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Nutritional habits of elite soccer players of different ages in Italy

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Introduction: Several data are recently available about the athletic nutrition and supplemental needs, however, optimal hydration and dietary habits are significantly affecting sport activity phases in athletes. Only few records show the prevalence of adherence to these recommendations in athletic population.

The aim was to assess dietary habits and adherence of the elite soccer players of different age groups to the recommendations for correct nutritional behaviour in entire season and evaluating the necessity of macro-micronutrient supplements.

Methods: Food frequency questionnaire method was used to evaluate dietary habits of 20 male soccer players of the Fiorentina club, in the premier league, as well as 20 Fiorentina youth soccer players, living in Tuscany, Italy. The study compared the dietary pattern of the two different age groups and RDA levels.

Results: Caloric intake was lower among adults players 2.209 kcal compared to 2996 kcal of the youngest and their diet pattern were last balanced as well as several nutritional flaws in the dietary habits in both groups. Food consumption patterns showed a low intake of "healthy" foods, such as fish, fruit and vegetables. Some minerals and vitamins didn't meet with the RDA.

Conclusions and limits: Food frequency questionnaire method might be more reliable for the assessing of dietary intake of the general population than in soccer players, even so we were able to observe tendencies regarding the personal dietary habits in entire season. Among adolescences, in term of quality, dietary pattern is more balanced comparing to adults. After an accurate evaluation of nutrition intake and habits, we recommend in very selected cases, a vitamin and mineral supplements when variety of food is inadequate and when athletes eliminate one or more food groups from their diet, but first of all we recommended that an accurate approach of nutritional education and recommendation should be given from skilled figure in soccer players overall at an early age.

Key words: Athletes. Habits. Nutrition. Supplement.

Anthropometric and physiological profile of young male athletes of Olympic triathlon

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The Olympic Triathlon (OT) is an endurance sport event consisting of 1.5 km of swim, 40 km bike and 10 km run. In OT, these events are placed back-to-back in immediate sequence and a competitor's official time includes the time required to "transition" between the individual legs of the race, including any time necessary for changing clothes and shoes. The purpose of the present study was to determine the anthropometric and physiological profile of young triathletes (OTA)(19-23 years) compared to a group of elite OTA, and to evaluate the profiles' differences in order to establish if the younger group already has such qualities to succeed.

7 male OTA, selected among the best Italian ranking between the age of 19 and 23, volunteered to participate into the study. Anthropometric measurements included body weight, height, and skinfold measurements; physiological measurements included aerobic and anaerobic test. $\dot{V}O_{2peak}$ was detected with an incremental test to exhaustion both on a treadmill and on swimming flume and with

a constant load test to exhaustion on a cycloergometer. Anaerobic evaluation was carried out with a 30 seconds Wingate test -Win30- and a power/velocity curve -PVC- on cycloergometers.

The average age was 22.0±1.4 years; the average height was 178.5±5.4 cm; the body mass (BM) was 69.8±2.7 kg; the percentage of body fat was 5.9±1.6 %; and the fat free mass range was 65.5±1.9 kg.

The $\dot{V}O_{2peak}$ was 71.5±4.7 mlO₂*kg⁻¹*min⁻¹, 70.3±6.6 mlO₂*kg⁻¹*min⁻¹ and 67.6±10.8 mlO₂*kg⁻¹*min⁻¹, respectively on cycloergometer, on treadmill and on swimming flume. The peak power (PP) on Win30 test was 831±93.8 Watt (11,9±1.4 Watt/kg BM), while it was 956±115 Watt on PVC.

This study shows that the young triathletes had similar body structures (height, weight, body fat), similar aerobic data and similar anaerobic values compared with the elite Italian OTA and elite Portuguese triathletes. It could be concluded that anthropometric and physiological profile of young athletes (20 years old), who participate into Olympic triathlon, are similar to that of high level athletes. Therefore the lower performance capability should depends on other physiological or biomechanical quality as energetic cost of running or efficiency of cycling.

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Key words: Triathlon. Physiological profile. Anthropometric measurements.

Effects of Thermal therapy on the Hormones and Delete Once Muscle Soreness after endurance exercise

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This study examined the application of cold water (CW) & or warm water (WW) for the regeneration on Delete Once Muscle Soreness (DOMS) in comparison with a control group without the application of water (CO) after endurance exercise. Therefore the main study took place in a randomized, controlled study design with 60 healthy, moderately fit young men (aged 22 ± 5 years, $\dot{V}O_{2peak}$ 53 ± 4 ml/min/kg), 20 men per group. All subjects had to run on treadmill at 90% IAT for 60min and after then they became either one cold (CW, 20°C), warm water exposure (WW, 38°C) or no intervention at all (CO). Blood was taken 30min before, immediately and 1, 2, 6, and 24h after exercise. The exercise leads to a clear increase of the muscle stress parameters without significant differences between the exercises. After standardised exercise a significant rises was found in the Cortisol concentration (p<0.05). The Cortisol concentration was significantly higher (p<0.05) after application of cold water compared to the application of warm water and control. On the other hand the growth hormone was more increased after the application of warm water compared to the application of cold water and control. Significant higher levels (p<0.05) of the CK, sTrp I and Myoglobin could be demonstrated after exercise. The application of warm water after exercise leads to a clear decrease in muscle cell reaction; additionally a significantly decrease was found in the CK and myoglobin after warm water. These results indicate that the exposure of cold water (20°C for 40 min) after exercise leads to an elevated Hormones stress reaction. Exposure of warm water (38°C for 40 min) leads to a decrease of the exercise-induced deflection of muscle cell reaction and decreases the Delete Once Muscle Soreness.

Key words: Thermal therapy. Hormones. Exercise. Myoglobine.

*Correcciones y omisiones; **Corrections and omissions.

Effects of a program pilot of "nordik walking" in patients with chronic diseases of the osteoarticular system

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Introduction: The Rehabilitation Service, HSR, in 2007 we initiated a program pilot of "Nordic walking", in patients with chronic Diseases of the osteoarticular system.

We tried to stimulate the independent and regular practice of physical exercise being reduced the pathogenic action of the sedentary and to improve the clinic and mobility due to the own pathology.

Objective: The intention of the study is to analyze the effects produced in the patients who followed the program, its tolerance and the appearance of complications

Method: Population: patient volunteers > 18y. CAP and Rehabilitation service HSR, with osteoarticular lumbar, rolls and hip pathology.

They were evaluated initially identifying absolute and relative contraindications to the practice of physical exercise and to determine his physical training conditions to individualize the program.

Analyzed variables: IMC, FC and TA of rest, index of Lequesne and Oswestry questionay. Test of effort (6' Walking Test).

The patients followed a program of technical training and physical agreement: 2 weekly sessions of 45' / 60', 6 weeks.

Study of intervention before/after:

Population: 35 persons.

Variable analyses: statistical, nonparametric tests.

Applicability: Clinical-sport.

Scope study: Patients chronic with chronic diseases of the osteoarticular system, CAP and Rehabilitation service HSR.

Results:

Weight and IMC, they did not vary.

TA diast. <1.98mmHg, TA Sist. <3.84 mmHg

FC basal <1,48 lpm.

6'WT >21.2 m.

Index of Lequesne: < 0,45 points.

Oswestry Questionnaire: < 0,8 %

2 abandonments (8%), without complications.

Conclusions: The program did not affect the corporal composition, a cardiovascular slight improvement (TA and FC). Appreciable effects were the increase of capacity of deambulaci3n and little evident on osteoarticular clinic.

The great tolerance, no complications and done that is following of independent form the exercise, animates to us to extend it and to raise a pursuit to long term.

Key Word: Nordik walking. Cronic disease. Osteoarticular.

Five-times-sit-to-stand test and stair climb: reliable tests to the elderly

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Reductions on individuals' ability to perform usual daily life activities have been recognized as a serious and common problem in older persons. Among others, the ability to go from a sitting position to a standing position has been considered a crucial factor in functionality and independence of older people¹. Additionally, many falls in public places occur on steps², making this ability a particularly important functional task. Despite the fact that the Five-Times-Sit-to Stand Test (STS-5) and the Stair Climbing (SC) are widely used measures to assess functionality, lower-limbs strength, mobility, fall risk and balance¹ in old persons, prospective evidence considering the reliability of this tests is needed to substantiate their accurate usefulness. So, the aim of this study was to determine the test-retest reliability of the STS-5 and SC.

Fifteen community-dwelling old subjects (68,6±5,8 years; BMI=27,6±3,0 kg/m²;) completed two sessions tests separated by 12 days for the STS-5 and the SC. To assess reliability Intra-Class Correlation coefficient (ICC) was calculated. The mean times required to complete STS-5 and SC at each test session (1 and 2) were respectively, 8,71±1,56; 8,28±1,45; 4,95±1,38 and 4,98±1,33 seconds. The times were reliable since the intraclass correlation obtained for the STS-5 and

the SC were ICC= 0,926 (p<0,001), ICC=0,952 (p<0,001). In this way, since the STS-5 and the SC shown an excellent reliability we reinforce their aplicability with community-dwelling old subjects.

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Key words: Reliability. Functional tests. Elderly.

Chronic noninsertional achilles tendinopathy: treatment with radial extracorporeal shock waves

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Introduction: Achilles tendinopathy is a common overuse injury, especially among athletes involved in activities that include running and jumping. A shock wave is an acoustic pulse, with a high peak pressure and a short life cycle. There are different techniques through which shock waves may be generated. The radial extracorporeal shock waves (rESWT) are pneumatically generated.

The aim of this study is to evaluate the long-term clinical results and complications of rESWT in the treatment of chronic Achilles noninsertional tendinopathy.

Methods: Between June 2005 and June 2007, 29 athletes (not professional) with a chronic (>6 months) noninsertional Achilles tendinopathy have been treated with rESWT, 11 of them with bilateral tendinopathy (total of 40 tendinopathies). Aged 29-53 years old (mean 37).

The patients were treated in 3 sessions (at intervals of one week) with 3000 impulses per session. Device used: Swiss Dolor Clast (EMS-Switzerland). Energy flux density: 0.12-0.16 mJ/mm². The pain center was detected by biofeedback. The Victorian Institute of Sport Assessment-Achilles (VISA-A) score were performed before therapy and on the week 8th, 26th and 52nd week after treatment.

The non parametric Wilcoxon test for dependent samples has been used to compare means of VISA-A.

Results: The VISA-A score increased after treatment: week 8th, (p<0.01) and week 26th (p<0.001).

At 54 weeks from baseline, the VISA-A score increased (from 45.6±12.2 to 74.3±18.9, p<0.001). The results were excellent ("completely recovered") in 9 cases and good ("much improved") in 16 cases. In 7 cases there was no improvement and the condition remained the same. There were no complications but 19 patients expressed their dissatisfaction about the pain felt during the therapy.

Conclusion: rESWT is an effective treatment method for chronic Achilles noninsertional tendinopathy. Further randomized and controlled studies are necessary to underline the results of this investigation.

Key words: Achilles tendinopathy. Shock wave. Treatment.

Prior heavy exercise not forearm occlusion reduced the oxygen debt of subsequent heavy exercise

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Introduction: Previous studies showed that enhanced muscle blood flow (BF) prior to heavy exercise increases onset muscle oxygen uptake (VO_{2musc}) and reduces offset oxygen debt.

We tested the effect of enhanced blood flow by prior heavy exercise and forearm occlusion on the oxygen debt of subsequent heavy exercise.

Methods: Seven varsity hockey players completed two different protocols: [1] two consecutive heavy dynamic handgrip bouts (5 minutes at 30 % MVC; 13.4 ± 0.98 kg) each were followed by 6 minutes recovery; [2] 15 minutes of forearm occlusion followed by a heavy bout then 6 minutes recovery. BF was measured continuously using Doppler ultrasound and venous blood was sampled each 15 seconds from a deep forearm vein to determine O₂ extraction.

Results: BF was elevated prior to the second heavy bout and after forearm occlusion compared to the baseline of the first heavy bout (137 ± 22; 121 ± 18 vs. 12 ± 3 ml/min, P< 0.01), however neither BF nor VO_{2musc} were different at end exercise among the three heavy bouts. Post exercise BF and VO_{2musc} were

maintained above the end exercise values for 15 seconds in all conditions, as well they were higher than the resting baseline values at the end of the 6 minutes recovery period. The calculated area for $\dot{V}O_{2\max}$ during the recovery was lesser after the second heavy bout in protocol [1] compared to the debt area of the heavy bout after occlusion or the first heavy bout (69.1 ± 7.1 vs. 85.6 ± 5.8 , 82.5 ± 5.4 ; $mL O_2$, $P < 0.01$). These results indicate a smaller oxygen debt following the second heavy bout compared to the other two conditions.

Conclusion: Our data show that both prior heavy exercise and forearm occlusion enhanced prior BF, but only prior heavy exercise reduced the oxygen debt of the subsequent heavy bout.

Supported by the government of Egypt and NSERC.

Key words: Muscle oxygen uptake kinetics. Forearm blood flow. Oxygen debt.

Posturas analysis of the cut of sugar cane in Brazil: a case study

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Introduction: The sugar industry-alcooleiro in Brazil, has shown booming arising from the possible shortage and environmental aspects caused by the use of fossil fuels, occurs then the search for alternative fuels in the world. The activity of cutting the cane is manual, exposed to high temperature, heavy clothing and intense pace of work for 8 hours a day. Since 2004, the Ministry of Public Work of the city of Campinas (Brazil), is suspected of the relationship of the events of 13 deaths to working conditions that would have led workers to exhaustion and a payment system for production, linked to working conditions harmful, without pausing to rest, can exacerbate the risks of accidents and premature wear of these workers. But without real indicative, they are in the field of assumptions, which occurs in sugar cane, so the demand for subsidies in scientific in medicine sports, as in occupational medicine there is work studied in this level of wear, comes with tools to add to review the position.

Materials and methods: The observation used to record on video camera with Sony DCR and post codification of the film through the software Captiv L2100.

Results: The software CAPTIV quantified the length of each variable observable. From the record of the company's data, obtained the daily production of the worker AES, with which saw the systematic observation and filming during the morning. One can calculate that the employee cut in 10 minutes 398.66 kilos of cane. For both earmarked at least 131 seams, podao and held 138 inflections of column. Information obtained from systematic observation, crossed with data from the production worker observed, makes designing for the period of one day information relevant to the workload and possible resurfacing of workers. For the daily journey, it is estimated from the systematic observation that the worker AES took about 3,994 inflections of column and at least 3,792 seams, podao. Besides the employee remain 45% of the time standing and 43% of the time in critical posture of bending lumbar, which represents the risk of injury osteoarticular system.

Conclusions: The analysis of the study allowed highlight several variables present in the work situation of cutters, sugar cane, and is inter-linked and influence how the activities are carried out by workers. It was observed that workers from cutting the cane, shows symptoms of exhaustion and disease by the difficulty for the performance of work. These results serve as a warning to those responsible for organizing the work and production, mainly by the effect that the intensified activities by the payment by production, are causing the health of these workers.

Key words: Posture. Cane-of-sugar. Health.

Anthropometric and physiological profile of Italian athletes of badminton

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Badminton is played on a synthetic surface of the size of 13.4 x 6.1 m, with a net of 1.5 m high, very similar to the volleyball one. The matches are played

indoors, in singles, doubles and mixed doubles. In terms of physiological and biomechanical classification, badminton is one of the disciplines classified as aerobic-anaerobic, with a high request of muscle mass and strength, particularly linked to the upper muscular district. In 2007, the Institute of Sports Medicine and Sports Science in collaboration with the Italian badminton federation, assessed the physiological characteristics of some athletes, mainly juniors. Table I includes a comparison of data regarding Italian junior and two senior athletes (at international level). Data appear in line with the others present in literature. As for the aerobic power of the two senior athletes in 2007, the wide standard deviation justifies the slight discrepancy with international references. The figure sustains the results by ranking, confirming that the maximum aerobic power is an important feature for this type of sport. In the

TABLE 1.

	Age (years)	$\dot{V}O_{2\max}$ (ml/kg/min)	HRrmax (bpm)	Lactate (mM)	Fat Mass (%)
5 Male - Juniores	17.4±0.5	55.9±7.4	196.2±8.5	9.7±1.8	5.5±1.8
3 Female - Juniores	17.3±1.1	44.5±5.0	205.0±8.5	8.0±1.1	20.6±0.6
2 Female - International	23.5±2.1	46.9±12.3	191.0±0.0	9.7±1.0	17.8±8.2

TABLE 2.

	SJ (cm)	CMJ Bb (cm)	CMJ Bl (cm)	Bosco 15" (cm)	Stiffness (Watt)
5 Male Juniores	38.2±3.5	41.4±2.1	48.2±4.0	36.3±3.6	52.9±4.8

same sessions, as reported in Table II, tests were performed to evaluate the mechanical muscle work of the lower limbs. Jump or thrust tests, as well as the Bosco Protocol, are excellent means of evaluation. The published data and our own data show that badminton athletes must have characteristics similar of those practicing volleyball, basketball and tennis. Moreover, the values of aerobic power ranked them at the top level among those categories. Currently, the different scoring system, does not show great changes in the energy requirements in order to change the physiological characteristics of our current athletes, compared to previous ones. Further studies are needed to assess the changes will lead in physiological adaptations.

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Whole body vibration: acute and residual effect on the jump ability

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The whole body vibrations (WBV) it is nowadays one of the most widely used methods for improving the explosive strength. This seems to produce similar effects than those found after applying a eccentric-concentric cycle. In this study, 12 subjects participating in recreational physical activity were allocated to 5 sets of 60 s of WBV exposure, using a frequency of 30 Hz, and 2.5 mm of amplitude, maintaining an static position (110 ° bending knees) on a vibratory platform (Galileo Fitness®; Novotech, Germany). The results showed an increase (not significant) in SJ ($+1.76 \pm 4.05$ cm) and CMJ ($+1.10 \pm 3.20$ cm) in the post-test conducted just after the vibration. The values of the post-test performed 30 min after SJ remained above the pre-test ones but just below the immediate post-test ones ($+0.42 \pm 4.43$ cm). By contrast, the values in CMJ dropped below the pre-test ones (-0.12 ± 2.45 cm). Based on these data it seems that when the frequency is not high it is necessary to use greater amplitude in order to achieve the desired effects. The effect achieved after the vibration is transient, not remaining after 30 min.

Key words: Whole body vibrations (WBV). Counter-Movement Jump (CMJ). Squat jump (SJ).

Planning the height of training in 21 days with sports elite of Venezuela Quito-Ecuador

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We present a study with the Venezuelan National Team Elite, with training at altitude based on scientific information and experience, with athletes from various disciplines. The aim was to determine the influence of adaptive changes, functional, biochemical and hormone produced by the training average height. The variables used were: heart rate, orthostatic index, blood lactic acid, urea, CK in the blood, testosterone and cortisol in the blood. It was a retrospective study, whose cross was universe (35) of the National Team and Greco wrestling, judo, boxing, TKD, cycling and swimming, who form the elite of these sports in Venezuela, conducted a training base in average height (2850 meters above sea level) in Quito, Ecuador, for a period of three weeks (21 days troops). The first 4 days critical stage, the rest (17) days adaptation phase, phase of development and supercompensation, the first week with intensities (60-70%) the second (80-85%) and reached the third highest (90%). At the end of the third it diminished (70-80%). We note a slight increase to a significant stabilization in the values of blood lactate and heart rate. The lactacidemia fell as you moved the adaptation process. At the heart rate was demonstrated positive effects of training in line with the average height increased lactate. It was found the usefulness of urea and CK where there were adapting to the burden of training or decreased the volume of these were demonstrated the usefulness of testing with the cortisol hormone and testosterone, which took charges related to training (super training). We observe tolerance to specific charges in training and competition. We add value in the various tests that could serve as reference for similar studies to be made later in athletes in average height.

Key words: Training at altitude. Hormones.

Reliability of balance tests in healthy young adults

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The balance is regarded as one of the physical qualities essential for the execution of most daily living motor task. Loss of it normal function increases dropping risk and may cause fractures with dramatic consequences in elders. In many sport disciplines successes depends on excellent balance. The assessment of balance is rather complex, since balance depends of the integration and coordination of many function. At present, most of the test proposed to assess static and dynamic balance show low reliability due to very high individual variation. Thus, new procedures should be developed to assess balance more reliably. Therefore, the aim of this study was to design a new balance test-battery to assessed static and dynamic balance with high reliability.

Methods: Fifteen physical education students [(mean \pm SD) age: 23 \pm 3 years, body mass: 69 \pm 8 kg] were tested two different days, two-week apart. Each testing day the subjects performed to trials of six different test consisting on: 1) One-leg standing on the jumping leg (JL; main propelling leg when jumping) with eyes open; 2) One-leg standing with the contralateral leg and eyes open; 3) One-leg standing on JL with eyes closed; 4) One-leg standing with the contralateral leg and eyes closed; 5) keep on standing with the domination leg and moving the dominant hand. 6) One-leg standing on JL while executing a precision task with the dominant arm extended, consisting on taping on numbers marked on table 1m in face the subject, at the height of the shoulders, in a standardised order. Each trial lasted 30 seconds and was performed on a Force Platform Kistler (Instruments AG 9281B, Winterthur, Switzerland). Each day the same test was repeated twice, separated by a 30 min. rest period. The best result of the two trial performed each day was taken as representative for further analysis.

Measurements: The following variables were calculated: a) centre of pressure speed (CP-speed); b) range of CP displacement (medium-lateral, RML and antero-posterior, RAP) and c) sway area of the centre of pressure (SA). The reliability of each test was assessed calculating the Cronbach's coefficient alpha (α) between the best result of testing day 1 and the best results of testing day 2.

Results: The coefficient alpha for inter-item reliability of the CP-speed showed fair to excellent reliability (α between 0.77 and 0.88). Only in test number 4, the

reproducibility of the CP-speed was unacceptably low. The RML showed good reliability in the test 3 ($\alpha = 0.85$) but low in the other tests (α between 0.44 and 0.67). RAP showed high reliability in the tests 1 and 4 (α of 0.86 and 0.71), and a bit less in the tests 3 and 6 (α of 0.57 and 0.69). The sway area the coefficients alpha ranged between 0.85 and 0.59, except in test 2, where SA was not reliable.

Conclusions: This study shows that static and dynamic balance can be assessed reliably in young healthy adults using very simple tests performed on a force platform. The tests performed standing on the jumping are more reliable than those performed standing on the contralateral leg. The tests performed with the eyes open are more reliable than with eyes closed.

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Key words: Balance. Reliability. Centre of pressure.

Ace genotype and critical velocity in elite swimmers

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Several recent works reported the association between the I variant of the human angiotensin I-converting enzyme (ACE) gene with lower serum and tissue ACE activity, and with greater endurance performance and enhanced muscle efficiency in sub maximal tasks. Although, the ACE genotype influence to difference exercise intensities as not been well establish and is unknown, to our knowledge, in swimmers.

In that way, we tested the hypothesis that the ACE II genotype may be associated with increased aerobic capacity in swimmers, by examining the association between the ACE genotype and critical velocity (CV). The CV concept has been shown in swimming to be a good approach to determine the maximal aerobic velocity, highly related to the velocity corresponding to a 4 mmol/l of blood lactate concentration and maximal lactate steady state.

Seventy-one competitive Portuguese swimmers were studied and stratified into two homogenous groups, based on their athletic status: i) 40 truly elite swimmers (23 male and 17 female, 18.96 \pm 3.04 years; Olympic candidates) and; ii) 31 standard swimmers randomly selected (15 male and 16 female, 18.85 \pm 2.87 years). For each subject the CV was assessed considering the best performance of a swimmer in several distances in freestyle events (100, 200 and 400m), based on the swimmer curriculum.

Chelex 100® was used for DNA extraction and PCR-RFLP methods determined the genotype.

Results showed that ACE-II elite swimmers had higher CV, although not significantly different from other ACE genotypes in both genders ($P > 0.05$). Similar results were obtained in standard swimmers ($P > 0.05$). Between the two athletic status groups, the CV differs significantly ($P < 0.05$) in ACE ID (in man) and in ACE ID+II (in both genders).

The present study shows that maximal aerobic swimming velocity is not ACE genotype dependent in both genders but seems to have some influence in athletic ability.

Key words: ACE I/D polymorphism. Critical velocity. Sports.

Ankle external compartment on long distant runners. Ultrasound study

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Introduction: The ankle is a joint that suffers a permanent load during the standing up position and more over during running. For this reason it is of great rele-

vance in long distant race events. On the other hand, ultrasound equipments have become a basic tool for the study of sport injuries, their diagnosis and evolution. The objective of this study is to evaluate the anatomical findings on the external compartment of long distant runners' ankle by means of ultrasounds.

Material and methods: 29 amateur long distant runners (26 men, 3 women) were studied in the week prior to the Madrid Marathon 2008. All of them had run at least one marathon before. In the same period 15 sedentary individuals (13 men, 2 women) were studied as a control group. All of them were studied at the Sport Medicine Center in Madrid with an Esaote Portable Ultrasound Equipment and a 7,5-12 MHz linear probe. Lateral ligament and peroneus tendons were identified. The statistical study was conducted by the Student T for independent variables and sonographic findings were compared analyzing the sample averages.

Results: The average age is $42,8 \pm 12$ years and $41,9 \pm 11$ years in each group. In long distant runners peroneus tenosynovitis is seen on 7% of right ankles and 0% of left ankles; lateral ligament desestructuration is observed on 13.8% (right) and 17.2% (left) and calcifications on 10.3% (right). In the control group, peroneus tendons look normal while lateral ligament has a structural disorder on 26.7% and calcifications on 6.7% of right ankles and desestructuration on 6.7% of left ankles. After the statistic study, results demonstrated a significance level > 0.05 so that we can conclude that there are not differences in the findings on both groups.

Conclusions: Practising long distant running seems not develop more important structural disorders in ankle joint among amateur runners than in no runners.

Key words: Ankle. Ultrasound. Sport.

Body composition profile in elite female rhythmic gymnasts

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Of all female sports, gymnastics has one of the most obvious trade-mark body images. Besides that, in order to achieve an internationally competitive level of gymnastics performance an extraordinary amount of training is required. Gymnastic performance is, to a large degree, dependent on gymnast's flexibility, and other factors like force capacity and gymnasts ability to sustain power (both anaerobic and aerobic) and to overcome resistance (Alexander, 1991; Hume, 1993). Both of these factors are interrelated with the gymnast's body composition. Body composition should be thought of as having an approximate range for different sports, as different sports have different requirements.

Body composition is generally influenced by genetic predisposition, age, gender, amount of activity and nutrition. In addition to the aesthetic and performance reasons for wanting to achieve an optimal body composition, safety reasons have to be also considered. Determination of body composition, the amount of muscle and fat a gymnast have can be predictive of performance, and bone mass assessment is important for understanding if developmental problems exist or if the athlete will face current or future risk for fracture. For that reason, a periodic assessment of body composition helps the gymnasts to

understand if the training regimen is causing the kinds of physical changes that are being sought.

Considering that in rhythmic gymnastic the appearance and performance have special requirements (Canda, *et al.*, 1993), the interest of this discipline and the myths around it, this work is aimed to establish a range of values related to body composition of Spanish women rhythmic elite gymnast in a range of 12 to 23 years old, by registration of anthropometric data (height, weight, and body-mass index) amount of muscle, fat, and bone. Results of gymnasts considered in this study showed a body composition change around 15 years old, with an increase in length until 18 years old reaching more than 170 cm in most cases, with a body mass index below 20 and a % of fat lower than 20%.

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Key words: Rhythmic gymnastic. Body composition.

The measurement of the daily physical activity with metabolic holter

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Introduction: The main aim of this study was to determine the physical activity levels of university students who get education at the departments related to health in Turkish society with metabolic holter (Sense Wear Armband (SWA)). The other aims were to evaluate the relation between physical activity levels and BMI, body compositions; to calculate the resting energy expenditure with different methods and to evaluate the validity of 24 hours physical activity evaluation questionnaire (24-h-FADA).

Methods: SWA and 24-h-FADA were carried out simultaneously in students' ordinary days. Body composition was determined by using BIA (Bioimpedance Analysis) method with TBF 300 Tanita Body Composition Analyser.

Results: As a result, students physical activity levels were found; 23,8 % low, 31 % medium, 35,7 % high and 9,5 % too high. When physical activity level (PAL) was found unrelated to BMI, it was found related to body fat % and FFM values. Female students' physical activity levels and BFP values were higher than male students statistically. Male students' TEE, REE, FFM and BMI values were higher than female students statistically. Any meaningful difference couldn't be found between second grade and fourth grade students' physical activity levels. REE values which were guessed by HB equality, BIA and SWA indicated too high correlations each other. REE which was guessed by HB equality was lower than REE which was guessed by BIA method at minimal level.

Conclusions: It was concluded that BIA and SWA could give more correct results in guessing of REE. Besides, it was reported that 24-h-FADA was a valid method in guessing of TEE in Turkish society's adult population.

Key words: BIA. Physical Activity Level. Resting Energy Expenditure