

**ORAL
PRESENTATION
ABSTRACTS**

O#1

High altitude functional changes in breathing and circulation.

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O#2

Echocardiography changes due to high altitude exposure in alpinists

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Objective: The aim was to assess the influence of high altitude on cardiac dimensions and left ventricle function, by use of echocardiography.

Methods: 12 men with mean age 33 years (24-47y) have undergone echocardiographic examination before and after high altitude expeditions- Pamir 2003, Everest 2004 and K2 2005. The average stay of climbers at an altitude of more than 3000 meters was 24,5 days(19-54d). The second examination was performed mean 16,5 days (4-28d) after descent below 3000 meters.

Results: From the 17 examined echocardiographic parameters, significant statistically changes in comparison with those in the first exam were observed in pulmonary artery systolic pressure – increase with 5,7 mmHg (+/- 4,03 mmHg, n=6, p=0,018) and telediastolic septum diameter – increase with 0,48 mm (+/- 0,71mm, n=12, p= 0,038).

Conclusions: Hypoxia, related to high altitude leads to occurrence of pulmonary hypertension, which is caused by an increase in pulmonary vascular resistance. There is evidence from the results that even after descending, the pulmonary artery pressure remains to be elevated, and at the same time no changes in the diameter of the right ventricle are observed.

O#3

Effects of Time of Day on Maximal Anaerobic Performance and Selected Metabolic Responses

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The purpose of the present study was to determine the time-of-day effects in maximal anaerobic performance and selected metabolic responses during and after a supramaximal exercise. Fourteen volunteer men undergraduate students participated in the Wingate Test at three time points: 09:00, 13:00 and 17:00 hours on separate days. Before each test subjects' body weight, oral temperature, resting heart rate and blood lactate concentrations were measured. During the Wingate test subjects' peak and mean powers were determined. Immediately after the Wingate test and at 3rd, 5th and 7th min of passive recovery period heart rate and blood lactate responses were also determined. A significant circadian rhythm was found for oral temperature (p<.001) and for peak (p<.05) and mean (p<.05) powers respectively. No significant circadian variation was observed for the metabolic variables in all measured time points (p>.05). As a conclusion these results

suggest a time-of-day effect in anaerobic performance during the Wingate test however this variation was not in phase with the circadian variation in oral temperature. In addition a time-of-day effect did not exist for the heart rate and blood lactate concentrations.

O#4

Analysis of VO_2 off- kinetics using different time intervals for measurements

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Concept of elevated aerobic metabolism after exercise has attracted a lot of researchers since 1922 (Hill, 1924) till nowadays (Bahr, 1992; Wilmore et al., 1999). Contemporary studies on the contrary of the traditional theory of so-called "oxygen debt" concluded that the EPOC depends on many other factors than classic understanding of it. EPOC curve could be described by collecting data with Douglas bag and up-to-date gas exchange technique (mixing chamber, breath-by-breath). The range of systems for obtaining VO_2 values is different. It is interesting to know whether the number of VO_2 measurements would change the EPOC curve parameters substantially in relation to time intervals. Therefore, the purpose of this study was to describe off-transient VO_2 kinetics by different interval measurements and analyze the oxygen uptake recovery phases.

The VO_2 - off response in 7 cases was fitted by a biexponential function using semi-logarithmic plot. Incremental cycle ergometer test protocol included 90 sec of baseline exercise at 60 W followed 30 W increments every 90th sec to exhaustion. Two university students-athletes were loaded with the same test model. Pulmonary gas exchange for subject A (age, 20 years, weight, 87 kg) have been done with Oxycon breath-by-breath system. After the step cycle test EPOC curve was analysed (4 cases) using VO_2 data at every 4 sec, 15 sec, 30 sec and 60 sec in 6 min recovery. The same procedure was done for subject B (age, 21 years, weight, 80 kg). VO_2 off- kinetics was plotted in three cases with VO_2 values for next time intervals: 15 sec, 30 sec and 60 sec. Gas exchange data for this man was collected by Spyrolit – Juncalor (mixing chamber). The maximal values of power (P) in W, VO_2 , VCO_2 , RQ were determined. The VO_2 off –kinetics parameters half-time ($t_{1/2}$), velocity constant of VO_2 recovery (k), VO_2 ("alactic" and "lactic" O_2 debt) have been computed for the fast and slow EPOC components.

The achieved peak work values of parameters for the subjects were: A – P 390 W, VO_2 4.59 L. min⁻¹, VCO_2 5.64 L. min⁻¹, RQ 1.23; B – P 390 W, VO_2 4.37 L. min⁻¹, VCO_2 5.131 L. min⁻¹, RQ 1.17. The results showed almost the same work capacity and VO_2 max of the subjects, but the VO_2 response of A was faster in two recovery phases. Slow and fast components with different VO_2 -slope were distinguished. In cases of breath-by-breath system the most difference of 10 per cent between the EPOC determined with 4 sec interval VO_2 values and the curve with 60 sec data was found. In the other cases and those of mixing chamber measurements the difference was about 5 per cent and less than it. In a way the longest time intervals impeded the component differentiation. It could be concluded from this pilot study that the use of different time interval measurements for VO_2 off-kinetics analysis

had slight effect on the EPOC curve parameters and the reliable procedure was applied.

O#5

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

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The purpose of this study was to investigate whether there are distinct patterns of flow in the thigh and calf of athletes, normal individuals and patients with peripheral arterial disease, under resting conditions, during walking and running on the treadmill, as well as during the post-exercise period. For this purpose simultaneous ^{99m}Tc clearance in the thigh and in the calf was used at rest, during and after exercise. The study was based on the principle that the clearance of the radioactive isotope was proportional to blood flow in the thigh and in the calf at any given time. All individuals rested before starting the test. Then, forty μCi of ^{99m}Tc diluted in 0.2 ml of saline were injected into the thickest part of the quadriceps and gastrocnemius muscles. Two light probes were strapped on the skin over the points of injections. These probes were connected to two isotope localization monitors, and the output from the detectors was recorded continuously on a pen recorder. Clearance curves were recorded for three minutes at rest. Then, all individuals walked on a horizontal treadmill at 4.5 km per minute for three minutes or until claudication occurred. All normal volunteers, athletes and non-athletes, were also asked to run on the treadmill at 9 km per minute for another three minutes. Clearance curves were obtained at rest and during exercise. Finally clearance curves were recorded during the post-exercise resting period for ten minutes. The percentage clearance per minute (T) at any minute, was obtained from the following equation (1): $T = \frac{f(t) - f(t+1)}{f(t) + f(t+1)} \times 200$ (equation 1), where $f(t)$ was the radioactivity measured at time t and $f(t+1)$ was the radioactivity measured one minute later. The radioactivity cleared during one minute was $f(t) - f(t+1)$ while the mean radioactivity during the same minute was $f(t) + f(t+1) / 2$ and therefore the percentage radioactivity cleared per minute was given by equation 1. Athletes (sprinters), as well as non-athletes individuals with no sign of peripheral arterial disease and patients with claudication were included in the study. The results demonstrated that although muscle blood flow in the thigh and calf in normal individuals were comparable in athletes and non-athletes, the increase of flow was greater both in the thigh and in the calf of athletes during and after exercise, than in non-athletes individuals. The faster clearance of the radioactive isotope in the thigh and calf of athletes can only be explained if we take into consideration the well developed quadriceps and gastrocnemius muscles of these athletes. In patients with peripheral arterial occlusive disease the pattern of clearance during and after exercise is not the same. In limbs with proximal occlusion the result suggested that the blood flow pattern in the thigh and in the

calf is the same as in normal limb, but was “throttled” by the proximal occlusion so that the blood flow was insufficient to permit normal hyperaemia in limbs with distal occlusion, the hyperaemia in the thigh was normal, but flow in the calf was diminished immediately after exercise when there was minimum vasodilatation in the muscle bed of this area, but later showed a delayed hyperaemia when the hyperaemia in the thigh subsided. The only conceivable explanation of the diminished flow in the calf immediately after exercise is a fall in pressure in the axial vessels distal to the occlusion. This in turn is the consequence of a similar fall in the pressure gradient across the collateral circulation. The calf is deprived permits hyperaemia in the calf where maximum dilatation is still present. In conclusion, there are distinct patterns of changes in flow during and after exercise, in athletes, in non-athletes normal individuals and in patients with peripheral arterial disease, which can be determined by ^{99m}Tc muscle clearance. These changes are so characteristics that they can be used for research and for diagnostic purposes.

O#6

Sports injuries in cranio-facial region.

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The cranio-facial region is extremely delicate and non-protected area in the human body. Man communicates with other people mainly by exposing his face. A number of vitally important organs are situated here, and some functions of utmost significance – breathing, swallowing, etc. – are closely related to face, herein the reason for its often and severe maltreatment, incl. sporting trauma.

The authors analyze 250 patients with fractures, treated in the Specialized Hospital for Maxillofacial Surgery – Sofia. Sporting trauma, however is relatively rare. 2% of the patients were injured during sport – mainly through training activities. Sports that lead basically to trauma are soccer, boxing and martial arts.

O#7

Treatment of shoulder instability in athletes.

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The development of arthroscopic surgery in the last decade allowed the possibility of significant development in the treatment of shoulder instability. The tendency of early arthroscopic stabilization of Bankart’s lesion in sportsmen and young people is imposed because in them the probability of recurrence is about 94-96%. *The aim* of our report is to present the last tendencies and our experience in the treatment of shoulder instability.

Materials and methods: For the period of one year (2005-2006) in the Third Clinic of Orthopedic Traumatology in MHATEM “Pirogov” we have operated on four patents with recurring luxation of shoulder joint. All are men – average age 23.5(19-28). Term of observation minimum 6 months. Two of the patients have

experienced recurrence of primary anterior traumatic luxation for less than 6 months. One patient is has experienced four episodes of recurrent anterior shoulder luxation for period of eight months. One patient is with many recurrences for a period of eighteen months. The same patient has clinical data for bidirectional anterior-inferior instability and laxity of the contra lateral shoulder joint.

The surgical technique is totally arthroscopic using anchors type GII. Postoperative treatment – immobilization in shoulder bandage for 3-4 weeks. Passive range of motion after 21 days. Active range of motion after 30 days. Active sport after 3 months, contact sports and throwing after 6 months. *Results:* For the short period of observation we have not observed any recurrences. The test of “apprehension” is positive in 1 patient but without data for subluxation. The total passive range of motion is recovered in all patients. In one patient there is restriction of the active external rotation in 90° abduction in the range of 10°.

Conclusion: The short period of observation and the small group of patients do not allow us to make serious conclusions. Nevertheless based on the literature the lesion of Bankart is present in 90-95% of the patients with anterior traumatic luxation of glenohumeral joint. The risk of recurrence after anterior traumatic luxation in athletes and young people goes to 94-96%. The early arthroscopic stabilization of the lesion of Bankart significantly reduces this high risk, shortens the period of recover and improves the quality of life.

O#8

Surgical techniques in the treatment of acromioclavicular dislocations.

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Dislocations of the acromioclavicular (AC) joint are 1,2% of all injuries and 12% of dislocations around the shoulder. Most common mechanism of injury is falling directly on the shoulder during sport. The surgical treatment is with absolute indications in IV-VI stage according to Rockwood and with relative – in III grade.

Patients and methods: For period of 5 years (2001-2006) in Third Clinic of Orthopedic Traumatology in MHATEM “Pirogov” we have operated on 21 patients with luxation of the acromioclavicular joint. 19 patients are observed for the term of 33(6-60) months. Average age 39.5 (17-62) years. The used surgical techniques are: ORIF with K-needles and ligamentorrhaphia in 9 patients; open reduction and coracoclavicular fixation according to the technique of Bosworth/Rockwood with ligamentorrhaphia in 4 patients; distal resection and ligamentoplastics according to modified technique of Weaver-Dunn in 3 patients; ligamentorrhaphia and coracoclavicular fixation with Ethibond №5 in 3 patients.

Postoperatively – immobilization in shoulder bandage for 21 days. Passive range of motion to 90° after 14 days. Active range of motion after 30 days.

Results: During CSA we observed excellent and good results in 16(84.2%) patients. Satisfactory result in 2(10.5%) patients and bad in 1(5.2%) patient.

Conclusions: Surgical treatment of instable acromioclavicular joint has good postoperative functional and anatomical results. The use of different surgical techniques depends on the duration of the lesion and the quality of broken coracoclavicular ligament.

O#9

Injuries of the proximal Biceps-labrum complex in athletes.

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O#10

Errors and complications in the operative treatment of shoulder instability.

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The authors describe the most common methods for operative treatment for shoulder instability. They discuss the most popular results in the scientific literature and raise the question to operate or not. The benefits and negative sides of the early operative treatment are analyzed. The authors present different operative techniques for the treatment of chronic shoulder instability. They analyzed the most common errors and complications in world orthopaedic practice.

O#11

Evaluation of knee laxity and fear of re-injury in athletes with reconstructed ACL injuries

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Returning to pre-injury level and full participation to sports activities are regarded as the indicator of ACL reconstruction success. Failure in returning to pre-injury level of participation often results from functional insufficiencies. On the other hand, social reasons or psychological hindrances, such as fear of re-injury may also influence athletes' return to sports. Thus, the aim of this study was to investigate relationship of anterior tibial translation (laxity) and fear of re-injury scores depicted by KT-1000 arthrometer and Tampa Scale of Kinesiophobia. (TSK)

Postoperatively rehabilitated 41 reconstructed ACL rupture cases participated to this study. All of them returned to sports activities at the time of the study. We have divided these patients into groups according to the postoperative months. 14 were in group A, 6-12 months; 14 in group B, 13-18 months; and 13 in group C, more than 18 months. Laxities of the reconstructed knees were measured by KT-1000 arthrometer at 15, 20 and 30 libes of forces and with manual maximum tests. Active tests were applied as well. All of the subjects fulfilled Tampa Scale of Kinesiophobia.

The TSK scores and KT-1000 values were statistically evaluated by using Pearson Correlation test. There were no significant correlations in arthrometric measurements of reconstructed knees and TSK scores of athletes at each group. ($p > 0,05$)

Although we have hypothesized that the athletes with higher anterior translation values would likely have higher TSK scores we could not find such a correlation. All of the subjects participated in this study had completed minimum 6 months of rehabilitation. During this period dynamic stability of the injured knees improved quite well since they were able to return to sports. Therefore we concluded that arthrometrically detected laxity did not lead to increased fear of re-injury in athletes having reconstructed ACL injuries.

O#12

Arthroscopic ACL reconstruction using BTB and cross pin fixation – early results

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The following study shows the early resultants from the arthroscopic cross pin fixation with graft from lig. patellae proprium. For the period 03.2005 – 04.2005 were operated 110 patients. The importance of the LCA for the stability of the knee joint has provoked the authors interest in the total repair and early mobilization of the operated limb. The arthroscopic reconstruction of the LCA is accepted as gold standard for operative treatment in the clinic of sports orthopedics and Traumatology in Dianabad, Sofia.

O#13

Rigid fix stabilization of the bone-tendon-bone graft in reconstructive operations of the ACL of the knee.

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O#14

Concept for anatomic repair of ACL.

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O#15

Acute first time hamstring strains during high speed running – palpation and MRI are useful in predicting recovery time

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Purpose: The aim was to investigate if it is possible to predict the time back to pre-injury level after an acute first-time hamstring strain that occurred during high speed running, by establishing the location by palpation and/or Magnetic Resonance Imaging (MRI).

Methods: Eighteen elite sprinters with acute first-time hamstring strain were prospectively included in the study. All subjects were examined, clinically and with MRI, on four occasions post-injury: at day 2-4, 10, 21 and 42. Clinically, the point at which the subject noted the greatest pain upon palpation was marked, and its distance to the ischial tuberosity was measured. In addition, knee flexor strength and range of motion in hip flexion with extended knee were measured. With MRI, the distance from the most cranial point of the injury oedema to the most caudal point of the ischial tuberosity was measured. In addition, each injury was characterized with respect to which muscle/muscles and what tissues that were involved. The follow-up period was 2 years.

Results: All sprinters were injured during competitive sprinting and the primary injuries were all located in the muscle-tendon complex of the long head of the biceps femoris muscle. There were no correlations between time to return to pre-injury level and the magnitude of the acute loss or short term recovery of knee flexor strength and hip flexibility. The mean distances ($\pm 1SD$, range) from tuber to the point of greatest pain upon palpation at the four test occasions were: 12 (± 6 , 5–24) cm, 11 (± 7 , 3–24) cm, 12 (± 7 , 4–24) cm, and 11 (± 8 , 4–24) cm, respectively. The mean distances investigated with MRI ($\pm 1SD$, range) at the four test occasions were: 67 (± 71 , -21–218) mm, 79 (± 65 , 0–205) mm, 86 (± 69 , 6–232) mm, and 102 (± 79 , 17–240) mm, respectively. The median value for the time back to pre-injury level was 16 weeks (range 6–50w). Proximity to the ischial tuberosity, as estimated both by palpation and MRI, and involvement of the proximal free tendon, as estimated by MRI, were associated with significantly ($p < 0.05$) longer time to return to pre-injury level.

Conclusions: Careful palpation during the first three weeks post-injury and MRI investigation performed during the first six weeks post-injury provide valuable information that can be used to predict the time to return to pre-injury level; a more cranial pain/injury location predicting a longer recovery time for the athlete.

O#16

Evaluation of white arthroscopies in sportsmen.

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O#17

Therapeutic principles for the treatment of injuries of the Achilles tendon

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The authors discuss the therapeutic principles for the treatment of injuries and diseases of the Achilles tendon. They make analysis of the patients for the last 20 years that passed through the clinic of sports orthopaedics and Traumatology in Sofia. A therapeutic algorithm is presented for conservative and operative

treatment and for diagnostic evaluation of injuries of the Achilles tendon. The authors present their operative techniques for treatment of old injuries of the tendon. Different tendon sutures are discussed used in miniinvasive surgery. The types and time of immobilization and the rehabilitation protocol is also considered.

O#18

Treatment of the thoracic outlet syndrome.

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O#19

Correlation of a unilateral accessory lumbosacral arthrosis with antalgic scoliosis in 8 patients with chronic low back pain

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Scope: The examination of the possible correlation of a unilateral accessory arthrosis between L5 and I1 vertebrae with scoliosis, in patients with low back pain.
Material-Methods: Inspection of radiographs of the lumbar spine of 328 patients with low back pain.

Results: An arthrosis between the transverse process of L5 and sacra ala was observed in 8 out of 328 patients (2.44%). Five of them were athletes and all the 8 patients with the accessory arthrosis had scoliosis with the convexity turned to the side of the accessory arthrosis.

Conclusions: The accessory arthrosis between L5 and S1 vertebrae is accompanied with scoliosis with the convexity turned to the side of the accessory arthrosis. Whether a lumbosacral transitional vertebra predisposes to back pain is not clear. The above described accessory arthrosis, however, has been shown that it has mobility, degenerates and may develop osteoarthritis, especially when it is high-loaded as in the case of athletes. Moreover, this anatomical variation alters the distribution of load in the lumbar spine and this may lead to osteoarthritis of facets, which is another cause of low back pain in individuals with this variation. The scoliosis that we observed in patients with the accessory arthrosis may be antalgic in order to avoid contact between the transverse process of the L5 and the sacra ala, but this leads to biomechanical alterations and possibly to osteoarthritis of facets.

O#20

Sports injuries during snowboard

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In recent years snowboarding has gained much popularity. This fact leads to changes in the localization and type of injuries in winter sports. The usual injuries

of the knee and lower leg are combined with increased rate of traumatic injuries to the shoulder and upper extremity in athletes practicing snowboard. The authors discuss the type, mechanism and treatment of snowboard injuries in one of Bulgaria's winter resort.

O#21

Methodological approaches of risk factors in sports traumatology in volleyball

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The volleyball becomes every year a more and more competitive game. The strength training in the preparatory period is not optional anymore but became a necessity. The players understood that because the volleyball includes a combination of resistance, strength, speed, agility and coordination is necessary to elaborate a program that will satisfy all these necessities. Like in other sports the development of the muscle mass in different muscle groups is asymmetrical and unequal, conducting to decrease of performance and trauma. Between the causes involved in a poor physical conditioning we mention the inequality in the development of agonist/antagonist muscular groups, the inadequate neuromuscular coordination, flexibility and low resistance of tendons and ligaments, low joint mobility. Reported to motor qualities the players must work for increasing of resistance, flexibility and strength, by using the main principles of individualisation, variation). Training: continuity, multilaterally, step by step increasing. Also is important that the players will use a variety of movements in all anatomical plans; by this reason the programs must prepare the players to produce, reduce or stabilise the dynamic structures involved in the movement execution for each plan.

The prophylaxis of injuries in volleyball will equally include in the training program specific exercises addressed to the strengthening of tendons and ligaments, along with the muscles, in order to fortify the joints they traverse, to prevent untoward injuries and to permit full and effective range of movement and stability. In plus we can use massage and self-massage related to the type of effort, training period, meteorological conditions, protection of areas most exposed to injuries by tapping and stapping (primary prophylaxis) and proper treatment/recovery of previous trauma (secondary prophylaxis). We also increased flexibility and range of joint motion. We used static stretching exercises for general flexibility, specific warm up procedures, weight training and resistive exercises in terms of specific activities. We worked for the development of flexibility, endurance and strength through the use of a carefully graded developmental program. The exercises were selected for assuring the warm up of all muscular groups. The training programmes were adapted to the correspondents training periods.

O#22**Muscle injuries in football players**

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The authors present the anatomy of skeletal muscles. The acute exogenic and endogenic injuries are discussed and the predisposing factors. The lesions are classified according to the sport pathology. The benefits of the ultrasound diagnostic is emphasized, elucidating the best time of evaluation, and the possibilities of control of the evolution and curing of the injury. The authors present the possible complication and make a statistic of the treated injuries of professional soccer players for 3 years period.

O#23**Physical activity. Competitive sport. Energy balance.**

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The study discusses the changes in the homeostasis, blood circulation, breathing, gastrointestinal tract and endocrine system in elite sportsmen during intense training. The authors present their 30 years of experience with 25 000 anesthetics in the clinic of sports medicine. They analyse the anesthesiological risk in high competitive sportsmen – malignant hyperthermia, tromboembolias etc.

O#24**Athletic trainer and sports rehabilitation: A review of the role of athletic trainer**

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Injured athletes receive comprehensive sports medicine service from a team of professionals of sports medicine. The one member of sports medicine team that exclusively provides sports medicine service is the athletic trainer. Athletic trainer is the critical link between the physician and athlete, and physician and coach. Duties of athletic trainer are varied but one of the more important duty of the athletic trainer is rehabilitation of sports injuries.

The sport rehabilitation program serves by the rehabilitation team but athletic trainer as a sport rehabilitation specialist is located at the center of rehabilitation team and is coordinator and leader of the team. Athletic trainer is also designer of sport rehabilitation program.

In the total rehabilitation program therapeutic exercise plays one of the more important roles in returning the injured athlete to sport participation. The correct

application of therapeutic exercise by an athletic trainer in a rehabilitation program emphasizes a sequence of physiological parameters such as:

1. Flexibility and range of motion
2. Muscle strength
3. Proprioception and coordination

Each of these parameters is based on the previous ones and athletic trainer is responsible for correct performing of the program.

O#25

Menstrual problems in female sport

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The sports medicine selection requires coordination between the structural characteristics of women and the special features of the different sports disciplines, and direction to sports adequate to the body structure. A specific problem is the monthly physiological changes due to the menstrual cycle. It is studied by means of inquiry of 146 active female athletes-students in the National Sports Academy from 40 types of sports according to 14 features. It is established that the average age of menarche is 13,4 years of age, which significantly differs from the average age of menarche for the Bulgarian population (12,4 years of age). This delay is most often observed in the so-called slim sports – rhythmic gymnastics, diving, long distance running. Among the menstrual disorders the most frequent ones are hypermenorrhea(47%) and dysmenorrhea (82%). Only 2 of the investigated students interrupt they training programs during the period of menstrual cycle. All students take place in sport events - 61% of them accomplish their personal achievements, 23,6% score lower than usual, and 15% score higher. The analysis of the results shows that the development of the adaptive possibilities of women to physical training allows them to overcome the menstrual disorders and to be successful. It is recommended that individualized sports medicine control is exercised. The role of the coaches in respect to protecting the female athletes health is by no means vital. An adequate training will help females in sports to overcome the monthly discomfort.

O#26

Dynamics of young female swimmers' psychophysical state during 6 weeks before competition

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Our poster presents results of the analysis of data related to different components of the complex psychophysical state of 12 young female swimmers aged 13-16, in pre-competitive period (measuring times: 6 weeks, 3 weeks, 2 weeks, 1 week, 3 days, 1 day before the main competition of the season). Eysenk's EPQ and Spielberger's STAI – Y for measuring trait anxiety have been administered to

subjects once - 6 weeks before the competition. A modification of PRQ (Pre-race questionnaire) of Jones, Swain, and Cale (1990) has been administered once – 1 week before the competition. 6 weeks, 3 weeks, 2 weeks, 1 week, 3 days, 1 day before the competition it was administered: 1. Spielberger's STAI – Y for measuring state anxiety; 2. modification of SAN-test measuring situative physical self-esteem, activity, mood, concentration and self-confidence. 6 weeks, 3 weeks, 2 weeks, 1 week, 3 days, 1 day before the competition it was registered heart rate variability. The study was carried out late afternoons during the recovery period just before the 2nd practice of the swimmers. The registration of the heart rhythm was carried out by means of a cardiomonitor Helige attached to a personal computer. The received R-R intervals values, measured up to 1 ms accuracy, were calculated and analyzed by a software product "Cardiolab" for variation and spectral analysis. The following variation parameters were used - average R-R interval (R-R mean) and coefficient of variation (V). Within the spectral analysis (Hartley Transformation) three regions were selected: 0.02-0.07 Hz (LF - Low frequency - slow waves from the second order), 0.07-0.15 Hz (MF - Middle frequency - slow waves from the first order), 0.15-0.35 (HF - High frequency respiratory waves). For every range it was calculated the maximum spectral power (Plf, Pmf, Phf), the frequency of the biggest power peak (Flf, Fmf, Fhf), the integral of the power of every range (IPlf, IPmf, IPhf) and the relation of IPlf, IPmf, IPhf to the total spectral power (LF%, MF%, HF%). For this presentation we analyze only the proportion LF%/HF% that represents the regulative mechanisms' level of tension. After the competition the young swimmers have answered to the questions of a special after-competition questionnaire related to their pre-start and competitive state, to their satisfaction of their sport results and competitive outcome, to their causal attributions for results and outcome. The analysis of data focuses on the complex integrative relationships between different registered components and levels of the psychophysical state of swimmers.

O#27

Prevalence of obesity in Turkish adults

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Objective: The objectives of this study were to determine the prevalence of obesity in Turkish Adults living in city centers.

Methods: From total of 3000 households 4906 subjects (aged ³ 18, 1892 men, 3014 women) were participated in this study. Households addresses were selected from the government's records of 2000 census. Anthropometric and demographic data were obtained for each subject. People were categorized according to the obesity criteria by WHO on which, body mass index (BMI) of >30 kg/m² is obese, BMI of 25-29,9 kg/m² is overweight and a BMI of 18,5-24,9 kg/m² is 'normal'.

Results: The overall prevalence of obesity (BMI 30>) in those 18 > years of age was 26% (n=1274), the overall prevalence of overweight 33,3% (n=1633). The prevalence of obesity was dramatically higher in women than that of men (33,5% versus 14%, P<0.05). The prevalence of obesity showed significant association with education status, gender and marital status. Up to 60 years, increasing age was also associated with obesity. The combined prevalence of both overweight and obesity was 59,3% (n=2907).

Conclusions: Although Mediterranean diet is considered one of the healthy kitchen and Turkey is a Mediterranean Country, obesity is a common problem for Turkish adults. In this respect, physical inactivity could be the major reason for this results.

O#28

Project "Creation of transnational open and distance training network in family and sports medicine"

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O#29

The fight of doping in sport – therapeutic use exceptions (YUE)

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WADA with the International Standards for TUE ensure that the process of granting therapeutic use exception is harmonized across Sports and Countries.

The CODE permits the athletes and their physicians to apply for therapeutic use exception i.e. permission to use for therapeutic use purposes substances, or methods contained in the list of prohibited substances and methods, whose use is otherwise prohibited.

The International Standards for TUE includes criteria for granting of TUE, confidentiality of information, the formation of therapeutic use exception committees and the TUE application process.

These Standards apply to all athletes as described by and subjects to the code i.e. able bodied athletes and athletes with disabilities.

The WADA code in article 4.4 (therapeutic use), article 13.3 (appeals for decision granting or denying a therapeutic use exception), article 14.5 (doping control information Clearing House) and article 15.4 (mutual recognition) give the direction of a universal and harmonized approach to this subject.

We know of abuses in the different ways that Federation and Anti-doping Organizations tried to control this. Here we clear and precise steps and directions to follow and comply.

I show try to put this process, as we asked to comply today and point out the responsibility of the athlete and his physician, the National Federation and National Anti-doping Committees, the International Federations and finally WADA's.

O#30

The effects of muscle damage on neutrophile function

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Eccentric exercise results in muscular damage characterized by decrease in strength muscular pain, and elevated levels of serum enzymes. Although acute inflammation which takes place during eccentric exercise is blamed to be responsible for muscular damage, the process of it is not clear. This study has been designed to investigate the role of neutrophiles as a source of free radicals in eccentric exercise induced muscle damage. Twelve healthy male volunteer subject (average age; 23.00 ± 2.21 years) has been assigned to this study. Subjects performed 8 sets of 10 maximal isokinetic (60 degrees .s) eccentric actions of the knee extensors through a range of motion from 180 degrees to 90 degrees (180 degrees = full extension). Blood samples were taken just prior, immediately after, and following 3h and 24h of exercise to measure neutrophile superoxide formation induced by N-formyl-L-methionyl-L-leucyl-L-phenylalanine (fMLP). Isokinetic isometric pik torques of extensors and flexors of knee joint were measured at 90 degrees. Pik torque measurements were done before, 3 hours after and on days 1, 2, 3, 4, and 7 following the eccentric exercise. Results have shown that free radical formation in neutrophiles significantly increased ($p < 0.01$) only just hours after exercise in both knee extensors and flexors and 24 hours after only in knee extensors following the eccentric exercise. It was concluded that eccentric exercise increases neutrophile sensitivity and may result in muscle damage as a source of free radicals.

O#31

Finite Element Approach To Rock Climbing In Static Conditions

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Rock climbing is a sort of sport, which includes both dynamic and static movements. One of the most important parts of rock climbing is maintaining the equilibrium during different positions. Equilibrium can vary in respect to the both upper and lower limbs position.

The supporting forces at the holds and the joints change by the body position and declination of the wall. Climbers generally try to keep their balance with distributing his body weight to the holds. Also they must use some extra forces to stabilize body moments. To understand the body positioning with respect to the different hold arrangement and finding the positions with minimum joint moments is important for climbing so the study of the forces and moments at the holds and

joints provides an excellent assessment of the activity. The purpose of this study is determined supporting forces, joint forces and minimized moments in different human body positions in the static condition of climbing.

To able to calculate supporting forces on the holds and joint forces, we modeled a climber with stick segments and some free and pinned support joints. We also added the weight of body segments in to our model and solve the problem with finite element analysis method in static condition. Stiffness matrix of the body segments and the master stiffness matrix of the system were created with respect to the literature. After determined the boundary conditions Matlab was used to solve the system of equations. To be able to visualize the climber graphical user interface (GUI) was created and the results of the solver was shown on the GUI.

O#32

Dynamic of pull phase in successful and unsuccessful snatch attempts

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Successful or unsuccessful lifts can be results of joint forces and moments in the snatch. In order to understand the mechanics of successful lift joint forces and moments ought to be calculated and compared to unsuccessful lift attempt. So, the purpose of this study was to compare the kinetics of pull phases in successful and unsuccessful snatch attempts in the constant weight.

Three elite men weightlifters were observed in this study during Turkey National Weightlifting Championships in 2003. Two S-VHS cameras (Panasonic NV-MS2b) operating at 25 frames per-second (50 fields per-second) were used to record snatch attempts during competition. Shutter speed was set to 1/500. The optical axis both of two cameras was approximately placed to an angle of 45° with the frontal plane of the subject. A calibration frame (with 12 control points, dimension of 2.5 x 2.5 x 2 m) was used for 3D space. The direction of motion was determined as medial-lateral (Z axis), vertical (Y axis) and anterior-posterior (X axis) directions. Kinematics data of subject and bar were obtained from the points that were selected on the body and bar. Selected points were the big toe, heel, ankle, knee, hip, shoulder, elbow, wrist, head and medial side of the grip of hand of the two sides of the body. These points were digitised using the Ariel Performance Analysis System (Ariel Dynamics, San Diego, CA), and then digitised data were transformed to real distance units using the calibration scale placed in the field of view. Low pass digital filter, which is cut-off frequency 4 Hz, was applied to the raw data.

The 2D dynamic model was built and used to understand dynamics of pull phase in the snatch. Dynamics model allow us to calculate the first and second pull phases of the snatch. The segment proportions, moment of inertia and centres of gravity locations were determined by using Dempster's data. Obtained kinematics data were utilised in this dynamic model.

In the pull phases of the successful attempts, the ankle joint forces were higher than the unsuccessful attempts. Although, the ankle joint moments were higher in

the first pull phase of the successful attempts, but the ankle joint moments were much lower in the second pull phase of the successful attempts. To be noted that in all unsuccessful attempts, weightlifters failed in the catch phase.

As a result, joint forces and moments are directly affected by the dynamics of the barbell and body during pull phases. The kinetics of pull phase can also be taken into consideration not only for successful lift but also prevent injuries and enhance performance.

O#33

3-Dimensional mathematical modelling and computer simulation of soccer ball flight

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According to FIFA survey in 2001, over 240 million people regularly play football around the world. Therefore soccer can be considered the most popular game in the world. Grant et. al. summarised that 171 goals scored during the 1998 World Cup and 1 out of 4 goals was originated from free kick settings. In time, the technique of bending the flight of a soccer ball during a free kick may signify the difference between win and defeat. A ball that is kicked from a dead stop can move in one direction, then bend to another direction. The phenomenon is due to the way air flows over the spinning ball. The objective of the study was to model and simulate the soccer ball flight after the free kick.

To be able calculate 3 Dimensional (3D) trajectory the ball, equations of motion were formed. The soccer ball projectile was considered to have three forces acting on it, ball's weight, the Magnus force when the spin was present, and the drag force. The resultant force vector gave the direction and the magnitude which acceleration of the ball could be calculated. The acceleration of the ball was second-order differential equation, which had no closed-form solution. So it was not possible to derive or calculate analytical solution but could be solved numerically given the initial conditions. Runge-Kutta method was used as a numerical integrator to calculate the 3D trajectory. Initial velocity, release angle, spin rate and spin axes vector, are the main variables, which determined the soccer ball trajectory. There were also air density, which depends on the altitude and temperature and gravitational constant, which can vary considerably with changes in latitude and altitude. That is why, in simulation process all variables and constants were taken into consideration as input property. The experiment part of the study examined the aerodynamic properties of a soccer ball during flight. The initial conditions and subsequent trajectory of soccer ball were measured by using two high-speed video cameras (operating at 500 Hz) and three video cameras (operating at 50 Hz). Then drag and lift coefficients were calculated for each test, based on the trajectory model. Simulations of various kicking settings demonstrated that a ball trajectory. Finally, 3D-computer graphics software was developed to demonstrate the soccer ball trajectory on the soccer field. The software allows to user to change the initial conditions in order to score.

In conclusion, high-speed video camera analysis, mathematical modelling techniques and trajectory simulations were used to explain what happens when a soccer ball bends during a free kick. These results might also help soccer players to train and improve their techniques.

O#34

Using PCA for data reduction in different movement pattern

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Describing human motion plays an important role in many application areas, such as surveillance, computer games, films, and biomechanics. Many researchers have been tried to describe movement patterns by conceptual, physical and mathematical models. Mathematical models range from the extreme simplicity of the some models of walking and running, to the complexity of models that represent numerous body segments. Human body can be considered as a rigid body and description of human movement occurs by measuring the kinetics and/or kinematics variables of the body segments. Generally angular or linear joint displacement data have been used for construction models. The use of linear techniques to describe human motion data has been employed in a number of studies. Principal Component analysis (PCA) is one of the linear techniques for data reduction. PCA represent a linearly transformed version of the input data, with the benefit that the transformed variables are uncorrelated. This approach also allows one to identify components of low power that may be removed from the data set without significantly affecting the data, thus producing a dimensionally reduced form of the original data. In this study, we aimed to observe the effect of PCA to reduce dimensionality of kinematics data set obtained from different movement patterns. These were running, lifting, hurdling, pitching, discus throwing, pole vaulting and saulting which were ordered from simple to complex movement. Human movement was regarded as a time series of postures. Each posture was specified by 3D human model consist of 16 points. PCA was applied to the position matrix which columns included 3D positions of the points. According to our results first four Principal Component (PC) covers more than 98% of total variance for simple movement patterns such as running, lifting and hurdling events. For more complex movement patterns such as pitching, discus throwing, pole vaulting and saulting required nine or ten PC to cover 98% of total variances. In conclusion, human movement can be visually described as specific body postures changing sequentially over time. Functions can be determined to compute corresponding coefficients for a given parameter on reduced dimension space. Using PCA technique human movements can be parameterized at different activity patterns.

O#35

Application of direct soft-tissue and joint mobilization for functional recovery after quadriceps femoris ruptures

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The paper presents the methodology of application and the functional results of direct soft-tissue and joint mobilization included in the complex Kinesiotherapy in the early postimmobilizing stage after surgical treatment of quadriceps femoris rupture.

The effect of different modern techniques for soft-tissue and joint mobilization has been investigated and compared – mobilization techniques according Kaltenborn and Maitland, mobilization with movement according Mulligan, mobilization stretching, postisometric relaxation, reciprocal inhibition, direct soft-tissue mobilization.

The applied methods of functional diagnostics are aimed at analysis of quality and quantity of recovery movements. It has been used goniometry, analysis of pain, tissue resistance and the end feel during physiological and accessory movement.

Late functional results in relation to recovery the artrokinematics and the complex functional recovery in patients have been analyzed. A discussion is made on the explanation of the effective techniques whose application shows the best efficacy.

The degree of the complex functional recovery of the patients is pointed out.

O#36

Kinesio taping treatment of traumatic injured tendons and ligaments in the ankle area

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Introduction: The treatment of traumatic injuries of tendons and ligaments in the ankle area is a delicate and complicated process. The periods of immobilization, as well as different therapeutic methods, applied after its removing, turn the rehabilitation of the patient in a prolonged process.

Aim: Aim of the research is to prove that such kind of injuries can be treated successfully by the Kinesio taping method. Easy to apply with rapid and continuous effect, this method has proved frequentative its effectiveness. By its active influence over subcutaneous structures and fascia, kinesio taping application removes congestion of lymphatic fluid or hemorrhages under the skin. It normalizes the fluid flow in the damaged tissues, which provides natural healing process.

Participants: Kinesio taping treatment is applied to a group of seven patients with traumas of tendons and ligaments in the ankle area. All patients are athletes, practicing different kinds of sports (professionals and amateurs). The traumas are result of sport activities.

Results: The traumas are similar but also very heterogeneous, but the effect of treatment by "Kinesio Tex" is proved. Positive changes in the assessment tests are collected for every patient immediately after the "Kinesio Tex" application (range of motion, edema, pain, dynamic tests).

O#37

The effects of maximal isometric contraction training in various knee positions on physical capacity of the quadriceps muscle in university students

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Introduction: The aim of the study was to evaluate the effect of isometric training of quadriceps muscle in various knee positions. Method: 20 healthy university students were divided into two groups. In sitting position maximal isometric contraction exercises were performed the knee at 15° flexion (Group I) and 60° flexion (Group II). Training program was designed 3 times a week for 6 weeks. Following tests were performed before and after training: one leg squat, step-up, step-down, one-leg hop, triple jump and one repetition. Results: In both group, all test scores were increased after training ($p < 0.05$). On the other hand, the scores belonging to the group II had higher compared with the Group I ($p < 0.05$). Conclusion: The results of the study showed that maximal isometric contraction training program at knee 60° flexion is much more effective to increase physical capacity of the quadriceps muscle than at knee 15° flexion.

O#38

The relationship of sacroiliac dysfunction with pain and musculoskeletal function

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Background and purpose: Sacroiliac(SI) joint is a potential source of pain. How often Sacroiliac dysfunction causes back pain is another question. This condition can be confused and co-exist at the same time with other disorders. In the absence of other pathologies such as discopathy, lumbar facet syndrome, and hip disease, the history and physical exam could be enough to make the diagnosis. "Is sacroiliac joint dysfunction is always a cause of back pain" is a question that has not certainly answered. For that reason we wanted to investigate the relationship between pain ,musculoskeletal function and sacroiliac dysfunction.

Subjects: 39 young people aged between 19-25 were participated in the study. Twenty-three of the subjects (%59) were male, sixteen of the subjects (%41) were female. Their mean age and standart deviation were $21,43 \pm 1,31$ years. Twenty-three of the subjects (%59) were doing sports activities regularly . Twenty-one of

the subjects (%18) had pain on their low back. Nineteen of the subjects (%48,7) had no sacroiliac dysfunction, twenty of (%51,3) them had sacroiliac dysfunction.

Materials and methods: Priorly a general history questionairre was asked. Pain assessment was made by Visual Analog Scale (VAS) , musculoskeletal function was evaluated with the Short Musculoskeletal Function Assessment (SMFA), and SI joint dysfunction was assessed by standing and sitting forward flexion test.

Results : SI joint dysfunction and VAS scores with movement and VAS scores at night degrees did not found statistically significant ($p > 0.05$) but VAS scores at rest and SI dysfunction were statistically significant ($p < 0.05$) . SI joint dysfunction and Function Index category of the SMFA did not found statistically significant ($p > 0.05$) Mean value and standart deviation for the VAS score at rest were $0,74 \pm 1,53$,mean value and standart deviation for the VAS score with movement were $1,71 \pm 2,60$, mean value and standart deviation for the VAS score at night were $0,43 \pm 1,29$. Mean value and standart deviation of the Function Index category of the SMFA were $5,82 \pm 6.07$.

Conclusion: This study demonstrated no statistically significant associations between SI dysfunction and musculoskeletal function and also SI dysfunction and pain with movement or pain at night; but SI dysfunction and pain at rest were found statistically significant. A further study with a prospective design will be necessary to determine the relationship.

O#39

Possibilities of physical rehabilitation for patients with back pain in the sacrolumbal part

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The aim of this work: to make common medical rehabilitation methods and methodic which would be able to use with patients. It would be possible to make correction of functions like rejuvenation of waist part. We could get the short but stable effect to take away pain.

34 sitting workers were taken for our research in ages 30 to 45 that have pain in back.

Examining the condition of patients sacrolumbal part, augmented *m.erector spinae* was found to 67%. These all were females who daily wore more than 5 cm high heeled shoes.

Examining the posture of all participants augmented lordosis of lumbal part ($m=5,1 \pm 0,35$ cm) was found. It is known by experience that it is proper to disbalance of *m. iliopsoas*, *m. erector spinae*, *m. rectus abdominis* and *m. gluteus maximus*.

According to patient's examination, we made group of medical rehabilitation methods, where was included: classic massage-10 massages each per 20 minutes, it helped to get the relaxation of muscles and to warm up; postisometric relaxation (PIR)-it was used for all shorten and tense muscles, to eliminate miofascial trigger points and to rebalance the lenght of normal muscles. Procedure was implemented as a 10-time course, 15 minutes daily, immediately after the

massage; the only active cure - exercise method-after massages and PIR course, 4 time per week for 5 month.

When we valuated the measures in dynamic of before and after (Figure 1; 2), we have to say that the subjective and objective measures improved. The pain of back wasn't even when the palpation of muscles, the active and passive movements was made. When we tested the point of pain disappeared, we didn't find the characteristic symptoms of miofascial pain. The balance among muscles appeared, so the reasons why appear points of pain also disappeared. After 5 months exercising, the posture test showed that lordosis has normalized ($m=4,4\pm 0,3\text{cm}$)

We recommend to all groups of patients, if it is not possible to change sitting job to more active one, then the exercises which were taught to them have to be done regularly to maintain the balanced muscles. It provides with right biomechanics at the lower part of back.

O#40

Application of a three-month fit-ball program with women having osteopenia

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According to data from Bulgarian League for Prophylactics of Osteoporosis (BLPO) around 700 000 - 800 000 from the women and around 150 000 men suffer from osteoporosis. 43% of the women have decreased bone density. Osteoporosis leads to many consequences that not only have negative effect over the way of life, but also in some cases could lead to fatal end, i.e. that determines the social importance of the disease and a search of various ways of treatment and prophylactics. The goal of this study was to monitor the changes in the bone density and some other parameters in the functional condition of women with Osteopenia, as a result of 3 months fit-ball gymnastics program. Methodology of the study - the study was conducted with five women, with decreased bone in density (Osteopenia). In the beginning and by the end of the course of treatment the changes in the bone densitometry, changes in arterial blood pressure, the pulse, body mass index (BMI), evaluation of the pain-syndrome, as well as study of the subjective complaints from the neuro-vegetative and cardio-vascular system were monitored, after 20 crouches. The Kinesitherapy program included – three times weekly, 45 minutes of fit-ball gymnastic, twice weekly a back-massage, and 15 minutes of the complex of exercises at home, performed with Gimnic-ball. Results and conclusions - Even a pilot one, this study showed that the including of fit-ball exercises in the activity and regime of women having Osteopenia can slow down and even stop the process of bone degeneration, improve the indicators of the cardiovascular system and the adaptation of the organism to greater load. The exercises with a large therapeutic ball, performed under proper musical accompaniment, are fun and that has resulted to better self-confidence and decreased the subjective complaints in women.

O#41

Physical analgesia – methods and mechanisms of action

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This paper proposes the vision of the author for the contemporaneous methods, means and devices for pain reduction using physical factors and the mechanism of its action. We explain the different natural and pre-formed physical agents, with effectiveness in the sport-medicine practice. We accentuate on the methods of transcutaneous electrical nerve stimulation (TENS), kryotherapy, reflexory methods. We underline the necessity of composition of complex physical therapeutic and rehabilitation program, respecting the basic principle of synergism between active agents. The author proposes our general theory for explanation of mechanisms of action of physical factors: *by influence on the cause for irritation of pain receptors* [because of stimulation of circulation, metabolism and trophic of tissues – by electric currents, magnetic field, ultrasound, massages; extension vertebrotherapy and manual techniques]; *by blocking of nociception* [low frequency currents, including TENS, lasertherapy]; *by peripheral sympaticolysis* [low frequency currents, peloids]; *by stopping the neuro-transmission (by C and A δ - fibers) to the body of the first neuron of general sensibility* [electrophoresis with Novocain in the region of neuro-terminations]; *by the gate-control mechanism* [TENS with frequency 90-130 Hz and interferential currents with high resulting frequency (90-150 Hz)]; *by activation of the reflexory connections – cutaneous – visceral, subcutaneous-connective tissue-visceral, proprio-visceral, periostal-visceral and motor-visceral* [classic manual, connective tissue and periostal massage, post-isometric relaxation and stretching-techniques; *by influence on the pain-translation in the level of cornu posterior medullae spinalis – using the root of activation of encephalic blocking system in the central nervous system* (increasing the peripheral afferentation) and *influence on the descending systems for pain – control* [TENS with frequency 2-5 Hz and interferential currents with low resulting frequency 1-5 Hz, acupuncture and laserpuncture; reflexory and periostal massage, zonotherapy, acupressure, sudogok; preformed factors in reflexory zones (palms of the hands, plants of the feet, paravertebral points; zones of Head, of Mackenzie, of Leube-Dicke, of Vogler-Krauss)]; *by influence on the psychic state of the patient* – the drug «doctor» and the drug «procedure».

O#42

The impact of Kinesitherapy on the peripheral nerves conduction in patients with diabetic polyneuropathy

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Diabetic polyneuropathy (DP) is a significant medical problem worsening patient's health and quality of life. One of the major reasons for the various clinical

symptoms of these patients is the impaired sensitive and motion conduction of the peripheral nerves of the lower extremities.

Aim: Electroneuromiographic evaluation of the impact of kinesitherapy (KT) on peripheral nerve conduction in patients with DP of the lower extremities.

Materials and methods: The investigated number of 124 patients was divided into two groups. The sample group consisted of 90 patients (52 females and 38 males of mean age 58.47 ± 8.69) and the control group of 34 patients (16 females and 18 males of mean age 58.79 ± 7.49). All patients were estimated for sensitive and motion conduction of the peroneal nerve by electroneuromiographic (ENMG) investigation following a standard methods and conduction speed (m/s) and latent time (ms) of the sensitive and motion fibers was determined at treatment initiation, at 6 weeks and at 6 months after the start. Drug therapy with alpha-lipoic acid (600 mg Thiogamma per day in venous infusion for 10 days) and kinesitherapy were administered. The sample group underwent specialized kinesitherapeutic methods (SKTM) continuing for 6 months and the control group of patients was subjected to routine 10-days kinesitherapy during their hospital stay.

Results: Before treatment initiation the patients suffered from impaired nerve conduction both of the sensitive and motion peroneal fibers. Having administered treatment in the control group was found a transient improvement only up to 6th week compared to the sample group which showed permanent improvement in the nerves and muscles conduction of the lower extremities represented by reduction of latent time for sensitive (by 1.1 ms) and motion (by 1.3 ms) conduction at 6 months as well as improved conduction speed in the peroneal nerve (by 5.3 m/s).

Conclusion: Specialized kinesitherapeutic methods enhances the effect of alpha-lipoic acid and leads to more marked and continuous improvement results in the sensitive and motion nerve conduction of the lower extremities in patients with DP.

Key words: diabetic polyneuropathy, electroneuromiography, kinesitherapy.

O#43

Timely diagnostics of feet deformity as factor for selection in sports

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Postural status of children represents a key factor for indulging in sports. Deformity of feet and spin are appearing in school age as result of feet deformity from the pre-school period. Correction of such deformity is most efficient in pre-school period. Appropriate and timely removal of deformity of feet and application of adequate body exercises represents unavoidable treatment-prevention process.

O#44

Diagnosing spinal stability.

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O#45

European project “Sports physiotherapy for all: be confident – be competent”

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The Sports Physiotherapy For All (SPA) project is funded through the European Commissions Leonardo Programme. The partners are 5 Universities with the lead partner the International Federation of Sports Physiotherapy (IFSP). The National Sports Academy (NSA) – Sofia is one of the project partners. The fixed term is from January 2004 until end December 2006.

The aims of the project are to promote and enhance:

- mobility and recognition of Sports Physiotherapists in Europe and beyond
- safe physical activity and participation in sport for all
- by the development of:
 - European competencies and standards for Sports Physiotherapists
 - an audit tool, evaluated in a European context
 - guidelines for ethical behaviour in relation to doping
 - a website interface between research, practice, education and employment
 - an interactive website for continuing professional education
 - an information resource for public access to Sports Physiotherapy.

The competency document has recently been approved by the SPA core group and the membership of the IFSP. The audit toolkit will assess individuals' formal (HU-students in the Netherlands) and non formal (sports physiotherapists in Bulgaria) learning against threshold standards for each competency.

Together with associated standards and an audit toolkit, competencies will allow sports physiotherapists to provide evidence of their abilities for accreditation.

O#46

Joint action project “Sports and physical activities for persons with disabilities – awareness, understanding action”

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Partners in Joint Action Project “Sports and Physical Activity for Persons with Disabilities – Awareness, Understanding, Action” (119672-JA-1-2004-1-BE-JOINT CALL-INDI) are 18 higher education institutions from 17 European countries – Belgium, Germany, Greece, Italy, Portugal, Spain, France, Finland, Norway, Bulgaria, Poland, Hungary, Latvia, Lithuania, Ireland, Czech Republic, Slovak Republic. The co-ordinator of the project is Catholic University in Leuven, Belgium. The aim of the project is to motivate children and youngsters with a disability to join APA and sports activities at all levels, to ensure their full participation in physical education classes, recreational and competitive sport and to give them inspiration for a future career orientation. The project also aims to improve the skills and

enrich the knowledge of the nowadays practitioners, who have been already working in the field of APA and Sport for disabled, to increase the overall awareness of the general public and to show that physical activities and sport increase the independence of the people with disabilities, empower them, bring positive changes in their lives and make them visible within their societies.

In the framework of the project a report on the current situation of the inclusion policy in the 17 participating country was drawn up, addressed to the physical education, sport and employment. Important recommendations have been done and published.

Substantial role for achievement of the aims of the project plays the web-site.

The main result of the Joint Action Project is creation of educational kit – educational booklet, Videos, motivational CD-ROM, addressed to the children and youngsters with disabilities, as well as to their parents and relatives, to the large spectrum of professionals and volunteers working in the field of Adapted Physical Activity and Disabled Sports.

