

POSTER
ABSTRACTS

P#1

Acute Sport Trauma – a low level laser therapy dose according to the specific absorbed rate (SAR)

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Patients are nowadays impatient. Thus, the fast and full recovery post acute sport trauma is of primordial importance; however, the treatment should not be too intensive. The testament of the anteties "...sed possum dosis" is still valid for medical practice and particularly for low level laser therapy (LLLT). Thereby, one could follow the trend of practicing the high art of inherent exposure: dose establishment by objective measurements and/or calculation. Herewith, authors presume dose as a mathematical primitive of a rank specific absorbed rate (rank SAR), as far as according to our knowledge light belongs to the concept of electromagnetic field, and the target tissue treated – *constituens turbidus* for the LASER irradiation. An attempt is made to illustrate such a model in three therapeutic cases.

P#2

The risk of cervical whiplash injuries and whiplash associated disorders (WAD) in athletic activities

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Aim: The aim was to assess qualitatively and quantitatively the potential risk in athletic activities to sustain cervical whiplash spine injury and associated soft tissue injuries WAD. Cervical whiplash syndrome is a common traumatic injury in sports activities.

Material and Methods: 114 WSI injuries were recorded in sports in our Orthopaedic Department between the years of 1996 and 2005, and classified according to Quebec Task Force (QTF) classification [1]. The most of them classified in grade 0 according QTF (98/114). All the other patients (16/114) returned for the 6-months, 1-year and 2-year follow-up appointment. All these patients (average age, 29.3 years old) underwent clinical, laboratorial and health related quality of life scales and psychometric examinations.

Results: Categories of Sports activities as causes of Chronic WAD [Whiplash Associated Disorders] in our patients were: Soccer (3), Indoor Soccer 5x5 (10), Basketball (1) Weights lift (2). Only 3 patients 3/114 complained for neurological signs at the time of injury. The other patients classified in the minor grades I and II according QTF classification. No patient complained for neurological signs after six months from the injury. Only two patients remains 2/114 with neck pain and tenderness, but with no physical signs [grade I] one year posttraumatic.

Conclusion: Mathematical models of the biomechanics showed that the forces involved in sports activities are of the same order as those involved in whiplash traffic injuries and of the same magnitude as compression injuries of the cervical spine. Our study shows that there is a significant risk of whiplash injuries in sports especially indoor soccer 5x5. But serious injuries with neurologic sequelae and WAD remain very infrequent [2], and most these injuries have minor severity.

P#3

Low back pain incidence in elite junior Cypriot athletes

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Introduction: Up to 85% of people experience LBP in their lives, a condition that is one of the most frequently disabling for people aged < 45 years old (Andersson, Acta Orthop Scand, 1998). Nowadays, elite athletes are required to cope with extremely high training loads so that they can perform at the highest levels. A common condition such as LBP may hinder their training and may become debilitating to their performance.

Purpose: The purpose of this study was to use a previously validated questionnaire (Srtranjalis et al., Spine, 2004) to estimate the prevalence of LBP in elite junior Cypriot athletes. The questionnaire was initially used in a pilot study and modifications were made to fit the particularities of the local population, in order to distribute it in a larger scale.

Results: Different prevalence rates were measured for different sports, with certain sports exhibiting higher incidences.

P#4

Effect of electrical stimulation on strength and endurance of the quadriceps muscle in healthy subjects: Exploring gender differences

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The purpose of this study was to determine the effect of electrical stimulation on the quadriceps femoris muscle in healthy subjects. 60 healthy young adults with mean age of 20.15±1.53 years (30 men and 30 women) were selected randomly among Pamukkale University, School of Physical Therapy students. To train; electrical stimulation on one leg at 60° knee flexion was used three times a week for 6 weeks. We purposefully used Russian Current (10 sc. contraction, 50 sc. interval time for 10 min). The subjects who had no any kind of systematic diseases, musculoskeletal dysfunction or neural deficits were tested using anthropometric measurements, strength and endurance tests, such as 1 repetition maximum, step-up, step-down, one-leg-hop, and tripple-jump. In the pre-study just before couple days the treatment started and during the 7th week, the tests were performed individually under supervision experienced 3 physiotherapists in a school gym.

After 6-week electrical stimulation program, results showed that trained limb (quadriceps femoris muscle) demonstrated benefits in all test parameters in both sexes ($p < 0.05$).

P#5

A study of the accessory bones of the foot. Incidence in the Greek population-clinical significance

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Scope: The determination of the accessory bones of the foot, their incidence in the Greek population, their clinical significance and their classification in the Greek language.

Material-Methods: Five hundred and three ankle radiographs (254 left, 249 right) and 619 foot radiographs (338 left, 281 right) were examined. The specimens were Greek, aged from 14 to 80 and their gender was mixed. The biostatistical analysis was performed using the statistical package SPSS. Results: The incidence of accessory bones on the foot was 20.47%. We found the following accessory bones on the foot: Os supertalare (0.4% R, 0.4% L), Os talotibiale dorsale (0.4% R, 0.4% L), Os trigonum (7% R, 6% L), Calcaneus accessories (0.4% R), Calcaneus secundarius (1.2% R, 0.9 L), Os tuberis calcanei (1.2% R, 0.4% L), Os tibiale externum (3.8% R, 5.6% L), Os naviculo-cuneiforme I dorsale (0.4% R), Os talonaviculare dorsale (0.4% R, 1.2% L), Os cuboideum secundarium (0.4% R, 0.8% L), Os peroneum (8.2% R, 10.4% L), Os intermetatarsale I (0.8% R, 0.4% L), Os Vesalianum (0.4% R), Os subfibulare (0.4% L), Os subtibiale (0.8% R, 0.4% L). Conclusions: Accessory bones are frequently found on the foot (20.47%) and they may suffer fractures, dislocations, subluxations, osteoarthritis, gout and osteochondritis. Moreover, they may be related to tendon ruptures, malignant transformations, impingement and other syndromes. The knowledge of the existence and location of the accessory bones is useful for the differential diagnosis from avulsion fractures of the adjacent bones.

P#6

A study of the accessory bones of the hand. Incidence in the Greek population-clinical significance

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Scope: The determination of the accessory bones of the hand, their incidence in the Greek population, their clinical significance and their classification in the Greek language.

Material-Methods: Eight hundred thirteen hand radiographs (377 left, 436 right) were examined. The specimens were Greek, aged from 14 to 80 and their gender

was mixed. The biostatistical analysis was performed using the statistical package SPSS.

Results: The incidence of accessory bones on the hand was 10.04%. We found the following accessory bones on the foot: Os centrale (1.3% R, 2.1% L), Os radiale externum (1% R, 0.9% L), Hypolunatum (0.3% L), Epilunatum (0.3% R, 0.3% L), Os Hypotriquetrum (0.5% R), Os ulnare externum (0.3% L), Pisiforme secundarium (0.3% R), Os Ulnostyloideum (1.5% R, 2.4% L), Os triangulare (1% R, 0.9% L), Trapezium secundarium (0.5% R, 2.1% L), Epitrapezium (0.3% L), Paratrapezium (0.3% R, 0.9% L), Capitatum secundarium (0.8% R, 0.3% L), Os styloideum (1.2% R, 1.2% L), Os Vesalianum manus (0.3% L).

Conclusions: Accessory bones are frequently found on the hand (10.04%) and they may suffer fractures, dislocations, subluxations, osteoarthritis, gout and osteochondritis. Moreover, they may be related to tendon ruptures, malignant transformations, impingement and other syndromes. The knowledge of the existence and location of the accessory bones is useful for the differential diagnosis from avulsion fractures of the adjacent bones.

P#7

A study of the sesamoid bones of the foot. Incidence in the Greek population-clinical significance

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Scope: The determination of the sesamoid bones of the foot, their incidence in the Greek population, their clinical significance and their classification in the Greek language.

Material-Methods: Five hundred and three ankle radiographs (254 left, 249 right) and 619 foot radiographs (338 left, 281 right) were examined. The specimens were Greek, aged from 14 to 80 and their gender was mixed. The biostatistical analysis was performed using the statistical package SPSS.

Results: We found the following accessory bones on the foot: Medial sesamoid of the first metatarsophalangeal joint single (91.5% R, 92.3% L), Medial sesamoid of the first metatarsophalangeal joint double (8.2% R, 7.3% L), Lateral sesamoid of the first metatarsophalangeal joint single (98.2% R, 98.8% L), Lateral sesamoid of the first metatarsophalangeal joint double (1.8% R, 1.2% L), Medial sesamoid of the second metatarsophalangeal joint (1.4% R, 0.9% L), Medial sesamoid of the third metatarsophalangeal joint (0.3% L), Medial sesamoid of the fourth metatarsophalangeal joint (0.3% L), Medial sesamoid of the fifth metatarsophalangeal joint (2.1% R, 1.5% L), Lateral sesamoid of the fifth metatarsophalangeal joint (8.2% R, 7.6% L), Interphalangeal sesamoid of the first toe (2.1% R, 0.9% L).

Conclusions: Sesamoid bones are frequently found on the foot. They are susceptible to injuries due to their complex biomechanical function and their anatomical location. Moreover these bones may suffer fractures, osteoarthritis, osteochondritis, gout and they may be related to tendon ruptures, malignant

transformations, impingement and other syndromes. The pathology of sesamoid bones has to be differentiated from tendonitis, bursitis and tendonobursitis.

P#8

A study of the sesamoid bones of the hand. Incidence in the Greek population-clinical significance

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Scope: The determination of the sesamoid bones of the hand, their incidence in the Greek population, their clinical significance and their classification in the Greek language.

Material-Methods: Eight hundred thirteen hand radiographs (377 left, 436 right) were examined. The specimens were Greek, aged from 14 to 80 and their gender was mixed. The biostatistical analysis was performed using the statistical package SPSS.

Results: We found the following accessory bones on the hand: First metacarpophalangeal joint radially (99.5% R, 99.7% L), First metacarpophalangeal joint ulnary (99% R, 100% L), Second metacarpophalangeal joint radially (29.4% R, 36.3% L), Second metacarpophalangeal joint ulnary (0.5% R, 1.2% L), Third metacarpophalangeal joint radially (1% R, 2.1% L), Fourth metacarpophalangeal joint radially (0.3% R, 0.3% L), Fifth metacarpophalangeal joint radially (1% R, 2.6% L), Fifth metacarpophalangeal joint ulnary (52.8% R, 58.7% L), Proximal interphalangeal pollicis radially (0.3% R), Proximal interphalangeal pollicis ulnary (8.2% R 8.2% L).

Conclusions: Sesamoid bones are frequently found on the hand. They are susceptible to injuries due to their complex biomechanical function and their anatomical location. Moreover these bones may suffer fractures, osteoarthritis, osteochondritis, gout and they may be related to tendon ruptures, malignant transformations, impingement and other syndromes. The pathology of sesamoid bones has to be differentiated from tendonitis, bursitis and tendonobursitis.

P#9

Joint hypermobility and genu recurvatum among physiotherapy students

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Purpose: The aim of this study was to observe joint hypermobility among physiotherapy students and to determine the relation between joint mobility and genu recurvatum.

Material and method: 81 healthy physiotherapy students (52 females, 69,1%; 25 males, 30,9%; age range 19-25) were participated in this study. Joint mobility was evaluated with the Beington score. Joint laxity was determined between 4-6 scores and hypermobility between 6-9 scores. Knee hyperextension was measured with

goniometer in standing position and values greater than 5 degrees of knee extension were considered as genu recurvatum. Mann-Whitney U test, Spearman Correlation and Chi-Square tests performed using SPSS version 11 for Windows.

Results: According to the Beighton scoring system, 9,9% of the students were classified as hypermobile. 18,5% of the students had lax joints and 71,6% had no joint laxity. The median of Beighton score was found 2,00(0-8). Twenty four (29,6%) of the students had genu recurvatum. The median of right and left knee hyperextension were found 3,00 (0-18) and 3,00 (0-16), respectively. Differences between women and men, median value of right and left knee hyperextension degrees were not significant ($p=0,108$; $p=0,583$ respectively). Beighton scores were significantly higher in females than in males ($p=0,020$). There was a correlation between genu recurvatum and Beighton score ($p<0,01$). There were correlations between Beighton score and height ($p<0,01$), and weight ($p<0,05$). Ratio of the students with genu recurvatum for the non-hypermobile group was found 22,4% on the right knee and 24,1% on the left knee; for the joint laxity group it was %33,3 on the right knee and %26,7 on the left knee; for the hypermobile group it was %75 on the right knee and %75 on the left knee. These ratios were significantly different in each groups , when comparison made according to Beighton score ($p<0,05$).

Conclusions: However a joint laxity and hypermobility was found among physiotherapy students, majority of students had no joint laxity. There was a relation between genu recurvatum and Beighton scores, positively.

P#10

Injury profile of the professional soccer players participating in Iranian premier league competitions (2005-2006)

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Background: Soccer is one of the most popular sports worldwide. Despite numerous studies have been done regarding soccer injuries, there is no data available considering the epidemiology of injuries in the Iranian soccer premier league.

In this study we evaluated the injuries occurred in players of a professional soccer team, participated in 2005-2006 Iranian premier league, both in training and competition sessions.

Objective: Evaluating incidence of acute sport-related injuries during a football season.

Materials and Methods: 21 male adult professional soccer players (age: 24 \pm 3) were followed for a 4 months period of time. The injury characteristics and exposure times were recorded in previously designed profiles by the team physician, who was present in all matches and training sessions. An injury was defined as any physical complaint that limited sports participation for at least 1 day.

Results: The total exposure time was 2610 playing hours (2342 h training V.S. 258 h competition). Totally 43 acute injuries were recorded, 27 (63%) of them happened while training and the rest, during matches. Therefore, an overall acute

injury incidence of 16.5 per 1000 hours of playing has been recorded (11.5 per 1000 hours of training and 62 per 1000 hours of competition). The most common types of injuries were muscle strains followed by muscle contusions. Most injuries (81%) were located at the lower extremities, mainly in the thigh and groin regions (n = 21).

Conclusion: High incidence of muscle strains in the thigh and groin regions should be noted. It seems that appropriate stretching exercises and pre-season conditioning would be effective in reducing these types of injuries.

P#11

Comparative analysis of injuries with female football players in Bulgaria

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Objective: The main objective of this research is to make analysis of injuries with female football players and the results obtained to be compared with similar ones with injury data from Women's United Soccer Association (WUSA).

Methods: The research was carried out for the period of 4 years and includes 67 women football players, members of the national teams – women and women under 19.

The injuries were classified in location groups as follows: chest; abdomen; spine/back; pelvis/sacrum; head; eyes; upper extremity; hip; thigh; knee; leg; ankle; foot; other.

The results obtained were compared with similar ones for players from WUSA.

Results: The results showed higher rate of knee injuries with both groups female football players, particularly in the "knee injuries".

Conclusion: Such investigation has been carried out for the first time in Bulgaria. It focuses our attention on the issue of clarifying the reasons for injuries risk with female football players as well as the ways of its prevention.

P#12

Geography of the water traumatism in Bulgaria

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The study of the problem with the water trauma in Bulgaria let some of the basic tendencies, reasons and causes to be understood and help for the prevention of water drawing. The analyses of the data for water incidents help us to determine the geographic and the demographic side of the problem.

The present study is made by Bulgarian Red Cross of Water life safety service in period of 16 years /1990-2005/, with the association of the police data gathering. Analysis has been made for showing the difference in water incidents between seacoasts and beaches and inside water areas in the territory of Bulgaria.

There have been made several conclusions:

-No matter of the length of our beaches the organized life saving system is factor that prevent much better our sea side than the inside water areas as a whole and the number of water incidents on the sea side is lesser.

-The large number of drowning incidents in the inside country water areas whenever they are natural or artificial water areas is because of the large population number and the absent of lifeguards.

-No matter that the Dunav River is one of the biggest water areas in the country, because of its ugly swimming perspectives is the least dangerous water area in the Country.

-We need to take maximum safety measures for the Black Sea beaches which are not under concession or rent.

P#13

Muscle functional state assessment by estimation of muscle fibre conduction velocity

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Conduction velocity of the excitation along the muscle fibers (CV) is a parameter giving information about the muscle membrane changes. Using CV can be estimated muscles resistance to fatigue and their long lasting adaptations to different training types. Because of the interference of bioelectrical signal in high muscle effort causing fatigue the CV was evaluated by the averaged potential of interference electromyogram (IEMG). In 10 healthy subjects (males), aged between 25 and 28 years and ten athletes (males) aged between 15 and 18 years the CV was measured in biceps brachii muscle. The IEMG was recorded by a surface multielectrode, consisting by two branched and monopolar electrodes with small leading-off areas during an isometric contraction at different levels of maximal voluntary contraction (MVC) before and after fatigue. CV was calculated by the time shift of the negative peaks of the averaged potentials (APs) of recorded IEMG.

The measured CV, recorded with both monopolar and branched electrodes were significant equal ($p > 0.05$) at all different muscle tension (10, 25, 50 and 75% of MVC) and for all investigated subjects. The CV was significantly higher ($p < 0.05$) at 50 and 75% compared to 10 and 25% of MVC. In branched APs the terminal positive phase was suppressed. The monopolar APs were with waveform similar to those of motor units potentials and the parameters of the different potential's phases (including the terminal positive one) may give additional information for functional state of muscles.

No differences in CV of both investigated groups for all muscle tension before the fatigue were observed. After fatigue, the CV of both groups was significantly ($p < 0.05$) decreased.

In conclusion, the level-triggered averaging of the interference EMG recorded from the skin surface by branched electrodes is an adequate noninvasive method for the

measurement of the propagation velocity of excitation along the muscle fibers and for evaluation of changed muscle functional state.

P#14

Changes in some physiological parameters through the pre competitive season in Turkish professional soccer players

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The aim of study is to analyze affectivities of training process through pre competitive period according to quantitative changes in some physiological and sports pedagogical parameters in Turkish professional soccer players.

Subjects of the investigations were 23 of 1st Turkish division super league soccer players from Ankara's clubs, age from 17 to 30 years with average 23.5 years. Each subject was involved 2 to 4 times in different tests procedures presented below.

Methods and tests procedures included experimental measurements and registrations of: aerobic and anaerobic parameters changes in running distance on HR threshold level; speed tests – 5, 10, 20, 30 m sprint running; body fat %; total body water; BMI; vertical jump. The data were with descriptive statistical methods calculated.

Results and discussion: A lot of statistically significant positive changes of quantitative characteristics of measured parameters were total measured. For example the high jump result by player 18 increased from 41.5 to 44.8 cm. The 30 m sprint running performance by player 15 from 4.13 to 4.08 s decreased and on 4 mmol la level the running treadmill speed from 13.5 to 15.3 km/h by player 2 was increased.

The comparative analyzes formed conclusions that the pre competitive training programs were well prepared and its affectivities was really high.

P#15

Evaluation of functional performance of lower extremities in athletic and non-athletic students: a comparative study

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Objectives: The main aim of this study was to investigate how sports activity effects on the functional performance of the lower extremities in athletic and non-athletic college students. The second aim was to describe the gender differences. Method: Fifty-two girls (average age= 12.75±0.76 years) and 87 boys (average age=12.81±0.24), in total 139 college students were participated in this study. All were between 12 to 14 years old. Eighty-four athletic students (20 girls and 64 boys) were compared with 55 non-athletic students (32 girls and 23 boys). The athletic students were selected among basketball, volleyball and football players.

The following three tests were performed to assess the functional performance; one-leg hop, triple jump and vertical jump. The *t*-test was used to compare the functional test scores belonging to the athletic and non-athletic students and to look the gender differences among participants.

Results: Functional performance test scores belonging to the non-athletic students were lower than the athletic students ($p < 0.05$). Gender difference was found regarding functional performance tests. Namely, the boys in both groups had higher scores compared with the girls ($p < 0.05$). Conclusion: The results of the current work showed that the functional performance is influenced by gender and sport activities in college students.

P#16

A physiological and kinanthropometric view of the Greek flatwater kayaker

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Physical and physiological factors accounting for the variability of performance in 500 and 1000 m flatwater kayaking were investigated using linear regression. Times achieved for each distance were used as the dependent variable for analysis while the independent variables were the parameters derived from the test battery. The 10 kayakers who participated were categorized as either state team members or non selected paddlers, based on an objective selection policy. Several of the participant subjects were Greek international representatives. All selected paddlers were grouped together and Student's *t*-tests performed to determine which variables could distinguish between selected and nonselected paddlers. Simple regression was used to determine the strength of association of each parameter with performance time over each race distance. Aerobic power and variables related to the aerobic-anaerobic transition were examined using gas analysis during an incremental workload test on a kayak ergometer. A 1-min all-out test also on a kayak ergometer was used to obtain an indication of anaerobic capacity and power. Muscular strength and fatigue were assessed using a simulated kayak stroke on a Cybex isokinetic dynamometer. Physical characteristics were determined using kinanthropometric tests. Aerobic power, anaerobic power and capacity, muscular strength, resistance to muscular fatigue and measures of body size were significantly greater in more successful kayakers. All of the parameters measured correlated significantly with performance time over at least one of the two race distances and so, may be useful for team selection, talent identification and for identifying those factors that must be emphasized in the kayakers training program.

P#17

A comparison of exercise performance using different types of ergometers in competitive cyclists, runners, rowers and swimmers

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Purpose: The purpose of the study was to compare physiological responses during different modes of maximal exercise testing.

Methods: Twenty competitive athletes and five recreational athletes performed incremental exercise tests using Bicycle, Treadmill, Rowing and Swim-Bench Ergometers.

Physiological variables ($\dot{V}O_2 \max$, O_2 pulse, Anaerobic Threshold, Maximum Lactate, Heart Rate, Blood Pressure, R. Q,) were measured using a Quark b² gas analyzer, Polar Heart Rate monitors and a Dr. Lange lactate analyzer). Blood lactate was measured post-exercise. Outcome variables were analyzed with repeated measures ANOVA.

Results: The data suggested differences in measured variables obtained using different modes of exercise. Caution is suggested when training guidelines and physiological assessment is made with athletes of different event specialization tested on various exercise modes.

P#18

High altitude influence on functional parameters of alpinists

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Objective: To assess the changes in the functional parameters after being at a high altitude.

Methods: 12 members of an expedition to peak Lenin (7134m) underwent 2 maximal spiroergometric tests - the first before expedition, and the second after return. The examinations were performed with a bicycle ergometer with step increase in the workload, at a low altitude (550meters). The climbers were higher than 3000 meters for 19 days, with more of the time staying higher than 4300 meters, (advance base camp). The maximal altitude reached was 7134 meters.

Results: 10 maximal parameters were compared: workload, ventilation, tidal volume, oxygen uptake, respiratory quotient at peak exercise, heart rate, $\dot{V}O_2/HR$, systolic and diastolic arterial pressure. We observed significant decrease of maximum workload with 14,2 Watts (+/-15,1W), increase in maximal tidal volume with 250 ml (+/-327 ml). The oxygen consumption decreased with 118,2 ml (+/-218,9ml) and 1,33ml/kg (+/-2,98 ml/kg), but it is not statistically significant.

Conclusions: The high altitude exposure leads to a small decrease in the maximal exercise performance, and no significant change in the oxygen consumption, measured near sea level.

P#19

Oxygen uptake efficiency slope as an index of exercise performance of healthy exercising subjects

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Objectives: The aim of this study was to elucidate the usefulness of oxygen efficiency slope (OUES) in evaluation of fitness level of healthy exercising subjects. **Background:** Cardiorespiratory endurance is one of the fundamental components of physical fitness and an important factor in performance of many athletic activities. Maximal oxygen uptake (VO_{2max}) is the most reliable measure of exercise capacity, but it is effort dependent. Performing VO_{2max} test required high level of motivation, which poses a special difficulty for nonelite athletes and untrained people. In 1996 Baba and coworkers proposed a new submaximal index for cardiorespiratory reserve in a study of pediatric cardiac patients.

Methods: Bicycle ergometer tests with simultaneously gas respiratory measurement were performed in 15 healthy adult subjects, practicing sports. During incremental exercise, oxygen uptake was plotted against the logarithm of ventilation and the OUES was determined. The measured VO_{2max} was compared with the OUES, calculated from the data of the whole test (OUES_{total}), as well as from the data of the first 90% of exercise duration OUES_{submax}.

Results: The correlation coefficient of the logarithmic curve-fitting model was 0.988. The mean VO_{2max} was $49,7 \text{ ml}\cdot\text{min}^{-1}\cdot\text{kg}^{-1}$, which did not differ statistically from the mean OUES_{total} ($50,6\pm 2,82$). The OUES_{submax} values were $48,53\pm 3,23 \text{ ml}\cdot\text{min}^{-1}\cdot\text{kg}^{-1}$ and they also were not different from the VO_{2max} and OUES_{total}. The correlation between VO_{2max} and OUES was significant.

Conclusions: The OUES is provides acceptable results as a measure of cardiopulmonary reserve, which is effort-independent. This variable may be useful as a measure of cardiorespiratory fitness of healthy subjects, which are not motivated to performed maximal tests.

P#20

A comparison of maximal force and power force of the leg muscles of competitors in power lifting, bodybuilding and weight lifting

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Anthropometry data and body composition data have been researched for competitors in bodybuilding, weightlifting and power lifting. The competitors have been tested in two tests:

Barbell squatting for estimating maximal force of the leg muscle and long jumping for estimating the power force of the leg muscle. The data resulting have been comparatively and correlatively analyzed. Based on the result the author makes the following conclusions:

In the bodybuilding group there is a strong positive correlation between: 1. The active body mass and the maximal force of the thigh muscles; 2. The active body mass and the power force of thigh muscles; 3. The muscular measure of the thighs and the maximal force of the thigh muscles; 4. The muscular measure of the thighs and the power force of the thigh muscles. In the other two groups there is positive correlations only between : 1.the active body mass and the maximal force of the thigh muscles and 2.the the muscular measure of the thighs and the maximal force of the thigh muscles. These differences between the researched groups are probably due to the different composition of the muscles and methodology of training of three groups of athletes.

Despite of the similar anthropometric and body composition profiles of the three groups of competitors there are differences between the results in the two force tests. In the first test – barbell squatting – powerlifters showed the highest results, followed by the weightlifters and bodybuilders. In the second force test – long jumping – weightlifters achieved the highest result, followed by powerlifters and bodybuilders. The author points out to the need of further and larger research in that aspect.

P#21

Orthostatic changes in mean arterial pressure and pulse pressure

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Orthostatic reactions of the blood circulation are subject of wide studies. Cardiovascular adaptation to gravity influences has been discussed mainly concerning heart rate and arterial blood pressure (systolic and diastolic) changes in position “lying- upright”(L. Hill, 1895; D. Dobrev,1969; E. Pavlova et al., 1999.) Data of mean arterial pressure in active orthostatic test were not found. Therefore, the aim of this study was to follow up the orthostatic changes in mean arterial pressure and pulse pressure and to extend the information of blood circulation parameters.

The reactivity of the cardiovascular system has been studied in two student groups (26 males and 31 females, age between 18 and 22 years). Active orthostatic test was carried out. Heart rate (HR) and arterial blood pressure (RR) were monitored by Sport tester and apparatus for automatic measurement. The HR, RR and D.Dobrev's orthostatic coefficient (Corth) have been published. The mean arterial pressure (MAP) and pulse pressure (PP) were calculated. Descriptive statistics, paired samples statistics and Spearman's rho correlations (at the .05 level of significance) were applied.

The average values of pulse pressure and mean arterial pressure in two groups changed significantly ($P < 0.05$) from lying position to standing up, but there weren't significant differences between MAP and PP values in 5-minute orthostasis. Significant correlation coefficients were found about MAP and PP after standing up. It has been established relationships between MAP and PP when the body is in lying (horizontal) position and in orthostasis up to the 3rd minute of it. These findings correspond to previous data analysis of HR, RR and Corth.

It could be concluded that the both groups of investigation refer to mean arterial pressure and pulse pressure changes establish orthostatic tolerance within the limits of reactions of the normotonic type.

P#22

Functional abilities as determinants of competition success in judo

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Introduction. Judo is a complex and physically demanding sport where many technical, functional, tactical and psychological variables determine the competition success. Mean time structure of judo fight is characterized by taking turns between extreme activity of about 15-30s, and breaks of about 10s, what demands specific functional adaptation. The functional variables in judo players were investigated in an attempt to understand the requirements for achieving top level in judo competition.

Participants and Methods. The first, national level (NL) group of subjects included competitors who participated in the national championships but failed to reach the final. The second, international level (IL) group of subjects included finalists in the national championships, and participants in Balkan and Mediterranean Championships. 30-s Wingate test was used to assess anaerobic capacity. VO_{2max} was assessed by graded exercise tests. Forced spirometry was used to diagnose lung function. Body fat percentage was determined by skin fold technique. All investigations were performed in the concluding part of preparation periods.

Results. NL vs. IL (means \pm SD): Peak power ($W\cdot kg^{-1}$) 12.11 \pm 1.63 vs. 12.86 \pm 1.71 ($p>0.05$); Mean power ($W\cdot kg^{-1}$) 8.77 \pm 0.89 vs. 8.35 \pm 0.7 ($p>0.05$); VO_{2max} ($ml\cdot kg^{-1}\cdot min^{-1}$) 54.62 \pm 4.06 vs. 58.82 \pm 4.78 ($p<0.05$); FVC (L) 5.56 \pm 0.31 vs. 5.99 \pm 0.36 ($p>0.05$); FEV_{1.0} (L) 4.69 \pm 0.5 vs. 4.8 \pm 0.45 ($p>0.05$); Body fat content (%) 9.83 \pm 3.6 vs. 6.88 \pm 2.12 ($p<0.05$).

Discussion. The IL group competitors had higher absolute and relative values of peak and mean power, but these differences were not statistically significant. VO_{2max} was statistically significant in the IL group. Higher values of aerobic capacity enable a faster recovery between successive matches, what can be decisive in this tournament type of competition and the possibility of fighting in even 6 matches. FVC and FEV_{1.0} do not differ significantly between the groups. Body fat content is significantly higher in the subjects of NL group, what can have a negative influence on motor performance during technical actions. The negative influence of body fat content can be expressed in relation to isometric strength, flexibility, balance and aerobic capacity.

Conclusion. The results of our investigation show that higher values of aerobic capacity and lower percentage of fat tissue characterize judo players who achieve better competition results. Therefore, in the training period, and especially in the preparation period, every effort should be made to obtain the highest possible VO_{2max} values, and lower values of fat tissue.

P#23

Changes in Poincaré indexes during submaximal exercise

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Measurement of heart rate variability (HRV) has become a widely used tool for assessment of both the parasympathetic and sympathetic control of heart rate. Commonly used methods for HRV analysis are linear time domain and frequency domain measures. In the recent years the Poincaré plot analysis is employed as a non-linear tool, which is more appropriate to assess non-linear dynamics of R-R intervals, especially in non-stationary conditions like exercise.

The aim of the study was to demonstrate the dynamics of Poincaré plot indexes (SD1, SD2 and SD1/SD2) during moderate submaximal exercise.

In the study participated eight male subjects (age 21.1 ± 1.3 years). The subjects performed an exercise bicycle test with the work rate increasing at a rate of 60 W every 3 min until reaching 75% of maximal predicted heart rate. R-R intervals were recorded during rest (R), first load of 60 W (EX1), second load of 120 W (EX2) and after the 5 min of the recovery (PostEX) and mean heart rate (MeanHR), mean R-R interval (MeanRR) and Poincaré plot indexes were calculated.

The results are shown in table:

	R	EX1	EX2	PostEX
MeanHR (1/min)	64 ± 7	96 ± 5	121 ± 8	84 ± 11
MeanRR (s)	0.95 ± 0.11	0.63 ± 0.03	0.50 ± 0.04	0.73 ± 0.08
SD1 (ms)	40.47 ± 22.89	10.58 ± 4.05	5.36 ± 4.72	16.65 ± 6.88
SD2 (ms)	79.70 ± 31.33	34.83 ± 7.70	26.04 ± 10.54	61.72 ± 24.26
SD1/SD2	0.49 ± 0.14	0.30 ± 0.09	0.19 ± 0.11	0.30 ± 0.17

Values are presented as mean \pm SD. Every value is significantly different from precedent value: $p < 0.001-0.05$

SD1 shows the instantaneous beat-to-beat variability of the data and is an index, which quantifies the vagal modulation of HR. The significant decrease of SD1 during EX1 and EX2 indicates a vagal withdrawal.

SD2 quantifies the standard deviation of continuous long-term R-R intervals and is influenced by both parasympathetic and sympathetic tone. SD2 is decreasing during exercise, suggesting that sympathetic activation reduces the long-term oscillation in HR during exercise. The decrease in SD1/SD2 ratio is due to the important reduction of SD1, which highlights the parasympathetic withdrawal during exercise.

The Poincaré scattergram becomes less scattered when vagal activity decreased – during EX1 and EX2.

The decrease of Mean RR during EX1 and EX2 suggests increase in sympathetic activation.

The increase of Mean RR, SD1, SD2, SD1/SD2 and the decrease of Mean HR during PostEX show a tendency towards restoration of sympathovagal balance.

In conclusion, the shape and indexes of Poincaré plot distinguished the autonomic changes induced by the moderate exercise. As Poincaré plot provides a visual measure of parasympathetic activity and the quantitative Poincaré method is a simple and powerful technique, it could be used for the analysis of heart rate dynamics during exercise.

P#24

Variability of the simple visual-motor reaction time in different zones of the visual field

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The study presented compares the variability of the simple visual-motor reaction time upon stimulation of different regions of the visual field. Four young men at the age of 22 to 26. As index of variation of the reaction time, the coefficient of variation of the quartile deviation (Vq) was used. The coefficients of quartile deviation, on the whole, show lower values in the central 5 degrees of the horizontal meridian of the visual field as compared to the peripheral regions. Besides, there is bigger variability in the nasal visual field ($p < 0.05$).

P#25

One repetition maximum and heart rate under bench press submaximal weight lifting

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The current work investigate the relationship between hearth rate and weight, lifted at one repetition maximum (1-RM) and under bench press submaximal weight lifting. 21 young man between 20 – 23 year were tested. 1-RM was predicted by submaximal weights using Brzycki formula. We have measured the R-R intervals through hearth rate monitor Polar 810 i. The hearth rate was studyed before, during and after the tree sets of 6 bench press repetitions at 40%, 60% and 80% of 1-RM for every participant. We found that the hearth rate is increasing proportionally to the weight, after each of the tree sets.

P#26

The influence of hypoxia on the heart rate variability

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Background: The results of the studies carried out in order to establish the influence of hypoxia on the variability of heart rate indicate fairly uniformly a fall in the HF component which means a reduction in the oscillation of the parasympathetic nervous system. As regards the changes in the LF component, the results are, however, contradictory.

Objective: The aim of our research was to additionally study the influence of acute exposure to hypobaric hypoxia on the oscillation of the parasympathetic nervous system in natural conditions and to compare these changes with the changes in the oscillation of the parasympathetic nervous system when under physical load in normobaric conditions.

Methods: Nine non-acclimatized healthy men (age 43.7 ± 7.3 years) took part in the study. Before the expedition, the maximal oxygen consumption of the participants was measured by means of the load on the treadmill. Heart rate was determined at 50 % and 75 % maximal oxygen consumption. Later on, two measurements in the time interval of up to three weeks were carried out at an altitude of 400 metres. The average of these two values was later used as the reference value. At the beginning of each measurement heart rate was recorded using the Polar. Then the subjects underwent the step test using the metronome; they were required to step up onto and down from a standard 50-cm high footstool. The speed of stepping was determined individually in the following way: heart rate during stepping corresponded to the previously determined frequency for a specific level of load. When the oxygen consumption levelled off at a particular level, we began recording heart frequency. Heart rate between the above-mentioned loads was monitored for 4 minutes using the Polar. **Field measurements:** The measurements of heart rate were also taken and recorded in the same way at an altitude of 3200 metres and at an altitude of 4200 metres.

The variability of RR intervals was represented in the Poincare diagrams. Standard deviation of sequential RR intervals (SD1) was calculated, which shows the oscillation of parasympathetic activity. The changes between the resting position and two levels of load in the lowland and at both altitudes were compared.

The presentation of the sample and basic parameters is based on the basic descriptive statistics. All the variables were continuous variables and were normally distributed. They were described with the mean and with standard deviation. The results of all the measurements were represented graphically.

Results: The average maximal oxygen consumption of the participants was 51.82 (± 8.98) ml/kgmin. The values of the average RR interval and SD1 decreased with an increase in the load at all altitudes. The trend of the change in SD1 in relation to RR showed an exponential function. The changes in SD1 were similar at all three altitude levels when the same change in heart rate was observed and among them there were no statistically significant changes.

Conclusion: The oscillation of the parasympathetic nervous system falls exponentially with an increase in heart rate, which corresponds to the results of some of the studies carried out so far. The fall is identical in the case of the increase in heart rate during the load in normobaric conditions and in the case of the increase in heart rate that is a consequence of hypoxia. The load at a higher altitude does not cause an additional significant fall in the oscillation of the

parasympathetic nervous system. This leads to the conclusion that hypoxia causes a decrease in the variability of RR intervals via an increase in heart rate.

P#27

Synthetic parameters for muscle performance evaluation

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Introduction: The researches of the last ten years in the muscle performance have known an impressive growth, challenging numerous groups of research teams, coming from different domains (physiologists, biochemists, sports medicine, nutritionists) with a defined purpose of investigating the human organism ability to physical effort in general and sportive effort in special, to improve the athletic performance, to prevent negative effects that the inadequate physical effort can have, and to promote a modern life style where physic exercises is a top factor in disease prevention.

In our study we propose a modern and complex exploration method of muscle performance and fatigue by computerized acquisition and analysis of surface electromyography (SEMG) and mechanomyography (MMG) during voluntary isometric maximal contraction of flexor hand fingers.

Methods: The method proposed by us for the study of the muscle fatigue is based on the simultaneous recording and acquisition, on the computer, followed by a very advanced processing, mostly original, of EMGS and isometric MMG during maximal voluntary contractions of hand fingers flexors, until total exhaustion.

There has been registered at the same time to these athletes a surface EMG and MMG during a maximal isometric contraction, hand grip type, undertaken till brake point. The program that has been elaborated by us, allows the analyses of 38 parameters, either continue, or on portions of 410 ms with gaps of 4590 ms.

This way it results, from 5 to 5 seconds, values of all the EMGS and MMG parameters, with whom the program forms, for each parameter, a curve of time evolution during the entire contraction period. Based on this curves we have drawn lines of regression. The regression lines have supplied more information based on *intercept* (ordinate value of a point where the regression line intersects the ordinate) and *slope* (shows the brutal change of the parameter because of the fatigue).

Conclusions: From all the results obtained it shows that based on some simultaneous electrophysiological and mechanical recording with the help of certain highly evolved mathematical processes, obtaining a lot of parameters, indexes, reports, graphics, mapping etc. there can be clearly observed the initial effort capacity and the level of fatigue growth at athletes with different effort capacities.

P#28

Somatotype characteristics of 13-14 years old competitors in swimming

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13 and 14 years old boys and girls from the National swimming team of Bulgaria were engaged in this research. The somatotype characteristics and the body structure of the competitors were analyzed.

On the basis of the anthropometric calculations we find out the following factors that define the body mass:

-Percent body fats: (%TM) by, Slaughter M. et al.

-Active body mass: kg (ATM), the difference between the whole body mass from the under skin body mass.

-The correlation between high and weight (HWR)

-We defines the somatotype of the competitors by the method of Heath – Carter.

We used a special program: Somatotype – Calculations and Analysis v1.1 by Sweat Technologies.

We cultivate the data by the variation analysis.

The analysis shows the most of the athletes had been under first time selection, good training process, healthy feeding and control. There are exclusionary athletes that are compared with elite competitors.

We propose systematic control of the basic anthropometric indicators Somatotype – Calculations and Analysis v1.1 by Sweat Technologies.

P#29

Changes in the body composition of elite female weightlifters

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In the present research 20 elite Bulgarian female competitors in weightlifting were the object of anthropometric investigation at the beginning of a training camp. After taking the anthropometric parameters of the athletes, 7 composed parameters, which give the body composition characteristics were calculated: % of body fat tissue; absolute quantity of body fat tissue; lean body mass; absolute quantity of muscular mass; muscular circumference of the arm; muscular circumference of the hip; body mass index;

Anthropometric investigation was done again after the finish of the training camp which lasted a month.

The results show same changes in the composed parameters that characterize the body composition.

P#30**Effect on an aquaerobic training program on some morphofunctional variables in 14 years old girls**

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The aim of the study was to prove the effect of 16-week training program on some morphofunctional variables.

18 girls, aged 14,2 years took part in the investigation.

The following variables were studied: height, weight, sum of 3 skin folds, %BF, LBM, BMI, circumferences, HR, RR, muscular strength and endurance, flexibility and speed.

The analyses of the experimental data shows significant difference between the initial and final results of the following variables: Body fat, BMI and the measure circumferences, aerobic endurance, muscle strength and endurance.

So aquaerobics is a good physical activity for body sculpture and improving the health related physical fitness.

P#31**Kinesiological analysis of quadripyramidal syndrome gait**

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The study aim was to compare kinematics and muscles activity of normal gait and subject with quadripyramidal syndrome. An original video-computer methodology was used to estimate gait kinematics and modeling the activity of 9 muscles: m. gluteus maximus, m. semimembranosus, m. semitendinosus, m. biceps femoris, m. rectus femoris, m. vastus lateralis, m. gastrocnemius и m. soleus. Normalized stride registered data were averaged for complete gait cycle. Phase structure, line velocity, speed of movement and angle kinematics were estimated. A comparative analysis has been performed investigating test persons based on Ferrigno and Pedotti model. For every person were registered five strides, that were averaged.

The quantitative results supported the pathokinesiological analysis of the disturbances in the passive and active parts of the locomotors system. The types of functional disorder compensations were found out.

P#32**Temporal structure of weight lifting exercises Jerk and Snatch**

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Very important for the training programs and high sports performance is the development of the motor activities and the increasing of training and competitive

efficiency. The aim of the study is to investigate temporal structure of competitive exercises like jerk and snatch, their comparison and interconnections. On the basis of the structural phase analysis we account for the changes in the temporal structure of competitive exercises. We have analyzed 40 attempts of Bulgarian and foreign competitors. For registration of the results we have used an original methodology for video-computer biomechanical analysis, as well as mathematical statistical methods. We have reached conclusions about the kinematical features of motor activity with successful attempts at maximal weights. This is a good opportunity to determine the motor activities of athlete.

P#33

Nandrolone decanoate increases running endurance, but provokes apoptotic tendency in some tissues of trained rats

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Apoptosis is a form of programmed cell death that occurs during several physiological and pathological conditions and variety of factors regulate the apoptotic program in different cell systems. Recent evidences suggest that endurance training attenuates the extend of apoptosis in postmitotic tissues. Anabolic androgenic steroids (AAS) are widely abused by athletes. Little is known about the effects of AAS on apoptosis and up to now the combined effect of endurance training and AAS treatment on the apoptotic processes in different tissues is not investigated. The aim of the present study was to determine the effects of AAS on submaximal running endurance (SRE) and the expression of antiapoptotic (Bcl-2) and proapoptotic (Bax) proteins in myocardium, testis and subcutaneous adipose tissue of endurance trained rats. Male Wistar rats were trained on treadmill with submaximal loading (70-75% VO_{2max}) for 8 weeks and were divided into two groups. One group (n=19) received an AAS - nandrolone decanoate (ND) for the last 6 weeks of the trail and the control group (n=17) received placebo. The rats were subjected to SRE test. On paraffin sections, immunohistochemical reactions for Bcl-2 and Bax using the ABC method were applied. At the end of the experiment ND group had higher SRE than trained controls ($P<0.01$). We found lower expression of Bcl-2 ($P<0.001$) and higher Bax immunoreactivity ($P<0.001$) in cardiomyocytes of ND treated rats in comparison with trained controls. In Leydig cells of steroid treated animals Bcl-2 immunostaining was lower, whereas Bax expression was stronger ($P<0.001$) then those in the control group. This resulted in a decrease of Bcl-2/Bax ratio in the positive cells of cardiomyocytes and Leydig cells of ND treated animals compared to controls. No differences in the immune reactions for Bcl-2 and Bax in adipocytes between the experimental groups were found. Our results show that AAS increase SRE. The present data demonstrates for the first time that AAS treatment decreases the Bcl-2/Bax ratio in some tissues of trained rats, which is an indicator of amplified apoptotic tendency.

P#34**Glucosamine administration in athletes: Effects on recovery of acute knee injury**

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The main aim of the present study was to examine the effects of four weeks of glucosamine administration on the functional ability and the degree of pain intensity in competitive male athletes after acute knee injury. Randomized, double-blind parallel trial of glucosamine (1500 mg per day) or a placebo for 28 days. Hundred and six patients with acute sports injury of knee evaluated at the beginning of the study and at 7, 14, 21 and 28 days after starting treatment. Evaluation included pain intensity at rest and while walking with a visual analog scale, passive knee flexibility (flexion and extension) of the injured limb and degree of knee swelling. No statistical difference was found between glucosamine and placebo group in mean pain intensity scores for resting and walking, and degree of knee swelling at the 7-day, 14-day, 21-day and 28-day assessment ($p > 0.05$). There was no statistical difference found between passive knee flexibility at the 7-day, 14-day and 21-day assessment ($p > 0.05$). After 28 days of treatment the patients from glucosamine group demonstrated significant improvement in knee flexion and extension as compared to placebo group ($p < 0.05$). The findings of the present study indicate that administration with glucosamine does not significantly alter recovery after acute sports injury of knee. Yet, glucosamine supplementation appears to be suitable as a flexibility improvement strategy in athletes after 4 weeks of treatment.

P#35**The effects and health benefits of antioxidant rich food products on blood pressure, glucose, triglycerides and cholesterol levels**

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Natural antioxidants such as vitamin C, tocopherols, carotenoids, and flavinoids are found in abundance in fruits, vegetables, nuts, seeds, tea, wine and cocoa products. The bioavailability of antioxidants provided by increased intake of cranberries, carrots and chocolates reduces oxidative stress and could improve cardiovascular health, blood pressure, stimulate immune system and contribute to cancer prevention.

Blood glucose, triglycerides, cholesterol and blood pressure (BP) were measured in two groups of experimental subjects: 22 students aged 20-25 years and 10 elderly participants aged 40-59 years after oral intake of carrots, cranberry juice and dark chocolate. Each product was given for a period of 15 days with washout periods of 5 days in between. Anthropometric and physiometric indices and 7 days record of daily activities were also taken. Base line results have shown higher BP values (systolic BP by 9 % and diastolic BP by 12%) in elderly participants, whereas no significant difference was found in blood glucose, triglycerides and cholesterol. No base line difference in systolic tension time (STT) was noted between two groups. Most noticeable decrease in the systolic blood pressure was found after dark chocolate (by 8.9%) and after cranberry juice by 4.5 % intake in elderly participants. Pulse pressure (PP =difference between systolic and diastolic BP) was lowered after cranberry juice intake by 12 % in students and by 11 % in elderly participants. In both groups no undesirable elevations in blood glucose, triglycerides and cholesterol were recorded. It appears that the mechanisms maintaining the blood pressure and the metabolism are under well-balanced regulatory control in both groups of healthy individuals. In conclusion, increased dietary intake of antioxidant rich foods and beverages is recommended for both age groups. Beneficial effects on lowering blood pressure are more pronounced in elderly people.

P#36

Oxidative stress and microtraumatism in the athletes

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Our investigations upon athletes show that the above typical cellulite of the women pool is considerably less found by them, and in some sports, like swimming practically it is not found at all. At the same time we ascertained that it is found cellulite in athletes from the two sexes in their most overloaded body zones /in scullers and volleyball players on the shoulders and armpits, in bicyclists on the thighs and underthighs, etc./ we call type of cellulite, related to the most intensively overloaded body zones *Sports cellulite* (1, 2).

When there is daily intensive physical overloading, the quantity of Oxygen Free Radicals grows significantly. Due to the lower possibilities of the hypoxic tissues of detoxication, in the hypoderma are accumulated Oxygen Free Radicals – Oxidative Stress. The oxidative process in these excessively overloaded body zones are loading to damages in the cells and tissues. This is most relevant for the muscles, sinews, joint capsules and ties. As a result of this there is an accelerated degeneration of the hypodermal structures and the skin.

The disturbed metabolism and the growing connective tissue are one additional reason for the worsening of the status of the relative body zone. They reflect negatively to the lower-laid active structures /muscles, sinews, ties/ due to their topographic interdependence. The outside reaction, diagnosed through the skin is cellulite in different stages, which is a direct result of the degenerative processes, taking place in the lower-laid tissues: Oxygen Free Radicals – Degradation of

Hyaluronic acid – Adhesion of Neutrophils and Activation of Granulocytes – Release of Proteolytic enzymes – Increase Permeability of cell's membranes – Flux Ca-ions in the cells – A-2 and C-Phospholipases activation – Activation of Arachnoid acid – Hydroxyl radicals (-OH) – Degeneration of tissues. It leads to early growing old of the cells and tissues of the affected muscles and joints – *Microtraumas*.

P#37

Peculiarities of the medical service during rugby competitions

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In the present report the author presents the peculiarities of the injuries in the Rugby sport and the difference of the medical service in competition with other team sports. The discussion is based upon knowledge of the teaching material of Section Rugby at the Department of Football, literature from the world of Rugby sport and also the trial of the author as a physician of the teams of Rugby Club NSA "V. Levski" and the National Team, participants in inner and international competitions. The author presents the necessity of additional qualification of the team doctors, concerning their surgical and traumatological skills and composing of full completed medical equipment. The topic brings for forming right opinion for this attractive sport and when it is well known and perceived, it will not be considered "definitely dangerous" for the health of the athletes that practiced it and helps to increase its popularity.

P#38

Some particularities of the tympanoplasty at sportsmen

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Practicing sport is in continuing ascension and the number of sportsmen injured during training and competitions is increasing steadily. Otorhinolaryngology has developed from a century to another due to the technical progress in the domain of medical technology and instruments and to the permanent improvement of the means of investigation and treatment.

Classical otology has been changed substantially during the last decades as a result of description of new otic affections, the appearance of new operational techniques directed to a functional and reconstructive surgery of the middle ear.

Hearing is of a great importance for the developing of a human being. It effectuates one of the principal necessities of a verbal communication. Tympanoplasty is a delicate microsurgery, a repairing surgery of anatomic injuries in the result of chronic otitis and traumatism.

This functional surgery has the aim to obtain a partial improvement of hearing.

Before taking a decision on the problem of tympanoplasty, it is necessary to make a thorough examination in order to eliminate existing affections (adenoidal vegetations, deviation of the nasal septum, faringitis, rhino sinusitis). The examination is done to establish the general affections of the ill man.

Objectives: The main object of this study is to establish the effectiveness of tympanoplasty, using the technique of „Underlay” for the patients that suffer from cronic otitis in remission or that have a stable perforation of the tympan post traumatic. It was applied as a graft temporal fascia or tragal perichondrium, their support in the middle ear being the gelfoam.

Material and method: During the period of 1998-2005, in the ENT pediatric clinic of the Clinical Republican Hospital, 120 operations of tympanoplasty have been effectuated. The age of the patients being 8 – 18 years old, 6% of them were sportsmen from the National Olimpic division. The surgic intervention was done under general anaesthesia, using interavenos calipsol.

Taking into account that the auditive tube of children is narrow, and the necessity to effectuate a control of autronomy, the retrauricular method was used.

At the beginning of the surgical intervention, first of all the auditive tube is cleaned through attentive aspiration.

The technique of „underlay” was used. Considering that the sportsmen have more unfavorable conditions to keep their changed tympanums, especially after barotraumas, at the tympanoplasty, as a graft, were used temporal fascia and tragal pericondrium, with the aim to obtain a new, more resistant tympanum.

The sportsmen that were operated must be on a strict evidence of an otholaringologist, especially after the competitions.

Conclusions: At prezent, positive results were achieved in 83% of all the operations, which are characterized by lack of acutization and intact tympanum, in 35% of cases, the hearing was improved. The sanation of the focal point of the infection of the affected ear and the effectuation of tympanoplasty, lowers the number of othic complications, improve the hearing and reduce their disablement, the sportsmen having the possibility to achieve good results on the sports arena.

P#39

Algorithm of surgical treatment of patellar chondropathy

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Introduction: Patellar chondropathy is very often diseases in every age, which have many distinct and obscure causes.

Aim: Elaboration algorithm to help the physician to choose the adequate methods for surgery patellofemoral joint (PFJ) with patellar chondropathy.

Material and methods: Between 1990 and 2005y 520 patients (354 male - 68,2% and 166 female - 31,8%), of average age 35 (17 - 80) have been investigated and

operated. The time elapsed from the chondropathy beginning was approximately 36 months (1-360). The clinical, radiological, biomechanical, MRI and arthroscopical methods were used. The patients were evaluated in 24 month using ICRS score.

Results: The patients were scored: 71,9 % - A, 23,4% - B, and 4,7% - C.

Conclusion: Algorithm for surgery PFJ with patellar chondropathy is following.

P#40

Relative intensities of supervised and unsupervised physical activity in middle-ages men

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We aimed to assess the role of supervision on exercise intensity characteristics in regularly exercising middle-aged men.

Methods: The study group consisted of 15 middle-aged men (mean age 52.5 ± 4.7 yrs), participating in regular supervised exercise sessions twice a week for a period of 11.5 ± 5.6 years. In all subjects, body mass index (BMI), percentage of body fat (% BF) and maximal oxygen uptake (VO_{2max}) were calculated and resting blood pressure (BP) measures were taken. Serum concentrations of triglyceride, and total-, HDL- and LDL-cholesterol were assessed. On a training day, subjects exercised for an average period of 44.8 ± 6.8 min without supervision; preceding a supervised exercise session, which lasted 29.3 ± 4.2 min. Time spent within, below and above the subjects' target HR limits (obtained using the $(220 - \text{age}) \times 60-90\%$ formula) in supervised and unsupervised exercise sessions were determined via heart rate monitoring every 5 sec.

Results BP measures, serum triglyceride, and total-, HDL- and LDL-cholesterol levels, and VO_{2max} values were all found to be in the medium range according to Cooper Clinic Coronary Heart Disease Risk Factor Assessment Norms for Physical Fitness and Health Standards. The average BMI values of the group were determined to be 26.8 ± 2.8 kg/m², which are considered as overweight. While subjects exercised below their target heart rate range (60-90% of maximal heart rate) $18.6 \pm 0.9\%$ of the unsupervised exercise session, they exercised below their target heart rate range only $6.5 \pm 9.5\%$ of the supervised exercise session ($p < 0.05$). Mean heart rates and percentages of time spent above and within target heart rate limits during both supervised and unsupervised conditions were not significantly different between the groups.

Conclusions: According to our findings, supervision during exercise lowered the time spent below target heart rate limits. We conclude that supervision seems to be advantageous for exercising within targeted heart rate limits, compared with the unsupervised condition.

P#41

Sports lessons and posture dynamics of first school year pupils

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One of the most important tasks in school sports education is pupils' normal physical development and right posture formation, especially in young school age (Newcomer K. et al.,1997, Nieman D.C.,1998). However in many medical investigations it was shown that majority of Latvian pupils suffer from posture functional disorders, witch by different authors data achieve 60-80% (V.Larins et al.,2005). This is in conflict with school sport education standard which foreknows that sports lessons are preventive, right posture formation and have consolidative effect. Therefore the aim of this investigation was to evaluate the pupils' posture and its dynamics at first school year in Rucava secondary school.

Methods. Sports lessons were organized twice a week and a special 12 exercise complex was used to form and consolidate posture and develop corresponding muscles. In pupils' physical development assessment anthropometry methods and estimate body mass index (BMI) was used. In posture evaluation we used standard somatoscopy and somatometry methods. Physical fitness was assessed using the European physical fitness test battery.

Results. At the beginning of the school year we stated that the level of children physical development corresponds to the level of seven year old children. BMI (kg/m²) was 16,6 ±0,64. General physical fitness according to the Eurofit method was below the average compared with same age children in Latvia (I.S.Priedite et al.,2006). Weakness of muscles and balance disturbances were typical.

We determined that posture disorders at the beginning of first school year increased from 82,2% to practically 100% at the end. The most determined was asymmetric, kifolordotic and kifotic posture - in 68.4%, 45,4% and 36,0% cases respectively. There was significant increases in cervical and lumbal lordosis and therefore in kifolordotic posture, but disorders in frontal side (asymmetric posture), flatten foot and flatfoot (76,9%) stayed practically unchanged ($\alpha < 0,05$).

Conclusions. We suggest that one of the most important reasons of posture disorders increase is insufficient of physical activity which causes weakness of muscles, posture functional disorders and deformations. Two 40 minute sports lessons per week for 7 years old pupils are too insufficient for their normal physical development and especially for right posture formation and consolidation. Therefore all pupils involved in this investigation need further special physical exercise therapy.

Assessments of children physical fitness and posture have important implications on the content of prevention programs as well as the planning of school physical education and sports activities, assessing the effectiveness of intervention programs designed to increase physical activity and right posture formation.

P#42

The “hidden” psychological portrait of the football-player

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Sport as manifestation of the human striving for victory is related to the development of the sports technique and pure perfectionism. At the same time, more and more often the winged symbol of Nike is darkened by different forms of aggression, violence, outrages, commercialism etc. There is change of rules, change of motivation of competitors, coaches, referees, audience etc. The aggressive style becomes purposeful strategy of the whole training process and turns even into a part of the sports ideal. The appeals for fair play turn out to be vain.

A complex study of 10 cadet and junior (15-19 years old) football teams uncovers the deeply hidden psychological portrait of the competitors, in which the deep characteristics (hysteria, psychoticism, hypochondria, depression, deceitfulness), point out that the aggressiveness is a stable personality characteristic of the studied young football players.

A variety of different complex causes for this high price paid by the athletes is analyzed in the presentation.

P#43

Study of the influence of the ecological factors on the physical working capacity of the pupils in school hours of physical education and sport

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The aim of the present report is to investigate some parameters of the functional statuses and the physical working capacity in concern and depending of some ecological factors in the school hours of physical education.

We investigated students (boys and girls) studying in 9th and 10th class during one school year to follow the influence of the ecological factors in the process of the classes of physical education and sport. The total number of the examined persons is 60, from them 28 are girls and 32 are boys. Some parameters of the functional status and the physical working capacity (heart rate, blood pressure, vital capacity and anthropometric parameters) under the influence of the ecological factors of the environment (temperature, humidity of the air, and atmospheric pressure) were investigated. The investigation was done in ecologically pure region.

We established insignificant changes in some parameters of the physical working capacity in comparison with the primary investigation and in concern of the influence of the passed period of 8 months (one school year), most general conclusion is that the physical education in the school program and the individual sport activities do not benefit the improvement of the functional and muscular abilities of the students.

P#44

Comparison between questionnaires and objective experimental tests as tools for estimation of fatigue and recovery in athletes

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The aim of our investigation is to compare possibilities of different psychological methods – questionnaires as well as objective experimental tests – for estimation of recovery, fatigue and workability of athletes. The tests under comparison are: 1. RESTQ-Sport – Recovery and Stress Questionnaire for athletes (EBFS - Der Erholungs-Belastungs_Fragebogen fuer Sportler) – Kellmann, Kallus, 2001; 2. Test by Apparatus for studying tiredness; 3. Reactions to moving objects. 4. Tables of Schulte-Gorbov. Tests NoNo 2,3, and 4 belong to the standard battery of tests used in psychological laboratory of the National center for applied scientific studies of State agency of Youth and Sport in Bulgaria. Test No 1 is used for similar purposes in other countries, but not yet in Bulgaria. The subjects were 28 young swimmers - 18 males and 10 females, - aged 14-18. Results show that different tests give not identical but similar estimations of workability and tiredness of athletes; test RESTQ-Sport gives lower estimation of recovery than objective tests. Different interpretations of the finding are discussed in the presentation. The influence of sex and age period is also under consideration.

P#45

Nutrition and high sports performance

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In the past twenty years the kind of food and the manner of nutrition are accepted as the most important factors for the results in the sports competitions.

The correlation between basic nutrients of food, the time of intake as well as the selection of specific food is of great significance in sports. It turns out that it influences the protein synthesis, glycogen stores in liver and muscles, and the inclusion of fats as energy source.

The controlled intake of foods could positively affect such diseases as bulimia and anorexia.

The meaning of carbohydrates is too important for supporting high enzyme activity in the basic metabolic pathways. For example, the starvation or the using of low carbohydrate diet after physical loading practically does not activate resynthesis of glycogen in muscles during rest. The using of however of high carbohydrate diet increases vastly resynthesis of muscle glycogen during rest.

The proteins and the fats there are also specific meaning about sports performance, while the fats are the biggest source of energy the proteins are utilized for that purpose as an exception. Under prolonged and exhausting exercises, the quantity of urea could be increase as well as at excessive intake of food proteins.

P#46**Proprioceptive training with lateral malleolar instability**

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The authors offer their own technique of proprioceptive training with lateral malleolar instability. For the period 2004-2006 in a private kinesiotherapy consulting room, 36 patients with established anterolateral instability of the malleolar joint have been treated for a period of 3 to 18 months after the trauma. The patients observed have been divided into two groups according to the applied kinesiotherapy procedure. Together with the traditionally applied kinesiotherapy program with the experimental group, a special proprioceptive exercise for restoring the balance and coordination possibilities has been introduced. A number of various kinesiotherapy means, used in different conditions for the patient, have been included. The functional results have been read according to the points scale for assessment of the subjective condition and the functional restoration of the ankle after A. Kaikkonen et al. (1994), as well as appropriate tests for assessment of the proprioceptiveness and the balance of the body. The functional results obtained, confirm the efficiency of the procedure applied. The intensive and purposeful proprioceptive gymnastics improves the stability of the ankle, reduces the phase of destabilization and increases the functional possibilities of the joint with respect to quality and quantity.

P#47**Short-term physical therapy in patients with Parkinson's disease**

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Aim: To compare the effect of two physical therapy (PT) programs in patients with Parkinson's disease (PD).

Major findings: We studied 16 patients with PD divided into two groups. Group A includes 8 patients (3 male, 5 female, mean ages of 70.4 years). Group B includes 8 patients (6 male, 2 female, mean ages of 72.8 years). Patients had Hoehn and Yahr, stage 2 - 3 PD. Activities of daily living and motor disability are judged by Unified Parkinson's Disease Rating Scale (UPDRS). The time of position change (lying to sitting, sitting to standing); 10 meters walking; 10 meters walking, avoiding 3 obstacles has been studied.

Two PT programs include fifteen daily 1-hour sessions. The difference between 2 methods is that in group A the exercises were predominantly for spinal flexibility with relieved starting position, while the exercises performed by group B were dynamic and included games, sports elements.

In the patients of both groups a statistically significant improvement in daily activities was observed. Positive change in group A was 8.5 points, while in group

B was 4.5 points. These results associate with the results from studying the motor disability. There was more significant improvement in group A, which can be connected to the purposive exercises for spinal mobilization. The 4 tests that were studied changing positions and walking tests underline the better effect of the PT performed by group A (lying to sitting 1.81sec., sitting to standing 0.80sec.) and two walking tests – 5.44sec., 5.79sec. In group B there was a statistically significant change, but absolute values were lower than that of group A.

Principal Conclusions: Both PT methods have a significantly positive effect in patients with PD. The exercise program, performed by group A, improves the daily activities and motor activity more distinctly.

P#48

A short-term in-hospital physical therapy program in patients with chronic obstructive pulmonary disease

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Chronic obstructive pulmonary disease (COPD) is the most common lung disease that can interfere with disability and activity of daily living (LDL) limitations. Physical therapy programs help the patient return to the highest level of function and independence possible. Exercise training improves overall quality of life-physically, emotionally and socially.

Aim: To quantify the effect of ten days physical therapy program in-patients with COPD.

Material and methods: We studied 12 patients with COPD (8 male, 4 female, from 45-60 years, mean ages of 53 years). On ten consecutive days all in-hospital patients performed specialized exercise training and were on standard anticholinergic medication. We tested them on day 1 and on day 11 with BODE index which integrates body mass index (BMI) for body weight, forced expiratory volume in one second (FEV1) for airflow limitation, dyspnea (Borg Rating Scale for Dyspnea) and 6-minutes walk distance (6MWD) to assess motor functional limitations.

Results: In the patients group increased BMI, FEV1 (from 41% to 46% predicted), 6MWD(from 150 m to 270 m) and Borg scale was reduced.

Conclusions: The study revealed that 10 days physical therapy program is beneficial for recovery in-hospital patients with COPD.

P#49

Application of myofascial release techniques in case of shoulder dysfunction

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Myofascial release technique applies the principles of biomechanical loading of soft tissue and neural reflex modifications by stimulation of the mechanoreceptors in the fascia and muscles. It combines many of the principles of soft tissue technique, muscle energy technique, indirect and direct technique. Myofascial release technique is one of the newer additions to the field of manual therapy practice.

There are no publications in our country concerning its application in case of dysfunctions, post injury, post immobilization etc.

Purpose: The present report aims to assess the effect of myofascial release technique application in case of shoulder dysfunction.

Material and methods: The research comprises 30 cases (mean age 28,4) with shoulder dysfunction treated at the Department of Kinesitherapy and private practice for a period of 2 years. In all cases we found upper crossed syndrome, decreased range of flexion and internal rotation of the shoulder, scapular hypo mobility, and shoulder pain on the basis of postural syndrome, physical activity and sport. We excluded from the group the cases with pathological changes in cervical spine or shoulder. The treatment includes about 10 procedures of myofascial release technique for the upper arm, shoulder, and scapula from different positions.

Results: An analysis of variance of data was performed. The functional results of goniometry, muscle balance and pain (VAS) were better after the treatment course in all patients. There was a recovery of symmetry, balance and function of both upper arms.

Conclusions: Myofascial release techniques are an excellent mean for gaining functional recovery in case of shoulder dysfunction. After a kinesiological analysis of the dysfunction and excluding of the contraindications, myofascial release techniques can be applied also in other clinical conditions causing shoulder dysfunction.

P#50

Complex physical-therapeutic and rehabilitation program in vertebral hypermobility

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The current paper proposes the application of complex physical therapy and rehabilitation (PhThR) program in patients with vertebral hypermobility. We made PhThR on 54 actual and ex - sportsmen with vertebral hypermobility (divided in two groups, each group of 27 patients), treated 10 days like in-patients in the National hospital of Physical therapy and rehabilitation – Sofia and 10 days like out patients in the Medical Center “Vitalis” – Sofia. The rehabilitation complex in both groups included physiotherapeutic techniques, oriented to the cervical and the lumbar part of the spine and the transition regions: symmetrical isometric exercises for the

paravertebral muscles; massages (ionizing methods of the classical massage, periosteal and connective-tissue massages); mobilizations and manipulations; paravertebral kryotherapy. To the natural physical factors we added in the second group pre-formed factors: ultrasound (phonophoresis) with Veral gel (standard method) and electrical stimulations of paravertebral muscles by unidirectional Kots currents (with parameters: basic frequency 2500 Hz, modulated in series with frequency 50 Hz, pulse duration 200 microseconds, ramp 2 seconds, cycle time 10/30). The clinical observation and investigations were made before and after rehabilitation and one month later. For the statistical evaluation of results we used t-test (variation analysis ANOVA) and Wilcoxon rank test (non parametrical correlation analysis). The comparative analysis of the results shows in both groups positive effects on the vertebral hypermobility, muscular dysbalance and the positive sensory radicular signs. The survey proves that the second PhThR-program has statistically more significant and durable final results: reduction of the intensity of pain complaints (evaluated by Visual analogue scale, palpatory and by dolorimetry), normalization of the tests of Schober, Ott and of the two balances; correction of functional scoliosis; stabilization of the atlanto-occipital and sacro-iliac joints; decrease of the tendency to pelvic distortion. The complex program ameliorates the quality of life and the functional sportive capacity of patients with vertebral hypermobility.

P#51

Complex physical-therapeutic and rehabilitation program after reconstruction of anterior cruciate ligament

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The current paper makes comparative evaluation of effectiveness of two complexes physical therapy and rehabilitation (PhThR) after reconstruction of anterior cruciate ligament in patients with post-traumatic rupture of anterior cruciate ligament of the knee joint. During the last two years we made PhThR on 42 patients of the Department of PhThR in University regional hospital – Pleven in early and late postoperative period, divided in two groups (21 patients in every group). The rehabilitation complex in both groups included orthotic immobilization and standard physiotherapeutic program with passive movements (under the pain point) for increasing the limited range of motion of knee joint, active exercises for increasing the limited volume of motion of the knee joint from discharged starting position (progressively increasing the range of motion allowed by the orthosis), analytic exercises for m.quadriceps femoris (especially for m.rectus femoris) and for the abductors of articulation coxae (especially for m.gluteus medius) (in the beginning – isometric, later – isotonic exercises contra progressively increasing resistance), post-isometric relaxation for m.rectus femoris (the goal is restoration of

the muscle plasticity), mobilizations of the patella (to restore the joint play), training of the gait (without assistance devices) with gradual loading. In the second group we used natural and pre-formed physical factors: impulse magnetic field, ultrasound (phonophoresis) with Fastum gel and electrical stimulations of muscles – m.rectus femoris, m.vastus medialis and m.vastus medialis. The clinical observation and investigations were made before and after the rehabilitation which included three courses of physical therapy and rehabilitation in the frame of three sequential months. For the statistical execution and calculation of results we used t-test (variation analysis ANOVA) and Wilcoxon rank test (non parametrical correlation analysis). The comparative analysis of the results shows in both groups positive effects on the intensity of pain complaints and on the functional mobility in the knee joint. The survey proves that the second PhThR-program has statistically more significant final results: increasing of range of motion of knee joint (evaluated by goniometry according SFTR-system), decrease of pain (Visual analogue scale), reduction of periarticular edema (centimetry), fortification of muscles - extensors of the knee joint and abductors of articulation coxae (manual and functional muscle testing). The complex program aids functional recovery of the locomotion and accelerates the return to labor and sport activity.

P#52

Evaluation of the effects of physical therapy on the motor abilities of patients with diabetes mellitus type

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Diabetes mellitus is a significant social disease with a continuously increasing spread and with a serious consequences of disability. According to the modern medical standards the physical therapy (PT) is one of the basic therapeutic methods positively influencing the metabolic control in patients with diabetes mellitus (DM) type 2.

Aim: To estimate the changes in the motor abilities of patients suffering from DM type 2 after a six week course of PT.

Material and method: From 2004 till 2005 in our department 13 patients suffering DM type 2 were followed up. Average age was 66.46 ± 4.93 . Several physiometric indexes including dynamometry (kg) of the upper extremities, the circumference of the calf muscle (cm), cadence and time needed to walk a distance of 8 meters (s) were studied before the beginning of the treatment and on the 10th day and 6th week after the treatment. The daily PT routine lasted 45 minutes and includes exercises against resistance (through Thera-Band).

Results: The three time followed up changes in the motor ability of the patients showed a significant improvement, which is quite distinct at the end of the treatment. By the 6th week there is an improvement of the muscle strength (left hand – 4.2 kg, right hand – 5.6 kg), muscle endurance (left hand – 3.7 kg, right

hand 5.6 kg) of the upper extremities, the muscle mass of the lower extremities (average with 1 cm) and the possibilities to walk. There is a decrease in the cadence and in the time needed to walk a distance of 8 meters, respectively with 3.08 steps and with 2.08 s.

Conclusion: The study shows that motor abilities of patients suffering from DM type 2 can be permanently improved through an analytic approach and a continuous PT influence.

P#53

Including of exercises with “Physio-Roll” therapeutic ball in the kinesitherapeutic program for kids with pneumonia

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Pneumonia is an inflammatory disease of the bronchial-lung system with great variety of etiological causes. Regardless of the long history, that disease is a serious challenge, in regards to the timely placed diagnose and treatment. The specifics of the children’s organism, in the various age periods creates a definite specifics in the course of the disease.

Kinesytherapy with its specific means takes a very important place in the treatment of pneumonia.

The goal of the current study is to determine the effect from the action of our model of Kinesitherapy with Physio-roll, in children with pneumonia.

Methodology of the study. The object of the study were 15 kids - eight boys and seven girls, diagnosed with Pneumonia. The Kinesytherapy complex was applied in the background of medical therapy. The hospital stay was eight days on the average. The children had no other complimentary diseases.

We have monitored the following indicators - x-ray findings (incoming and outgoing patients), functional study of the breathing (incoming and outgoing patients), everyday auscultatory findings from the doctor's visits, the number of the breathing excursions (incoming and outgoing patients) and homodynamic indicators – pulse and blood pressure (incoming and outgoing patients).

The main goal of the development of Kinesitherapy Methodology was recuperation of the lung function. The main applications means were – inhalation treatment, breathing cage massage over Physio-roll, draining positions over Physio-roll, active exercises – breathing with and over Physio-roll.

Results After the applied with Physio-roll therapy - We managed to improve the psycho-emotional tonus of the children, there was a positive effect to the expectoration, we managed to recover the correct breathing mechanism, improved the stamina of the breathing musculature and the resorption of the pneumonic infiltrates.

Taking into account the good results, we suggest the application of the kinesitherapeutic program with Physio- roll exercises, for children with pneumonia, in the clinical practice.

P#54**Impressions of the applied combined kinesitherapy and orthotic correction in newborn children with clubfoot**

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The purpose of the announcement is to share the author's first impressions of the application of passive corrective Kinesitherapy in congenital clubfoot and early provoking of reflectory active action of the fibular muscles as well as the extensory muscles of the fore foot and toes. In the most severely deformed feet the main task is facilitation of the plaster correction. In the moderate deformations 2 weeks passive reflectory Kinesitherapy followed by 2 weeks plaster. In the cases of a comparatively light form of deformity the authors are using only Kinesitherapy.

Under surveillance and investigation were 8 patients aged 2 to 4 weeks. The final results are not yet announced because of the continuation of the treatment, but the first impressions are encouraging.

P#55**Investigation of the effects of modified method of physical therapy in case of traumatic injury of knee joint**

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The object of the research work was to study the therapeutic effect of modified methods of physical therapy on patients with traumatic injury of knee joint.

Methods: In the research work were included 18 patients after traumatic injury of knee joint, in the period January 2005 – May 2006 at Medical Center for Diagnostic and Consultation No. 17 – Sofia, and Sports and Rehabilitation Center at Sofia City University "St. Kliment Ohridski".

For the patients from the control group we used routine methods of physical therapy and for the patients from the experimental group we applied in addition post reciprocal relaxation for Quadriceps femori and modified methods for increasing of the range of motion and strength of the flexors at the traumatized knee joint.

Results and analysis: We achieved best results from the applied modified methods of physical therapy regarding the strength of the knee joint muscles, especially the flexors of the knee joint, enhancement of the muscles balance and increase of range of motion. The difference between the passive and active range of motion is lower for the experimental group in comparison to the control group, which was one of the purposes.

P#56

Kinesiotaping application to the operated patients after traumas in the knee articulation

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The knee articulation traumatic injuries are closely related with serious violations in its function leading to continuous disablement and the rehabilitation in the post operative period requires bigger efforts for reaching the maximal results.

The purpose of our examination is to check if the KINESIOTAPING used as a supporting source will lead to faster and full functional patient's rehabilitation.

The method of our treatment is the use of physical and kinesiotherapeutical procedures after KINESIOTAPING application.

The results have shown quick and meaning improvement in all examined indexes – pain and tumefaction decreasing, articulation mobility and muscle power.

P#57

Complex rehabilitation after arthroscopic reconstruction of the anterior capsulo-ligamentar apparatus in post-traumatic shoulder instability

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This article evaluates the effectiveness of two complexes physical therapy and rehabilitation (PhThR) after arthroscopic reconstruction of the anterior capsule – ligamentar apparatus in patients with post-traumatic anterior shoulder instability. During 4 years we made PhThR in 58 patients of the Department of PhThR in University regional hospital – Pleven in early and late postoperative period, divided in two groups (29 patients in every group). The rehabilitation complex in both groups included positional treatment, kryotherapy, massages (including manual lymphatic drainage) and standard physiotherapeutic program with passive movements (under the pain point) for increasing the limited range of motion of shoulder joint, active exercises for increasing the limited volume of motion of the shoulder joint from discharged starting position, analytic exercises for m.supraspinatus, m.infraspinatus, m.subscapularis, m.pectoralis major (in the beginning – isometric, later – isotonic exercises contra progressively increasing resistance), manual tractions for the capsule of shoulder joint. In the second group we used natural and pre-formed physical factors: interferential currents for shoulder joint and electrical stimulations of muscles – m.supraspinatus, m.infraspinatus, m.pectoralis major, m.deltoideus. The clinical observation and investigations were made before and after the rehabilitation which included two

courses of physical therapy and rehabilitation in the frame of two sequential months. For the statistical execution and calculation of results we used t-test (variation analysis ANOVA) and Wilcoxon rank test (non parametrical correlation analysis). The comparative analysis of the results shows in both groups positive effects on the intensity of pain complaints, on stability and on functional mobility in the shoulder joint. The survey proves that the second PhThR-program has statistically more significant final results: increasing of range of motion of shoulder joint (evaluated by goniometry according SFTR-system), decrease of pain (Visual analogue scale), reduction of periarticular edema (centimetry), reinforcement of muscles of the rotator cuff of the shoulder joint (manual muscle testing) and recovery of the scapulo-humeral rhythm. The complex program aids functional recovery of the arthro-kinematics of shoulder joint and accelerate the return to sport activity.

P#58

Treatment of spinal deformities in children with cerebral palsy (CP) with Kinesio taping

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The complex rehabilitations of CP imposes continuous and systematical pursuits. In the children target group from DCDIFZ – Blagoevgrad we have found a large percent of secondary scoliosis as a result of asymmetrical limbs.

The purpose we have sited was to approbate the Kinesitherapy method together with KINESIOTAPING in children with cerebral palsy in which we have found out scoliosis mutation and how the scoliosis correction influence the total muscle tonus.

The complex therapy included BOBATH straightening exercises both for muscle tonus and for pose control, specialized Kalp quadripedic exercises, training in correct walking and body posture after application of KINESIOTAPING.

The results show that after KINESIOTAPING use and the combination of different special techniques – for both spinal deformities and specialized technique for muscle tonus influence, we have succeeded to report asymmetry decreasing of both limbs, influencing the spinal curvature we have showed improvement in the Ashworth values for spastic definition.

P#59

Effectiveness of methods of respiratory physiotherapy on mucociliary clearance in children with cystic fibrosis

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Aim: The aim of the present study is to compare the effects of three methods of respiratory physiotherapy: conventional physiotherapy, active cycle of breathing techniques in a sitting and supine position and active cycle of breathing techniques

in positions with and without the head down, on mucociliary clearance in patients with cystic fibrosis.

Material-Methods: Thirty-five children teenagers and adults with cystic fibrosis, 8-20 years of age, with mean Schwachman score 78,49 took part in the research. All patients had regular physiotherapeutic control and applied systematically physiotherapy. All children received three methods of respiratory physiotherapy in a 3-month random order, when they came at the outpatients' department of the hospital for their regular check-up.

Results: The comparison of the results of the three methods showed no statistically significant difference in the quantity of mucus, whereas statistically significant difference was noticed regarding the quality of mucus after the application of the active cycle of breathing techniques in positions with and without the head down.

Conclusion: The application of the active cycle of breathing techniques in positions with and without the head down contributes effectively in the sputum expectoration from the peripheral bronchopulmonary segments and enhances the mucociliary clearance in children with cystic fibrosis.

P#60

Children with special needs and sports

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Sports are not the privilege of a few people aiming perfection and very high standards, but a need and a right of everyone. With the word "sports" we refer to the social sport activity that contributes to the character building and the completion of personality as well as to social relationships and affiliations. The organization of Physical Education of Municipality of Heraklion, for the last 8 years, have been organizing the annual School Games for children with Special Needs, very successfully. This competition takes place in one of the gyms in the area of Heraklion and all schools with children with Special Needs participate.

The purpose of this study is to present the sport activities- games, that take place in Heraklion for this special population. That is the programme includes mini-basketball (343), wrestling, relays, games from Malta, games with tails, games with balloons, bowling. For children with special needs, participation in sport activities is a very strong factor of socialization and psychomotor growth. That is sports gives them chances for maximum effort, cooperation and team work, in a pleasant and creative way, that in a upper level, will accomplish their acceptance from the social environment. The sum up, we would like to support our strong belief that sports are a social value with very important profits that everyone deserves including children with special needs.

P#61**Preliminary observation in application of the specialized kinesitherapeutical for ARS – complex in sportmen**

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In sports Traumatology practice this disease is important because of the frequency, tendency of chronic recurrence and occurrence in different sports.

The purpose of the announcement is to submit our clinical findings of the application of Kinesitherapy methods for ARS – complex patients. Under the observation for period of 3 years 12 patients aged 17 – 28 practicing professional football were observed. In 10 of the 12 objects were detected ARS – syndrome and in 2 ARS – complex.

The author's experience concerning Kinesitherapy, combinations with other physical methods as well as instructions for training regime were shared.

The analysis of the results display the role of Kinesitherapy in the complex treatment as well as the importance of the statical and dynamical stabilization of the pelvic girdle and precise loading.

P#62**Research in the treatment of rheumatic arthritis with kinesitherapy resources**

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Rheumatic arthritis is an illness which leads to a hard invalidation. With our publication, we aim to present the role of the kinesitherapeutic exercises facing the training in daily responsibility for prevention of the invalidation.

The method includes specialized exercises supporting daily routine responsibilities.

We have received hopeful results related with the tumefaction decreasing and with improvement in the small hand articulations movement.

P#63**Kinetic program in rehabilitation of burner syndrome at athletes**

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Objectives: We applied a kinetic rehabilitation programme at athletes with Burner syndrome, football players, after we made a correct and objective selection of patients. Our subjects go to rehabilitation programme that include physical and kinetic methods because they must to return to sport activity at soon at possible. Material and method: This study at was made in Sport Medicine Department of Clinical Hospital from Craiova, between march2005-march2006, on 10 athletes,

that present some microtrauma during sport activity like elongation or compression of brachial plexus, after repetitive traumas. Our subjects have been distributed in 3 groups(passive kinetic, active kinetic methods and control group).All of the present down shoulder and anteprojection of shoulder, reduce of angle between shoulder and neck, neurovascular signs, pain, muscle contracture. We evaluated our patients using clinical, functional and specific tests for evaluation mobility, pain, contractures and also we used scale for evaluation pain like McGill scale and also VAS. The evaluation has been made before and after kinetic treatment. The objectifes of rehabilitation were increase the pain, restore the mobility, muscle force and shoulder stability. Results: We observed the efficiency of rehabilitation programe after 8weeks, and we try to made a analyze of clinical and functional aspects for change the rehabilitation programme and so to obtain the fast return at sport activity.So we observed that exist a good evolution regards clinico-functional parameters. Also we must to say that our programme including orthesis therapy that has been used also after programme. Statistic evaluation for VAS and physical parameters showed us an increase of mobility 20points, force increase with 35points, ability and coordination increase 10points. Specific tests showed a good evolution for Adson test from 90% to 20%(positive test means bad prognostic).Also Spurling test has a good evolution from 60% to 20% and Hawkin test from 70% to 20%. Conclusions: This study present the role of active and passive kinetic programme in Burner syndrome. This therapy showed to us that we can obtain an improvement of clinic and functional parameters like disappear of pain and also is important to make a good evaluation before we begin the rehabilitation programme. We observed that kinetic rehabilitation protocol give to us an increase of upper limb functionality in Burner syndrome that means to obtain a good evolution of sensibility, coordination, mobility, muscle force and muscle tonus.

P#64

Early prevention of late complications after free vascularized fibula grafting of the femoral head

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Osteonecrosis of the femoral head is still one of the unsolved diseases in the orthopedic field. One of the best alternatives that can prevent the necrotic femoral head from progressing to collapse is free vascularized fibula grafting.

In this study a kinesitherapeutic program for early postoperative recovery after free vascularized fibula grafting is presented, emphasizing on early prevention of donor site complications with the use of continuous passive motion devices. The program is created according to the operative technique and the main clinic-functional problems during the phase of maximum protection of the operated limb.

The functional results give reason to think that the use of continuous passive motion devices, in addition to the kinesitherapeutic program, decrease the risk of late donor site complications.

P#65

Postural control and mobility in community-dwelling elderly women after single physical therapy session

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Background: Performance of some functional abilities decline with aging, due to dysfunction of postural control and decreased mobility. Aim: To assess the effect of single physical therapy (PT) session on balance, mobility and functional activities in community-dwelling elderly women, which are leaded into regular PT classes (three times per week). Material and methods: Participants are 16(n=16) ambulatory, community-dwelling women aged 66 and over who underwent one PT session of supervised balance, coordination, aerobic, isometric, breathing and relaxation exercises. The patients performed 45-min PT session with moderate intensity. Our baseline measures are: self-reported screening questionnaire included health status, use of medications, vision and hearing impairment, balance, history of falls a year ago, assistive devices and fear of falling. Main outcome measures The Timed 'Up&Go' test, 'side-by-side stand', 'semi-tandem stand', and 'tandem-stand', 'unilateral stand', 'step test', 'sit to stand test' were performed at baseline and after single PT session. All tests are used to assess functional activities (sitting, standing, turning around, and walking); dynamic balance and static balance. Results: PT session is beneficial for functional activities, dynamic balance and function of lower limbs. No difference was noted for pretreatment and post treatment static balance. Conclusion: Single PT session with moderate intensity increases functional ability in community-dwelling elderly women with good postural control and good mobility level.

P#66

Combined method for arthrosis treatment of the knee articulation with NeOx

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From all articulation illnesses the first place takes the illnesses of the knee articulation. The knees have the vital role for the human's daily routine.

We have examined closely 25 people, suffering arthrosis mutation in the knee articulation as a result of different illnesses causing the arthrosis, which were apportioned in control and experimental group and complex treated with appliance physiotherapy and well selected complex of medical gymnastics. The patients from the experimental group parallel with the complex treatment used the medicine NeOx for external use.

The purpose of the examination was to prove if the medicine NeOx as a supporting resource will contribute for faster positive results in our work. The results have confirmed this with the faster progress in getting better within the experimental group according to the following indicators: tumefaction and pain decreasing and individual endurance to the low-voltage electricity.

P#67

Effects of physiotherapy on motoring's surgically treated multiple injury

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Motoring is one of the most dangerous sport activities because of the high speed and risk of multiple traumas especially highly-energetic. Fracture of the acetabulum is one of the most frequent and severe injuries in this sport. Modern trends in treating complex acetabular fractures are directed at applying a surgical less risky method developed by A. Iotov. The severity of the injury and the necessity of the prolonged recovery period influence on the psychological factors, daily life and sport participation.

Purpose: To analyze critically the functional deficits after surgically treated complex trauma and to develop a physiotherapeutic strategy of the patient's motivation on returning to sport participation.

Material and methods: Thirty two-year-old patient was treated in July 2005 at the Orthopaedic Traumatology Department in the Emergency Medicine Institute "N. I. Pirogov"- Sofia with diagnoses: fractura acetabuli dextra, fractura luxatio coxae dextra, fractura malleoli medialis sinistra and fractura processus styloidei radii sinistra. Initially an osteosynthesis fixing the fracture of the medial ankle was set. A limited invasive surgical method, implemented by A. Iotov, aiming treatment of the acetabular fracture, was made later on the 20th of July after the direct extension. There is a co-existing pathology – contusio n. ischiadicus dextra. The goals of the physiotherapy were integrated with individual condition to motivate the patient, to control pain, to progress the hip and ankle range of motion and to stimulate the muscles.

Results: The most common complaint was pain. The pain was rated using the visual analogue scale from 0 to 10 maximum levels. The passive and active range of motion of the right hip and the left ankle was restored. Progression of the passive left ankle mobility was achieved. The strength of m. biceps femoris and m. gastrocnemius was increased.

Conclusions: We have developed a physiotherapy program which is specific by including the analytical approaches related to surgical treatment, complications on recovery, psychological and environmental condition. The effective and respectful communication in the multidisciplinary team leads to progressive recovery of the patient.

P#68

Directions and peculiarities of accent in the presurgical kinesitherapy for children with spine deformities

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Authors establishment is that the final results of the complex treatment of the spinal deformities are depending considerably of various factors that can be favorable influenced presurgically and in this way to be increased the individual rehabilitation potential.

The purpose of this announcement is to share clinical observations concerning presurgical preparation of the children suffering of the spinal deformities.

38 patients were under observation 21 of them girls, treated surgically in the University Orthopaedics Hospital "Prof. B. Boychev" within 5 years. 18 of them were treated clinically presurgically under the supervision and guidance of a kinesitherapist for the period of 15 days. The rest of the children were fulfill Kinesitherapy program (made professionally) at home.

The criteria for assessment of the rehabilitation potential included as follows: balance possibilities, muscle strength of the hip and gluteal groups, levels were explained.

The results were compared and they showed faster postsurgically recovery in 79% of the investigated children that were prepared clinically. The progress were 12,5 days shorter postsurgical hospitalization, lack of orthostatic reactions early verification. The effectiveness of the clinically prepared children is doubtless.