



ABSTRACT BOOK

**International Conference on the 70th Anniversary of
Sports Medicine in the Republic of Moldova**

12-14October, 2017, Chisinau



FOREWORD

It is a great pleasure to invite you at the 70th Anniversary of the International Conference of Sports Medicine in the Republic of Moldova. This is an excellent opportunity to meet our international and national partners, to bring together well-known senior experts and talented junior researchers, and also to discuss fruitfully and prospectively about the new researches and exchange of information at all disciplines related to sports medicine.

During the conference delegates will discuss actual problems of sports medicine, including management of sport care, sport cardiology, traumatology, orthopedics and rehabilitation, sports nutrition, emergencies in sports medicine, health promotion and sports medicine etc.

The achievements in sports medicine in the Republic of Moldova will be summed up, with the role of medical-sports examinations and the prospects for developing activities in this field in line with international practices.

During the last few years, several activities have been carried out regarding to sports medicine in the Republic of Moldova. It was performed to strength, by broadening, the spectrum of medical-sport examination, in order to improve the medical act and provided services.

In June 2012, the first Scientific-Practical Conference on Sportive Medicine was held, with the title "Sports medicine - a healthy human clinic".

In November 2012, the Jubilee Conference was held 65 years after the founding of Sports Medicine in the Republic of Moldova and the National Sports Medicine Center „Atletmed”.

The scientific-practical conference with international participation "Sports Medicine: Challenges and Perspectives" which was held on 12-13 November, 2015 at the Nicolae Testemitanu State University of Medicine and Pharmacy from the Republic of Moldova is also related to assessment of the current healthcare system of athletes.

The athletes have an increased interest towards their health, results and long-life in sporting. It is important to note that the success in athletic achievements of athletes largely depends on the quality of provided health care services. This requires a very significant approach to the quality of sports medicine services provided at all levels.

We hope that the conference will not be just a place to discuss new aspects regarding sports medicine but also an opportunity to meet people from different countries and cultures, an

occasion to visit the wonderful city Chisinau.

We wish you a pleasant meeting and we are looking forward for a good collaboration in the future!

On the behalf of Organization Committee,

Gheorghe Ștefanuț- Head of National Centre of Sports Medicine “Atletmed”

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The opinions expressed in this publication are solely the responsibility of authors.

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**THE EFFECTS OF NON-FUNCTIONAL OVERREACHING AND OVERTRAINING ON
AUTONOMIC NERVOUS SYSTEM FUNCTION IN HIGHLY TRAINED ATHLETES**

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Aim of the study was to compare the autonomic nervous system(ANS) functioning, as measured by heart rate variability (HRV), in athletes with non-functional overreaching(NFO) and overtraining(OTS) and athletes without NFO/OTS.

Material and methods: On the initial stage of the study conducted in the Clinical Center of Sports Medicine and Rehabilitation of Tbilisi State Medical University physical condition and health state of 348 high level athletes (aged $22\pm 4,7$ y.o.) were examined and 43 subjects with NFO/OTS were revealed, among them 37(10,6%) athletes with non-functional overreaching and 6 (1,7%) athletes with overtraining of different severity and duration

Results of the study show lower HRV and lower vagal influence along with increased sympathetic cardiovascular control in athletes with non-functional overreaching and particularly in athletes with overtraining, than in highly trained athletes without NFO/OTS. "Stress Response" in athletes with NFO, as well as in some athletes with OTS, showing sympathetic dominance, considered as a sign of physical or mental fatigue and chronic stress, whereas "Total Autonomic Dystonia" in most of the athletes with OTS (67%) reflects more advanced stage of maladaptation associated with depressed regulatory function of the ANS, both sympathetic, as well as vagal influences. Most frequently NFO and OTS were seen in wrestling, which needs further investigation and regular medical monitoring.

Conclusions: Thus, results of the study show progression of autonomic imbalance and depression of regulatory function of the autonomic nervous system in athletes with OTS. The cardiac autonomic imbalance observed in overtrained athletes implies changes in HRV and therefore would consider that heart rate variability may provide useful information in detection of overtraining in athletes and can be a valuable adjacent tool for optimising athlete's training program as well as for timely diagnosis and prevention of progression of NFO/OTS.

PHYSICAL GROWTH AND NOURISHMENT OF PUPILS STUDYING AT A SPORT

HIGHSCHOOL AND AN ART ONE – pilot study

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Introduction: nourishment is an external factor that plays an important part, assuring physical growth and maintaining children's and teenagers' health. It is also important for teenagers who practise performance sport.

Material and method: the study was done on a group of 54 seven graders from a sport high school (25 teenagers) and an art high school (29 pupils) from Iasi. There were evaluated the physical growth (with the aid of the national reference values) and nourishment (with the aid of quiz regarding the weekly frequency of food consumption) of these teenagers.

Results: pupils' height is especially average (46,29%), and so is the weight (66,66%). The calculated differences on groups are statistically insignificant. The diagnosis of physical growth points out 25,92% teenagers with a disharmonious growth with mass shortage and 11,11% teenagers with mass surplus. 5.55% teenagers with a pathological growth draw our attention. The calculated differences are statistically insignificant and draw attention on the growth of pupils from the sport high school. They should be carefully supervised, as the disharmonious growth with mass shortage or surplus is not a stimulating factor for the sport performance. It could be a burst of growth or a disharmonious growth caused by an unbalanced nourishment. The leading input of cheese, meat, animal and vegetable fat is 1-3 times a week, the calculated differences being statistically insignificant. These results are inappropriate and point out the existence of a disordered nourishment, which could be risky for the pupils from the sport high school. The main consumption of vegetables is 4-7 times a week, a results fitting in the norms of rational nourishment.

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Conclusions: physical growth and nourishment are similar at pupils from the two study groups. It is quite an unexpected result for the pupils from sport high school, for whom physical growth and nourishment play an essential role to assure sport performance.

NATURAL REMEDIES USED IN SPORTS MEDICINE. MEDICAL AND LEGAL ASPECTS

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Introduction: Generally, in the last period people are increasingly turning to natural remedies from medicinal plants. Goals are different from diminishing hypodynamic states or rehabilitating the general public, cases of self-medication to body modeling by increasing muscle mass, a tendency that is especially true of amateur athletes. There is no exception in this direction from either performance athletes, but the purpose already pursued in this case is also linked to the

increase in physical performance. Probably the same is true also for other types of sports.

Material and methods: As material and methods, we selected a systematic analysis based on Medline database using appropriate keywords and manual evaluation of returned items. Separately we analyzed: cross-sectional studies on the use of various natural remedies by athletes, clinical trials aimed at investigating natural remedies or nutritional supplements to athletes subjects or for use by athletes, other studies (observational, case reports on the use of such products in athletes, etc.). Non-clinical studies were not included in the analysis.

Results: A systematic analysis based on the use of appropriate keywords shows that, in the top of preferences, including athletes preferences, are the preparations and natural remedies obtained from medicinal plants. In total 283 articles were processed, including 19 synthesis (reviews) articles, 5 case studies (AR of dietary supplements used by sportsmen or positive doping tests), 11 cross-sectional studies investigating the use of dietary supplements in various categories of athletes, 23 experimental studies.

Clinical studies using natural remedies from the Ginseng root reveal the following indicators: Cross Study, Crossbred Pb Study (n = 10); 1125 mg / day, 35 days; CD8 + T cells from peripheral blood have diminished, the ex-vivo production of mitogen-stimulated IL-2 has increased; no other changes in the immune system, lactate, insulin, cortisol, or growth hormone were observed. Another study (n = 4) compared the influence of a ginseng extract (20 g) on growth hormone, IGF-1, testosterone and cortisol administered immediately after an intense exercise. Within the 2-hour recovery interval there was no significant difference between verum and Pb.

Natural Remedies of *Eleutherococcus senticosus* (Rupr. Et Maxim.) Study DB, Cross-Bound, Pb Controlled, Crossed (n9); 800 mg / day ES or placebo, 8 weeks; V O₂ max increased by 12% (p <0.05); resistance time (cycling exercises) increased by 23% (p <0.05); maximum heart rhythm increased by 4% (p <0.05); the production of free fatty acids and blood sugar decreased over the eight weeks.

Rhodiola + Ginkgo Remedies (*Sedum roseum* (L.) Scop.): Rz, DB, Pb-ctrl (n = 35 + 35), 270 mg x 4/day, 7 weeks; significant increase in VO₂max from baseline; cortisol level unchanged from baseline, increased to Pb; testosterone ratio: unchanged cortisol in the verum group, (p <0.05) low in the Pb group. Rhodiola as a monotherapy does not improve ATP turnover immediately after or during exercise. A combination of Rhodiola and *Cordyceps sinensis*, 2 weeks, did not

improve the physical performance of cyclists.

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Remedies from *Beta vulgaris* L.: 1 single dose of beet juice (rich in nitrate), evaluated at athletes by kayaking (n = 8) no effect on performance in the supramaximal repeated sprint or in the 1 km performance test. Other studies in different categories of healthy athletes have suggested that there are benefits, those at trained athletes have not identified any benefit.

Other remedies and preparations investigated: remedies from *Astragali radix* (mixed with other species); remedies from *Schisandrachinensis* (Turcz.) Baill. and *Bryonia alba* L.; Remedies from *Angelica sinensis* (Oliv.) Diels; *Saccharomyces cerevisiae* remedies + orange juice + malt + honey; evaluating the immune response to dehydrated people (wrestling students) (using peripheral blood and a polysaccharide from Coconut Pore (*Polyporaceae*)); evaluation of the influence of *Ganoderma lucidum* (10 and 20 capsules per day) on peripheral blood T cell subsets; an ointment of volatile oils from several plant species, evaluated along with Chinese massage in the lumbar pain.

Case Reports: Hepatic toxicity in a 17-year-old after using more "natural" supplements to increase muscle mass and physical performance; acute psychosis in a 28-year-old woman who used multiple nutritional supplements for sports and weight loss supplements; ephedrine-induced ventricular tachycardia to an athlete used to increase performance (the authors also discussed herbal supplements with ephedrine); acute renal failure and hyperbilirubinemia in a young man after ingestion of *Tribulus terrestris* L extract; positive doping test caused by an *Ephedra* nutritional supplement.

Conclusions: The study shows, in general, the beneficial effect on the body of natural remedies obtained from medicinal plants in all groups of consumers. However, the reported case reports point to a rational administration, personalized dosages for each consumer, scientifically grounded, systematic consultation of specialist doctors. Also, some of the natural pharmaceutical remedies fall under the provisions of the special prescription, release, administration, antidoping regime.

INDICATORS OF THE FUNCTIONAL STATE OF THE HUMAN CARDIOVASCULAR SYSTEM IN THE CONDITIONS OF DOSED LOADS IMPLEMENTATION

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Introduction: The cardiovascular system of physically trained persons (in comparison with non-athletes), when performing dosed loads of exercises, functions more economically (the second functional effect of training). The trained people are more likely to undergo processes of developing the circulatory system at the beginning of activity, they have a less high and more stable level of the heart functioning in the process of fulfilling the dosed load, and the recovery is always faster (Anokhin).

Materials and methods: The obtaining of the necessary information on the problem under investigation was provided by such methods: analysis, generalization and systematization of documentary materials, scientific and methodical literary sources; medical and biological methods.

Results: The heart rate with age decreases during dosed aerobic loads. The same work increases more economically due to less intense cardiac activity. Thus, boys at the age of 12-13 years old at heart rate of 130 beats a minute can perform a work that does not exceed 70 Watts, and 18 years old – 122 Watts. The pulse rate, systolic and minute volumes of blood at the standard load in the trained people is lower than that of the non-trained. An increase in the minute volume of blood circulation in trained athletes is mainly due to an increase in systolic blood volume, in untrained – due to heart rate, which is less effective (Kucheruk, Plakhtiy).

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To objectively assess the level of heart rate and pulse pressure after the standard load the percentage of increase in these indicators is determined. The informative index of the efficiency of the cardiovascular system is an indicator of the average arithmetic magnitude of the increase in heart rate and pulse pressure after loading (Plakhtiy).

The normal response to a test with twenty squats for 30 seconds is a heart rate increase to no more than 75% of the pulse rate in a state of rest (up to 25% is excellent, 26-50% is good, 51-75% is satisfactory). A bigger increase in pulse after dosed loading (more than 75%) indicates an inadequate heart reaction to the load. The reason for this may be lack of training or incomplete restoration of the athlete's initial condition after performing the previous training load. Insignificant growth of pulse rate after dosed loads indicates a large volume of functional reserve of the heart, a higher perfection of the mechanisms of cardiac activity regulation (Kucheruk, Plakhtiy). The most adequate reaction of the arterial pressure on a dosed load with 20 squats is an increase in systolic pressure by 15-30% and a decrease in diastolic pressure by 10-35% (or its immutability compared with the state of rest).

Conclusion: A comparison of the magnitude of the acceleration of the pulse and the increase in pulse pressure at the dosed loads allows determining the ratio of pulse changes to changes in blood pressure. The following reaction is considered rational: the percentage of the acceleration rate of the pulse corresponds to the percentage of increase in pulse pressure; rarely the percentage of heart rate acceleration is slightly lower than the magnitude of the increase in pulse pressure (Anokhin, Vasilieva).

ACUPUNCTURE BETWEEN TRADITION AND MODERNITY - VIDEO PRESENTATION

AN ESSAY ABOUT ACUPUNCTURE

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We will present, in a cinematographic manner, a millenary treatment method, which today “reinterprets” its mechanisms of action: the acupuncture.

The enormous interest given today in the traditional extremely oriental techniques emphasizes the returning of the modern man towards the nature, towards the treatment methods with minor secondary effects and verified by the severe proof of time.

There are not missing the “Qi”, Ying-Yong notions and the law of those five elements.

The acupuncture overtook its long empirical, being a scientific method of treatment. This was possible especially by explaining its mechanisms of action: “the control entry” of the pain at the medullar and supra-medullar level (cerebral trunk, thalamus and cortex) and the stimulation of the endorphin and enkephalin secretion at a central level.

The possibility of obtaining an acupunctural analgesia isn't doubtful anymore. Controlled studies established that the painful perception is reduced through acupuncture and by blocking this effect with the specific antagonist of the morphine: naloxone.

The work synthesizes and presents by electronic graphics the intimate mechanisms of action of the acupuncture stimulus at external, medullar and central level, pointing out the main indications, but also the limits of this treatment method, which completes the classical medicine in a favorable way.

PREVENTION OF SPORTS INJURIES AMONG JUNIOR ATHLETES

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Introduction: It is obvious that the correct and rational organization of the training should not cause trauma and illness to athletes. However, its appearance is not a rarity. This issue has a particular importance among young athletes. The severity of the injuries caused during competitions or training is determined not by the injuries, but also by the fact that the injured athletes are forced to give up the competitive activity for a long period of time. Thus, the purpose of this study was to evaluate the specific features of trauma and illness among junior basketball and volleyball athletes.

Material and methods: The study was conducted on a group of 54 athletes practicing sports games (basketball and volleyball) aged between 13-18 years from a sports club from Chisinau. The tool used was the questionnaire about the health of athletes. Statistical data processing was performed using a database implemented with SPSS.

Results: Most athletes who practice volleyball have a 3-years (38%) and five-years (30%) sport practice and 5 years (34%) and 8 years (26%) for basketball. Analyzing the level of study of the respondents, it was noticed that most of them are students from the theoretical high schools and lyceums (78,3%), the smallest part is represented by the sport lyceum students (2,8%).

During the sporting activity, 60% of volleyball athletes and 63% of those who practice basketball reported that they had traumas that caused absences from training and competitions. In the case of athletes who practice volleyball at the sports club, 66% of traumas were hand joints, 22% foot joints, 8% back injuries and 4% head trauma. For sportsmen practicing basketball, the highest share is the trauma of hand joints – 71,5% and foot joints – 19,7%, followed by trauma in the back region – 6,3% and head region - 2,5%.

Regarding the question of where athletes usually receive medical care, most athletes, 79% of basketball players and 72% of volleyball players, are addressing for medical assistance at the Family Doctors' Center in their sector. At the medical point from the school, are addressing 15,7% of the basketball players and 8% of the volleyball players. Only 4% of athletes who practice volleyball are addressing to the "Atletmed" National Sports Medicine Center. Have to mention, that 16% of volleyball athletes and 5,3% of basketball players have addressed for medical care at other medical institutions (private medical centers, hospitals, etc.).

Conclusions: The most common injuries to athletes practicing volleyball and basketball were at the hand and foot joints. Considering the results of the research we have developed a complex of measures to prevent the adverse functional conditions of the athlete's body, to improve and strengthen their health. Thus, it is very important to carry out some activities for the promotion of health among athletes based on knowledge of the negative effects caused by the non-observance of the hygienic conditions of training and behavior, the diet and the intake of the main nutrients with food, the importance of medical examinations etc.

PHYSICAL ACTIVITY – A SIGNIFICANT FACTOR FOR A HEALTHY WEIGHT

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Introduction: Physical activity and nutrition are important components of a healthy lifestyle. International and national studies show that the technological progress reduces the level of physical activity among the population and influences the appearance and development of overweight and obesity.

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Material and method: The purpose of the study was to evaluate the quantity of kilocalories burned during practicing different levels of physical activity among 423 persons with overweight and obesity using the International Physical Activity Questionnaire (IPAQ).

Results and discussion: According to IPAQ Scoring Protocol, 70% of persons (n=258) are physically inactive and spend 805,4 MET minutes/week, 36,4% of persons (n=154) are

minimally active and spend 1752 MET minutes/week, and 2,6% of persons (n=11) are active and spend 3788,7 MET minutes/week. The results of the study showed that the group of physically inactive persons burn $\approx 632,8 \pm 1178,9$ kcal per week. Respondents that are minimally active burn $\approx 1292,5 \pm 525,8$ kcal/week and those physically active lose $\approx 2833,5 \pm 694,9$ kilocalories per week. In these contexts, there was estimated the number of days that were necessary to get an ideal body weight among the respondents. During practicing heavy level of physical activity (7 days and 30 minutes) there are necessary $\approx 405,7 \pm 157,8$ days (≈ 58 weeks) to get an ideal body weight (IBW). People who practice moderate physical activity will need $775,4 \pm 301,7$ days and those who practice light physical activity need $988,3 \pm 384,5$ days for getting an IBW.

Conclusion: The results of the study revealed that a further increase in physical activity will lead to additional improvements in health status of participants and will help to get in a shorter period of time the ideal body weight.

PARTICULARITIES OF SPORTS INJURES AMONG JUNIOR FOOTBALL PLAYERS

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Introduction: Playing football can induce beneficial health effects, but there is also a high risk of injury. Football players are usually exposed to various types of traumas; most of all are lower and upper limb injuries. The type and mechanism of the trauma depends on the player's

position in the field.

The aim of this study was to find out what are the characteristics of the athletes trauma as a result of the sport activity and to elaborate methods of prophylaxis.

Materials and methods: In order to assess the health status, it has been developed a questionnaire in order to study the health of the athletes, from which we selected the items referring to athletes' trauma. A descriptive type study was done, with 96 junior athletes from sports clubs Buiucani and Zimbru from Chisinau, among them: male athletes aged 14-18 years, which practice football for at least 2 years.

Results: Most athletes (69, 2%) said they had traumas which induced absences from training and competitions. Regarding the type of traumas that endanger the training, 55, 4% of the athletes mentioned that these were the luxation's, dislocations and inflammations of the ligaments. Localization was different, 31% were knee injuries, 29, 4% leg joint injuries, 5,5% forearm injuries, 11,1% hand injuries, 12,5% □□ head and back injuries, and 10,5% other locations.

Among athletes who practice football have specific fractures. 36, 9% of the athletes said they had bone fractures. Most often there were fractures of the upper limb bones, followed by leg joints fractures, etc.

Athletes who practice football also showed contusions and head trauma. Thus, 21, 5% of the athletes mentioned that they suffered contusions and other head injuries.

Conclusion: The most common traumas encountered in junior football players are luxations, dislocations, bruises and fractures. These traumas are specific to this type of sport. All musculoskeletal traumas can be prevented by proper training and proper physical activity.

THE FEATURES OF THE PHYSICAL METHODS APPLIED IN THE TREATMENT OF ATHLETES

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Background: The use of therapeutic physical factors in sports medicine makes it possible to expand the arsenal of effective means of restoring and improving the performance of athletes. Modern and purposeful use of them in the process of training athletes prevents the development of fatigue and physical overstrain. There are differences in approaches when applying physical methods of treatment in athletes. The most important of them are as follows:

1. The physical factors with restorative purposes for athletes can be used both with the same and with different frequency.
2. The number of physiotherapeutic procedures and the intervals between them are set taking into account the entire complex of restorative measures for the athlete.
3. The assigning of restorative measures at any stage of an athlete's training, it is important to take into account the degree of athlete fatigue.
4. The preparations of athletes with therapeutic physical factors are used in conjunction with other means of rehabilitation.
5. The selection of rehabilitation methods depends on the type of sport and the nature of athlete

fatigue.6. During the competition, the use of shortened rehabilitation procedures of general action is shown.7. The organization of control over the effects of rehabilitation procedures on the athlete's body.8. Accounting for the effects of physical methods on the cardiac, respiratory and thermoregulatory systems of the athlete.9. The restoration of athletic performance by therapeutic physical factors is carried out only by the appointment of a specialist doctor.10. The use of physical factors with a rehabilitation purpose depends on the nature of the disease or injury suffered.

Conclusion: The use of physical factors in sports medicine with a rehabilitation goal should be carried out taking into account the above features. The timing of the resumption of training will depend on the sport, age and gender of the athlete.

PAIN AND QUALITY OF LIFE IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Introduction: Rheumatoid arthritis (RA) is a chronic inflammatory systemic disease. The first symptoms are symmetrical carpal and metacarpophalangeal arthritis manifested by pain, edema, exudates and a limited range of function. Pain and progressive hand dysfunction contributes to various limitations in the personal, social and professional aspects of life. Functional rehabilitation with exercises which strengthen muscles and increase joint mobility has proved beneficial. The aim of this study was to evaluate and determine the relationships among pain and quality of life in patients with rheumatoid arthritis (RA) with functional and without functional rehabilitation.

Materials and methods: The study included 21 patients with RA with functional rehabilitation treatment (Group I) and 23 patients with RA without functional rehabilitation treatment (Group II). Pain, quality of life and disease activity of all of the participants were evaluated using a visual analogue scale (VAS), the Short Form-36 (SF-36), and the Disease Activity Score-28, respectively.

Results: When the two groups were compared, higher scores for the VAS were found in the Group II compared to Group I ($P = 0.003$). The SF-36 subscales of the physical component summary and mental component summary were statistically significantly different for Group I ($P > 0.005$).

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Conclusion: This study evaluated the situation in patients with RA with and without functional rehabilitation treatment and showed that pain worsen the quality of life.

SCOLIOSIS IN THE PRACTICE OF A SPORTS DOCTOR

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Introduction: Scoliosis is the lateral deviation of the spine from its vertical axis by more than ten degrees. In children and adolescents involved in asymmetric sports, muscular hypertrophy on the dominant side of the trunk can give the impression of having scoliosis. For patients with unstructured scoliosis, there are no contraindications for exercises.

Material and methods: As a material for the study were used several international scientific articles and theses. In the process of research were used meta-analysis, statistical observation, and the method of synthesis. The goal was to study international experience in this field.

Results: Scoliosis is a descriptive term, not a diagnosis. Structural scoliosis is characterized by deformation of the vertebrae. When examining a patient, the test with lateral inclinations does not affect the curvature of the scoliosis or even worsens it. Scoliosis is also often followed by disorders resulting from the asymmetry of the tone of the muscles of the trunk, for example, in rickets, poliomyelitis, cerebral palsy, congenital crooked. However, in 80% of cases of structural scoliosis the cause remains unclear, although there have been carried out numerous studies to identify it. As for the treatment of unstructured scoliosis, the set of tools and methods in this case is unlimited, which most likely indicates the low efficiency of almost all methods, the large involvement of unstable placebo effects due to the prevalence of pain syndrome in the clinical picture. Various kinds of therapeutic gymnastics and kinetotherapy, massage, physiotherapy and sanatorium treatment, osteopathy, reflex therapy in the form of ointments, rubbing or compresses, analgic injection blockades, dry and underwater traction methods, kinesiotherapy, manual therapy, acupuncture are used. And this is due to the heterogeneity of the pathogenesis of various types of scoliosis. The main goal is to prevent the subsequent progression of scoliosis and, thus, the maintenance of normal functioning of the thoracic organs. It is assigned to an experienced orthopedic surgeon. If the curvature is 20-25°, observation is carried out. Upon reaching maturity, a screening test is recommended every 6 months. If progression occurs more than 5° in six months, there will be prescribed a corset. Therapeutic exercises are ineffective. Studies show that using a corset is much more effective than electrostimulation. But for this, most orthopedists recommend wearing a corset full-time, that is 24 hours. If the scoliosis is greater than 40-50°, it is recommended surgical correction. Full correction is rarely achievable.

Conclusion: The strategy of the therapeutic approach in athletes could be presented as follows: 1) The volume of therapeutic intervention is conditioned by the degree of severity of the pain syndrome. In other words, painless lung scoliosis needs only rational psychotherapy. 2) In the presence of skeletal asymmetry due to the relative flatfoot correction is made - orthopedic insoles, individually manufactured footwear, etc. 3) The most blocked segment / segments of the spinal column are palpated, and the therapeutic action is accented on it as much as

possible. The combined effect on the main trigger zones or biologically active points of the body with local use of medicines is maximally effective, supplemented by the elimination of subluxations of the facet joints of the entire spine, followed by a modification of the lifestyle, aimed at reducing the asymmetry of the routine vertical load on the spinal column in waking state and eliminating the asymmetry of muscle tone during sleep.

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NERVOUS SYSTEM DISORDERS AMONG ATHLETS FROM THE REPUBLIC OF MOLDOVA

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Actuality: The individual's loading at the place of activity is the mobilization of physical and psychophysiological functions and capacities. It is a result of the influence of external and internal exciters according to the nature, complexity and responsibility of the actions. Studying the health status of athletes and early detection of chronic or acute disorders - is an important measure of fortification of the athletes' health.

Material and methods: As materials were used the results of the medical examinations of athletes at the Atletmed National Sports Medicine Center in 2016. The analysis was carried out using traditional statistical methods.

Results: In the Republic of Moldova there are about 12,900 people practicing various sports. The Ministry of Youth and Sport supervised 18 sports schools with 4989 athletes. At the level of local public authorities there are 66 sports schools with about 23,000 athletes.

In 2016 at CNMS Atletmed was performed the neurological medical control of 4414 persons, i.e. 3.4% of the total number of registered athletes. The medical examination data confirmed 22 cases of illness. 4 of these cases - for the first time, i.e. 18.1% of the total recorded. The nosological structure of the identified diseases includes the following forms: infantile paralysis - 4.5%, consequences of neuroinfection - 12.6%, vertebro-basilar insufficiency - 12.6%, lumbar spine pain and thoracalgia associated with scoliosis - 22.8%, perinatal trauma consequences - 45.5%. In dependence of the sports types the cases are divided as follows: athletics - 4.5%, football - 4.5%, autosport - 9.1%, basketball - 9.1%, free fighting - 9.1%, judo - 9.1%, weightlifting - 9.1%, kickboxing - 18.2%, swimming - 27.3%.

Conclusion: Nosology with high frequency is presented by the consequences of perinatal trauma, and among different sports a major incidence is noticed in kickboxing and swimming.

OCCUPATIONAL DISEASES AND DISSABILITY PHENOMENON AMONG PROFESSIONAL SPORTSMEN

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Introduction: Athlete health is one of the most important factors in achieving high scores. The performance of athletes is very heavy, which causes the high probability of occupational diseases and accidents occurrence and as a result the loss of work capacity with the occurrence of disability.

Materials and methods: In the research process were used the historical-bibliographic (35 international articles in the field made over the last ten years), case study and descriptive-comparative methods.

Results: Studies have shown that performance athletes occupation is very heavy, according to classical hygienic classifications, which act daily on the athlete and are negatively reflected on the functional indicators of the body`s state. The prevalence of chronic disease is 84 cases per 100 athletes. The first place in the structure of chronic diseases among athletes is the musculoskeletal and peripheral nervous system diseases. There were 6,183 athletes with vocational training / education in Republic of Moldova in 2015, of which 3884 were adults. There were also registered 183.9 thousand persons with disabilities, which make up about 5.2% of the population of the republic, disability having a general tendency to increase among young people and working age population. At national level, there is no evidence of occupational morbidity and disability among athletes. Most frequently, people are examined in terms of general work, as general population, without the specialization of occupation / profession, in our country. There is currently no adequate rehabilitation service in the sports medicine system, which could meet the demands of modern sport.

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Conclusions: Solving this multilateral problem by a complex medical-social approach will provide athletes guarantees for safe work. A solution is to create a National Sports Medicine Service and cooperation with National Council for Determining Disability and Work Capacity, The Republican Center for Occupational Diseases and chairs of State University of Medicine and Pharmacy. Contemporary development at the national level of the individualized electronic medical card could be a solution for athlete monitoring at all levels of health and social care.

INSTRUMENTS FOR DETERMINING THE HEALTH RISK FACTORS FOR WORKING AGE POPULATION

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Introduction: Risk is a component of the life and accompanies man in all spheres of his work. Reducing the impact of risk factors on the health of the working-age population is an important task of occupational health. The Concept of Occupational Safety is formulated in the ILO Global Workplace Development Strategy on Occupational Safety.

Materials and methods: In the framework of the Occupational Health Laboratory were developed tools / questionnaires for highlighting occupational factors at the level of primary health care. The qualitative study allowed highlighting obstacles in determining the diagnosis at an early stage and assessing the loss of their work capacity.

Results: The data from the national statistical reports mention an increase in the number of jobs with harmful and unfavorable conditions. The number of cases of morbidity with temporary working incapacity is increasing (from 50.6 cases per 100 employees in 2012 to 52.5 cases in 2016); the number of days of morbidity with temporary working incapacity is increasing (from 778.5 days per 100 employees in 2012 to 825.4 days in 2016); and the incidence of the disability of the working age people is constantly increasing (from 35,6 in 2011 to 39,2 in 2015). On the other hand, the low level of diagnosis of occupational diseases over the last five years does not accurately reflect the situation regarding the state of health of the employees. The selective study has highlighted that the most important obstacles in determining the diagnosis of occupational diseases and work related are: 1) the lack of information about work risks; 2) employment without the employment contract; 3) the worker's fear and unwillingness to declare health problems; 4) the absence of normative-legislative levers to motivate the family doctor to diagnose on time the problems of an employee` health.

Conclusions: The theoretical and practical importance of estimating the health of the population in relation to risk factors, assessment and prevention of occupational hazards is not only an

important area of public health but also an important element for leadership in the enterprise or organization.

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PRACTICING PHYSICAL EDUCATION AND SPORTS IN PRE-UNIVERSITY EDUCATION INSTITUTIONS IN THE REPUBLIC OF MOLDOVA

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Introduction: During childhood and teenage, physical education at school provides an excellent opportunity to learn and practice the skills needed to improve physical and health status throughout life. Early acquisition of basic skills makes it crucial for children and adolescents to practice and understand better the value of these activities in their later education. Thus, the aim of our study was to evaluate the provision of pre-university education institutions with gyms and staff.

Materials and methods: The data on the provision of schools with gyms collected from all the pre-university education institutions of the Republic of Moldova by the regional Public Health Centers were sent to the National Public Health Center where they followed a statistical analysis. In the study were used the following research methods: analytical, descriptive, statistical and mathematical.

Results: The general schools in the Republic of Moldova are provided with sports facilities in the proportion of 84.6%. The smallest share of the sports schools of the general schools is observed in regions as Șoldănești (43.5%) and Rezina (53.3%). From the general schools of the Republic of Moldova where there are gyms are provided with shower only 45.9%. Have to mention that in Causeni, Criuleni, Donduseni, Dubasari, Rezina, Soroca, Telenești, Comrat and Vulcanesti are no schools with showers in the gyms. Another current problem is the presence and functionality of dressing rooms attached to gyms. In 85.8% of the schools provided with gyms these are present and in 83.4% of the schools they are functional.

Conclusions: Practicing physical activities at physical education lessons at schools should ensure development of a healthy and dynamic youth, capable of creative activities, in order to form an integral, creative and autonomous personality. In schools of the Republic of Moldova there is still a problem with the provision of gyms and sports grounds for practicing physical activities.

CORRELATION OF THE STUDENTS HEALTH AND THEIR MUSCULAR ACTIVITY

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Introduction: The issue of physical education and the preservation of young people's health is dedicated to the research of many scientists. In particular, V.A. Antikova, V.G. Apanasenko, S.O. Gorbatyuk, D.O. Egoricheva, T.Y. Krusevich, L.B. Malanyuk, S.V. Ostroushka, L.P. Pilipey, T.B. Shugan and others. However, the issue of the impact of motor activity on students needs further research. To date, there are still controversial issues regarding the amount of load and the structure of motor activity, if the goal is not the development of individual physical qualities, not the achievement of sporting results, but the receipt of a well-being effect.

Results and discussion: In response to the reaction of the human body to physical activity, the first place takes the influence of the cerebral cortex on the regulation of the functions of the main systems: there is a change in the cardiorespiratory system, gas exchange, metabolism, etc. Physical exercises also lead to an increase in white blood cells and lymphocytes, which are the main advocates of the body in the path of infection. Physical exercises have an effect on breathing and ventilation of the air in the lungs, on the exchange of oxygen and carbon dioxide in the lungs between air and blood, on the use of oxygen in the tissues of the body. Any disease

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is accompanied by a violation of functions and their compensation, and physical exercises contribute to accelerating regenerative processes, oxygen saturation, plastic ("building") materials, which accelerates recovery. With diseases, the general tone decreases, in the cerebral cortex the braking state is deepened. Physical exercises increase the general tone, stimulate the body's defenses. There is a close relationship between the activities of the muscles and the internal organs. In the application of physical exercises, in addition to the normalization of the reactions of the cardiovascular, respiratory and other systems, the adaptability of the recovering to climatic factors is restored, human resistance to various diseases, stress, etc. is restored. With many diseases, properly dosed physical activity slows the development of the painful process and promotes faster recovery of impaired functions. Youth inactivity practically without exception reflects a deviation of the state of health from the norm, therefore the disease is considered as a direct or indirect cause of their hypoactivity - the disease often leads to a decrease in the level of motor activity, which has a therapeutic effect, which reduces the functional capabilities of the body and thereby determines its hypoactivity.

Hypocativity is determined (O. Bar-Or, T. Rouland, 2009) as a level of activity, lower compared to healthy peers with a similar sex, cultural and socio-economic group. Some diseases will restrict the ability to move and perform other exercises, a young person with asthma or diabetes can lead an active lifestyle, but often does not. Such an indirect limitation that affects motor activity is often combined with other factors, excessive parental care, the fear of a student or parents, inexperience of parents, teachers, and sometimes doctors, social isolation from peers - all this leads to hypoactivity. In some people, a decrease in the level of motor activity occurs during a short period of rest, associated with trauma, surgical operation or the aggravation of chronic illness. It can also be observed in healthy people who for some reason reduce motor activity.

Conclusions: Thus, under the influence of physical exercises, the structure and activity of all organs and systems of a person is improved, the working capacity increases, health becomes better. The low level of physical activity leads to hypoactivity, and this becomes part of a closed circle. Individuals with various health disorders sometimes perceive the same intensity of motor activity as higher in comparison with their healthy peers, and this may be another reason for their advantageous sedentary lifestyle.

BASIC PRINCIPLES AND TASKS OF ATHLETE'S NUTRITION

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Introduction: Modern sports are associated with great physical activity and considerable emotional stress of athletes. One of the most important tasks of contemporary sports is the timely determination of the functional state and changes in the musculoskeletal system of an athlete, making corrections to the training process and taking out restoration measures. Constantly growing requirements for the functional state of highly skilled athletes during training and competitive exercises stipulate the timely application of restorative measures, namely, balanced nutrition.

Material and method: The following methods are used to solve the problems: analysis of literary sources, induction and deduction, comparison and generalization

Results and discussion: The basis of development is the following fundamental principles based on the concept of balanced nutrition of A.A.Pokrovsky:

1. Provision of athletes with the required amount of energy corresponding to their expenses in the process of physical activity.
 2. Following the principles of balanced nutrition in relation to certain types of sports and intensity of loads, including the distribution of calories according to the types of basic nutrients.
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3. The choice of adequate forms of food (products, nutrients and their combination) during periods of intense loading, preparation for competitions, competitions and during the recovery period.
 4. The use of inductive effects of nutrients to activate the processes of aerobic oxidation and complex phosphorylation, transglycosidase processes of biosynthesis of coenzyme forms, ATPase reactions, accumulation of monoglobin and other metabolic processes, which are especially important for ensuring the exercise of physical activity.

5. The action of nutrients in order to create a metabolic background, beneficial for biosynthesis and the implementation of humoral regulators (catechins, protoglandins, corticosteroids, etc.).
6. Application of nutritional factors to provide increased speed of muscle buildup and increased strength.
7. The choice of adequate meals depending on the mode of training and competition.
8. Use of alimentary factors for fast “taking off” of weight when raising an athlete to a given weight category.
9. Development of the principles of individualization of food, depending on the anthropometric, morphological, physiological and metabolic characteristics of an athlete, a state of his digestive apparatus, his tastes and habits, allergenicity to individual nutrients and their complexes.

Nowadays, on the basis of many years of research, it is possible to formulate conditions for the use of food products, including biologically active food supplements and vitamin beverages for solving specific nutritional problems of athletes:

→feeding on a distance and between workouts;

→accelerating of the recovery processes of the body after training and competitions;

→regulation of water-salt metabolism and thermoregulation;

→correction of body weight;

→ directed development of the athlete's muscular mass;

→reduction of the daily ration during the competition period, change in the quality orientation of the daily ration depending on the orientation of the training load or in preparation for the competition;

→individualization of nutrition, especially in conditions of high nervous-emotional stresses;

→urgent correction of unbalanced daily rations;

→an increase in the multiplicity of nutrition in the conditions of multiple training.

Conclusion: The theoretical and practical experience of nutrition specialists testifies that in the conditions of modern sports of the highest achievements in connection with the need to accelerate the processes of recovery and increase of the performance of sports requires the use of special products. Nowadays it is possible to organize rational and balanced nutrition of athletes at different periods of training and competitions with the help of such products, taking into account their principles and conditions, taking into account individual characteristics at the level of modern requirements of the human nutrition science.

ROLE OF RECREATIONAL-HEALTH ACTIVITY FOR ELDERLY PEOPLE

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Introduction: Scientists and students involved in the problems of organization of healthy physical education are O. Andreyeva, T. Kruzevych , C. Manucharian, Y. Prystupa. In the researches they proved that regime of active motion improves the health, extends functional abilities, slows down the aging process.

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Materials and methods: Such methods are used in: the analysis of professional literature sources, the method of analysis and generalization, induction and deduction, comparison and generalization.

Results and discussion: Recreational health activity provides power for exercises - not for intensive aerobic work in a gym, but elementary motions: walks in a park in fresh air, morning gymnastics, jogging. But if there are no clinical contraindications, then it is admissible to visit gym under guidance of an experienced coach. Physical exercises should be associated with positive emotions, otherwise there will be less efficiency. The exercise program, for elderly people, should be selected considering all the changes that take place with age, to avoid any harm for the organism.

Recreational health activity for elderly people can include such types of physical activities as: swimming, badminton, tennis, skiing, rowing and other. Also we should follow few recommendations to have benefits from the recreational health activity:

- while doing exercises, it is necessary to avoid sharp movements, to lift too large weight, to change position of a body too quick;

- during physical exercises it is unacceptable to hold up breathing, to strain, otherwise the wave of blood will be pressed in the heart, and also it will provide the risk of pulmonary emphysema.

The role of recreational health activity in life of elderly people depends on psychological capacities, social interaction and environment. Efficiency of recreational health activity as an integral system of sociocultural activity for elderly people highly depends on such factors as:

- financial and material support: the amount of pension, income;

- models of free time organization: advantages of traditional leisure time spending and technologies;

- professional staff: the presence of specialists who can provide realization of the various programs with elderly people;

- ethical and psychological aspects: social activity for elderly people, their interest in leisure activities, level of cultural queries and necessities;

- informative-methodical resources: a base of methodical literature, specialized magazines;

Recreational health activity should be oriented, first of all, on activation of the personal activity of senior people, forming their vital tone.

On the basis of such approach it is possible to distinguish such basic functions of recreational health activity for elderly people: maintaining the interaction with lots of people; satisfaction of requirement in recognition; improvement and support of the psycho-physical state; maintenance and strengthening of social activity .

Conclusion: Thus, recreational-health activity provides positive influence on a people's health and helps to delay an aging process.

SUDDEN CARDIAC DEATH IN A TEENAGER DUE TO ARRHYTHMOGENIC RIGHT VENTRICULAR DYSPLASIA: A CASE STUDY

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Introduction: Physical activity and sports are important resources in health promotion and in the prevention of various diseases.

Sudden cardiac death (SCD) is the leading cause of mortality in athletes during sport. A variety of mostly hereditary, structural, or electrical cardiac disorders are associated with SCD in young athletes, the majority of which can be identified or suggested by abnormalities on resting 12-lead

electrocardiogram (ECG).

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Arrhythmogenic right ventricular dysplasia (ARVD) is a poorly understood and often underdiagnosed disorder of the right ventricle characterized by fibroadipose tissue, arrhythmic manifestations, and sudden death.

This study presents the first case of ARVD diagnosed retrospectively postmortem in Estonia.

Material and methods: Retrospective case analysis was done according to periodical health evaluation and autopsy.

Results: A 13-year-old boy participated in football training 3 times a week and in athletics training 4 times a week. The boy had not experienced any syncope. Family history did not reveal any cases of sudden death at a young age. In June 2006, he underwent periodical health evaluation which included physical evaluation, anthropometric measurements, spirometry and an ECG exercise test. The results of the studies were within normal limits. The young athlete collapsed suddenly on April 30, 2007 shortly during football training. Cardiopulmonary resuscitation was started with delay at a local hospital but did not give any effect. His autopsy study revealed specific signs of ARVD.

In conclusion, clinicians must become more familiar with ARVD, which is a potentially fatal cardiac disorder that can create vulnerability within young athletes' population.

The preparticipation health screening of athletes is advised before beginning regular physical training and periodic health evaluation in competitive athletes. In addition, coaches have to acquire relevant knowledge and skills of resuscitation.

TUE ASPECTS TO ATHLETES IN REPUBLIC OF MOLDOVA

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Introduction: Calling for therapeutics exemption procedures is a solution for performance and amateur athletes with a view to the lawful use of banned substances or method included in the prohibited list. These may be used only for obvious reasons mentioned in the WADA International Exemption Standard for Therapeutic Use. A request for a TUE is examined by TUE Awarding Commission (TAC), which is designated by the Anti-Doping Agency.

Estimate the number of appeals from national athletes to the TUE procedure's during the years 2015-2017 and identify obstacles to its application.

Methods of research: The research was carried out by applying the ADAMS system in accordance with the confidentiality criterion, the evaluation of data held by the International and National Sport Federations regarding national athletes.

Results: During this period of time, the National Anti-Doping Agency of the Republic of Moldova has not received any official request regarding the TUE granting from performance athletes. At the same time, we mention that NADO Moldova, has all the technical procedures and offered consultations on TUE procedures about 89 athletes during the period 2015-2017y. Also, during this period, the International Sport Federations offered TUE to 4 athletes from the Republic of Moldova.

Conclusions: The study concerned: that national athletes prefer to bear the physical, emotional and organic discomfort related to refuse of using the necessary preparations from the Prohibited List; a lack of athlete's staff who would help to simplify the Therapeutic Use Exemption procedures; low awareness and poor knowledge among performance athletes (35%) about the therapeutic use of banned substances from Prohibited list.

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PREVENTION METHODS OF DOPING

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Introduction: It is known that the anti-doping process is a complex where doping prevention plays an essential role. Thus, the spirit of clean sport, professional ethics and awareness of national athletes is the essential element in promoting Olympic values. As a result, doping prevention actions cannot reduce only to the distribution of leaflets and commentaries about doping. The aim of the study was to evaluate anti-doping methods applied to national athletes during the years 2016-2017 and to identify their effectiveness.

Methods of research: The research was carried out by applying the specialized WADA questionnaire, the use of on-line programs, the psycho-pedagogical methods of training and the evaluation of the obtained results within meetings with the national sports federations and the national athletes.

Results: The research found that the standard prevention methods used by the National Anti-Doping Agency in the Republic of Moldova in its assemblies have positive effects. Respectively, their conscious use and repetition leads to a favorable dynamic by reducing doping violations by national athletes, coaches and assistant staff. It has been found that specific prevention methods are effective for each particular group. Thus, for children, teenagers and young athletes, online programs are more beneficial, for adults---the specialized questionnaire and for the assistant staff and managers --psycho-pedagogical methods.

Conclusions: The study concerned:

The beneficial effect of teaching methods about doping damage in the National Federations depending on the present staff.

Periodic repetition of procedures and use of method combinations favors the effect of approximately 73% on the first session.

The presence of contact staff responsible for doping prevention in the Sports Federations reduces the number of doping violence.

RESULT MANAGEMENT

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Introduction: The assessment of testing results are evaluated when in biological samples of amateur and performance athletes have detected banned substances from the Prohibited List or the above mentioned athletes have used prohibited methods. The procedure for evaluating test results is specified in the International Result Management Standard adopted by WADA. In case of the positive result of the athlete, the athlete shall be suspended and notified. The goal of this study was estimation of the procedure for evaluating the results for national athletes during the period 2016-2017 and identifying the obstacles to its application.

Methods of research: The research was carried out by applying the ADAMS system with respect to the confidentiality criterion in domain of result management, the evaluation of the tests results conducted by the International and National Federations on national athletes.

Results: During this period of time, the National Anti-Doping Agency of the Republic of Moldova has obtained timely all the results of national performance athletes' tests, which were carried out in the framework of its own missions or missions of the International Federations. We mention that NADO of Republic of Moldova has delegated the result management procedures to the East European Anti-Doping Organization (EERADO) for a limited period of time. At the same time, during the period 2016-2017 y., there were 2 meetings with the representatives of the National Federations regarding the results management procedures.

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Conclusions and recommendations: The study concerned:

A lack of competent staff among National Federations who would be fully aware of the results management procedures.

A tendency for refusal from positive athletes to recognize their own violations.

The desire to pass through all international Appeal Courts, indifferent by the violation found, which in turn into huge expenditures from the Moldovan state.

COLLABORATIVE MANAGEMENT OF PHCAND SPORTS MEDICINE SERVICES

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Introduction: Actually, collaborative management of Primary Health Care (PHC) and Sports Medicine services is an essential element in providing quality and durable assistance to athletes. Therational co-operation between above-mentioned services will ensure the exclusion of excessive and repeated examinations and will allow more effective monitoring of the health of the athletes. At the same time, this management will contribute to the creation of a common database, efficient communication and faster intervention in emergency situations. The purpose of the study was to evaluate the collaboration between PHC and sports medicine in the field of healthcare provided to national athletes between 2016-2017 yy. and to identify its effectiveness.

Methods of research: The research was carried out by meta-analysis of the articles in the field, the orders of the specialized central authorities, using the specialized search programs and the evaluation of the results obtained during the meetings with the national sports federations and the national athletes.

Results: The research found that the degree of collaboration between PHC and sports medicine services was at the initial stage in Republic of Moldova. Correspondingly, the improving of service's collaboration will generate positive dynamics by increasing athletes' satisfaction inside of medical services and will exclude repeated examinations. At the same time, a permanent connection and direct communication between national athletes, coaches, assistant staff, sports doctors and family medicine will be established.

Conclusions:

The study found:

The beneficial effect of joint meetings of service representatives (PHC and Sports Medicine) within the National Federations through the increasing communication.

The informing PHC staff about the treatment algorithm in case of performance athletes will eliminate the duplication of support services.

Unification of databases and access routes between PHC and sports medicine services will improve communication and quality of assistance.

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ANALYSIS OF TRAUMA PROBLEM IN SPORT GAMES

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Introduction: In modern professional sport there is a tendency of trauma danger connected with physical activities, in pursuit after effectiveness, desire to figure out attractiveness for leading sport clubs, teams etc. In general, sport trauma represents 10-17 % of all damages. The sportsmen of high level, suffering professional diseases and traumas, are forced to have 7- 45 trainings and 5-35 competitions a year. As the result, the amount of injured sportsmen who need stationary treatment after having been injured is about 10 % and 5-10% need surgical treatment.

There are certain specific traumas for every type of sport. According to the leading researchers, the most traumatic are sport games (causing the locomotor apparatus traumas). Success of recovering after a trauma and returning of a sportsman to trainings and competitions depends not only on the qualified conducted treatment but also on a correctly planned rehabilitation process.

Materials and methods: Such methods are used in solving of problems: the analysis of professional literature, the method of analysis and generalization, induction and deduction, comparison and generalization.

Results and discussion: Sports injuries are leading factors that determine sport effectiveness and sport longevity. The reasons of traumas origin for sportsmen are various enough. Due to statistics, about 30,05% traumas caused by reasons of organizationally-methodical character and 69,95% - by individual features of sportsmen.

The carried out research of data in theme literature testifies that the organizational reasons of traumas origin are such as: the state of overtraining, lack of material-technical support; unsatisfactory sanitary-hygienic conditions; low quality of judging; drawbacks of theoretical and

practical preparation of a coach. In addition, specialists in industry of sport traumatology constantly pay attention on the points of rules improvement during competitions as the means of trauma prevention.

As for the reasons of methodical character we focus on: abuse of general training principles (the gradual increasing of sport loading); errors of sport selection; lack of medical monitoring; an insufficient competence of a coach while using the exercises from other types of sport. The reasons of injuries are conditioned by the individual features of sportsmen: insufficient level of technique-tactic background, low level of physical experience; breaking of sporting rules; non-fulfillment of the general schedule. The main role of game types of sport after the general amount of traumas is non-random, it is connected, first of all, with their specific features: by the quick change of actions in accordance with the motion of a game, by the acceptance of quick and effective decisions on a spot. Next to physical activity, sportsmen in the playing types of sport feel extra nervously-psychological influence through emotional excitement.

These types of sport include the competition period and frequent moves of sportsmen in different climatic zones with the change of time zones, diet, and also participation in competitions without previous adaptation.

Undertaken studies testify that the sportsmen of playing types of sport mostly get the traumas of lower extremities (53,8 %). It concerns both team and individual sport. Along the traumas of upper extremities (18,3%) go backbone (13,2 %)and a head (9,8%).

Conclusion: Most of the sportsmen traumas in playing types of sport go with a musculoskeletal system (about 67%) that related to the technical features and specific way of training and computational tendency of these types of sport.

INFLUENCE OF SPORTS QUALIFICATION ON SOME INDICATORS OF THE FUNCTIONAL STATUS OF FOOTBALL PLAYERS

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Introduction: Analysis of scientific literature reveals, that questions of functional readiness of football players are not well studied. The difficulty lies that in team sports it is optimal consistency activities of the various systems of the body, the quantitative characteristics of which are only possible with the complex diagnostics of the functional state of organs and systems.

Aim: to study the heart rate variability (HRV), central hemodynamics (CH) and physical performance (PP) of football players.

Materials and methods: Comprehensively studied the definitions of HRV, TC and PP of 73-football players, who were divided according to sport qualifications in four groups. First group included 14 football players with qualifications Master of Sports (MS), average age $27\pm 1,36$ years, experience of playing football – $17\pm 2,0$ years. Second group included football players with level Candidate Master of Sports (CMS) – 9 people, average age $20\pm 0,93$ years, experience of playing football – $10\pm 1,33$ years. Third – football players of the 1st qualifications –

34 people, average age $17 \pm 0,19$ years, experience training – $8 \pm 0,51$ years. Fourth – football players with qualifications II-III level – 16 people, average age $16 \pm 0,43$ years, experience of playing football $7 \pm 0,74$ years.

For the analysis of vegetative regulation of the heart activity time and frequency components of heart rate were used. Central hemodynamics as studied by automated tetrapolar rheography. Definition of PP was performed by standard technique on bicycle ergometer with usage of submaximal test PWC170.

Results: Comparison of HRV data of football players, varying in qualifications indicates the relative homogeneity of the average values of time and frequency indexes. Comparison of TC revealed that the average heart index (HI), of football players qualifications MS, CMS and 1st grade were barely discernable and corresponded to hypokinetic type of blood circulation (TC), while football players of the II-III-d level, it had eukinetic type of blood circulation. It is confirmed also in the analysis of the TC. So, football players of the level MS have ratio of the TC had the form: 78.6%: 21.4%, 0%, respectively, hypo-, eu- and hyperkinetic TC.

The football players of CMS qualifications have ratio the 77,8%:22,2%:0,0%, and football players 1st qualifications and qualifications II-III level, respectively, 61,8%:35,3%:2,9% and 25,0%:62,5%:12,5%.

Thus, if the hypokinetic TC is prevalent among the football players of the MS, CMS and 1st degree levels and in first two there are no sportsmen with hyperkinetic TC, then by decreasing of the sport qualification II-III degree, gradual decreasing of the number of sportsmen with hypokinetic TC and increasing with eukinetic and hyperkinetic TC is observed, which leads to prevalence of eukinetic TC among the sportsmen of II-III degree.

The average value PWC170/kg of the football players level MS and CMS, CMS and 1st qualifications did not differ among themselves and were respectively $20,45 \pm 0,65$ vs. $19,17 \pm 0,69$ and $19,17 \pm 0,69$ vs. $18,18 \pm 0,54$ kgm/min/kg ($p > 0,05$). Significant differences PWC170/kg level $p < 0,01$ were observed among the football players level I-st and MS, MS and II-III-th qualifications, CMS and II-III-th qualifications, 1st qualifications and II-III-th qualifications.

Conclusions:

1. Economization of physiological functions of qualified football players show itself in bradycardia, prevalence hypokinetic TC and absence in groups MS and CMS sportsmen with hyperkinetic TC.

2. PWC170/kg is at rather high level football players, which proves the confirming the direction of the training process on the development of speed-strength qualities with expression high level of common, high-speed and special endurance.

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COMPARISON OF SOME INDICATORS OF THE FUNCTIONAL STATE OF HIGH-CLASS ATHLETES WHO DIFFER IN GENDER

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Introduction: Studies of recent years revealed distinct regularity of achievement of sport performance of highly qualified sportsmen of both genders, who specialize in the same kind of

sport, by the convergence of their morphological and functional parameters. It is shown, that the features similar in the level of development in men and women contribute to the convergence of functionality and sport results, and features that are radically different, because a restriction in women's achievement of the results close to men.

The aim of the work was to compare the integrated indexes of vegetative nervous system, central hemodynamics and physical performance of high class sportsmen, differing by the gender.

Materials and methods: Complex examination, including determination of the parameters of heart rate variability (HRV), central hemodynamics (CH) and PWC170/kg 579 sportsmen qualified from I level to the masters of sports of international class (MSIC), including 369 women and 210 men, representatives of 4 cyclic sports was made. This is athletes (runners at the distance of 100–400 meters) – 121 persons (74 men and 47 women), swimmers at the distance of 50–100 meters – 56 persons (25 men and 31 women), swimmers at a distance 200–400 meters – 72 persons (35 men and 37 women), representatives of boat racing – 219 persons (159 men and 60 women), triathlons – 111 persons (76 men and 35 women).

Results: Among integrated indexes of HRV – (LF/HF, TI) among sportsmen of MS qualifications (Master of Sports)-MSIC there were no differences by gender in swimmers at the distance of 50–100 and 200–400 m, representatives of boat racing and triathlons.

At sportsmen of I qualifications-Candidate Master of Sports (CMS) there were no gender differences among the runners at the distance 100–400 m, swimmers at the distance of 50–100 and 200–400 m, representatives of boat racing and triathlons.

Among the integrated indexes of CH (heart rate, cardiac index (CI)) in MS-MSIC there were no differences by gender in runners at the distance of 100–400 m, swimmers at the distance of 50–100 and 200–400 m, representatives of boat racing and triathlons.

At sportsmen of I qualifications-CMS no gender differences in runners at the distance of 100–400 m, swimmers at the distance of 50–100 and 200–400 m, representatives of boat racing and triathlons.

It should be noted, that the tendency of the convergence of the studied parameters extends also on the types of blood circulation (TC). Thus, there were no differences in TC in men and women, with prevalence of hypokinetic TC runners at the distance of 100–400 m (MS-MSIC). At the same time in swimmers at the distance of 50–100 and 200–400 m (MS-MSIC) and triathlons (MS-MSIC) no sportsmen with hyperkinetic TC.

Besides, there were no gender differences among sportsmen of the level MS-MSIC in PWC170/kg. There runners at the distance of 100–400 m, swimmers and triathlons at the distance 50–100 m. Among sportsmen qualifications I qualifications–CMS it is runners at the distance of 100–400 m, swimmers at the distance of 50–100 and 200–400 m.

Conclusion: Thus, long-term training process has the same influence on men and women organisms, which is reflected in the absence of significant differences in high class sportsmen of some cyclic kinds of sport from the side of integral indexes of HRV (LF/HF, TI), CH and PWC170/kg.

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THE ROLE OF COENZYME Q10 IN EARLY REHABILITATION PROGRAM AFTER ACUTE MYOCARDIAL INFARCTION

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Introduction: Until now the need of routine integration of dietary supplements with antioxidant properties in rehabilitation programs in patients with severe coronary artery disease seems to be controversial.

Aim: To investigate the effect of coenzyme Q10 (CoQ) on the changes of several functional and biochemical parameters during early rehabilitation after acute myocardial infarction (AMI).

Material and methods: Two to four weeks after AMI the patients started with 50-minute exercise therapy sessions three times a week with an overall length of 12 weeks. 58 patients were randomized into 2 subgroups: 31 patients received CoQ 100/200 mg per day (1/7 weeks) and 27 patients received placebo according to the similar scheme. The patients underwent breath-by-breath bicycle cardiopulmonary testing before and after the rehabilitation program, while the functional indices of cardiorespiratory system were measured (Oxycon Record, Erich Jaeger). The following parameters were estimated before and after rehabilitation program: oxygen consumption (VO_{2AnTh} ; ml/min/kg) and workload at anaerobic threshold (W_{AnTh} ; watts), peak oxygen consumption (Peak VO_2 ; ml/min/kg) and maximal workload (W_{max} ; watts), total cholesterol (Chol; mmol/l), HDL-cholesterol (HDL-Chol; mmol/l), LDL-cholesterol (LDL-chol, mmol/l), triglycerides (Trigl; mmol/l), ultra-sensitive C-reactive protein (US-CRV; mg/ml), conjugated dienes (CD; $\mu\text{mol/l}$); baseline conjugated dienes (BCD; $\mu\text{mol/l}$), oxidized LDL (ox LDL; mU/ml) and human autoantibodies against oxidised low density lipoprotein (oxLDLAb; U/l). Level of CD was measured according to the method previously described (Starkopf et al., 1995). The levels of ox LDL and ox LDLAb level were determined by using a commercially available kits (ELISA Cat.NO 10-1143-01, Mercodia and oLab Cat.NO BI-20032).

Results: In the study group the improvement in aerobic capacity was more significant than in the control group (increase in Peak VO_2 +17%/ +12%, respectively). Remarkably different was the change in US-CRV (-45%/ -33%, respectively). The level of CD, BCD, oxLDL and oxLDLAb did

not demonstrate statistically significant change neither in the study group nor in the control group.

Conclusions: The administration of coenzyme Q seems to improve positively the aerobic capacity of the patients after AMI. Thus, favourable modifications in patients' cardiorespiratory reserve and functional capacity may become more established in terms of dietary CoQ supplementation. The decrease in the level of serum US-CRV may refer to the anti-atherogenic properties of coenzyme Q.

DIETARY SUPPLEMENTS, ACID-BASE BALANCE AND PHYSICAL PERFORMANCE: A CONCISE REVIEW

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The accumulation of hydrogen ions (H⁺), i.e. an increase in acidity, is thought to cause fatigue by several mechanisms during short term, high intensity exercise. These mechanisms include, but are not limited to inhibition of key enzymes in the glycolytic pathway, inhibition of calcium release from the sarcoplasmic reticulum and its binding to troponin C, and reduction of

contractility of muscle fibers.

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Therefore, the tolerance of high intensity exercise may depend on the ability of the body to counteract decreases in intracellular (muscle) as well as extracellular (blood) pH through its intrinsic buffering systems. Consequently, by increasing the buffering capacity of the body through ingestion of appropriate dietary supplements, performance of high intensity exercise may be improved. Supplements that possess the property to increase the capacity of extracellular buffering systems and which have been studied most extensively are sodium bicarbonate and sodium citrate. Intracellular buffering capacity of skeletal muscle may be increased by ingestion of non-proteogenic amino acid β -alanine. This amino acid is the rate-limiting precursor to carnosine synthesis, and carnosine has been identified as an important intracellular H⁺ buffer in skeletal muscle. This concise review attempts to summarize up to date research findings regarding most effective supplementation protocols of sodium bicarbonate, sodium citrate and β -alanine as well as performance effects and applicability of these substances in improving training outcomes and increasing competitive success. In studies that have reported improved performance the doses of sodium bicarbonate (300 mg/kg body mass) and sodium citrate (500-600 mg/kg body mass) were administered 90 – 120 min and 100 – 120 min prior to exercise, respectively. A few studies that have assessed ergogenic effects of chronic instead of acute ingestion of sodium bicarbonate and sodium citrate have also reported positive results. Regarding β -alanine, doses of 4 - 6 g/day have been shown to increase muscle carnosine concentrations by up to 64 % within 4 weeks, and up to 80 % within 10 weeks of supplementation. Ingestion of sodium bicarbonate or sodium citrate are considered most effective in improving performance in high-intensity exercise involving large muscle groups and lasting 1–10 minutes. The ergogenic effect of β -alanine occurs most prominently in high-intensity exercise tasks of 1 – 4 min duration. Recent findings suggest that sodium bicarbonate and β -alanine may have cumulative positive impact on upper-body intermittent performance.

THE ELECTROCARDIOGRAM CHANGES IN ATHLETES

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Introduction: In modern sport with its high achievements the training process and competitive activity lead to a maximal mobilization of functional reserves and compensatory-adaptive human possibilities. In spite of certain achievements in the treatment of heart diseases, elaboration of new diagnostic technologies, the problem of sudden cardiac death even in the developed countries remains unsolved.

Material and methods: With the aim to study functional state of the cardio-vascular system of young sportsmen we have examined 100 sportsmen aged from 18 to 22 including 25 track and field athletes, 25 weightlifters, 25 football and 25 basketball players. Sport experience of the examined sportsmen was 5 years. For all of them electrocardiography (ECG) was made in twelve leads before and after physical load on the apparatus "Cardio +" on the basis of the Regional Physiotherapeutic Dispensary. The following ECG readings were analyzed: P, T waves, P-Q intervals, R-R distance before and after physical load on bicycle ergometer.

Results: 35% of children going in for sport have been found to have changes on ECG increasing up on 10% after physical activity. ECG changes before physical exercise are found more often among track and field athletes, football players and basketball players, whilst ECG changes among weightlifters are found twice as frequently after physical activity. Before physical load ECG of track and field athletes and football players detects disorders of impulse formation prevailing, and after physical load disorder of impulse conduction becomes three times as much. Peculiarities of ECG changes among weightlifters before physical load are prevailing disorders of impulse formation found by 20% more than among track and field athletes, and after physical activity disorder of impulse conductivity becomes twice as much, and disorders of repolarization processes increase five times as many. ECG of basketball players detects prevailing disorders of impulse formation, and after physical load disorder of impulse conductivity decreases almost twice as much which is indicative of functional changes available.

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Conclusion: Therefore, all sportsmen require special control during preventive examinations before and after physical load, which must be individual, controlled and dosed considering gene polymorphism.

STRECHING EXERCISES AS A METHOD OF TRAUMAS PROPHYLAXIS FOR VOLLEY-BALLERS

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Introduction: Presently, sports traumas, as to different sources, are 2-5% of general traumas (domestic, street, industrial and other). It also depends on the type of sport, and in sporting games, unfortunately, most cases meet on 1000 people who go in for sports. Volleyball is one of the most popular types of sport in the world that can challenge on popularity only with football. In difference from other team types of sport, volleyball is the noncontact type of sport. On the other hand, volleyball becomes the traumatic enough in a number of noncontact types of sport, such as ski sport, gymnastics, tennis and other types. The idea of this work is determined by joints motions with high amplitude and angular speed that result in traumas. In addition,

frequent motions above a head, with high rapidity and large amplitude can cause the development of chronic traumas.

Materials and methods: There were used such methods as: analysis of literary sources, the method of analysis and generalization, induction and deduction, comparison and generalization.

Results : A successful game in team competitions without traumas, is one of major tasks of trainers, in other words, prevention of traumas. It is distinguished four basic types of traumas, specific for volleyball: 1) ankle sprain joints, 2) fingers, 3) knee-joints and shoulder, 4) extremities. All traumas can be divided into "tired" and "sharp". Tired traumas are caused by permanent micro injuries of skin, they meet far more often. Stretching is a system of exercises, a basic purpose of which is stretching of ligaments and muscles, and also increase flexibility of body. During exercises brief tension of muscles alternates with their weakening. Thanks that, there is a possibility to take off tension from muscles and recuperate after physical activity. At the change of intensity, there's also use of various types of stretching, almost all muscular groups are involved in a process.

That's why we consider that stretching exercises accelerate restoration processes, diminishing the risk of the tired traumas. Sportsmen practice stretching with the aim of declining the risk of traumas and it causes large interest from scientists, as we can observe in their advanced researches.

As jumping, speed and explosive force are included in the number of the most meaningful physical features of a volleyball player, in the experiment, we don't operate with the elements of stretching in preparatory part of trainings (not to harm the training process and to decrease the risk of declining the sports results). The aim of our investigation is in searching new methods of trauma prophylaxis.

Because of not enough lighting up of using stretching method as a method of traumas prophylaxis in volleyball, we consider our research topical. We also assume that including the stretching elements in a final part of training; will decrease the level of traumas for volley-ballers.

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Conclusion: Thus, the research shows that the elements of stretching should be adapted in the training process for volley-ballers.

MINERAL SALTS IN THE DAILY DIET OF YOUNG ATHLETES

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Introduction: Nutrition is the basic prerequisite for maintaining of life, ensuring growth and development of the body. Mineral salts are included in enzymes of metabolism, being the plastic material indispensable to the human organism. The human body requires over 20 mineral salts.

Aim: The purpose of the study is to evaluate hygienically the amount of mineral salts ingested by athletes and to develop preventive measures.

Methods: In order to assess the amount of mineral salts with food, were analyzed 212 daily

diets' reports in the winter-spring season and 214 in summer-autumn season, that were completed by young athletes during one week with inclusion of dishes and foodstuffs eaten throughout the day.

Subsequently, using the tables "Chemical composition and energy value of foodstuffs" it was calculated the intake of mineral salts from foodstuffs included in daily diets of these athletes.

Results: The results of the study concerning the ensuring of athletes with mineral salts highlighted important peculiarities of their diet. Lack of mineral elements in food rations was fairly expressed. Presented results revealed the extremely insufficient ensuring with calcium, copper and zinc - practically less than 50% of the required amounts that obviously leaves a fingerprint on the health.

The deficiency of mineral salts in daily diets of sportsmen was 1453.5 – 973.0 mg/day for Ca; 1370,9 – 2965.5 mg/day - Na; 2378.1 – 288.7 mg/day - K; 358.3 – 1288.4 mg/day - P; 73.7 – 293.6 mg/day - Mg and for microelements: Cu - 1.02 – 1.48 mg/day; Zn - 8.02 – 10.7 mg/day; Fe - 1.5 – 15.6 mg/day; I2 - 0.01 – 0.07 µg/day, with an average share of 38.2% deficiency for Na; 16.6% - K; 57.7% - Ca; 28.9% - P; 26.1% Mg; 30.9% - Fe; 62.3% - Cu; 62.6% - Zn and 26.67% for I2.

For a better assimilation of calcium it is recommended that the ratio of calcium to magnesium must be 1: 0.6 and the ratio of calcium to phosphorus - 1: 1.5.

In daily diets of boys-athletes the ratio of Ca: Mg: P was on average 1:0,49:1.92 in winter-spring period and 1:0,52:1,99 in the summer-autumn period, and in daily diets of the girls-athletes this ratio was 1: 0.53: 2.02 and 1: 0.52: 1.98, respectively. The hygienic assessment of these reports revealed an imbalance between the intake of elements, which influences their absorption and assimilation by the body.

Conclusions: It was established the deficiency of some mineral salts and an imbalance between them in daily diets of young athletes. The results of the study argues the need to increase the contribution of some mineral salts in daily diets of sportsmen on account of products rich in mineral salts.

PRIMARY SELECTION OF CHILDREN FOR SPORTS

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Introduction: One of the basic principles of occupational medicine is the non-admission in the profession of people who do not have all the morpho-physiological attributes for work and harmonious adaptation to the occupational environment and the overworking imposed by the activity. In this context, the primary professional selection of athletes is of interest because it is made in childhood and/or adolescence, in the most vulnerable periods of human development, when the body is very sensitive to the influence of endogenous and exogenous factors. The purpose of the current study is to assess the health status of junior athletes at the stage of professional selection.

Material and methods: Were analyzed the results of the medical-sports exam, which is executed annually at the stage of registration of candidates at the Republican High School with Sports Profile and Chisinau Municipal High School during the period 2014-2016, applying the traditional statistics methods.

Results: Annually is executed the medical-biological selection of $233,2 \pm 11,11$ graduating students at the "Atletmed" National Sports Medicine Center.

As a result of the initial examination, $7,0 \pm 0,33$ graduating students (about 3-3,6%) were diagnosed with various pathologies, incompatible for performing sports. Those are not admitted to the exam session. Among the most frequently diagnosed pathologies are diseases of the circulatory system (including congenital heart malformations), bronchial asthma, advanced vertebral spine disorders (scoliosis), and high-grade myopia.

At the same time, $92,8 \pm 9,33$ people were diagnosed with various reversible disorders of the state of health, which did not reach the intensity of being absolute contraindication for practicing sport. The structure of detected pathologies is determined by heart rhythm disturbances, myopia, chronic dental caries, urinary tract infections, depression disorder, and physical underdevelopment.

Conclusion: The initial medical exam is the first sorting phase of young athletes, with absolute contraindications for practicing intense sports; Annually, about 3% of graduating students are found in sporting education institutions with absolute contraindications for practicing sport, incompatible with this sphere of human activity; About 50% of young people admitted to sports education institutions have relative contraindications that show reversible health disorders and require a special recovery and training program.

MONITORING THE STATUS OF HEALTH OF THE ATHLETES FROM THE REPUBLIC OF MOLDOVA

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Introduction: As many self-regulating biological system, the human body responses adequately to professional risk factors. These could be related to different biological meanings: useful, useless and careless. Individual adaptation necessity is much more increased, than in other activity areas. Professional and extra-professional factors, summed up, could be a volume of demands, which limits the possibilities of adaptation and harmonious integration of the human body into the environment, usually, determining the passage from healthy physiological states into pathological. People who are practicing sport, presents a high interest in this case, because their activity is specific and it is associated with physical overloading. All these facts have served as a key points for the current research, the aim of which is to assess athletes' health based on regular medical examination results.

Material and methods: There were analyzed the data regarding the periodic sport medical examination results carried out at the National Centre of Sports Medicine "Atletmed", during the period of 2014 - 2016, using the traditional methods of sanitary statistics.

Results: Athlete's health monitoring is done biannually and provides the data regarding the medical-sports anamnesis, the diagnosis of the health state, the assessment of the physical state, the cardio-respiratory state, the aerobic exercise capacity and the restoration capacity.

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Annually, full medical exam is performed at $5352 \pm 11,5$ persons, the periodic medical-sports

exam at $24637,5 \pm 52,30$ persons, primary medical consultations at $8287,5 \pm 1481,30$, and repeated medical consultations at $4441 \pm 89,5$ people.

During the research period, there were found 3344 - 3899 and 271-214 individuals with ECG changes induced by sports effort without pathological significance and with appropriate pathological significance.

The structure of ECG changes without pathological significance is predominant by sinus arrhythmia (34.9 - 29.5%), bradycardia (26.2-23.6%), RBBB (15.4-18.0%), LVH (8.0-11.7%) and repolarization disturbances (DR) I grade (9.0-8.8%). Changes in ECG of 73.8-51.9% pathological significance are presented by grade II repolarization disturbances (DR).

Conclusion: The volume and the specificity of the medical act given to athletes allow detection of adverse functional changes induced by the sportive effort in the premorbid phase.

First-time acute lateral patellar dislocation: the relation between femoral sulcus angle and patella alta

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Introduction: Lateral patellar dislocation (LPD) is a relatively common injury particularly in young active people. The two most important anatomical variants that have been implicated in LPD include trochlear dysplasia, patella alta. How exactly these main anatomical risk factors interact and bring about patellofemoral instability is still a matter of debate. The aim of the present prospective study was to determine the correlation of patella alta incidence with different femoral sulcus angle in patients with primary LPD history.

Material and methods: 58 patients (boy/girl 23/35; age range 11–18 years) with acute primary LPD were selected prospectively. All patients had a history of a first time LPD including a documented dislocated patella that required reduction and a thorough clinical, X-ray (AP, Mercer-Merchant views), CT scan examinations of the both knees. Three study groups (gr.) were formed as follows: 14 patients (A gr.) with affected knee sulcus angle (SA) $\leq 138^\circ$; 21 patients (B gr.) with SA from 138° to 145° ; and 23 patients (C gr.) with SA $>145^\circ$. Patellar height and sulcus angle were measured according to the Blackburne – Peel and Brattstroem methods respectively. Patients age, gender, height, weight, BMI and its percentiles were statistically similar in the all groups. Statistical analysis: the Mann-Whitney U, chi-square tests and the Pearson correlation coefficient. Significance was set at $p < 0.05$.

Results: 71.4% of patients in gr. A and 95.2% in B and 87% C gr. had a high-riding patella. There was a statistically significant difference between patients from the A and B gr. The mean patellar height ratio was 1.15 in A gr. patients, 1.33 in B and 1,33 in C gr., respectively. There was a statistically significant difference between patients from the A and B gr. The patellar height ratio was moderately (directly) correlated with SA ($r = 0.537$, $p < 0.05$) for A gr. patients. In our 58 patients the gender ratio was 60% female/40% male, which is similar to other study populations in the existing literature. The published incidence of patella alta in LPD is 20% to 81%. In the current study, patella alta was observed in 86% patients.

Conclusions: The lower rate of patella alta incidence and patellar height ratio of the affected knee was observed for patients with SA $\leq 138^\circ$ compared to those with SA from 138° to 145° .

Laxity OF RECONSTRUCTED Anterior Cruciate Ligament OF THE KNEE: Considerations TO THE PHYSIOTHERAPY PLAN AND RETURN TO PLAY OF THE ATHLETES

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Introduction: It has been reported that over 70% of anterior cruciate ligament (ACL) injuries occur in noncontact situations during professional and recreational sport activities. In most cases injury requires surgery and the reconstruction of torn ACL. The rehabilitation takes about 6 – 9 months and the athlete is ready to return to play in about 81% cases. Another frightening fact is that kids ACL injury rates grown up to 400% over the last ten years. Anterior cruciate ligament rupture leads to the front - lateral knee joint instability, quadriceps muscle atrophy, joint surface degeneration, meniscus injuries and the recurrent pain. The main problems arising for the following reasons: knee proprioception dysfunction, balance impairment and gait dysfunction, a lot of difficulties in casual activity, especially in sport and physical activities. In a 'normal' body, ligaments (which are the tissues that connect bones to each other) are naturally tight in such a way that the joints are restricted to 'normal' ranges of motion. This creates normal joint stability. Proper physiotherapy plan after the ACL reconstruction gives about 50% of success in return to play. Latest trends in the physiotherapy of the athletes suggest criterion-based rehabilitation plan over the time-based rehabilitation. The aim of the study was

to evaluate laxity of the reconstructed ACL 3, 6 and 12 months after the surgery in professional or recreational athletes.

Material and Method: The knee laxity was measured with robotic laximeter Genourob. The GNRB® is a knee laxity testing device for measurement of anteroposterior tibial translation at 20° of knee flexion thus reproducing the Lachman test position. A linear jack exerts gradually increasing thrust forces according to the examiner on the upper section of the calf. Laxity (mm of movement of the proximal tibia in the anterior direction relative to the femur) was calculated at test forces of 134 N, 150 N, 200 N and 250 N. The healthy knee should have not more than 1 mm anteroposterior tibial translation, the partial tear of ACL can be suspected when the side-to-side difference of anteroposterior tibial translation is 1–3 mm. More than 3 mm difference is indicating total ACL tear. The idea of the test is to compare injured knee with the healthy knee. Slope of curves of displacement was measured as a unique indicator of the functional instability of the knee. Difference of slopes of curves $\Delta P2$ ($\mu\text{m}/\text{N}$) was analysed: $\Delta P2 > 10$ – high of risk of functional instability; $5 < \Delta P2 < 10$ – medium and $\Delta P2 < 5$ – low risk of functional instability. 134 N force was used 3 months after the surgery. 6 and 12 months after the surgery 150 N and 200 N forces has been used additionally.

Subjects: 218 men at the age of 31.43 ± 8.57 years were tested. The average of body mass index was 25.81 ± 2.99 kg/m². All the patients were professional or recreational athletes and suffered the ACL injury during the sport activities. 81 athletes were tested 3 months, 78 - 6 months and 59 - 12 months after the ACL reconstruction. All the surgeries were done by the same experienced surgeon. Data presented in mean \pm standard deviation and degree of statistical significance was set at $P \leq 0.05$.

Results: 3 months after the surgery the average of side-to-side difference at 134 N force during the anteroposterior tibial translation was 0.95 ± 1.45 mm. 6 months after the surgery we had similar side-to-side difference - 0.70 ± 1.22 mm. The average of side-to-side difference after the 12 months was 0.43 ± 1.40 mm. Despite the fact that results in the follow-up can be named as „acceptable” - we can conclude that the stability of the knee and the tightness of the ACL graft statistically significant ($p=0.034$) increased and side-to-side difference of anteroposterior tibial translation at 134 N during the robotic ACL laxity measurement decreased from 0.95 ± 1.45 to 0.43 ± 1.40 mm.

The risk of functional instability of the operated knee - slopes of curves - $\Delta P2$ ($\mu\text{m}/\text{N}$) remained in the same medium risk of instability level - 6.28 ± 5.07 - 3 months and 5.79 ± 4.83 – 12 months after the surgery ($p=0.565$). These findings confirm the importance of the physiotherapy in order to regain knee stability, muscle strength, and range of motion, proprioception, confidence and psychological readiness to return to play.

Conclusion: The reconstructed ACL needs time to “adapt” in the operated knee. The ACL graft becomes about twice tighter in about 12 months after the surgery, although the risk of functional instability of the knee remains in the medium level. This fact leads to the conclusion that knee laxity measurements should be included into the return to play decision algorithm for professional and recreation athletes in order to avoid re-injury of the ACL and emphasizes the role of criterion-based rehabilitation in full recovery.

Nonlinear psychobiological model framework:

exercise-induced pain

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Introduction: Psychobiological behavior during endurance exercise can be conceptualized as the result of a self-organized process. This behavior can then be investigated through an approach based on nonlinear dynamical systems (NDS) theory. The interest for conducting the study of pain in the framework of the Nonlinear psychobiological model of exercise-induced fatigue is drawn upon three main aspects: a) pain as a subjective experience offers unique possibilities to explore how fatigue spreads throughout the body and helps study the dynamics and individual patterns inherent in this sensation, b) there is a close interrelation between perception of pain and attention and of both with endurance and task disengagement, c) finally and foremost the pain location dynamics have not yet been studied. Hence, the contribution of the present work towards a better understanding of attention driven pain mechanisms as well as the development of effective strategies for its management.

Material and Method: Physical education students were tested while cycling and running at a "hard" intensity level (e.g., corresponding to Borg's RPE (6–20) = 15) or completing a progressive incremental cycling test. To detect pain dynamics and corresponding bodily regions, a body map was verbally explained to participants prior to the baseline test and experimental tasks. Using the map, every 15 s during exercise, upon the researcher's prompts, participants reported bodily regions with discomfort and pain. Significance level was set at $p < 0.05$ level.

Results: The analyses revealed that the number of body locations with perceived pain and discomfort increased throughout five temporal windows in constant and incremental tasks. Three distinct and consistent pain distribution patterns emerged: adders who added pain locations, jumpers who switched among pain locations, and adders-jumpers who both added and switched among pain locations throughout the effort. Task endurance was associated with

the total number of changes of pain locations ($r = .46, p < .04$). Idiosyncratic pain distribution patterns with more switching among pain locations throughout effort seemed to increase time on task. The metastable dynamics of the body pain locations groupings over time were discerned by three time scales: (1) the time scale of shifts (15 s); (2) the time scale of metastable configurations (100 s), and (3) the observational time scale (1000 s). Perception of pain and attention to pain seem to be multidimensional and interrelated through hierarchical.

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Conclusion: Within the framework of the nonlinear psychobiological model of exercise-induced fatigue the present results are pioneer in that they a) offer an initial account of pain location dynamics during constant exhaustive exercise, b) recognize the individuality of pain patterns dynamics, and finally c) detect a nested temporal organization of subjective experiences (qualia) through the study of pain-attention dynamics.

MEDICAL ASSISTANCE DURING THE SPORTS COMPETITIONS

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Introduction: Sport competition is one of the evaluation sport activity and the main performance assessment criterion. Physical and psychophysiological overloads during the sports competitions are clearly superior comparing with the sport trainings and cantonments. The spectrum of risk factors for athletes' health during competitions is quite wide compared to daily activity. The purpose of the current study is to assess the medical assistance of the competitions provided by The National Centre of Sports Medicine "Atletmed" specialists.

Material and methods: There were analyzed the data regarding the medical-sport monitoring of competitions during the period of 2014 - 2016, using the traditional methods of sanitary statistics.

Results: Annually The National Centre of Sports Medicine "Atletmed" specialists serve $42,3 \pm 4,36$ different sports activities at national and international level: taekwondo, karate, kikbox, moto - autocross, football, etc. During the research period, the number of assisted competitions varies within the range of 31-49 events. The number of athletes participating in competitions varies from 317 athletes in 2014 to 705 in 2016, averaging $479,3 \pm 86,86$ people.

During the competitions, there were registered a number of 45-100 addresses of sports care due to sports injury, the annual average being $55,0 \pm 5,77$. That shows that the number of trauma cases practically double increase in 2016 compared to 2015, from 45 cases to 100 cases respectively.

In the trauma structure, on the first place are the plagues and superficial injuries with $52,7 \pm 11,1\%$ being followed by ligament breaks, luxation and sprains ($18,7 \pm 8,47\%$) and bone fractures of the superior limb ($15,6 \pm 0,02\%$). Brain concussions are also frequent during the sports competitions, amounting to $9,3 \pm 1,54\%$.

Conclusion:

1. Medical assistances during sports competitions play an important role in maintaining and promoting health of athletes.

2. In addition to the supervision of habitual conditions, nutrition and practicing the sports effort, the first aid in trauma is also important, and the management quality of the trauma cases depends decisively on the recuperation and the sport longevity.

3. With all the preventive measures taken, the risk of trauma during competing remains high.

PHYSIOTHERAPY REHABILITATION OF LOCAL FUNCTIONAL DEFICITS INSTALLED AFTER TRANSTIBIAL INFERIOR LIMB AMPUTATIONS

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Introduction: The loss of a segment of the lower limb strongly influences the static and dynamic biomechanics of the body by adding compensatory, asymmetric movements to the coxofemoral joint, pelvis and trunk.

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These changes overload the joints, tendons and muscles above the amputated segment. The asymmetric compensatory kinematics initially has an adaptive character, but with great potential in the development of pathological muscle and joint imbalances. Respectively, the most common local biomechanical complications occurring during the postoperative period are the muscular hypotrophies and stiffness of the joints at the level of the amputated segment, caused primarily

by the lack of support and walking function of the inferior limb.

Materials and methods: The study included the analysis of the medical records of 14 patients with unilateral transtibial inferior limb amputations, randomized division of the research sample into two groups and their involvement in various rehabilitation programs. Lot I (70 people) underwent conventional (classic) rehabilitation treatment; Lot II (70 persons) - conventional rehabilitation and physical therapy techniques applied locally and generally. The effectiveness of the programs was analyzed by assessing the knee joint of the amputee part (goniometry in degrees) and muscle testing (difference in perimeter of the thigh of the amputated part relative to the healthy one), performed at admission, after 1 month (discharge) and 6 months.

Results: Of the total study number of people enrolled, 47.9% of cases were diagnosed with vicious stump with flexum and only 59.1% of them followed postoperative rehabilitation treatment. Poor joint mobility in the amputated segment was recorded by limiting knee extension in 56 patients in group I ($82.0 \pm 4.59\%$) and 62 ($86.1 \pm 4.07\%$) patients in group II. After 6 months in both groups, 30% of patients did not have a knee extension deficit, but in the test lot, the dynamics outcome are much more progressive, from 12% to 28% ($p < 0.01$). In the group of patients who received physical therapy rehabilitation treatment, the number of patients with the perimeter difference up to 2 cm after 1 month increased by 5.5% versus 1.4% in the group of patients receiving generic treatment ($p < 0.05$). In group II, their dynamics increased from 16.7% initially to 44.4% after 6 months.

Conclusion: The incidence of cases diagnosed with vicious stump is directly proportional to the number of people who did not benefit from postoperative rehabilitation assistance. Significant progress in articular mobility in the test group is justified by the intensity of physical therapy programs performed in stationary and home conditions. The difference in the perimeter of the thigh had a more pronounced dynamics over 6 months due to the fact that the increase in strength and muscular volume, respectively, takes longer. The medical rehabilitation programs with active kinetic techniques have considerably influenced the dynamics of the functional indexes assessed at the amputated segment level.

NUTRITIONAL INTAKE FOR ADOLESCENTS IN FOOTBALL

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Introduction: Sport nutrition, which can also be called exercise nutrition, is the application of nutrition principles for the purpose of improving training, recovery, and performance. Sports are competitive physical activities, although the term is being expanded to include other competitions (interestingly, poker tournaments are now being covered in the sports section of some newspapers). Although exercise nutrition is perhaps a better term, sport nutrition is likely to remain the most widely used term. A sophisticated appreciation of the role of nutrition has been made possible by increasing knowledge of the physiology of exercise. The nutritional support of an intense daily training programme includes an appropriately high energy intake, predominantly in the form of carbohydrate in order to continually replenish muscle glycogen stores. However, these increased requirements are likely to be met by the generous protein intakes anticipated in a high energy diet. Implementation of a nutrition programme for team sports involves application of scientific research together with the social skills necessary to work with a sports medicine and coaching staff.

Soccer is the most popular team game, which in the last two decades has received much attention by sports scientists.

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The purpose of this study was to investigate the nutritional intake of adolescent (semi-professional) football during a week in the competitive season.

Methods: Food intake was evaluated using a questionnaire, for 25 teenagers in the city Chisinau, at sports theoretical high school Nr. 2, using a 7-day food record. Many investigators have studied the eating habits of football players in an attempt to examine whether the diets reported correspond to dietary recommendations.

Results: The volunteers had a history of 5 ± 1 year at competitive level and trained four times per week for about 90 min. They participated in one formal competition every week and had no training the day before and the day after competition. The players were requested to record all food items and beverages consumed except for water. The subjects were also trained to describe food portion sizes using household measures such as cups, dishes and spoons, and detailed verbal and written instructions were provided by a registered dietitian on how to record food consumption. Subjects recorded their diet during a week. Total energy intake was 11.8 ± 0.4 MJ and was derived from carbohydrate by 43 ± 1 %, fat by 39 ± 1 %, protein by 17 ± 1 %, and alcohol by less than 1 %. Throughout the recording period mean carbohydrate intake was 4.2 ± 0.1 g/kg BM and protein intake was 1.6 ± 0.1 g/kg BM, while the fiber intake was only 4.5 ± 0.3 g/1000 kcal. The pre-competition meal on the day of the game was also characterized by low carbohydrate content (43 ± 3 %), whereas its fat content was high (40 ± 3 %). Also, during the recovery period after the game the food intake of the players was not optimal for replenishing body carbohydrate stores. In terms of micronutrient intake, players met the Dietary Reference Intakes with the exception of folic acid, magnesium and vitamins D and E. The diet of the semi-professional soccer players was characterized by low carbohydrate intake, high fat content and low fiber consumption, whereas the amount of proteins was at satisfactory level.

Conclusion: However, due to the small sample size of the study the results should not be considered as conclusive for semi-professional soccer players in general.

CHANGES IN PHYSICAL CONDITION OF BODY OCCURRED UNDER THE INFLUENCE OF SYSTEMATIC PHYSICAL EFFORT

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Background: The practice of physical exercises by women and observance of dietary pattern corresponding to health status, age and phase of the menstrual cycle gives a better physical, mental and emotional state, which is a strong motivation for changing lifestyle and health orientation.

Material and methods: A descriptive study was carried out in which a group of women of reproductive age from Chisinau was included. All the selected persons for study were divided into groups and subgroups, upon criterion of age, systematic physical effort and dietary pattern.

Results: The duration of systematic practice of sport by the participants to study is from 6 months up to 8 years, at average of $42,5 \pm 2,46$ months. The weekly observance of training sessions is 3 days. The duration of a training session is about 60 minutes, according to the programs elaborated within this study. The majority of participants to study started practicing the sport for the purpose to equilibrate the body mass, especially to lose weight. It was found that the loss of body mass after practicing systematic physical effort within the limits is from 3 up to 23 kg, the registered mean level being of $13,2 \pm 1,27$ kg. The correlation of lost kilograms to number of training months is losing weight by 1,2 kg/month. The intensity of losing body mass of examined women depends on duration of systematic attendance of sport training sessions with systematic physical effort. Thus, practicing systematic physical effort for duration more than 12 months may ensure a loss of body mass up to 23 kg.

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The compared evaluation of BMI value at different distances of practicing systematic physical effort points out that initially, in all groups of study, the persons with BMI lower 18,5 were not registered, and BMI over 35 were 30 (7,8%) persons.

Gradually, after 36 months practicing systematic physical effort, the number of women with BMI lower 18,5 is 67 (17,4%) and BMI over 35 – 2 (0,5%) persons. It is also appreciated positively

the increase of number of persons with BMI up to 25: from 153 (39,8%) at initial investigation up to 332 (86,5%) after 36 months of systematic practicing of systematic physical effort.

Conclusions: The practice of systematic physical effort contributes to gradual decreasing of body mass, in such a way that, after 36 months of systematic practice, the number of women with BMI over 35 decreased from 30 (7,8) up to 2 (0,5%), and those with BMI lower 18,5 increased from 0 up to 67 (17,4%); contributes to decreasing of anthropometric sizes of abdomen, hips and nates; to shaping of silhouette. The faster achievement of the expected results is characteristic for the persons from early stage of the reproduction phase, and those in the late stage obtain visible results slower and need more time to maintain the obtained results.

