.

PHILLIPS, S.L., 2003, *Contributing Factors to Music Attitude in Sixth, Seventh and Eighth Grade Students,* Non-published Dissertation, Iowa University.

RANDALL, S. H. , 1992, *A multidimensional scale for measuring business ethics: A purification and refinement,* Journal of Business Ethics; Volume 11, Number 7 / July

TAVSANCIL, E., 2002, *Tutumların Ölçülmesi ve SPSS ile Veri Analizi*, Nobel Yayın, Ankara.pp.76-81.

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MINING PHYSICAL AND MOTOR DEVELOPMENT OF ADOLESCENT FEMALE TAEKWONDO PLAYERS

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ABSTRACT

Purpose. In the study it was generally purposed to examine physical and motor developments of adolescents that make physical taekwondo training regularly.

Methods. Taekwondo players whose 87 were female between 10-13 years old, voluntarily participated in the study. It was measured level, age, height, weight, body mass index (BMI), competition weight, band, vertical jump, speed, grip strength of right hand, grip strength of left hand, leg strength, maximal oxygen consumption (VO2), balance duration, balance point, reaction time, fat percentage of body (BF%), anaerobic endurance, hip flections, hip extension, hip internal rotation, hip external rotation, knee flections, knee extension parameters of the volunteer sportsmen that participated in the study. In statistical analysis, it was calculated averages of groups and their standard deviations. For comparison made inter groups it was applied independent't' test.

Results. As a result of comparison made between female sportsmen that were competitors and female sportsmen that were not competitors, it was determined meaningful differences at the level of $p<0,05$, in view of light reaction time of left hand, selective light reaction time, foot light reaction time, anaerobic endurance, hip flections, hip external rotation and knee flections parameters. It was determined meaningful differences at the level of $p<0,01$in view of height, weight, body mass index, balance duration, balance points, light reaction time of right hand, hip extension parameters. It was determined meaningful differences at the level of $p<0,001$ in view of competition weight, band, fat percentage of body (BF%), hip internal rotation knee extension, parameters.

As a result of comparison made between female sportsmen that were degree entered competitors and female sportsmen that were not degree entered competitors in Turkey Competitions, it was determined meaningful differences at the level of $p<0,01$ in view of height, vertical jump, balance duration, voice reaction time of right hand, hip external rotation parameters. It was determined meaningful differences at the level of $p<0,001$ in view of band, grip strength of right hand, grip strength of left hand, maximum VO2, balance point, light reaction time of right hand, voice reaction time of left hand, light reaction time of left hand, selective light reaction time, foot light reaction time, fat percentage of body (BF%), hip extension, hip internal rotation, level parameters.

Conclusions. As a result; it can be said that the reason why a meaningful difference occurred that was in favor of sportsmen that were competitors between physical and motor parameters compared between sportsmen that were competitor and not competitor and between sportsmen that were placed and not placed in Championship of Turkiye is resulted from the fact that competitor sportsmen trained regularly and those regular trainings affected both physical and motor measurements positively.

KEY WORDS: Adolescent, Taekwondo, Motor feature, Physical feature.

INTRODUCTION

The goal of being successful in sport has led scientists in many countries to do extensive researches in these fields, and about what should be done to reveal reaching the performance of the upper limits in sport. Success in sport, in other words performance, depends on aerobic and anaerobic energy consumption, neuromuscular functions such as power, speed, technique, and psychological factors and tactics. Also, these motor characteristics are required to be improved for success in taekwondo sport as well as any other sports.

The physical fitness levels including physical and motor characteristics of children Taekwondo athletes may significantly improve in their adolescence period. This development seems important since it will provide a basis for their future performance. The study aims to determine and investigate the physical and motor characteristics of children that will be future taekwondo champions.

METHODS

87 female taekwondo athletes, ranging in age between 10 and 13, who do training on a regular basis participated in the study voluntarily.

Age; The ages of volunteers on their Republic of Turkey ID cards were recorded.

Tests performed:

Height; measured with a sliding calliper (Holtain, UK).

Body weight; measured with a weighing machine (Angel) sensitive up to 20 grams with barefoot and only wearing shorts.

Body mass index; obtained through dividing the parameters of body weight into the square of height parameters.

Belt levels; obtained through the official website of the Taekwondo Federation of Turkey with record number
of athletes. The belt and gup levels were recorded as follows: 10th gup-white belt, 9th gup/white-yellow belt, 8th gup/yellow belt, 7th gup/yellow-green belt, 6th gup/green, 5th gup/ green-blue, 4th gup/blue, 3rd gup/blue - red, 2nd gup/red, 1st gup/red-black.

Vertical jump test; the device called Jumping Takei Physical Fitness Test was used for vertical jump test. The vertical jump heights of the volunteers were measured and recorded (K.Tamer 2000).

30 m Acceleration; **Running time of the distance by the subjects were measured in a standard 50 m indoor running track, with a photocell timer established between 5 - 35 m and the best of three trials was recorded by applying 5 min rest intervals.**

Hand Grip Strength Test; hand grip strength was measured with Takkei hand grip dynamometer (K.Tamer 2000).

Leg strength; Measurement was conducted with Takkei back and lift dynamometer (K.Tamer 2000).

Maximal Oxygen Consumption ; max VO_2 , 20 m shuttle run test was used (K.Tamer 2000).

Filamingo balance test; To measure the balance of the volunteers, subjects tried to keep balance as long as possible standing on the balance beam on their preferred leg.

Reaction time; measured with reaction time measurement section of Bosco's Newtest 2000 battery. Volunteer groups visual basic (right and left hand with right foot) RT, auditory basic (right and left hand with right foot) RT and visual-choice RT (hands) were measured (K.Tamer 2000).

Calculation of body fat in percent (%); Subcutaneous fat thickness measurements were made with a Skinfold device (Tamer 2000). Logx = (biceps + triceps + sub-scapular + sacroiliac) % fat = (4.95 / D - 4.5) * 100

Anaerobic endurance; as measuring battery**,** "Hexagonal Obstacle Test" was used (Kibler 1990).

Hip flexion, hip extension, hip internal rotation, external rotation of the hip, knee flexion, knee extensor; measurements were done with goniometer (Y.Sevim 1995).

Contestant Level; measured in order to determine if volunteers have participated in competitions

Competition Ranking; used to determine ranked and unranked athletes participating in 2009 Taekwondo Championship of Turkey.

Data analysis; **the mean and standard deviations of the groups were calculated. For the two independent group comparisons, independent't' test were applied.**

RESULTS

Table 1: The arithmetic means, standard deviations and 't' and 'p' values of female competitor and non-competitor athletes.

Variables	Competitor (n:67) X ± Ss	Non- Competitor (n:20) X ± Ss	t	p
Age (years)	11,42 ± 1,03	11,80 ± 1,51	1,061	,299
Height (m)	1,48 ± ,12	1,57 ± ,05	2,980	**,004****
Weight (kg)	40,25 ± 14,56	51,16 ± 1,46	3,332	**,001****
Body Mass Indeks (kg / m^2)	17,83 ± 4,09	20,98 ± 2,12	3,302	**,001****
Competition Weight (kg)	39,49 ± 11,83	50,00 ± 2,51	3,929	**,000****
Belt Level (gıp)	4,28 ± 1,39	1,80 ± 1,00	7,417	**,000****
Vertical Jump (cm)	32,78 ± 5,98	30,80 ± 11,56	,736	,470
Speed 30 m (sn)	6,01 ± ,62	6,20 ± 1,35	,877	,383
Right Hand Grip Strength (kg)	14,58 ± 6,04	15,06 ± 3,32	,342	,733
Left Hand Grip Strength (kg)	13,80 ± 6,21	12,52 ± 3,12	,885	,379
Leg Strength (kg)	36,16 ± 12,46	36,90 ± 5,78	,255	,799
Maximal Oxygen Consumption (ml/kg/dk)	37,08 ± 3,88	34,77 ± 4,99	1,905	,068
Balance Time (sn)	48,65 ± 18,37	60,00 ± ,00	2,751	**,007****
Balance Score (score)	2,58 ± 3,63	,00 ± ,00	3,171	**,002****
Right Hand Sound Reaction Time (ms)	245,55 ± 48,90	257,07 ± 28,52	1,002	,319
Right Hand Light Reaction Time (ms)	304,68 ± 58,25	375,05 ± 88,96	3,331	**,003****
Left Hand Sound Reaction Time (ms)	267,07 ± 47,77	257,95 ± 37,32	,784	,435
Left Hand Light Reaction Time (ms)	328,72 ± 69,77	372,05 ± 94,93	2,234	**,028***
Selective Light Reaction Time (ms)	348,30 ± 73,03	375,75 ± 32,04	2,399	**,019***
Foot Sound Reaction Time (ms)	325,72 ± 54,40	309,25 ± 28,90	1,296	,198
Leg Light Reaction Time (ms)	361,30 ± 66,36	410,42 ± 77,97	2,555	**,016***

Body Fat Percentage (%)	10,37 ± 5,06	18,72 ± 2,64	7,083	**,000*** **
Anaerobic Endurance (sn)	14,15 ± 3,29	16,06 ± 1,29	2,527	**,013***
hip flexion (º)	122,30± 14,88	134,00 ± 20,11	2,413	**,023***
Hip Extension (º)	27,19 ± 11,97	20,00 ± ,00	2,676	**,009** **
Internal Hip Rotation (º)	33,54 ± 6,92	16,00 ± 7,54	9,298	**,000*** **
External Hip Rotation (º)	30,70 ± 7,28	28,00 ± 2,51	2,567	**,012***
Knee Flexion (º)	137,73 ± 24,71	123,00 ± 15,08	2,523	**,013***
Knee Extension (º)	183,14 ± 5,22	190,00 ± ,00	5,855	**,000*** **

*p<0,05 **p<0,01 ***p<0,001

No significant differences were found as a result of the comparison between competitor and non-competitor female athletes at p>0.05 level in age, vertical jump, speed, right-hand grip strength, left hand grip strength, leg strength, max. VO_2, right-hand volume RT, left-hand volume RT, foot volume RT parameters. A significant difference at p>0.05 level was found in left-hand light RT, eclectic light RT, foot-light RT, anaerobic endurance, hip flexion, hip external rotation, knee flexion parameters. Significant differences were found at p<0.01 level in height, weight, BMI, duration of balance, equilibrium score, right-hand light RT, hip extension parameters, and at p<0.001 level in competition weight, belt, %BF, hip internal rotation, knee extension parameters.

Table 2 The arithmetic means, standard deviations and 't' and 'p' values of ranked female athletes in Taekwondo Championship of Turkey.

Variables	Not-Degree Entered (n:49) X ± Ss	Degree Entered (n:38) X ± Ss	t	p
Age (years)	11,39 ± 1,27	11,66 ± ,99	1,078	,284
Height (m)	1,47 ± ,12	1,54 ± ,09	2,728	**,008** **
Weight (kg)	42,46 ± 12,35	43,14 ± 15,18	,223	,824
Body Mass Indeks (kg / m^2)	19,09 ± 3,19	17,87 ± 4,71	1,367	,176
Competition Weight (kg)	41,92 ± 10,89	41,89 ± 2,05	,010	,992
Belt Level (gıp)	2,71 ± 1,65	5,00 ± ,00	8,550	**,000*** **
Vertical Jump (cm)	30,22 ± 8,71	35,03 ± 4,73	3,065	**,003** **
Speed 30 m (sn)	5,98 ± ,95	6,15 ± ,68	,916	,362
Right Hand Grip Strength (kg)	12,73 ± 5,77	17,21 ± 4,00	4,078	**,000*** **
Left Hand Grip Strength (kg)	11,35 ± 5,15	16,28 ± 5,09	4,465	**,000*** **
Leg Strength (kg)	34,76 ± 10,61	38,35 ± 11,86	1,466	,147
Maximal Oxygen Consumption (ml/kg/dk)	34,93 ± 3,99	38,65 ± 3,63	4,488	**,000*** **
Balance Time (sn)	56,18 ± 11,47	44,91 ± 20,28	3,066	**,003** **
Balance Score (score)	,12 ± ,60	4,39 ± 3,90	6,690	**,000*** **
Right Hand Sound Reaction Time (ms)	261,24 ± 46,91	231,37 ± 36,99	3,223	**,002** **
Right Hand Light Reaction Time (ms)	353,51 ± 75,08	278,76 ± 40,42	5,541	**,000*** **
Left Hand Sound Reaction Time (ms)	279,67 ± 47	246,02 ± 36,08	3,655	**,000*** **
Left Hand Light Reaction Time (ms)	366,35 ± 84,08	303,01 ± 51,01	4,094	**,000*** **
Selective Light Reaction Time (ms)	377,04 ± 65,40	325,69 ± 57,28	3,831	**,000*** **
Foot Sound Reaction Time (ms)	330,48 ± 54,51	310,91 ± 41,76	1,834	,070
Leg Light Reaction Time (ms)	401,95 ± 76,26	334,74 ±42,73	4,869	**,000*** **
Body Fat Percentage (%)	14,29 ± 6,23	9,72 ± 3,98	3,934	**,000*** **
Anaerobic Endurance (sn)	14,88 ± 2,57	14,22 ± 3,59	,959	,341
hip flexion (º)	125,82 ± 17,57	123,92 ± 16,03	,518	,606
Hip Extension (º)	21,43 ± 7,07	30,84 ± 12,69	4,391	**,000*** **
Internal Hip Rotation (º)	24,59 ± 9,83	35,84 ± 6,64	6,355	**,000*** **
External Hip Rotation (º)	27,96 ± 4,32	32,82 ± 7,94	3,401	**,001*** **
Knee Flexion (º)	130,92 ± 13,18	138,76 ± 32,18	1,414	,164
Knee Extension (º)	185,41 ± 5,38	183,83 ± 5,39	1,356	,179

*p<0,05 **p<0,01 ***p<0,001

No significant differences were found as a result of the comparison between ranked and unranked female athletes in Turkey Championship at $p>0.05$ level in age, weight, BMI, competition weight, speed, leg strength, leg volumeRT, anaerobic endurance, hip flexion, knee flexion, knee extension parameters. A significant difference was found at $p<0.01$ level in height, vertical jump, balance duration, right-hand sound RT, hip external rotation parameters and at $p<0.001$ level in the level parameters of belt, right-hand grip strength, left-hand grip strength, max. VO_2, equilibrium score, right-hand light RT, left-hand volume RT, left-hand light RT, selected light RT, foot-light RT, BF%, hip extension, hip internal rotation, knee extension parameters.

DISCUSSION AND CONCLUSIONS

The effects of taekwondo, a defence and combat sport, on physical and physiological characteristics of athletes can be evaluated by the tests and measurements performed. In this study, 87 female taekwondo athletes, between the ages of 10 and 13 in age, participated in voluntarily. It is seen that the groups have similar averages of age. These results indicate that the participation level into competition or the ranking success in competition of athletes should be evaluated independently of the age factor. In addition, this situation may result from the limitations on participation age of the athletes. Therefore, the similar average age of our research groups and the idea that differences will not be due to age differences may support our research to have more reliable bases. It was found out that non-competitor athletes have higher height-average than competitor athletes when the groups' height values were examined. This situation can be considered as one of the typical differences of research group. However, the height that is higher than competition weight in taekwondo can improve the achievement levels of athletes. As a result of the research, it was figured out that the height values of ranked athletes were higher than other unranked athletes. It is considered that having higher height than their competitors provide significant advantages to taekwondo athletes if there is no significant insufficiency in their motor skills and motor characteristics. This answers the question of why athletes with higher average of height than other sport groups are more ranked in competitions. Athletes that will enter the contest are expected to compete in certain weights in taekwondo. The weight, competition weight and BMI values of athletes, who did not participate in competitions, were found higher than the weight, competition weight and BMI values of competitor athletes. This situation may result from the fact that the competitor athletes have to control their weights continuously. Changes in weight value contribute to BMI values as well. Moreover, because weight athletes have to pay attention on their food consumption in order to control their competition weights continuously, this prevents their performance to be affected negatively due to rapid weight loss. It was concluded that the weight, competition weight and BMI values do not have a significant impact in ranking levels of research groups. As a result of the comparison of groups' belt levels, it was found that the belt levels of competitor or athletes, ranked in a competition, were higher than the belt levels of non-competitor or athletes unranked in a competition. Athletes would proof their own levels by the belt colors they wear in terms of testing the adequacy of technical skills of taekwondo and monitoring their development stages. At the same time, the belt scale provides important information about the performance of athletes. This information indicates that the belt levels of taekwondo athletes might be quite effective in the grades of competition participation or ranking in participated competition. As a result of the comparison of ranked and unranked athletes in Turkey Championship, a significant difference was found in vertical jump levels. This difference may result from the positive developments in the vertical jumps of competitor athletes training regularly. The step taking or dances during taekwondo training or during competition can be effective in this positive development. Aydos and Kürkçü, in the measurements of athletes from different sports branch with the same age group, found the vertical jump values as 39±6,51 cm in those who sport and 27,93 ±5,43 cm who do not sport (L. Aydos and R. Kürkçü 1997). In the study performed with female basketball players at 14-16 age groups, Sevim and Savaş in the measurements of female athletes from different sports branch with the same age group, found the vertical jump values as 31,7±5,20 cm in the volunteer group and 30,0±2,51 cm in the control group (Y. Sevim and S. Savaş 1992). The obtained information as a result of the study is consistent with the literature. No significant difference was found as a result of the intergroup comparison of speed values of the athletes participated in the research. However, the speed values of competitor or ranked athletes were found as lower than the speed values of non-competitor or unranked athletes. Researches regarding 30 m speed values addressed to examine the differences between before and after a specific training program. However, the findings are parallel to the measured values. These indicated that 10-week training programs increased significantly the sprint averages which were performed on 18 amateur soccer players by (A. Ugras et al. in 2002). In the study, by Eler, in 1996, significant improvements were determined in the averages of speed tests performed on the 15 top-level handball players before and after 12-week training period (S. Eler 1996). Taekwondo trainings, regular and extended over long periods, contribute to the development of speed ability significantly. It is considered that this development results from the speed trainings which have an important place in taekwondo. In maximal strengths of the athletes participating in the research, no significant differences, which would affect the competition result, were found as a result of the

intergroup comparison. These obtained results are considered due the significant developments in each group because the training density based on force in taekwondo. The leg strength values, found in the measurements of female athletes from different sports with the same age group, are as follows. Sevim et al., found the values as right hand grip strength 21.0 ± 1.65 kg ., left-hand grip strength 17.9 ± 2.14 kg, leg strength 88.7 ± 8.85 kg, in women basketball players and in the control group right-hand grip strength 20.4 ± 1.43 kg, left hand grip strength 17.3 ± 1.12 kg, leg strength 86.1 ± 18.8 kg (Y.Sevim and S.Savaş 1992). The average grip strength values of candidate athletes for taekwondo national team were found as follows; the right-hand grip strength 47 ± 305.84 kg, left-hand grip strength 46.57 ± 5.16 kg, leg strength mean value 151.46 ± 25.31 kg, respectively (Tel 1996). Seliger et al., in adolescent children, found the values as right-hand grip strength 35.8 ± 8.6 kg, left-hand strength 33.6 ± 7.9 kg. (Seliger et al 1991). The values of young-national table tennis players were found as right-hand grip strength 41.7 ± 5.38 kg, left-hand grip strength 37.4 ± 1.93 kg, leg strength 112.0 ± 2.11 kg, by (O. Cimen et al.1997). (O.Senel et. al., 1998) identified the values of young national badminton players as right-hand grip strength 39.15 ± 7.75 kg, left-hand grip strength 34, 53 ± 7.16 kg. (O.Senel et. al. 1998). There are also some differences between our and other research results as well as some similarities exist. These differences can also be explained by different characteristics of the research groups, but it is important to note that the different training methods influence the athletes' strength values significantly.As a result of the intergroup comparison, it is seen that the reaction times of athletes, participating in the research, affect the competition result and the situation of being a competitor. Senel et al., in the study on young-national badminton players, found the values regarding reaction time in different sports as (age 17.1 ± 1.85), right-hand light reaction time 135 ± 15.1 sec., right-hand aural reaction time 118.7 ± 13.5 sec. (Senel et. al. 1998). (O.Senel et al. 1997), in their study with cyclists (age 24 ± 2.24), found the visual reaction time for right hand as 0.17 ± 0.03 and as 0.18 ± 0.01 for right hand aural reaction time (O.Senel et al. 1997). Values obtained from the research results were higher than the literature information. These low values can be considered as a result of high age averages and sport levels of athlete groups in the literature researches. The reaction time differences that occur in groups result from the training structure of taekwondo branch and fast competition process. In addition, because the fast-strength trainings have continuous quick-direction changes and these trainings mostly improve nerve-muscle coordination, the reaction time is affected positively. In many studies, it was highlighted that there was a significant difference in anaerobic power values between the groups who sport and who do not (N.A.Güzel et al 2007). It was reported that there was a significant difference between untrained group and taekwondo training group (A. Borlu 2005). The average values of anaerobic power of the candidate athletes for national team were found as 133.81 ± 9.72. These values are very high than the average values of non-sport groups. However, it shows similarity with the studies performed on some other athletes whom are in sport branches requiring heaviness and challenging (M.Tel 1996). In the study of Borlu, performed on different age groups in 2005, the averages of anaerobic power test was determined as 49.26 ± 7.02 in children (A. Borlu 2005). The averages of anaerobic power test, performed on basketball, volleyball and football players by Yardimci in 1997, were found as 133.04 ± 10.55 in basketball players, 135.15 ± 14.15 in volleyball players and 102.75 ± 10.55 in and football players, and it was determined that there was a significant difference between different branches (M. Yardimci 1997). The reason for this difference can be explained by the positive impact that regular trainings provide on anaerobic powers and strengths of athletes. Athletes participated in the research are in the period of rapid growth. This period is characterized by rapid physical growth and intense hormone activities (C.Açıkada and E.Ergen 1990). Especially the physical development and biochemical maturation in girls peaks at the age of 14 (K.Özer 2001).In conclusion, participation in a competition or ranking in a competition can be considered as an important selection criteria. However, these athletes that have also more advanced motor skills than other athletes show us that being successful is not only limited to technical skills but motor skills are also quite important in the expression of technical skills. Especially, the reaction time, the relative development level and the joint movement ranges significantly affect the athletes' competition performances.

REFERENCES

AÇIKADA, C., ERGEN, E.,1990, *Bilim ve Spor, Büro* – Tek Ofset Matbaacılık, Ankara.

AYDOS, L., KÜRKÇÜ, R.,1997, *13-18 Yaş Grubu Spor Yapan ve Yapmayan Orta Öğrenim Gençliğinin Fiziksel ve Fizyolojik Özelliklerinin Karşılaştırılması*, G.Ü. Beden Eğitimi ve Spor Bilimleri Dergisi, Cilt:2, Sayı: 2, Ankara; ss 31-38.

BORLU, A., 2005, *Değişik Kategorilerdeki Bayan Basketbolcuların Fiziksel ve FizyolojikParametrelerinin İncelenmesi, Gazi Üniversitesi, Sağlık Bilimleri Enstitüsü,* Beden Eğitimi ve Spor Anabilim Dalı, Yüksek Lisans Tezi, Ankara.

ÇİMEN, O., CİCİOĞLU, İ., GÜNAY, M., 1997, *Erkek ve Bayan Türk Genç Milli Masa Tenisçilerin Fiziksel ve Fizyolojik Profilleri, G.Ü.* Beden Eğitimi ve Spor Bilimleri Dergisi, Cilt:2, Sayı: 4, Ankara; ss 7- 12

ELER, S., 1996, *Bir Sezonluk Antrenman Periyotlaması Boyunca Üst Düzey Erkek Hentbolcülerin Bazı Motorik ve Fizyolojik*

Parametrelerinin İncelenmesi, Gazi Üniversitesi, Sağlık Bilimleri Enstitüsü, Beden Eğitimi ve Spor Anabilim Dalı, Yüksek Lisans Tezi, Ankara.

GÜZEL, N.A,, ÇOLAKOĞLU, F., KARACAN, S., ÖZ, E., AKYÜZ, M., ASLANOĞLU, E.,2007, *13-16 Yaş Grubu Kız Voleybol ve Futbolcuların Bazı Fiziksel Fizyolojik* ve Antropometrik Özelliklerinin Karşılaştırılması, Ankara.

KIBLER, W.B., 1990, *The Sport Preparticipation Fitness* Examination, Human Kinetics Books.

ÖZER, K., 2001, *Fiziksel Uygunluk,* Nobel Yayın Dağıtım, Ankara; ss 153- 154

SELIGER ve ark.,1991, *Çekoslavakya'da Somatik Fonksiyonel Motor Özelliklerin Ortalama Değerleri, Uluslararası Biyoloji Programı.* Çev: Turnagöl, H. Antrenman Bilgisi Sempozyumu, H.Ü. Spor Bilimleri Ve Teknolojisi Yüksekokulu Yayını Sayfa: 157 Ankara.

SEVIM, Y.,1995, *Antrenman Bilgisi,* Gazi Büro Kitabevi, Özkan Matbaacılık, Ankara.

SEVİM, Y., SAVAŞ, S., 1992, *14-16 Yaş Grubu Kız Basketbolcularda Dairesel çabuk Kuvvet Metodunun Genel Kuvvet Gelişimine Etkileri,* H.Ü. Spor Bilimleri Dergisi, Cilt:3, Sayı: 4, Ankara; ss 40- 47.

ŞENEL, Ö., ATALAY, N., ÇOLAKOĞLU, F.F.,1997, *Türk Milli Bisikletçilerin Fiziksel ve Fizyolojik Prpfilleri,* H.Ü. Spor Bilimleri Dergisi Cilt:8 Sayı:1 Ankara; ss 43, 49

ŞENEL, Ö., ATALAY, N., ÇOLAKOĞLU, F.F., 1998, *Türk Milli Badminton Takımının Antropometrik, Vücut Kompozisyonu ve Bazı Performans Özellikleri, G.Ü. Beden* Eğitimi ve Spor Bilimleri Dergisi, Cilt:3, Sayı: 2, Ankara; ss 15- 20.

TAMER, K., 2000, *Sporda Fiziksel-Fizyolojik Performansın Ölçülmesi ve Değerlendirilmesi. Gelistirilmiş* 2. Baskı, Bağırgan Yayınevi Kültür Matbaası, Ankara ; ss 138.

TEL, M., 1996, *Türk Taekwondo Milli Takım Sporcularının Seçilen Bazı Fiziksel ve Fizyolojik Özelliklerinin Analizi*, Fırat Üniversitesi Sağlık Bilimleri Enstitüsü, Yüksek Lisans Tezi, Elazığ; ss 51- 52.

UĞRAŞ, A., ÖZKAN, H., SAVAS, S.,2002, *Bilkent Üniversitesi Futbol Takımının 10 Haftalık Ön Hazırlık Sonrasındaki Fiziksel ve Fizyolojik Karakteristikleri,* Gazi Eğitim Fakültesi Dergisi, Cilt 22, Sayı;1, Ankara.

YARDIMCI, M., 1997, *Değişik Sportif Oyun Branşlarıyla Aktif Olarak Uğrasan Sporcuların Fiziksel ve Fizyolojik Performans Parametrelerinin Karşılaştırılması,* Gazi Üniversitesi, Sağlık Bilimleri Enstitüsü, Beden Eğitimi ve Spor Anabilim Dalı, Ankara.

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INVESTIGATING MOTORIC IMPROVEMENT OF ADOLESCENT FEMALE TAEKWONDO ATHLETES

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ABSTRACT

Purpose. In the examination, it was purposed to examine physical and motor developments of adolescents female taekwondo athletes which were training regularly.

Methods. At this study 10-13 aged, 87 female Taekwondo athletes were participated voluntarily. Participants' level, age, height, kilo, body mass index (BMI), competition weight, band, vertical jump, speed, grip strength of right hand, grip strength of left hand, leg force, maximal oxygen consumption (Maximum VO2), balance duration, balance point, reaction time, body fat percentage (BF%), anaerobic endurance, hip flexion, hip extension, hip internal rotation, hip external rotation, knee flexion, knee extension parameters of the volunteer sportsmen were measured in the examination.

For statistical analysis, averages of groups and their standard deviations were calculated by Independent't' and One Way Enova tests that were performed for comparison of groups.

Results. As a result of comparison according to athletes' increasing age factor, hip extantion, knee flexion parameters were found significantly different ($p< 0.05$) Athletes' BMI, hip flexion and knee extantion parameters were found significantly different ($p<0,01$). Athletes' level, height, weight, competitions weight, band category, vertical jump, speed, right hand grip strength, left hand grip strength, leg strength, max. VO2, right-hand sound Reaction Time(RT), RT light right-handed, left-hand sound RT, RT left hand light, choose light RT, RT footstep, foot lights RT, BF%, anaerobic endurance, hip internal rotation, hip external rotation, parameters were found significant ($p <0.001$). Althought differences between age groups showed a linear variability about force and RT parametres, there was not a linear variability abour motor skills and ability of athletes.

Conclusions. It was seen that athletes had different motor and physical skill improvement at different age and level during adolescent period. While it was seen that age factor had an important effect on maximal produced values, it hadn't and important effect on relative produced values

KEY WORDS: Adolescent, Taekwondo, Motor feature, Physical feature.

INTRODUCTION

The physical fitness levels including physical and motor characteristics of children Taekwondo athletes may significantly improve in their adolescence period. This development seems important since it will provide a basis for their future performance.

The study aims to determine the physical and motor characteristics of children that will be future Taekwondo champions and to analyze development levels of mentioned skills against aging factor.

METHODS

87 women Taekwondo athletes ranging in ages between 10 and 13 who do training on a regular basis participated in the study voluntarily.

Age; The ages of volunteers on their Republic of Turkey ID cards were recorded.

Tests performed:

Height; measured with a sliding calliper (Holtain, UK).

Body weight; measured with a weighing machine (Angel) sensitive up to 20 grams with barefoot and only wearing shorts.

Body mass index; obtained through dividing the parameters of body weight into the square of height parameters.

Belt levels; obtained through the official website of the Taekwondo Federation of Turkey with record number of athletes. The belt and gup levels were recorded as follows: 10th gup-white belt, 9th gup/white-yellow belt, 8th gup/yellow belt, 7th gup/yellow-green belt, 6th gup/green, 5th gup/ green-blue, 4th gup/blue, 3rd gup/blue - red, 2nd gup/red, 1st gup/red-black.

Vertical jump test; the device called Jumping Takei Physical Fitness Test was used for vertical jump test. The vertical jump heights of the volunteers were measured and recorded (K.Tamer 2000).

30 m Acceleration; Running time of the distance by the subjects were measured in a standard 50 m indoor running track, with a photocell timer established between 5 - 35 m and the best of three trials was recorded by applying 5 min rest intervals.

Hand Grip Strength Test; hand grip strength was measured with Takkei hand grip dynamometer (Tamer 2000).

Leg strength; Measurement was conducted with Takkei back and lift dynamometer (K.Tamer 2000).

Maximal Oxygen Consumption; max VO_2 , 20 m shuttle run test was used (K.Tamer 2000).

Filamingo balance test; To measure the balance of the volunteers, subjects tried to keep balance as long as possible standing on the balance beam on their preferred leg.

Reaction time; measured with reaction time measurement section of Bosco's Newtest 2000 battery. Volunteer groups visual basic (right and left hand with right foot) RT, auditory basic (right and left hand with right foot) RT and visual-choice RT (hands) were measured (K.Tamer 2000).

Calculation of body fat in percent (%); Subcutaneous fat thickness measurements were made with a Skinfold device (Tamer 2000). Logx = (biceps + triceps + sub-scapular + sacroiliac) % fat = (4.95 / D -4.5) * 100

Anaerobic endurance; as measuring battery**,** "Hexagonal Obstacle Test" was used (Kibler 1990).

Hip flexion, hip extension, hip internal rotation, external rotation of the hip, knee flexion, knee extensor; measurements were done with goniometer (Sevim 1995).

Contestant Level; measured in order to determine if volunteers have participated in competitions

Competition Ranking; used to determine ranked and unranked athletes participating in 2009 Taekwondo Championship of Turkey.

Data analysis; **the mean and standard deviations of the groups were calculated. For more than two independent groups to compare the One Way Anova test were applied.**

RESULTS

Table 1 Comparison of some physical and motor characteristics of the athletes between the age groups

Variables	Age Groups	N	X ± Ss	F	p
Contestant Level (count)	10,00	24	1,33 ± ,48[a]	10,819	**,000***
	11,00	18	1,00 ± ,00[b]		
	12,00	22	1,00 ± ,00[b]		
	13,00	23	1,52 ± ,51[a]		
Competition Ranking Level (count)	10,00	24	,25 ± ,44[a]	3,514	**,019***
	11,00	18	,50 ± ,51[ab]		
	12,00	22	,68 ± ,48[b]		
	13,00	23	,35 ± ,49[ab]		
Belt Level (gıp)	10,00	24	3,00 ± 1,50[a]	9,165	**,000***
	11,00	18	4,83 ± ,71[b]		
	12,00	22	4,41 ± 1,18[b]		
	13,00	23	2,91 ± 2,04[ac]		
Height (m)	10,00	24	1,40 ± ,09[a]	25,693	**,000***
	11,00	18	1,47 ± ,05[ab]		
	12,00	22	1,53 ± ,11[b]		
	13,00	23	1,61 ± ,05[c]		
Weight (kg)	10,00	24	36,23 ± 12,24[a]	12,484	**,000***
	11,00	18	35,84 ± 1,48[a]		
	12,00	22	43,55 ± 10,33[a]		
	13,00	23	54,24 ± 15,38[b]		
Competition Weight (kg)	10,00	24	36,92 ± 11,68[a]	10,991	**,000***
	11,00	18	34,94 ± 2,18[a]		
	12,00	22	44,54 ± 11,71[b]		
	13,00	23	50,04 ± 9,09[b]		
Body Mass Indeks (kg / m^2)	10,00	24	17,94 ± 4,13[ab]	4,444	**,006**
	11,00	18	16,67 ± 1,45[a]		
	12,00	22	18,44 ± 2,62[ab]		
	13,00	23	20,77 ± 5,15[b]		
Body Fat Percentage (%)	10,00	24	12,22 ± 7,15[ab]	6,803	**,000***
	11,00	18	8,14 ± 1,55[a]		
	12,00	22	12,26 ± 4,40[ab]		
	13,00	23	15,66 ± 5,65[b]		
Right Hand Grip Strength (kg)	10,00	24	9,83 ± 3,40[a]	27,222	**,000***
	11,00	18	12,96 ± 2,65[ab]		
	12,00	22	15,84 ± 4,82[b]		
	13,00	23	20,00 ± 4,51[c]		
Lleft Hand Grip Strength (kg)	10,00	24	8,38 ± 2,51[a]	28,787	**,000***
	11,00	18	11,20 ± 1,20[a]		

	12,00	22	15,80 ± 5,28[c]		
	13,00	23	18,45 ± 5,19[c]		
Leg Strength (kg)	10,00	24	25,42 ± 3,97[a]		
	11,00	18	32,94 ± 6,91[b]	27,907	**,000*** **
	12,00	22	42,14 ± 10,72[c]		
	13,00	23	44,83 ± 9,13[c]		
Balance Time (sn)	10,00	24	58,22 ± 8,72[a]		
	11,00	18	49,50 ± 17,53[ab]	3,081	**,032***
	12,00	22	43,93 ± 19,92[b]		
	13,00	23	52,40 ± 17,21[ab]		
Balance Score (score)	10,00	24	1,87 ± 3,33[ab]		
	11,00	18	3,78 ± 4,67[a]	2,736	**,049***
	12,00	22	1,82 ± 2,75[ab]		
	13,00	23	,87 ± 2,12[b]		

*P<0,05 **p<0,01 ***p<0,001 **abc:** the differences in abc letters, explain the differences between the groups.

As a result of comparison between groups, Competition Ranking, balance time and score parameters were significantly different (p <0.05). In BMI parameters at p <0.01 level, in Contestant Level, belt level, height, weight, competition weight, BF %, right and left hand grip strength and leg power parameters significant differences were found at p <0.001 level.

Table 2 Comparison results of motor characteristics of athletes between the age groups

Variables	**Age groups**	**N**	**X ± Ss**	**F**	**p**
Vertical Jump (cm)	10,00	24	23,42 ± 6,41[a]		
	11,00	18	34,33 ± 3,25[b]	44,665	**,000*** **
	12,00	22	33,27 ± 4,62[b]		
	13,00	23	39,13 ± 3,84[c]		
Speed 30 m (sn)	10,00	24	6,73 ± ,83[a]		
	11,00	18	5,67 ± ,69[b]	11,946	**,000*** **
	12,00	22	6,10 ± 45[b]		
	13,00	23	5,61 ± ,80[b]		
Maximal Oxygen	10,00	24	31,85 ± 2,28[a]		
Consumption (ml/kg/dk)	11,00	18	35,86 ± 1,64[b]	38,302	**,000*** **
	12,00	22	38,80 ± 2,29[c]		
	13,00	23	39,85 ± 4,13[c]		
Anaerobic Endurance (sn)	10,00	24	16,65 ± 3,20[a]		
	11,00	18	11,74 ± 2,34[b]	12,963	**,000*** **
	12,00	22	14,21 ± 2,56[c]		
	13,00	23	15,05 ± 1,92[ac]		
Agility Error Count (count)	10,00	24	4,29 ± 3,44[a]		
	11,00	18	,89 ± ,90[b]	11,627	**,000*** **
	12,00	22	1,50 ± 1,06[b]		
	13,00	23	1,13 ± 2,09[ab]		
Quick jumps	10,00	24	27,87 ± 8,01[ab]		
(count)	11,00	18	23,94 ± 1,89[a]	6,134	**,001*** **
	12,00	22	28,36 ± 6,67[ab]		
	13,00	23	32,43 ± 6,24[b]		
hip flexion (º)	10,00	24	122,04 ± 13,75[ab]		
	11,00	18	117,22 ± 18,88[a]	4,199	**,008** **
	12,00	22	125,00 ± 9,51[ab]		
	13,00	23	134,13 ± 20,09[b]		
Hip Extension (º)	10,00	24	25,92 ± 11,86[a]		
	11,00	18	28,89 ± 10,37[a]	,992	,401
	12,00	22	25,00 ± 11,95[a]		
	13,00	23	23,04 ± 9,14[a]		
Internal Hip Rotation (º)	10,00	24	29,04 ± 6,01[a]		
	11,00	18	33,61 ± 4,13[a]	9,558	**,000*** **
	12,00	22	34,77 ± 9,19[a]		

	13,00	23	21,74 ± 13,11[b]		
External Hip Rotation (º)	10,00	24	25,92 ± 3,66[a]		
	11,00	18	28,89 ± 5,30[a]	8,837	**,000*** **
	12,00	22	34,54 ± 7,22[b]		
	13,00	23	31,09 ± 6,56[b]		
Knee Flexion (º)	10,00	24	137,21 ± 40,80[a]		
	11,00	18	135,56 ± 4,50[a]	,782	,507
	12,00	22	127,73 ± 16,01[a]		
	13,00	23	136,74 ± 10,93[a]		
Knee Extension (º)	10,00	24	184,54 ± 5,03[ab]		
	11,00	18	185,00 ± 6,18[ab]		**,007** **
	12,00	22	181,87 ± 5,13[a]	4,357	
	13,00	23	187,39 ± 4,23[b]		

*P<0,05 **p<0,01 ***p<0,001 **abc:** the differences in abc letters, explain the differences between the groups.

In hip extension and knee flexion parameters of the groups, no significant differences were found (p> 0.05). In the number of quick jumps, hip flexion and knee extension parameters significant differences were found at p <0.01 level, but in vertical jump, speed, max. VO_2, anaerobic endurance, agility error count, internal and external hip rotation parameters significant differences were found at p <0.001 level.

Table 3 Comparison results of reaction time values of athletes between the age groups

Variables	**Age Groups**	**N**	**X ± Ss**	**F**	**p**
Right Hand Sound Reaction Time (ms)	10,00	24	299,83 ± 41,04[a]		
	11,00	18	247,56 ± 16,22[b]	35,141	**,000*** **
	12,00	22	224,77 ± 34,46[b c]		
	13,00	23	217,23 ± 20,34[c]		
Right Hand Light Reaction Time (ms)	10,00	24	397,50 ± 85,13[a]		
	11,00	18	305,75 ± 33,33[b]	22,332	**,000*** **
	12,00	22	279,94 ± 48,03[b]		
	13,00	23	291,85 ± 26,39[b]		
Left Hand Sound Reaction Time (ms)	10,00	24	315,21 ± 35,45[a]		
	11,00	18	276,92 ± 31,60[b]	42,518	**,000*** **
	12,00	22	234,45 ± 29,57[c]		
	13,00	23	232,39 ± 16,62[c]		
Left Hand Light Reaction Time (ms)	10,00	24	432,90 ± 68,38[a]		
	11,00	18	317,82 ± 55,84[b]	37,652	**,000*** **
	12,00	22	300,91 ± 49,54[b]		
	13,00	23	292,84 ± 19,97[b]		
Selective Light	10,00	24	428,93 ± 71,78[a]		
Reaction Time (ms)	11,00	18	321,12 ± 23,32[b]	29,562	**,000*** **
	12,00	22	310,22 ± 33,41[b]		
	13,00	23	345,72 ± 39,34[b]		
Foot Sound Reaction Time (ms)	10,00	24	374,62 ± 42,46[a]		
	11,00	18	342,05 ± 28,05[b]	44,439	**,000*** **
	12,00	22	285,10 ± 34,12[c]		
	13,00	23	286,43 ± 12,36[c]		
Leg Light Reaction Time (ms)	10,00	24	444,19 ± 80,40[a]		
	11,00	18	391,92 ± 25,42[b]	28,500	**,000*** **
	12,00	22	323,76 ± 43,51[c]		
	13,00	23	329,47 ± 29,37[c]		

***p<0,001 **abc:** the differences in abc letters, explain the differences between the groups.

In the right-hand sound RT, right-hand light RT, the left hand sound RT, the left-hand light RT, selective light RT, foot sound RT and leg light RT parameters significant differences were found at p <0.001 level.

DISCUSSION AND CONCLUSIONS

The effect of long term Taekwondo (a martial art featuring defence and combat characteristics) training over physical and physiological characteristics of athletes, can be evaluated through the tests and measurements performed. 87 women Taekwondo athletes ranging in ages between 10 and 13 participated in the study voluntarily. BF % was found as 12.29 %, between 11 years and 13 years of age less than 11 level, p>0,01 significant differences were found, among other age groups, p>0,05, no significant differences were found in level (A.R.Miguel and colleagues 1998), on elite men's taekwondo developers (n = 13, age = 22.3 ± 7.1), they have done research on body fat percentage by 9.6%, 11.6% ± 4.1 for boxers has indicated. (Akgün 1986) normal body fat percentage in male athletes is between 15-20% of the population are reported. (Turgut and colleagues 1998) athletes in middle and long distance runners VYO was 12.1%, A Turgut and col. 1998) VYO group of football players was 13.5%, (Cimen and colleagues 1997) Turkish youth in the national table tennis players body fat was found as 10.4. (Söğüt and colleagues 2004) the study has been made in different categories of ages 11, 12 and 14 years young men tennis players the body fat percentage, p>0,05 found significant difference in levels. (H.Puerta and col. 2003), Argentine elite tennis player's body composition profiles to determine the 189 elite tennis players have done the study, 14 younger than 27 men, fat% to 10.3 ± 1.6 to identify and l p>0,05 level, a significant difference was found. Results obtained from this study shows parallelism with our literature.When vertical jump height values examined, it is found that vertical jump values of 10 and 11 age groups pose higher averages than those of 12 and 13 age groups. When other studies of similar nature are examined, the vertical jump values of the same age group appear to be different from each other. For example, the results that Aydos and colleagues found are as follows: ± 39 6.51 cm in those doing sport, 27.93 ± 5.43 cm in those doing no physical exercise (Aydos and Kürkçü 1997). Zorba and colleagues found these results in their study comparing people leading sedentary life style and actively doing sport: in football players, 30.58 ±5.54cm, in basketball players, 34.6 ± 7.76cm , in sedentary, 23.4 ± 2.75 cm (E.Zorba et al1. 996). Sevim and colleagues found the vertical jump values for girl basketball players as 31.7 ± 5.20 cm and in the control group, as 30.0 ± 2.51 cm (Sevim et al 1992). Muniroglu and colleagues, in the study where they compared swimmers belonging the 12-14 age groups in Ankara, they found the vertical jump values of short-distance swimmers as 34.37±3.50 cm and long-distance swimmers as 28.47 ± 0.92 cm (S. Muniroğlu et al 2000). Senel and colleagues found these results in Junior National Badminton Team: (age 16 ± 1.89) 36.83 ± 3.86 cm (O. Şenel et al 1998). Cimen and colleagues found these results in Junior National Table Tennis Team: (age 16.9 ± 1.67) 37.5 ± 6.27 cm (O.Çimen et al 1997). The results achieved in this study consistently show parallelism with the values in the literature. Differences between this study and other similar researches are considered to result from independent training programmes particularly applied for the type of sport. Moreover, these results are thought to result from the lack of the force produced against a rapid increase in height and body weight in adolescence. The rise in the height and weight values of the volunteers participated in the study, which depends on the age factor, seems to support the results achieved here. After all, it is quite important for adolescent athletes to protect the relative strength values they need to produce against increasing body weight, particularly for individual athletes.

Max. 36.55 VO2 ml / kg / min was found, 10 years with a 11.12, and 13 aged 10 years lower levels, p>0,01 11 years to 12 and 13 years between the age of 11, lower p>0,05 level, significant differences were found, 12 to 13 age group between level p>0,05 significantly differences weren' t found. (I. Cicioğlu 1995) with Stars basketball player in the Max VO2 47.11 ml / kg / min, (E. Erol 1992), with 16-18 year-old male basketball player in the Max VO2 value of 58.9 ml / kg / min as they find value in this study, the values are high. This difference between the studies of the subject is thought to result from differences in the age group. (Imamura 1999), after Karate training to investigate the use of oxygen in the Fukuoka University Karate team made a research on the seven athletes. After the tests, MaxVO2, was 47.4 ml.kg.dk. (O.Faude and col 2007) in the measurements of 12 national badminton (eight women and four men) VO2max values for women 50.3 ml / kg / min., Men and 61.8 ml / kg / min. was found. In this study, it has been emphasized that well aerobic capacity is necessary for a rapid recovery.The analysis of the speed values between groups showed that the speed values of children in rapid growth period rise as they grow older. The first of two significant findings in speed parameters is the speed values of age group 10 athletes are not at a level to compete against other age groups. The second finding is the speed values of athletes in age group 13 enter into a rapid development period. A quick research on the other studies in the literature reveals that acceleration improvement curves analyzed in connection with training sessions become more prominent. These include tests by Ugras et al where 18 amateur soccer players tested before 10-week training period in 30 m sprints and they found their average 2.75 ± 0.08 sec, post-training test results were 2.69 ± 0.08 sec showing significant decreases (A. Uğraş et al 2002). Eler, in 1996, clocked the average speed of 15 top-level handball players in a 30 m sprint before and after the training. While pre-training results were 4.36 ± 0.12 sec, after the 12 weeks, post-training 30 m speed values were recorded as 4.30 ± 0.11 showing a significant improvement (S. Eler 1996). Güzel et all recorded 30 m sprint values of 11 soccer

and 9 volleyball athletes. While the average of volleyball players recorded as 5.87 ± 0.34 seconds, football players' values were recorded as 5:06 ± 0.20 sec. So, they found significant differences (N.A.Güzel et al 2007). It is known that various sports use shock drills in order to improve acceleration and speed. Acceleration can be defined as capability of creating the maximum force that a muscle can generate by absolute dynamic energy as soon as possible (T. Bompa 1997). The results achieved in this study consistently show parallelism with the values in the literature. When force values between groups examined, it is observed that strength values of children improve as they age during the period of rapid growth. However, these strength increases observed in adolescents seem more pronounced in the lower extremity. Linear increase occurred in maximal strength may be considered as development of maximal forces adapted to the period of rapid growth. Moreover, it may be due to relatively more intense use of lower extremity in Taekwondo comparing to the use of upper extremity. Other studies examined in the literature reach similar conclusions. For example, Taekwondo national team candidate athletes right-hand grip strength averaged at 47 ±305.84kg Left-hand grip 46.57 ±5.16kg, leg strength mean value, 151.46 ±25.31kg respectively (M.Tel 1996). Seliger and colleagues found right-hand grip strength in adolescent boys as 35.8 ± 8.6 kg, left-hand strength 33.6 ± 7.9 kg (Seliger et al 1991). Cimen and colleagues found these results in junior national table tennis players: (age 16.4 ± 1.07) 41.7 ± 5.38 kg right-hand grip, left-hand grip 37.4 ± 1.93 kg., leg strength 112.0 ± 2.11 kg (Çimen et al 1997). Senel and colleagues (1998) identified the values of junior national badminton team players as follows: (age 17 ± 1, 85) right-hand grip strength 39.15 ± 7.75 kg., left-hand grip strength 34, 53 ± 7.16 kg (Şenel et al 1998). The upper extremity strength values found in our study appear to be either lower than the results found in other studies conducted in Turkey or similar. That the strength values of Taekwondo athletes are found to be more or less same with other sports reveal Taekwondo athletes do not need more strength but similar values.When reaction times between groups examined, it is observed that every group significantly differs from each other. Significant differences between age groups include the observation of significantly lower reaction times of the 10 year old athlete group. The development occurred in reaction times results from Taekwondo training sessions focusing on speed based drills. Besides, implementation of the specific structure of the quick strength training and the training of a similar feature occur due to the development of nerve-muscle coordination in reaction time are affected positively. The reaction times in different sports-related values were examined in the literature, studies and research findings among themselves and with variable results have been achieved. For example, Senel and colleagues, in their study of male junior national badminton athletes, found the following results (age 17.1 ± 1.85), right-hand reaction time 135 ± 15.1 sec light, the right-hand visual reaction time 118.7 ± 13.5 sec. (O. Şenel et al 1998). (Senel and colleagues 1997), in their study in male cyclists (age 24 ± 2.24), found the following results visual reaction time 0.17 ± 0.03 for the right hand, right hand for auditory reaction time as 0.18 ± 0.01 (O. Şenel et al 1998). Achieved values were found to be lower than those provided in the literature. This may be resulting from the higher ages and fitness levels of the athletes participated in the literature studies. Anaerobic endurance values were found to differ significantly between groups. The differences between anaerobic endurance values for children in the period of rapid development are also claimed by the literature. However, it is surprising that anaerobic endurance values of age group 10 are significantly higher than the values of other groups but when rapid weight gain in the rapid growth period and consequent declining relative value is taken into account, the results are not meaningless. The significant differences between the groups doing regular sport and sedentary groups in terms of anaerobic endurance values, not only in this study but also in the literature, enable us to draw promising conclusions (N.A.Güzel et al 2007). The researches conducted also highlight that there is a significant difference between the groups performing Taekwondo training and the untrained group (Borlu 2005). Anaerobic power and endurance average value of the national team candidate athletes is recorded as 133.81 ± 9.72. These values are significantly higher than average values of the sedentary groups. But they provide similarity with the values obtained in certain sports requiring heaviness and intense effort (M.Tel 1996). In the anaerobic power tests conducted by Borlu in 2005 in the different age groups, the average values of juniors recorded as 49.26 ± 7.02 (A.Borlu 2005). In the anaerobic power tests conducted by Yardimci in 1997 on basketball, volleyball and football players, values recorded as follows: the average basketball player at 133.04 ± 10.55, volleyball players as 135.15 ± 14.15 and soccer players as 102.75 ± 10.55. It is observed that there are significant differences between different branches (M. Yardımcı 1997). It can be concluded that this difference occurs because of the positive effects of regular training on the anaerobic power and endurance of athletes.This group is in adolescence period in which rapid physical growth and maturation occur. This period is characterized by rapid physical growth and intense hormone activities. Motor skills of boys and girls are age-specific and they keep developing from 7 years to 17 years of age (C. Açıkada and E.Ergen 1990). During this period, the gender gap occurs in a more specific way. Development in girls peaks at the age of 14. But this development will continue from the age of 3 until 16-17. Motor development rate in males tend to rise at the ages of 13-14 (K. Özer 2001). In conclusion, the regular practice of taekwondo training provides a considerable

contribution to an adolescent's physical development and improvement of motor skills and motor performance. However, rapid development of these values should not be handled regardless of natural growth criteria. So we can conclude that regular training has a relatively more impact over maximal values rather than relative values.

REFERENCES

AÇIKADA, C., ERGEN, E., 1990, *Bilim ve Spor, Büro – Tek Ofset Matbaacılık,* Ankara.

AKGÜN, N., (1986), *Egzersiz Fizyolojisi*, 2. *Baskı, Gökçe* Ofset Matbaacılık, Ankara.

AYDOS, L., KÜRKÇÜ, R., 1997, *13-18 Yaş Grubu Spor Yapan ve Yapmayan Orta Öğrenim Gençliğinin Fiziksel ve Fizyolojik Özelliklerinin Karşılaştırılması*, G.Ü. Beden Eğitimi ve Spor Bilimleri Dergisi, Cilt:2, Sayı: 2, Ankara; ss 31-38.

BOMPA, T.O., 1997, *Power Training for Sport*. Revised nd ed. Newyork: Mosaic Pres.

BORLU, A., 2005, *Değişik Kategorilerdeki Bayan Basketbolcuların Fiziksel ve FizyolojikParametrelerinin İncelenmesi*, Gazi Üniversitesi, Sağlık Bilimleri Enstitüsü, Beden Eğitimi ve Spor Anabilim Dalı, Yüksek Lisans Tezi, Ankara.

CICIOĞLU, İ., 1995, *Piliometrik Antrenmanın 14-15 Yaş Grubu Basketbolcuların Dikey Sıçraması ve Bazı Fiziksel ve Fizyolojik Parametreleri Üzerine Etkileri,* Gazi Üniversitesi Sağlık Bilimleri Enstitüsü Yayınlanmamış Yüksek Lisans Tezi, Ankara.

ÇIMEN, O., CICIOĞLU, İ., GÜNAY, M., 1997, *Erkek ve Bayan Türk Genç Milli Masa Tenisçilerin Fiziksel ve Fizyolojik Profilleri,* G.Ü. Beden Eğitimi ve Spor Bilimleri Dergisi, Cilt:2, Sayı: 4, Ankara; ss 7- 12

ELER, S., 1996, *Bir Sezonluk Antrenman Periyotlaması Boyunca Üst Düzey Erkek Hentbolcülerin Bazı Motorik ve Fizyolojik Parametrelerinin İncelenmesi,* Gazi Üniversitesi, Sağlık Bilimleri Enstitüsü, Beden Eğitimi ve Spor Anabilim Dalı, Yüksek Lisans Tezi, Ankara.

EROL, E., 1992, *Çabuk Kuvvet Çalışmalarının 16-18 Yaş Grubu Genç Basketbolcuların Performansı Üzerine Etkisini Deneysel Olarak İncelenmes,.* Yayınlanmamış Yükseklisans Tezi, Gazi Üniversitesi Sağlık Bilimleri Enstitüsü Beden Eğitimi ve Spor Ana Bilim Dalı, Ankara.

FAUDE, O., MEYER, T., ROSENBERGER, F., FRİES, M., HUBER, G., KİNDERMANN, W., 2007, *"Physiological Characteristics of Badminton Match Play", European j.* Applied Physiology. 100:4, 479-485.

GÜZEL, N.A., ÇOLAKOĞLU, F., KARACAN, S., ÖZ, E., AKYÜZ, M., ASLANOĞLU, E., 2007, *13-16 Yaş Grubu Kız Voleybol ve Futbolcuların Bazı Fiziksel Fizyolojik* ve Antropometrik Özelliklerinin Karşılaştırılması, Ankara.

IMAMURA, H., YOSHIMURA, Y., SEIJI, N., ANTHONY, T.N., CHIHIRO, N., TOMOKO, S., 1999, *Oxygen uptake, Heart Rate and Blood Lactate Responses During and Following Karate Training*, Medicine and Science in Sports and Exercise, 31, 2, 342-347.

KIBLER, W.B., 1990, *The Sport Preparticipation Fitness Examination,* Human Kinetics Books.

MIGUEL, A.R., ANITA, R. M.B., WALTER, R.F., (1998), *Health Related Physical Fitness Characteristics of Elite Puerto Rican Athlets.* Journal of Strength and Conditioning Research, 12, 3, 199-203.

MÜNIROĞLU, S., ŞEN, P., TANILKAN, K., 2000, *Ankara'daki 12-14 yaş grubu kız erkek Uzun ve Kısa Mesafe Yüzücülerin Dikey Sıçrama Derecelerinin İncelenmesi, M.Ü.* Spor Araştırmaları Dergisi, Cilt:4, Sayı: 1, İstanbul; ss 21-32.

ÖZER, K., 2001, *Fiziksel Uygunluk, Nobel Yayın Dağıtım,* Ankara; ss 153- 154

PUERTA, H., MAQUİRRİAİN, J., AQUİLİNO, G., CARDEY, M., GUİLLONE, C., DİAZ, I., LENTİNİ, N., PAPİNİ, H.R., 2003, *Body Composition Profile of Argentine Tennis Players. Erişim:* [http: //www.stms.nl/april2002/artikel11.html]. Date of access: 09.12.2003

SELIGER et all., 1991, *Çekoslavakya'da Somatik Fonksiyonel Motor Özelliklerin Ortalama Değerleri, Uluslararası Biyoloji Programı.* Çev: Turnagöl, H. Antrenman Bilgisi Sempozyumu, H.Ü. Spor Bilimleri Ve Teknolojisi Yüksekokulu Yayını Sayfa: 157 Ankara.

SEVİM, Y., SAVAŞ, S., 1992, *14-16 Yaş Grubu Kız Basketbolcularda Dairesel çabuk Kuvvet Metodunun* Genel Kuvvet Gelişimine Etkileri, H.Ü. Spor Bilimleri Dergisi, Cilt:3, Sayı: 4, Ankara; ss 40- 47.

SEVİM, Y., 1995, *Antrenman Bilgisi,* Gazi Büro Kitabevi, Özkan Matbaacılık, Ankara.

SÖĞÜT, M., MÜNIROĞLU, R.S., DELICEOĞLU, G., 2004, *Investıgatıon of Anthropometrıc and Somatotype Characterıstıcs of Junıor Male Tennıs Players In Dıfferent Categorıes.* Sportmeters Journal of Physical Education and Sport, II (4) 155-162.

ŞENEL, Ö., ATALAY, N., ÇOLAKOĞLU, F.F., 1997, *Türk Milli Bisikletçilerin Fiziksel ve Fizyolojik Prpfilleri,* H.Ü. Spor Bilimleri Dergisi Cilt:8 Sayı:1 Ankara; ss 43, 49.

ŞENEL, Ö., ATALAY, N., ÇOLAKOĞLU, F.F., 1998, *Türk Milli Badminton Takımının Antropometrik, Vücut Kompozisyonu ve Bazı Performans Özellikleri,* G.Ü. Beden Eğitimi ve

Spor Bilimleri Dergisi, Cilt:3, Sayı: 2, Ankara ; ss 15- 20.

TAMER, K., 2000, *Sporda Fiziksel-Fizyolojik Performansın Ölçülmesi ve Değerlendirilmesi. Gelistirilmiş 2. Baskı,* Bağırgan Yayınevi Kültür Matbaası, Ankara; ss 138.

TEL, M., 1996, *Türk Taekwondo Milli Takım Sporcularının Seçilen Bazı Fiziksel ve Fizyolojik Özelliklerinin Analizi, Fırat Üniversitesi Sağlık Bilimleri Enstitüsü,* Yüksek Lisans Tezi, Elazığ; ss 51- 52.

TURGUT, A., ÜNAL, N., KÖSE, N., ÖZDEN, H., GÖKTÜRK, E., SEBER, S., DEMİRÜSTÜ, C., 1989, *Spor Yapan ve Yapmayan Genç Bayanlarda Vücut Yağ Oranları ve Yağ Dağılımları*, Spor Hekimliği Dergisi, 33, 67-75, İzmir.

UĞRAŞ, A., ÖZKAN, H., SAVAS, S., 2002, *Bilkent Üniversitesi Futbol Takımının 10 Haftalık Ön Hazırlık Sonrasındaki Fiziksel ve Fizyolojik Karakteristikleri, Gazi Eğitim Fakültesi Dergisi,* Cilt 22, Sayı;1, Ankara.

YARDIMCI, M., 1997, *Değişik Sportif Oyun Branşlarıyla Aktif Olarak Uğrasan Sporcuların Fiziksel ve Fizyolojik Performans Parametrelerinin Karşılaştırılması, Gazi Üniversitesi,* Sağlık Bilimleri Enstitüsü, Beden Eğitimi ve Spor Anabilim Dalı, Ankara.

ZORBA, E., KALKAVAN, A., AĞAOĞLU, S., KARAKUŞ, S., ÇOLAK, H., 1996, *Farlı spor branşlarında bazı Fiziksel Uygunluk Değerlerinin Sedanter Grupla Karşılaştırılması,* G.Ü. Beden Eğitimi ve Spor Bilimleri Dergisi, Cilt:1, Sayı: 3, Ankara; ss 25- 35.

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Content

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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 chapters of the research paper will be written in Bold, **The diagrams and the tables** can be centered at the end of the paper. The accepted number of pages, including bibliography is of 6-8.

The paragraphs will have the dimensions of 1cm. (First Line indent 1cm, Hanging Indent 0cm, Left Indent 0cm). The borders of the page will be of 1,5cm up, down and right and 2,5cm left, and the **size of the page will be A4 (21cm x 29,7cm).**

The co-author is based on the substantial contribution to (a) creation and design or analysis and interpretation of the data, (b) creating the article's summary or the critical review of the article and (c) approval of the final version of the article in order for it to be published. The conditions (a), (b) and (c) must all be accomplished by each author. The general supervision of the research group is not enough to accomplish the condition of co-author. The members of the group that do not accomplish the condition of co-author can be mentioned, with their permission, at the section "Thanks".

The abstract and the key words

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:

For the experiment type paper	**For the essay type paper**
- the author (authors) of the research and the title of the paper; - the objective (objectives) of the research; - the procedures and methods of research (subjects, applied tests); - the results (main results); -discussions and conclusions (main discussions and conclusions); - key words (between 3 and 5 key words, which punctuates the interest areas of the article);	- the author (authors) of the research ant the title of the paper; - the object of the research; - the content of the research (short summary); - conclusions (main conclusion); - key words (between 3 and 5 key words, which punctuates the interest areas of the article);

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 succint title.

Table 1. Physical characteristics of the subjects

	Feminine subjects (n=21)	
Variables	M±DS	CV (%)
Body height (cm)	166,143±5,597	3,369
Body weight (kg)	61,524±8,364	13,595
IMC (kg/m^2)	22,338±3,282	14,692
Body fat percentage (%)	25,329±3,074	12,136
Fat mass (kg)	15,182±4,066	25,715

* significant correlated with IMC, r=0,875.

Established significance level at p<0,05.

IMC, body mass index; M, average; DS, standard deviation; CV, variability coefficient; n, number of subjects.

Tabelul 1. Caracteristicile fizice ale subiecților

	Subiecți de sex feminin (n = 21)	
Variabile	**M ± DS**	**CV(%)**
Înălțimea corporală (cm.)	166,143 ± 5,597	3,369
Greutatea corporală (kg.)	61,524 ± 8,364 *	13,595
IMC (kg/m^2)	22,338 ± 3,282	14,692
Procent de grăsime corporală (%)	25,329 ± 3,074	12,136
Masa grasă (kg.)	15,812 ± 4,066	25,715

* semnificativ corelat cu IMC, r=0,875.

Prag de semnificație stabilit la p<0,05.

IMC, indicele de masă corporală; M, media; DS, deviația standard; CV, coeficient de variabilitate; n, numărul de subiecți.

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 succint title, preceded by the unusual abbreviations used in the diagram or other observations.

Measurement units
Measuring the length, height, weight and volume must be expressed in metric units (meter-m, kilogram- kg, liter- l, second- s, or decimal multiples). The temperature must be measured in Celsius grades (ºC), and the arterial pressure in mmHg. Other measurement units must be expressed in the International Units System (SI).

Discussions
In the chapter Discussions the new and important aspects are emphasized, which result from the data processing. The data of other similar studies presented in the introduction chapter cannot repeat in detail. Also, the implications of the results found must be discussed, their limitations and the implications of these results, for the future studies. The observations found must be reported to other similar studies.

Conclusions
The conclusions must be reported directly to the hypotheses of the paper and derive directly from the chapter Discussions. The conclusions that are not fully backed-up by the data found or that are based on unjustified affirmations must be avoided. New hypotheses can be concluded or attach some recommendations, if the case be.

Thanks
In the section Thanks (when the case appears) there can appear:
- the contribution of the people that are not co-authors;
- the name and surname of the people that have contributed intellectually to the accomplishment of the paper (with their agreement), but that are not co-authors- scientific counselor, data collector etc.;
- the financial help and the material support, specifying the nature of the support;
- the technical help (in a separate paragraph called “Other contributions”);

Bibliography
Bibliography and text quoting
The bibliography must be arranged in alphabetical order, the unpublished papers being quoted, but that are registered for publishing. In the bibliography all the authors quoted in the text are written. In the text all the authors are written if there are 6 or less. If there are 7 or more authors, the first three authors are written, followed by “et al.” (it comes from the latin “et alia” which means “and others”). If in the bibliography there are at least 2 papers that have an identical author (authors) and the publishing year, in the text, but in the bibliography as well, immediately after the publishing year, a letter will be written (in alphabetical order), in order to distinguish the papers in the bibliography ((1998a), (1998b)). The name of the author (authors) must be followed by the initials of the surname.

In the text, the quotations will have the following structure:
a) for one and/or two authors
- at the end of the phrase (T.S. Keller, and A.L. Roy, 2002);
- in the phrase T.S. Keller and A.L. Roy (2002), T.T. Gomez, 2003 found significant differences of isometric force...
b) up to (including) 6 authors
- at the end of the phrase (T.S. Keller, A.L. Roy, Carpenter G, 2002)
- in the phrase “Also, (.S. Keller, A.L. Roy, 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);
- in the phrase “Also, T.S. Keller, A.L. Roy, G. Carpenter et al (2002) found significant differences of isometric force...”
Generally, for magazines, the bibliography will have the following structure:

NAME OF THE AUTHOR- AUTHORS (year of publication), *Title of the article*, Magazine, number of the volume (yearly number the number of the supplement part): number of pages.
a) standard magazine article
b) organization as an author
c) no author
d) volume with a supplement
e) number with supplement
f) volume with part
g) number with part
h) number without volume
i) no volume and number
j) pages in roman numbers
k) indicating the type of article if it is necessary

For **books** the bibliography will have the following structure:
a) personal author(s)
b) editor(s) as author(s)
c) organization as author or the one that publishes
d) chapter in a book
e) license degree paper, dissertation or PhD. Thesis.
RISTARU, M., 2005, *The influence of pliometry on the muscular development at the lower limbs level* [dissertation]. Constanta, The Faculty of Physical Education and Sport.

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For the **electronic materials,** the bibliography will have the following structure:
a) article in electronic format
b) computer program

Sending the manuscripts in electronic format
For the review of a research paper or a better organization of the research papers volume by the scientific board, the author (authors) will have to send a copy in electronic format (ASCII) in the format Word Microsoft Office. The papers in Romanian will be written with diacritical signs in the format Romanian (Legacy) of the computer keyboard. Also, the operating system used (Microsoft Windows XP, Microsoft Vista) and the processing program of the text (Microsoft Office XP, Microsoft Office 2003, Microsoft Office 2007) will be mentioned.

The evaluating/self-evaluating grid for the quality of the research paper by the reviewer/author(s)

The evaluating/self-evaluating grid for the quality of the research paper by the reviewer/author(s)		
1	The originality of the research theme	15 points
2	The quality of the research paper structure	5 points
3	The clarity and quality of the research hypotheses elaboration	10 points
4	The quality of the registration of the results and their presentation	10 points
5	The clarity and quality of the discussions directly linked to the results with reference to similar studies	10 points
6	The clarity and quality of the elaboration of the conclusions in accordance with the hypotheses of the paper	10 points
7	The applicability of the results found in the practical and scientific practice	10 points
8	The accuracy of the in text and bibliography quoting	10 points
9	The clarity and quality of the expression in the text	10 points
10	Strictly respecting the elaboration technical requirements	5 points
	Total	**100 points**

Based on these reasons, the article will receive from the reviewers' board a number of points. A number lower than 60 will lead to the rejection of the article, between 60 and 90 points the article will suffer certain changes from the point of view of the structure, expression in the text, etc. in order to receive the accept for publication, and over 90 points the article will receive the accept for publication, after small changes in the elaboration (if the case may be).

The review of the article will be objective, clear and strictly formulated, in accordance with the **technical and scientific request for the elaboration of the scientific papers**, without discrediting the author(s) of the article (manuscript).

The review process

Step 1

The article must be send in electronic format (or on any media format CD_ROM, etc), in english (Abstract in English), through electronic mail at the address contact@analefefs.ro, 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.

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