# Hellenic Sports Medicine

# ΑΘΛΗΤΙΑΤΡΙΚΗ


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**ΑΘΛΗΤΙΑΤΡΙΚΗ**

**Περιοδική Έκδοση της Αθλητιατρικής Εταιρείας Ελλάδος (Α.Ε.Ε.)**

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**Acknowledgements:** These should be as brief as possible. Any grant that requires acknowledgement should be mentioned. The names of funding organizations should be written in full.

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***c) Chapter in a book:*** Phillips SJ, Whisnant JP. Hypertension and stroke. In: Leregh JH, Brenner BM, editors, Hypertension: pathophysiology, diagnosis, and management. 2nd ed. New York: Raven Press; 1995. p. 465-78.

***d) Conference/Congress proceedings:*** Tocitu D, editor Enzymatic of the adaptative processes in High-Performance Sport. Proceedings of the 12th Balkan Sports Medicine Congress, 6th International Congress of the Sports Medicine Association of Greece, 3rd Hellenic-Cyprus Sports Medicine Congress 2002 March 21-24; Thessaloniki, Greece.

***e) Dissertation:*** K.Natsis. Ultrastructural study of the skeletal muscle fibers after an experimental muscle atrophy [dissertation number 870]. Medical School, Aristotle University of Thessaloniki, 1993.

***F) Journal article in electronic format:*** Christodoulou A, Terzidis i, Natsis k, Gigis i, Pournaras j. Soleus accessorius, an anomalous muscle in a young athlete: case report and analysis of the literature. Br J Sports Med 2004;38(6):e-38

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**Figures:** Figures, illustrations, or halftones should be used when findings are best visually communicated. The use of photographs or equipment and experimental subjects should be avoided; good line drawings are more informative. Abbreviations used in the figure must be explained in the legend. Reference to the figure should be made in the text. Figures, illustrations or halftones must be sharp and high contrast. Uniform typographical setup (font style & size,

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Numbers one to nine should be referred fully written and up to ten arithmetically. Percentages should be referred always digitally, while a number in the beginning of a sentence should be fully written. Abbreviations should be written initially in parenthesis next to the full phrase.

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# HELLENIC SPORTS MEDICINE

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# Contents

# Examination of obesity degree in relation to physical skills on Elementary School pupils

Mavrovouniotis F., Arsenopoulou M., Argiriadou Eir.

**Abstract**

*The purpose of the present study was the investigation of obesity degree in relation to sport tests on Elementary School pupils. For this aim 271 pupils of the six grades of the primary school were examined (148 boys and 123 girls). Measurements of height, body mass, waist and hip perimeter were performed. Moreover, tests in long jump, vertical jump and trunk flexion were carried out. Body Mass Index was used for the evaluation of the degree of overweight and obesity, while waist perimeter was used for the evaluation of the degree of central obesity. From data statistical analysis it was found out high percentages of central obesity in all ages that fluctuated from 6.9% up to 38.9%. In addition, high percentages of overweight and obese children were observed, both boys (38.66%% and 13.31°%, respectively) and girls (39.96%% and 17.60°%, respectively). Important is the fact that overweight and obese children come significantly behind in the long jump ($p<0.001$) and vertical jump ($p<0.01$ and $p<0.001$) performance, against children of normal weight. This decreased physical robustness and muscle strength of overweight and obese children distinguishes inactivity and decreased participation in physical activities, as well as tendency for lower physical fitness. Consequently, obesity prevention in childhood is imposed, with ways mainly the increase of physical activity that involves inactivity reduction and television and videogames employment, but also the controlled diet, as the most effective strategy for obesity control.*

*Key words: central obesity, physical activity, diet.*

# Are there any distinct blood flow patterns in the thigh and the calf of athletes, healthy volunteers and patients with claudication at rest, during, and after exercise?

Angelides N., Konstandinou Ch., Costeas A. , Christofides N.

**Abstract**

*The purpose of this study was to investigate whether there are distinct patterns of flow in the thigh and calf of athletes, normal individuals and patients with peripheral arterial disease, under resting conditions, during walking and running on the treadmill, as well as during the post-exercise period. For this purpose simultaneous 99mTc clearance in the thigh and in the calf was used at rest, during and after exercise. The study was based on the principle that the clearance of the radioactive isotope was proportional to blood flow in the thigh and in the calf at any given time. All individuals rested before starting the test. Then, forty pCi of 99mTc diluted in 0.2 ml of saline were injected into the thickest part of the quadriceps and gastrocnemius muscles. Two light probes were strapped on the skin over the points of injections. These probes were connected to two isotope localization monitors, and the output from the detectors was recorded continuously on a pen recorder. Clearance curves were recorded for three minutes at rest. Then, all individuals walked on a horizontal treadmill at 4.5 Km per minute for three minutes or until claudication occurred. All normal volunteers, athletes and non-athletes, were also asked to run on the treadmill at 9 Km per minute for another three minutes. Clearance curves were obtained at rest and during exercise. Finally clearance curves*

*were recorded during the post-exercise resting period for ten minutes. The percentage clearance per minute (T) at any minute, was obtained from the following equation (1):*

$$T = f(t)-f(t+1) / f(t)+f(t+1) \times 200 \qquad \text{(equation 1)}$$

*where f(t) was the radioactivity measured at time t and f(t+1) was the radioactivity measured one minute latter. The radioactivity cleared during one minute was f(t)-f(t+1) while the mean radioactivity during the same minute was f(t)+f(t+1) / 2 and therefore the percentage radioactivity cleared per minute was given by equation 1. Athletes (sprinters), as well as non-athletes individuals with no sign of peripheral arterial disease and patients with claudication were included in the study. The results demonstrated that although muscle blood flow in the thigh and calf in normal individuals were comparable in athletes and non-athletes, the increase of flow was greater both in the thigh and in the calf of athletes during and after exercise, than in non-athletes individuals. The faster clearance of the radioactive isotope in the thigh and calf of athletes can only be explained if we take into consideration the well developed quadriceps and gastrocnemius muscles of these athletes. In patients with peripheral arterial occlusive disease the pattern of clearance during and after exercise is not the same. In limbs with proximal occlusion the result suggested that the blood flow pattern in the thigh and in the calf is the same as in normal limbs, but was "throttled" by the proximal occlusion so that blood flow was insufficient to permit normal hyperaemia In limbs with distal occlusion, the hyperaemia in the thigh was normal, but flow in the calf was diminished immediately after exercise when there was maximum vasodilatation in the muscle bed of this area, but later showed a delayed hyperaemia when the hyperaemia in the thigh subsided. The only conceivable explanation of the diminished flow in the calf immediately after exercise is a fall in pressure in the axial vessels distal to the occlusion. This in turn is the consequence of a similar fall in the pressure gradient across the collateral circulation. The calf is deprived and can only begin to receive blood when the hyperaemia in the thigh subsides. This then permits hyperaemia in the calf where maximum dilatation is still present. In conclusion, there are distinct patterns of changes in flow during and after exercise, in athletes, in non-athletes normal individuals and in patients with peripheral arterial disease, which can be determined by 99mTc muscle clearance. These changes are so characteristic that they can be used for research and for diagnostic purposes.*

*Key words: blood flow quadriceps gastrocnemius isotope clearance during exercise.*

# Body composition comparison between athletes, anorexia nervosa patients and recovered former anorexia nervosa patients, using D.E.X.A..

Grammatikopoulou M.G., Stewart A.D., Zakas A., Tzetzis G., Grammatikopoulos G.

**Abstract**

*The aim of this study was to assess total and regional body composition differences of female eating disorders patients and recovered eating disorders patients compared to athletes and a controls group.*

*Subjects formed 4 groups, 28 current anorexics, 32 recovered anorexics, 30 athletes and 30 controls, all Caucasian females. Dual-energy x-ray absorptiometry was used to examine total and regional body composition.*

*Results showed a similar percentage body composition for athletes and anorexics (p=1 for %lean, %fat, and %Bone Mineral Content). Athletes and anorexics also presented similar (p=1) % leg and torso fat whereas the RA group differed significantly for the same body regions, compared to the athletes (p<0.05). Controls had significantly different %torso fat compared to the patients and the athletes and different %leg fat compared to the*

*athletes only.*

*Anorexics appeared to have similar body components of lean, fat and BMC to those of the athlete population. These similarities suggest that an unhealthy pattern for body image and appearance exists in the female athlete*

*population.*

*Key words: eating disorders, body fat, anthropometry, bone mineral content.*

# Physiotherapy in conservative treatment of spondylolysis in athletes

Tasheva R., Ganchev D.

**Abstract**

*The aim of this study is to develop the physiotherapy program in conservative treatment of spondylolysis in athletes.*

*Between December 2000 and December 2005 we observed 12 athletes with spondylolysis with mean age 17,6 (15-22) years. There were 8 female and 4 males. Average follow-up term is 11 (5-36) months. The physiotherapy program taught the patients to maintain the pelvis tilt and to restore the muscle balance.*

*The results were assayed on the ground of subjective (pain, discomfort, and neurological symptoms) and functional objective (low back and hip range of motion, extending the big toe, and athletic activity) criteria. Regarding the subjective criteria there are 2 (16,67%) patients with mild pain, discomfort and neurological symptoms. Two patients have some weakness in extending their big toe. All patients are with restore of low back and hip range of motion and only 1 (8, 3%) of them didn't feel comfortable during sports activity.*

*The combination of conservative treatments such as bracing, static and dynamic physiotherapeutic program,*
*and lifestyle changes can control the condition of the athletes with spondylolysis. It is important to know that any therapeutic approach must take into account that spondylolysis means that there is a potentially unstable area of the spine, so the competency of the treating spine specialist is very important consideration.*

*Key words: athletes, conservative treatment, physiotherapy program, spondylolysis.*

# Liquid-Liquid extraction of amphetamine from biological samples of blood and urine

Raikos N., Pouliopoulos A., Spagou K., Natsis K., Psaroulis D., Tsoukali E.

**Abstract**

*Amphetamine has been extensively used therapeutically in the past. However, its central stimulating actions have led to extensive abuse with attendant social and psychiatric problems. The objective of this study was the optimization of amphetamine extraction from biological samples by liquid-liquid extraction. The recovery of amphetamines was studied using a variety of 5 solvents (dichloromethane, 1-chlorobutan, ethyl acetate, di-ethylether, chloroform) as well as a system of solvents (chloroform: ethyl acetate: ethanol, 3:1:1 v/v) named as alkaline B. The extracting solvent was further examined for the appropriate pH value and quantity with the maximum recovery. After the optimization of the method, the recovery of amphetamines using*

*biological samples was studied. The determination of amphetamine was accomplished by gas chromatography equipped with a flame ionization detector (FID), after derivatization with heptafluorobutyric anhydride (HFBA).*

*Key words: amphetamine, liquid-liquid extraction, gas chromatography.*

# The frequency of injuries in Kickboxing

Kotsikas G., Kitsios A. , Sykaras E. , Teflioudis A.

**Abstract**

*OBJECTIVES: This study was prepared with the cooperation of coaches and athletes and its purpose is to show the frequency of injuries in kickboxing. A valid questionnaire was used and the interviews were taken at the place where the athletes work - out.*

*METHODS: A total of 121 athletes participated in the study, 99 of them were males (81,8%) and 22 females (18,2%) (Graph 1). The mean age for males was the 22,90 years and the mean age for the females was the 20,27years (Chart 1). Out of the 121 athletes, 112 (93%) of them were amateurs and 9 (7%) were professionals (Graph 2).*

*RESULTS: The most common body region injured were the lower extremities 14°%, followed by injuries to the wrist 9,9%. Injuries to the foot and thigh were 8,3%. Injuries to the neck region 5,8%, to the elbow region 3,3%. Injuries to the knee and hand were 3,3%, followed by injuries to the spine 1,7%, to the pelvic region and*

*the head 0,8% (Chart 2). The type of injury in most of the cases was identified as strain 55%, followed by*

*sprains 20% and fractures 5%, an 8% of them was a combination of different injuries (Graph 5).*

*Conclusion: Kickboxing is a safe sport, but further research into injury patterns in different styles of kickboxing and the mechanism of injury occurrence and also in relation with similar contact sports is required.*

*Key words: frequency of injuries, type of injuries, different age groups, kickboxing.*