

**SPORTS MEDICINE**

**MORPHOFUNCTIONAL FEATURES OF PHYSICAL  
DEVELOPMENT OF 15 YEAR-OLD GIRLS OF MAGADAN CITY  
DEPENDING ON THEIR SPORTIVE SPECIALIZATION**

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**Keywords:** adolescent girls, somatic development, functional indicators of the cardiovascular system, sportive specialization

**Annotation.** The paper presents the results of a study of the morphofunctional development of 15-year-old girls all born in Magadan who have been involved in sports with the sports school for children, depending on sportive specialization (skiing and rhythmic gymnastics) in comparison with those girls who are not regularly involved in any sports. The schoolgirls were examined to comparatively analyze the main somatometric parameters of their physical development: Body Length (BL, cm), Body Mass (BM, kg) and Chest Circumference (CC, cm) as well as their cardiovascular system functional parameters: Systolic Blood Pressure (BP<sub>S</sub> mm Hg), Diastolic Blood Pressure (BP<sub>D</sub>, mm Hg) and Heart Rate (HR, beats per min). It is shown that statistically significant differences in BL are observed between the groups of skiers and gymnasts. Gymnasts are lighter than non-athletes and skiers in BM. Non-athletic girls are significantly higher in CC than their age mate athletes. The highest variability of indicators and a significant proportion of the examinees with disharmonious and microsomatic body types (21.1% and 37.9% respectively) were typical for non-athletic girls. A mesosomatic type of the body build was observed in 74.6% of the examined female skiers and 66.7% of gymnasts. They also demonstrated a high percentage of harmonious physical development (93.7% and 82.2% respectively). It was found that non-athletic girls have a significantly higher Blood Pressure than girls involved in sports. No significant differences were revealed between athletes and non-athletic girls in the HR, but female gymnasts demonstrated quite higher HR than skiers.

**HYPERBILIRUBINEMIA IN THE SPORT OF HIGHER  
ACHIEVEMENTS**

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**Key words:** hyperbilirubinemia, features of development of bilirubin metabolism disorders in athletes.

**Annotation.** As sports achievements and success at competitive events depend on many factors, one of which is the health status of the athlete, the purpose of this study is to estimate the frequency of detection in sportsmen of various sports of such a state as hyperbilirubinemia, the relationship between the intensity of physical exertion and the level of bilirubin.

Following the development of the mechanisms of functional states that arise during exercise, provoking bilirubin metabolism disorders, and also assessing the data of foreign studies, a direct dependence of the increase in load intensity and the occurrence of hyperbilirubinemia in a number of athletes was revealed. Since the stability of hematological status indicators is one of the key factors determining optimal physical performance, especially in the sport of higher achievements, it is important to monitor athletes with hyperbilirubinemia and in a timely manner to provide them with a set of measures aimed at restoring the level of bilirubin.

### **NON-DRUG TREATMENT TECHNOLOGIES OF PATIENTS WITH THE SYNDROME OF THE POLYCYSTIC OVARIES**

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**Key words:** polycystic ovary syndrome, infertility, laser puncture, iodide-bromine baths, gynecological irrigation.

**Annotation.** The authors set the goal to develop pathogenetically grounded methods of combined application of laser puncture and balneotherapy with iodine-bromide waters in patients with polycystic ovary syndrome to restore reproductive function. Based on the study of 80 patients, it is proved that the use of the developed therapeutic complex is physiologically justified, it expands the arsenal of therapeutic agents for restoring the reproductive function of this contingent of patients.

### **FEATURES OF THE VEGETATIVE PROVISION OF CARDIOVASCULAR SYSTEM IN YOUNG SKATERS WITH DIFFERENT SOMATOTYPE**

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**Key words:** autonomic nervous system, figure skaters, young athletes, heart rate variability, somatotype.

**Annotation.** The article presents the information about the features of heart rate variability of young athletes that are involved in figure skating. Considered characteristic of the vegetative provision of cardiovascular system of figure skaters of 6-7 years with regard to somatotype. In the distribution of groups of children taking into account somatotype were identified representatives of muscle (62%), digestive (20%) and thoracic (18%). It was determined that in the group of 7-year-old children with muscle type heart rate variability indicators are characterized by

approximate values to the normative indicators of this age group. In the group of children 6 years there are conflicting results. Other regulatory criteria need to be developed for them

## **BEHAVIORAL EFFECTS OF VALDOXAN MEDICINES WITH MELATONIN IN THE PHARMACOLOGICAL MODEL OF DEPRESSION**

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**Key words:** melatonin, valdoxan, reserpine, depression, behavior, rats.

**Annotation.** In model experiments on rats, the modulating effect of Valdoxan on the behavioral phenotype in experimentally induced depression was studied. It was found that Valdoxan reduced the adverse effect of reserpine on orienting-exploratory behavior. The mechanisms of the modulating effect of Valdoxan on the behavior under various conditions of the organism's existence are discussed in the work.

## **INDICATORS OF CEREBRAL HEMODYNAMICS AND LIPID PEROXIDATION IN ATHLETES UNDER THE INFLUENCE OF GIPERTERMICESKI-HYPOXIC TRAINING ON RESPIRATORY TRAINER «CARBONIC»**

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**Key words:** cerebral hemodynamics, transcranial duplex scanning, indicators of lipid peroxidation - antioxidant system, hypercapnic-hypoxic training, carboxylic therapy.

**Annotation.** The article deals with the changes in cerebral hemodynamics and parameters of lipid peroxidation - antioxidant system (LPO-AOC) in athletes of different specializations in the application of hypercapnic-hypoxic training on the breathing simulator "Carboxylic". As a result of the study revealed that the use of carboxylic therapy in the training process can significantly improve its effectiveness by reducing the disorders of autoregulation of cerebral circulation, increasing metabolic perfusion reserve, normalization of vascular tone, reducing hyperresistivity of cerebral arteries, changes in the performance of the system of POL-AOC.

## **FEATURES OF FOOD AND WATER-DRINKING MODE OF SPORTSMEN OF GAMING SPORTS**

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**Keywords:** game sports, water-drinking mode, nutrition of athletes, the energy value of the diet, physical activity.

**Annotation.** Modern sporting achievements are based on the principles of optimal nutrition, no less than on the features of neuro-mental and muscular activity in the training process. This paper is devoted to the review of the characteristics of nutrition and water-drinking regime in team sports. Game sports are characterized by alternating loads of varying intensity with rest periods. The mechanism of energy supply of work is a mixed anaerobic-aerobic. The result in the game depends on the degree of development of the neuromuscular apparatus, the cardiovascular and respiratory systems, the visual analyzer, and is determined by the development of skills, both technical and tactical. Large individual differences in energy consumption are possible, which is associated with many factors affecting the intensity of physical activity during the game. In this regard, the energy value of the diet can also be very variable. The qualitative and quantitative distribution of food and fluid intake in the daily ration of athletes of game sports should be made taking into account the upcoming game. The paper provides a literary analysis of the effect of nutrients on the restoration of sports performance of athletes of game sports. Formulated features in the formation of diets and drinking regime of such athletes.

## **THE USE OF THE ROBOTIC COMPLEX CON-TREX MJ FOR THE DIAGNOSIS AND CORRECTION OF AN IMBALANCE OF LEG MUSCLES IN ATHLETES**

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**Keywords:** sports medicine, sports injury, muscular strength, athletics, athletes, achillotendopathy, therapeutic physical culture.

**Annotation.** Dysfunction of the leg muscles leads to an uneven biomechanical load, resulting in a limitation of the amplitude of movements in the ankle joint and a malfunctioning of the muscular-ligamentous apparatus of the joints of the lower extremities. The purpose of the study is to identify and correct the imbalance of flexor and extensor muscles with the help of the CON-TREX MJ robotic complex (RBC) in athletes at the preclinical stage. During the initial examination, muscle imbalance of the flexor and extensor muscles of the right and left legs was revealed, which is manifested by large indicators of the maximal torque of the extensor muscles, compared with the flexors of the muscles of the left foot, by contrast, the extensor muscles of the right leg. The use of RBC CON-TREX MJ helps to predict and prevent fatigue injuries of the Achilles tendon in athletes at the

preclinical stage. Timely preventive measures will help optimize the biokinetic chain and eliminate muscle imbalance. Therapeutic gymnastics at RBC CON-TREX MJ can be an effective method of conservative treatment of injuries of the Achilles tendon.

## **EFFECTS OF THE APPLICATION OF A ROBOTIZED DIAGNOSTIC TRAINING COMPLEX OF CON-TREX IN REHABILITATION OF ATHLETES WITH DAMAGE OF THE KNEE-JOINT**

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**Keywords:** robotic complex, rehabilitation, rehabilitation, athletes.

**Annotation.** The aim of the work was to study the influence of the course of therapeutic gymnastics on a robotic complex on the functional state of the knee joint. Studies have shown that a course of therapeutic gymnastics on a robotic complex contributes to an increase in the range of motion in the knee joint, and can also be used to correct muscle imbalance. When analyzing the electroneuromyography data, reliably improved neuromuscular parameters were found. According to rheovasography, microcirculation and venous outflow rates also tended to normalize. From this it follows that medical gymnastics on a robotic complex is a highly effective method of rehabilitation of athletes with injuries of the capsule-ligament apparatus of the knee joint.

## **EXTRACTION FREEZING-OUT IN PRELIMINARY PREPARATION OF BIOSAMPLES FOR GC-MS ANALYSIS**

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**Keywords:** liver, kidney, sample preparation, extractive freezing-out, GC-MS

**Annotation.** A low-temperature rapid method of sample preparation is proposed, based on the use of extractive freezing-out in combination with centrifugation of the sample as a stage of preliminary preparation of the biological object (liver from the corpse). The method significantly reduced the «chemical background» of endogenous co-extractives and significantly improved the conditions of GC-MS research.

## **BALNEOLOGY AND REHABILITATION**

## **INFORMATION INTERACTION BETWEEN PARTICIPANTS IN THE PROCESS OF REDUCING TREATMENT FOR EMPLOYEES WHO HAVE HARMFUL WORKING CONDITIONS**

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**Key words:** rehabilitation treatment, medical diary, technological protocol, quality assessment of medical care.

**Annotation.** The article is devoted to the development and implementation of a system of continuity, consistency and evaluation of the quality of medical care during the rehabilitation treatment of workers with harmful working conditions into the departmental medicine of OOO Gazprom transgaz Krasnodar. The effectiveness of the staged rehabilitation treatment is shown.

## **NON- MEDICAMENT TECHNOLOGIES IN TREATMENT ANEMIA FOR CHRONIC DISEASES**

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**Key words:** hematology, chronic diseases, pathological forms of red blood cells, organ therapy.

**Annotation.** Anemia of chronic diseases accompanies infectious, rheumatic and inflammatory diseases of various etiologies. According to modern concepts, it is based on the immune-mediated mechanism: cytokines and cells of the reticuloendothelial system cause changes in iron homeostasis, proliferation of erythroid precursors, erythropoietin production, life expectancy and osmotic resistance of red blood cells. Very often, the key process responsible for increasing the osmotic fragility of red blood cells is the peroxidation of membrane lipids [5]. Therefore, dynamic control of blood parameters is a diagnostic method used to study the mechanism of pathological processes and the action of biologically active substances, including xenogenic origin, obtained by isolated extracorporeal perfusion of parenchymal organs of laboratory or farm animals.

## **DEVELOPMENT AND JUSTIFICATION OF TECHNOLOGIES FOR THE USE OF ENDOMASSAGE AND THE MAGNETIC FIELD IN THE PROCESSES OF RECOVERY AND REHABILITATION OF ATHLETES IN THE SPORT OF HIGHER ACHIEVEMENTS.**

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**Keywords:** endomassage, magnetic field, recovery, rehabilitation, athletes.

**Annotation.** The aim of the work was to develop a method of applying the combined effect of endomassage and magnetic field on the functional state of the musculoskeletal system of the lower limbs of athletes, as well as to study the effect of endomassage and the magnetic field in the period of post-traumatic rehabilitation in athletes. Studies have shown that the combined use of endomassage and magnetic field enhances the functionality of the musculoskeletal and neuro-muscular system, and is also an effective tool with a pronounced analgesic effect, the use of which is possible in the post-traumatic rehabilitation of athletes.

**USE OF CLIMATIC LANDSCAPE THERAPY IN PREVENTION OF METEOPATHIC REACTIONS WITH PATIENTS SUFFERING FROM ISCHEMIC HEART DISEASE COMPLICATED BY CARDIAC ANGINA IN COMBINATION WITH CEREBROVASCULAR INSUFFICIENCY WITH WORK-RELATED DISADAPTOSES**

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**Key words:** ischemic heart disease, work-related cardio-cerebral vascular pathology, resort treatment, climatic landscape therapy, meteosensitivity, meteopathic reactions.

**Annotation.** The article deals with the efficiency of application of climatic landscape therapy to basic resort treatment and metered trained walking in national park "Kislovodsk" to prevent meteopathic reactions with patients suffering from ischemic heart disease (IHD) in combination with cerebrovascular insufficiency with work-related disadaptoses (DA).

The combined application of the dosed physical training walking along special health paths in the park with climatic landscape therapy in individualized modes at resort treatment of patients with IHD and DA, enhances synergism of their positive action on adaptive organism systems promoting regress of clinical symptomatology, improvement of adaptation and regulatory status, increase in compensatory and adaptive opportunities of patients' organism.

**NON-INVASIVE WAY OF QUANTIFY THE FUNCTIONAL STATUS OF THE HEART: SOME EXAMPLES OF CLINICAL PRACTICE**

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**Key words:** functional diagnosis, electrocardiography.

**Annotation.** The article gives examples of the development of common heart diseases (from the earliest manifestations to pathology). These unique data were obtained by means of a mathematical analysis of the electrocardiogram signal, which made it possible to evaluate the functional state, adaptive capabilities of the myocardium, and, in the future, to identify a number of signs that directly indicate a predisposition to any cardiac pathology.

### **THE MEDICAL AND SANITARY PASSPORT OF CHEMICALLY AND HAZARDOUS FACILITY**

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**Key words:** health passport, chemically dangerous object, public health, health of the personnel, factors, work environment, the environment, risk, health and environmental tensions.

**Annotation:** This article presents the main positions of the health passport of chemically hazardous facility and the surrounding area. The necessity of the health passport to organize sanitary-epidemiological approaches to integrated assessment of a single system is shown, which characterizes health, personnel working in chemically hazardous facilities, industrial hazards and the environment, taking into account the emissions of chemically hazardous objects.

### **THEORETICAL-EXPERIMENTAL RATIONALE ISSUES OF MODIFICATION OF DRINKING MINERAL WATERS TO IMPROVE THEIR BIOLOGICAL CAPACITY**

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**Key words:** experiment, rats, healthy animals, silver nanoparticles, modified mineral waters, toxic liver damage.

**Annotation.** In healthy animals, a single administration of nanoparticles of the se-rib has a negative effect on hepatocytes, manifesting themselves as stress-type reactions, and activating lipid peroxidation. Course intake of silver nanoparticles to a lesser extent affected the increase in indicators characterizing the state of the liver, the change in metabolic indicators. With the combined use of silver nanoparticles with mineral waters, the negative effects of nanoparticles have significantly decreased. The addition of silver nanoparticles to mineral waters on the background of chronic liver damage with formaldehyde revealed a greater efficiency of the



course intake of the mineral water of the Krasnoarmeisky spring, by 4.8-5.2%, over the modified mineral water Essentuki No. 17, reducing its biological potential on average on 3,5-6,1%.

## **STUDYING THE INFLUENCE OF THE NATURE OF MINERAL WATER ON THE AGGREGATE STABILITY OF SILVER NANOPARTICLES**

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**Key words:** experiment, colloidal silver, modified mineral waters, photon-correlation spectroscopy.

**Annotation.** The conducted studies of silver nanoparticles after their extemporal introduction into the composition of drinking mineral waters «Essentuki No. 17» and «Krasnoarmeisky» showed high aggregative stability of silver nanoparticles to the composition of mineral waters of various composition and mineralization.

## **APPLICATION OF SLABOSULFIDNY MINERAL WATERS OF PYATIGORSK FOR WORKERS OF CHEMICAL INDUSTRY WITH TOKSIKO-HIMICHESKIMI DAMAGES OF THE LIVER FOR INCREASE IN EFFICIENCY OF MEDICAL REHABILITATION AT THE SANATORIUM STAGE**

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**Key words:** slabosulfidny mineral waters, toxic hepatitises, aspartate aminotransferase (AST), alanine aminotransferase (ALT), lipidic exchange, low-new dialdehyde, catalase.

**Annotation.** Patients with toksiko-chemical damages of a liver have an intake of drinking mineral water - slabosulfidny mineral water with the content of hydrogen sulfide of 10 mg/l and Pirogovsky bathtubs of the same structure involve the immune system of an organism, intensify processes of resilience of an organism as improve blood supply and stir up functional activity of a liver, well influence lipidic and cholesteric exchange.

## **IODOBROM BATH AND OZONOTHERAPY IN SANATORIUM-RESORT REHABILITATION OF PATIENTS WITH CHRONIC BRAIN ISCHEMIA**

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**Key words:** Chronic cerebral ischemia; iodide-bromine baths; ozone therapy.

**Annotation.** In accordance with the tasks set in the work, 90 people with chronic cerebral ischemia 1 st. They were randomized into three treatment groups. The patients of the control group (30 people) received iodide-bromine baths, the patients of comparison group (30 people) received ozonotherapy and the patients of the main group (30 people) received iodide-bromine baths and ozonotherapy. The examination included ultrasonic dopplerography, electroencephalography, rheoencephalography, cardiointervalography, lipid metabolism, fibrinogen content. As a result of treatment in patients of all treatment groups, there was an improvement in clinical symptoms, normalization of biochemical and neurophysiological indices. The authors proved the expediency of restorative treatment of early forms of cerebral vascular diseases at the stage of sanatorium rehabilitation.

### **SANATORIUM-SPA TREATMENT OF PATIENTS WITH CHRONIC ISCHEMIA OF THE BRAIN**

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**Key words:** iodide-bromine baths, pulsed low-frequency electrostatic field, chronic cerebral ischemia.

**Annotation.** A new pathogenetically grounded technology for sanatorium-resort rehabilitation of patients with chronic cerebral ischemia with the use of iodide-bromine baths and pulsed low-frequency electrostatic field was developed. It is proved that the resort stage of rehabilitation of patients with chronic cerebral ischemia leads to a positive dynamics of initially changed parameters: disappearance or reduction of headaches, dizziness, normalization of atherogenic blood potential, optimization of vegetative processes of the organism, improvement of cognitive processes and stabilization of emotional-volitional sphere, and quality of life.

### **FUNCTIONAL DISORDERS OF THE BILIARY TRACT: MODERN CLASSIFICATION, PRINCIPLES OF DIAGNOSIS AND TREATMENT**

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**Key words:** functional disorders of the biliary tract, functional disorder of the gallbladder.

**Annotation.** The article discusses the problem of functional disorders of the biliary tract: functional disorder of the gall bladder and sphincter of Oddi (functional disorder of the biliary sphincter Oddi and functional disorder of the pancreatic sphincter Oddi) in the light of the Roman criteria IV (2016), new views on the etiopathogenetic mechanisms of this pathology development, modern clinical and

laboratory diagnostic methods, approaches to pharmacotherapy, non-pharmacological and surgical treatment.

### **GENOTOXICITY AND CYTOTOXICITY OF UNSYMMETRICAL DIMETHYLHYDRAZINE IN ACUTE AND SUBCHRONIC EXPOSURE**

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**Key words:** unsymmetrical dimethylhydrazine, genotoxicity, cytotoxicity, lymphocytes, reticulocytes, alkaline gel-electrophoresis, micronucleus assay.

**Annotation.** The objects of this study were leukocytes, reticulocytes and hepatocytes of white rats.

The aim of this work is to study the genotoxic and the cytotoxic effects of unsymmetrical dimethylhydrazine (UDMH) using alkaline gel-electrophoresis on leukocytes and hepatocytes, and reticulocyte micronucleus test and lymphocytes by the cytokinesis-block micronucleus (CBMN) assay.

The genotoxicity and cytotoxicity were studied after the acute intraperitoneal administration of UDMH in doses of 25 and 50 mg/kg at 3 and 24 hours exposure and after daily administration in doses of 10 and 20 mg/kg for 7 and 14 days. It was found that after a single and subchronic injection of UDMH, the fragmentation of the nuclear DNA of leukocytes and hepatocytes did not change. The frequency of micronuclei in reticulocytes and lymphocytes did not change either (genotoxic action).

A dose-dependent decrease in the relative content of binuclear lymphocytes (cytotoxic effect) was only detected by CBMN assay after subchronic administration of UDMH.

Thus, the possibility of using CBMN in monitoring studies concerning health of people who have professional contact with UDMH during its manufacture, use or utilization has been confirmed.

## **AGE PECULIARITIES OF PSYCHOLOGICAL FEATURES OF KARATE ATHLETES**

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**Key words:** psychological specificity, karate, Cattell's Personality Factor Questionnaire, age-specific differences.

**Annotation.** Current study was conducted among athletes of youth Russian national karate team in order to identify individual psychological specificity of athletes. Evaluation of personality characteristics was carried out with personal questionnaires of Cattell 16PF and adaptation of the same questionnaire for adolescents of the 14 factorial personality questionnaire of Cattell. Results show significant differences in personality characteristics among athletes of different age groups. Results emphasize the importance of defining professionally important qualities for various sports disciplines and understanding their impact on the effectiveness of sport performance of Russian national team athletes.

## **INDIVIDUAL PECULIARITIES OF SELF-REGULATION OF THE ATHLETE AS A FACTOR OF REDUCING NEGATIVE MANIFESTATIONS OF SPORTS ACTIVITY**

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**Keywords:** highly qualified athletes, individual self-regulation, regulatory profile, emotional burnout, type A behavior, total stress index

**Annotation.** The article deals with the individual characteristics of self-regulation of athletes in the context of their relationships with emotional burnout and behavior of type A as the main negative manifestations of sports activity. The obtained results show that the higher the indices of individual self-regulation and athletes, the lower the manifestations of stress and the negative consequences of sports activity - emotional burnout and behavior of type A.

## **THE IMPACT OF INTERVENTION PROGRAM ON THE ATHLETES' FUNCTIONAL STATUS (THE CASE OF FEMALE VOLLEYBALL PLAYERS)**

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**Keywords:** psychophysiological indexes, psychological correction, self-regulation, biofeedback, sensomotor reaction, mobilization, relaxation.

**Annotation.**

This article presents the results of psychophysiological diagnostics of the female volleyball players in context of their sport activities. The authors propose the intervention program of the cognitive and emotional-volitional sphere. Besides, this program proved to be relevant in the correction of the functional status, providing the positive dynamics of the studied parameters. It shows the significant correlation of the mobilizing potential and general organismal adaptive capacity with the reliability of sports activities.

**EXPERIENCE OF THE PSYCHOLOGICAL SUPPORT PROGRAMM FOR THE GROWTH OF PROFESSIONAL SUCCESS OF ATHLETES OF RUSSIA'S NATIONAL TEAMS IMPLEMENTATION**

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**Key words:** professional success in the sport of higher achievements, stability of the life-world, effectiveness in sport, psychological health, psychological support of professional success.

**Summary.** The article presents the results of approbation of the program of psychological support for the growth of professional success of Russia's national teams athletes. A holistic approach to the organization of an effective process of psychological and pedagogical support of the professional success of highly qualified athletes is presented. The theoretical and methodological justification is given and the effectiveness of the chosen psychological mechanism of increasing professional success through the creation of psychological and pedagogical conditions for the growth of the indicator of the stability of the life-world and the building up of signs of the constructive nature of its manifestation are provided. As a result, it makes possible to improve sports results as quickly as possible, and to improve the indices of mental adaptation of athletes of Russian national teams.

**ENGLISH SPORTS TERMINOLOGY: WAYS OF WORDFORMATION  
(based on the English tennis terms)**

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**Keywords:** wordformation, tennis, terminology.

**Annotation.** The article reveals structural features of English tennis terminology. The importance and relevance of such analysis are defined by the material representing one of subjects of the English lexicon unexplored earlier.

физической культуры и спорта.