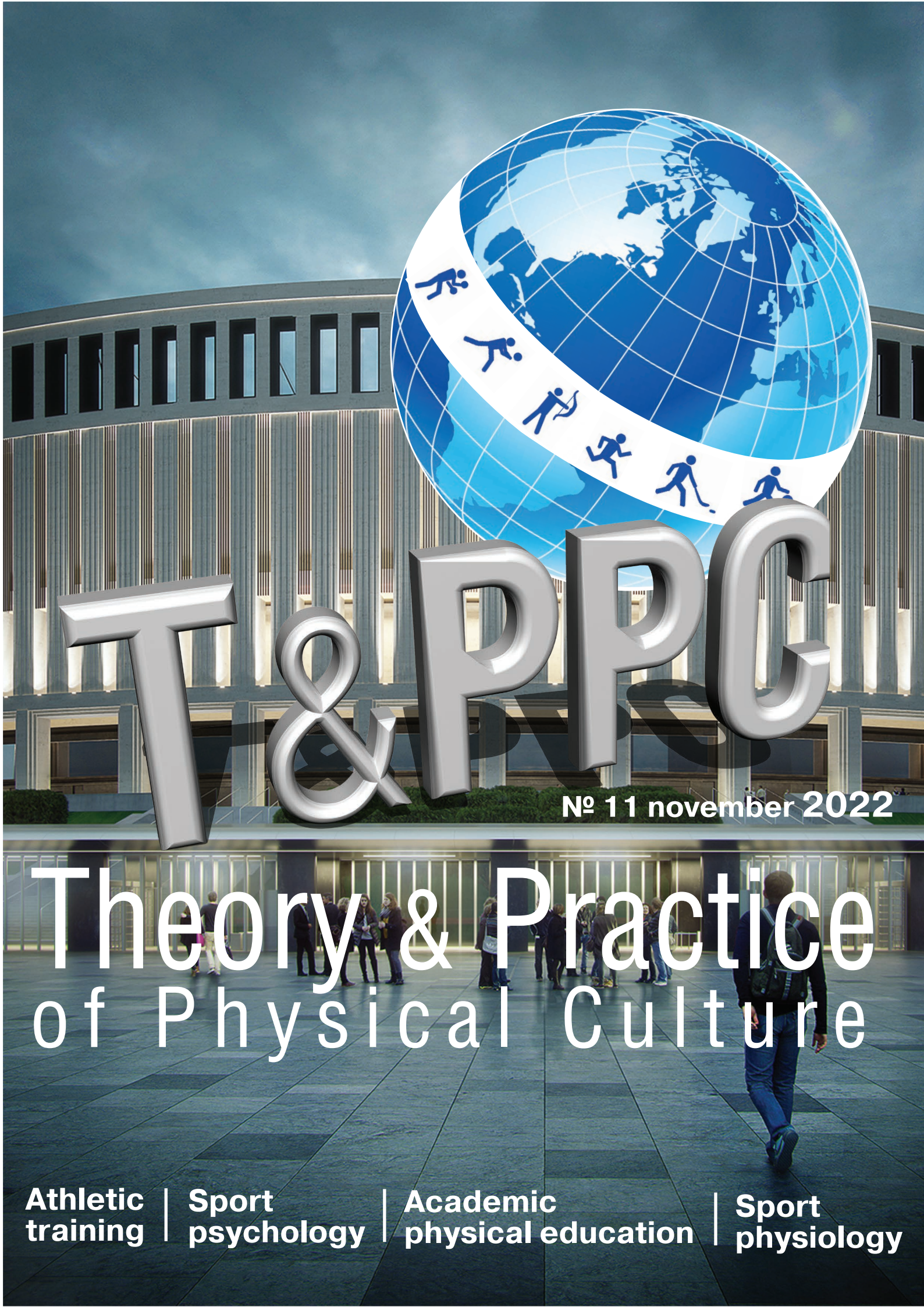

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№ 11 november 2022

Theory & Practice of Physical Culture

Athletic training | Sport psychology | Academic physical education | Sport physiology

Key issues of the modern sports science for discussion

Sociological research as a factor in the management of social processes in the field of physical culture and sports

A modern person in a period of uncertainty in the state of public life is faced with a variety of social tasks, for which it is necessary to have an idea of the world where he lives, to understand the essence of human relations, to know and observe the value meanings of social behavior, to anticipate and find ways to solve complex conflict situations, to take into account the peculiarities of the functioning of various social institutions that ensure the vital activity of society. Fundamental and applied sociology, including the sociology of physical culture and sports, allows a person to find guidelines for comfortable living in society and ways to solve sectoral social problems.

Currently, the sociological problems of physical culture and sports are of particular importance due to the need to manage sectoral social processes and the need to make scientifically sound management decisions. Many leading specialists in the field of physical culture and sports are sometimes guided by intuition, practical experience and their own understanding of the problem situation. Nevertheless, a wide range of social knowledge obtained in the course of research provides a basis for effective analysis of problems, focusing on evidence-based data, which leads to the adoption of a rational management decision.

Today, questions about the place of the physical culture and sports sphere in the human life system, the characteristics of the image and lifestyle of various socio-demographic groups, as well as what cultural values and meanings fill, for example, the Olympic movement, remain important. It is important to understand how the ratio should remain in the development of mass sports and sports of the highest achievements, how the personality of an athlete is self-realized during the construction of a sports career, how the values of physical culture and sports are formed and new technologies of health improvement, education and self-realization of people by means of physical activity are created, etc.

In order to make effective management decisions in the field of physical culture and sports, it is necessary to take into account the attitude of various socio-demographic groups to new forms of classes, their content, the development of sports infrastructure, staffing. Conducting specific sociological research reveals the socio-cultural potential of physical culture and sports, increases the importance of training sessions not only for the organization of a healthy lifestyle, but also for improving the personal qualities of those involved. The most important result of large-scale sociological research is the prediction of trends in the development of the physical culture and sports industry.

Modern sociological research uses advanced big data analysis tools embedded in the structure of digital technologies, in particular artificial intelligence technologies, Big Data and others. Thanks to these innovations, the range of coverage of sociological data sources is expanding, allowing you to gain new knowledge and get a complete picture of social reality. At the same time, the property of exhaustion and versatility is manifested in the possibility of analyzing the entire data array, rather than a separate sample. At the same time, the high speed of processing processes contributes to obtaining up-to-date information, since big data is created continuously. In turn, the digital information obtained becomes the basis for identifying new management factors, building models that determine the vector of social forecasting of the development of physical culture and sports in society.

In conclusion, I would like to emphasize that in the future, the sociology of physical culture and sports will not only preserve, but also strengthen its cognitive and prognostic role based on the use of innovative resources. The real increase in the importance of sociological knowledge and its application depends on the high professionalism of scientists and practicing sociologists who are constantly improving their competencies not only in the field of their scientific interests, but also in the field of digital technologies.

We invite scientists to publish articles aimed at finding innovative approaches to the effective use of the tools of sociological research in the field of physical culture and sports and expanding the scale of their implementation.

Chief Editor of TiPFC,
Honored Worker of Physical Culture of the Russian Federation,
doctor of pedagogical sciences, professor L.I. Lubysheva

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Theory and Practice of Physical Culture

Contents

Historical milestones in the development of the institute of physical culture, sport and youth policy of the Ural federal university named after the first president of Russia B.N. Yeltsin

UDC 796/378.096

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Abstract

Objective of the study was historical analysis of the formation and development of the Institute of Physical Culture, Sports and Youth Policy of the Ural Federal University named after the First President of Russia B.N. Yeltsin.

Results and conclusions. The article reveals the history of the formation and development of physical education of students, and then the training of qualified personnel in the field of physical culture and sports in one of the largest universities in the Urals - UrFU. There is an interrelation between the trends in the development of an institution of higher professional education, the formation of student sports and the areas of training specialists for the Sverdlovsk region.

Keywords: *institute of physical culture, student sports, UrFU, physical education.*

Introduction. In order to ensure stability in the context of anti-Russian sanctions in the field of physical culture and sports, as a socially and reputationally significant area, the history of the development of physical education of students, and then the training of qualified personnel for the region at the Ural Federal University (hereinafter referred to as UrFU) is of interest.

Objective of the study was a historical analysis of the formation and development of the Institute of Physical Culture, Sports and Youth Policy of the Ural Federal University named after the First President of Russia B.N. Yeltsin.

Research results and discussion. The first years of functioning of the Ural State University, established on October 19, 1920, were not easy, because it was necessary to form a material base, build a comfortable learning process for students and teachers. Of course, in those days there were serious difficulties with funding, and the issues of physical culture and sports were not in the first place for the university leadership; the main goal was to “get back on your feet”, to create a reliable foundation for future development.

The first official structural subdivision of the current Ural Federal University in relation to physical culture and sports is the department of physical training of students, founded in September 1932, headed by Valery Vasilyevich Skryabin, Doctor of Medical Sciences, Professor. In 1934, the Council of People's Commissars of the USSR decides to merge several Sverdlovsk branch institutes into one Ural Industrial Institute with seven faculties and five thousand students [2].

Already in 1934, through the efforts of Valery Vasilyevich Skryabin and Andrei Mikhailovich Vishnevsky, the Department of physical education was organized at the Ural Polytechnic Institute. For three months it was headed by a graduate of the Leningrad Institute of Physical Culture named after P. F. Lesgaft Valery Vasilyevich Skryabin, and from December 1934 to 1970 (with short breaks for acting head of the department of other teachers) the department was headed by Andrey Mikhailovich Vishnevsky, candidate of pedagogical sciences, associate professor, graduate of the Moscow Institute of Physical Culture (SCOLIPE).

Under the leadership of A.M. Vishnevsky department has been developing for more than three dec-

ades, and during this period a lot of efforts have been made to establish the educational and training process at the institute. It is interesting to note that under the supervision of the head of the department, the track and field athletes of the institute introduced year-round training into the training process, which resulted in the record of the Soviet Union set by the athletes of the institute in the 5x1000 m relay in 1940 [2]. At the regional level, the team of polytechnics had no equal for a long time - 23 times they won the relay race for the prize of the newspaper "Ural Worker" (one of the most prestigious regional athletics starts).

In the period from 1936 to 1939, the department was headed by Vasily Ivanovich Shibakin, Boris Kononovich Lurie, Boris Alexandrovich Zhuravlev and Ignatiy Vasilyevich Nazarov. During the Great Patriotic War from 1942 to 1945, the department was headed by a Russian sports veteran Vladimir Fomich Piontek. Already on the second day of the war, hundreds of students and teachers of the institute went to the front as volunteers; among them were six employees of the department of physical education.

An important event for the development of student sports at the institute was the creation at the end of 1945 of a student sports club, which, together with the department of physical education, energetically engaged in mass sports work. For many years he led the club M.S. Stolyar. This club continues its activities at the present time, organizing physical culture and sports events, involving as many students and employees as possible in the sports life of the university.

It is necessary to note the scientific and methodological component of the development of the department in the postwar years. A.M. Vishnevsky was the first in the country to develop a methodology for practicing physical culture with a health-improving orientation with young people who have deviations in their state of health.

The sports achievements of students were also numerous. Here are some figures: since 1947, the team of the Ural Polytechnic Institute (UPI) has won 85 times and 101 second and third places in various All-Union and All-Russian competitions in 26 sports. Students brought gold medals from world championships (parachuting, shooting), and gold from the World Universiade (skiing), and the highest awards of the USSR (skating, cycling, rock climbing, etc.).

With regard to the development of the material base of the institute, two most significant events took place in these years. The first is the creation of a sports camp on the shores of Lake Sandy, the idea of which belonged to the rector G.A. Prudensky, who saw something similar in one of the Moscow universities. And the second is the design and construction of a unique winter athletics arena. The construction of the first winter stadium in the country's universities was completed in 1967.

Since February 1971, Associate Professor John Lvovich Polikarpov became the head of the Department of Physical Education. Much attention to D.L. Polikarpov was focused on the issues of methodological support of the educational process. [2]. In 1980, the UPI Department of Physical Education was one of the first in the country to start regular physical education classes with third and fourth year students, which were held twice a week for two hours [2]. It was during these years that the Ural Polytechnic Institute for the mass development of sports and outstanding sports achievements (the only university in the country!) was forever awarded the challenge Red Banner of the All-Union Committee of Physical Culture and Sports [4].

On September 1, 1984, a new head of the department appeared - Leonid Samoylovich Dvorkin, at that time candidate of biological sciences, associate professor. It was Leonid Samoilovich who managed to realize the idea of his predecessor as the head of the department to create a faculty of physical culture at the Ural Polytechnic Institute. In 1988, the Academic Council of the Institute decided to create on the basis of the Department of physical education the first Faculty of physical education in technical universities of the country [2].

In 1991, Leonid Aronovich Rapoport, now Doctor of Pedagogical Sciences, Professor, Master of Sports of the USSR, Honored Worker of Physical Culture of the Russian Federation, became the head of the Faculty of Physical Culture.

Among the important events of the 90s of the XX century at the faculty it should be noted: the construction of a specialized training complex for rock climbing; implementation of attracting targeted and sponsored financial resources for the training of high-class athletes; opening of postgraduate studies in the scientific specialty "13.00.04 - Theory and methods of physical education, sports training, health and adaptive physical culture"; for the first time in Russia, within the walls of the arena of the Ural State Technical University (USTU-UPI), two stages of the Rock Climbing World Cup were held on a new artificial wall with the participation of athletes from 18 countries, etc.

The created system of sports training, developed material base, the availability of qualified personnel

and educational and methodological support predetermined the opening of the graduating specialty "022300 - Physical Culture and Sports" at USTU-UPI. On July 7, 1994, a state license was obtained to recruit a group of students in their specialty.

In 2004, the Academic Council of the University supported the appeal of the Faculty of physical education to rename it into an institute. By order of the rector S.S. Naboychenko, on November 1, the faculty became the Institute of Physical Culture, Social Service and Tourism, and its first director was Professor L.A. Rapoport. The successful start of the 2004-2005 academic year should be noted: seven representatives of the university competed at the XXVIII Olympic Games in Athens and won six Olympic awards, including L. Galkina, G. Mamedaliev, O. Chukanova, O. Fedorova, I. Khabarova [four].

In 2006, the Institute was headed by Sergei Viktorovich Novakovsky - Doctor of Pedagogical Sciences, Professor, Honored Coach of the Russian Federation, Honored Worker of Physical Culture, Master of Sports of the USSR in classical (Greco-Roman) wrestling, international judge.

In 2011, the institute received its current name of the Institute of Physical Culture, Sports and Youth Policy and was headed by Nina Borisovna Serova, Candidate of Pedagogical Sciences, Associate Professor, excellent student of physical culture. One of the main achievements of this period and the pride of the institute was the scientific and educational laboratory "Technologies of Recovery and Selection in Sports", organized in 2012, headed by a sports medicine doctor - K.R. Mehdiyeva, who subsequently defended her Ph.D. thesis on the pathology of the heart muscle of athletes.

Since 2019 he has been acting, and since 2021 he has been heading the Institute of Physical Culture, Sports and Youth Policy E.A. Shurmanov, candidate of pedagogical sciences. The educational process and programs of the Institute continued to expand: the educational program "Hotel Activities" was developed and launched at the Department of Management in the Field of Physical Culture and Sports; together with the al-Farabi Kazakh National University (Kazakhstan), training was started on the master's programs "Motivation and self-realization in sports" and "Preventology among the youth." Memoranda of cooperation were signed with ten foreign European and Asian universities for the joint implementation of educational and scientific activities, as well as academic exchange.

Currently, more than a thousand students study at the institute (727 at the undergraduate level, 350 at the master's level), of which 72 are foreign students. The teaching staff of the institute includes 188 people, including 13 doctors of science and 57 candidates of science. More than 17,000 university students are engaged in physical education.

An important milestone in the development of physical education and sports is the opening in 2022 of the dissertation council at Ural Federal University on 5.8.11.25 in pedagogical sciences, branches 5.8.5 "Theory and methods of sports", 5.8.7 "Methodology and technology of vocational education".

Students adequately represent the name of the institute in sports and professional arenas, proving with their success that it is realistic to combine studies with sports.

Conclusions. Thanks to the effective activity of the Institute of Physical Culture, Sports and Youth Policy of the Ural Federal University named after the First President of Russia B.N. Yeltsin, there is an interrelation between the development trends of the institution of higher professional education, the formation of student sports and the areas of training specialists for the Sverdlovsk region. An example is the successful performance of our students and graduates at international and all-Russian competitions - this is hockey player Pavel Datsyuk; boxers Konstantin Dzyu, Yegor Mekhontsev and Sergey Kovalev, gymnasts Anastasia Tatareva and David Belyavsky, biathletes Sergey Chepikov, Anton Shipulin, Svetlana Mironova, Irina Kazakevich and many others.

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Primary diagnosis of psycho-emotional states of athletes of the russian wheelchair curling team

UDC 796.01:159.9

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Abstract

Objective of the study was to conduct a primary psychological diagnosis of athletes of the main team of the Russian wheelchair curling team.

Methods and structure of the study. Eight athletes of the main composition of the Russian national team aged 33 to 52 years old took part in the scientific work: four men and four women. For diagnosis, four basic methods for diagnosing indicators of stress and anxiety were chosen: a method for diagnosing self-esteem Ch.D. Spielberger, Yu.L. Khanina (assessment of situational and personal anxiety); inventory of stress symptoms (T. Ivanchenko et al.); scale for assessing subjective comfort (A. Leonova); diagnostics of the state of stress (K. Schreiner).

Results and conclusions. According to the results of the diagnostics, it was revealed that the athletes of the main team of the Russian national team are able to get together and respond constructively in a tense situation, but at the same time they are prone to anxiety, which can cause errors during the competition. Based on the data obtained, a sports psychologist developed a correctional program aimed at reducing the levels of situational and personal anxiety, as well as the formation of skills for conscious self-regulation and emotional relaxation.

Keywords: *psychodiagnostics, wheelchair curling, emotional stability, psychological preparation of athletes.*

Introduction. Stable results of athletes in elite sports are the result of the systematic work of a team of specialists. In addition to the competent work of the training staff, the complex activity of a sports psychologist is mandatory, which involves, at the first stage, primary diagnostics, then correction of the necessary indicators, and repeated diagnostics to determine its effectiveness. A sports psychologist provides psychological training. According to the textbook "Sports Psychology": psychological preparation is "the formation, development and improvement of the properties of the psyche necessary for the successful activity of athletes and teams" [1].

Since 2020, the coaching staff of the main team of the Russian wheelchair curling team has decided to form a system of psychological training. Wheelchair curling has been officially considered a professional sport since 2002. The Russian national team is currently one of the leaders and has medals of the World Championships: “gold” in 2012, 2015, 2016, 2020 and “silver” in 2017. Also in 2014, athletes won silver medals at the Paralympic Games - 2014 in Sochi.

Team coaches note that in this direction of curling, tactical, strategic superiority and psycho-emotional state are in the forefront, and only then motor activity [2].

Objective of the study was to conduct a primary psychological diagnosis of athletes of the main team of the Russian wheelchair curling team.

Methods and structure of the study. One of the most important and often decisive factors for a successful performance in this sport is the psycho-emotional state of athletes at the time of preparation

and participation in competitions, as well as stress resistance. It is worth noting that the 2020-2021 sports season is not quite ordinary: due to the coronavirus pandemic, there were no international competitions, all-Russian competitions are severely limited. The last official game of the athletes - the victorious final of the 2020 World Cup - was about a year ago. The next competition plans were also not determined, which, according to the coaches, leaves an imprint on the psycho-emotional state and stress level of the athletes.

The diagnostics of the athletes was carried out during the training camp in January 2021. The athletes reacted to the diagnostics with interest, were calm and relaxed. The studies were carried out individually with each athlete. All athletes were available for productive contact, showed initiative in conversation, were active in communication, answered questions in detail and in detail. The background of the athletes' mood was moderate with periodic anxiety manifestations, the emotional response was normal, and the speech was literate. Athletes learned the instructions after the first presentation, immediately set to work. When performing tasks, they were not distracted and were independent. The subjects showed interest in the result.

The study involved eight athletes of the main composition of the Russian national team aged 33 to 52 years: four men and four women.

For diagnostics, four basic methods for diagnosing indicators of stress and anxiety were chosen [3]:

– a method for diagnosing self-esteem Ch.D. Spielberger, Yu.L. Khanina (assessment of situational and personal anxiety);

– inventory of stress symptoms (T. Ivanchenko et al.);

– a scale for assessing subjective comfort (A. Leonova);

– diagnostics of the state of stress (K. Schreiner).

Testing C.D. Spielberger revealed moderate anxiety in six athletes, and high anxiety in two, both personal and situational. Personal anxiety characterizes a stable tendency to perceive a wide range of situations as threatening, to respond to such situations with a state of anxiety. Situational anxiety is characterized by tension, anxiety, nervousness. High situational anxiety often causes a violation of attention and even a violation of fine coordination, which is quite critical for curling. High personal anxiety is dangerous with emotional and neurotic breakdowns, as well as psychosomatic diseases. The most likely psychosomatic diseases include sleep and appetite disorders, gastrointestinal tract disorders, pressure surges, and heart disorders.

Anxiety, unlike fear, does not have an objective cause and a specific object, which significantly complicates the stabilization of the psycho-emotional state. Athletes with high levels of anxiety are recommended to work systematically with a psychologist to stabilize their psycho-emotional state. The recommendations provide specific exercises that, with regular training, reduce the level of anxiety.

In the inventory of stress symptoms (according to T. Ivanchenko et al.), all athletes revealed a similar assessment of the situation of vigorous activity and stress: all are included in the group who scored 31-45 points. If, after a severe injury, both physical and psychological, these people were able to find the strength to start playing sports and achieve high results, then they are characterized by vigorous activity and tension. Athletes are subject to stress both in the positive sense of the word and in the negative: they strive to achieve something, but they have enough problems and worries. A similar overall score in a team indicates social activity and chronic stress. The main task of the coaching staff is to develop the skills of conscious self-regulation and emotional release.

Diagnostics on the scale of subjective comfort (according to A. Leonova) revealed a high level of subjective comfort and well-being in five athletes. The index of their subjective comfort (ISC) >54 points. Three athletes have 48<ISC<54 points, which is an acceptable level of subjective comfort and normal health. One athlete had a reduced level of subjective comfort and decreased well-being, which may be due to the unpleasant news about the illness of another member of the team with whom the athlete was in contact. The results obtained indicate that it is comfortable for athletes to be together at this training camp, in the current period of time.

When diagnosing the state of stress (according to K. Schreiner), it was revealed that all athletes scored a similar number of points: from 1 to 3. This suggests that all members of the team behave in a stressful situation rather restrainedly and are able to regulate their own emotions, which is inherent sports such as wheelchair curling.

Recommendations. Based on the results of the primary diagnosis, a correctional program was developed aimed at reducing the levels of situational and personal anxiety, as well as the formation of skills for conscious self-regulation and emotional relaxation.

The program was based on breath control techniques, visualization, ways to control muscle tone [4], as well as the formation of grounding skills to reduce the level of anxiety before competitions. To mobilize the state, athletes are offered exercises for upper breathing, and for calmness and concentration - four stages of a single cycle of lower breathing. Athletes are also recommended to prevent muscle clamps by performing exercises in three phases: “strain - feel - relax”.

Conclusions. Athletes of the main team of Russia are able to pull themselves together and respond constructively in a tense situation, but at the same time they are prone to anxiety, which can cause mistakes during the competition.

Testing was carried out during the preparatory period, the athletes were in comfortable conditions at a familiar sports base, engaged in their usual training activities. At the same time, major competitions were postponed indefinitely due to the self-isolation regime due to the spread of coronavirus infection, the news agenda regarding the future of Russian sports remained alarming, which can explain the increased level of stress among the leaders of the national team. In the future, to complete the primary diagnosis of athletes of the Russian wheelchair curling team, it is planned to study the indicators of aggressiveness and frustration reactions.

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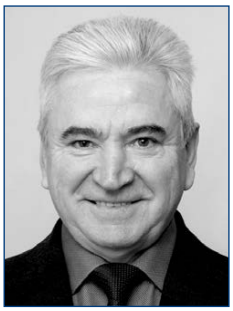
Sport as a factor of tolerance formation in the student environment

UDC 37.035



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Abstract

Objective of the study was to determine the impact of sports on the formation of tolerance among students.

Methods and structure of the study. At the theoretical stage of the study, the tasks of determining the role of mass sports as a tool for disseminating the idea of tolerant relations at the university were solved; disclosure of educational and social functions of sports activities of students; determining the educational potential of student sports in the formation of a culture of tolerance as its ability to ensure in the university environment the formation and development of a set of qualities of a tolerant personality in a student. At the applied stage of the study, a massive online survey of students from the Ural Federal University named after the first President of Russia B.N. Yeltsin (hereinafter - UrFU), whose tasks covered a range of issues related to the role of sports as a factor in the formation of tolerant relations at the university in the minds of students.

Results and conclusions. The educational potential of sport in the formation of a culture of tolerance among students is significant due to the fact that sport is a means of transmitting an international universal culture without prejudice, xenophobia, racial discrimination and gender prejudice. Promoting the educational and social function of sport means: developing access to sports practices; promote citizenship education; promote the social and professional integration of young people; participate in the prevention and fight against xenophobia and violence. From the study, it is obvious that in the views of students, sport is an important factor in the formation of tolerant relations at the university. In the student environment, the opinion prevails that joint sports contribute to the interracial and interethnic rapprochement of university students.

Keywords: *student sports, multicultural educational environment of the university, student sports clubs, tolerance, culture of tolerance.*

Introduction. In the 21st century, as people from different social, economic, cultural and political circles are involved in mass sports, it becomes a phenomenon of society, its role in public life acquires a new sociocultural dimension. The basis of mass sports is school and student sports, focused on achieving basic physical fitness and optimizing general physical capacity in the system of education and upbringing. Mass, public sport contributes to the formation of a culture of self-expression and tolerance by increasing public awareness of such humanitarian problems as xenophobia, racism, gender inequality, inequality in education and the promotion of ideas of equality and tolerance.

Objective of the study was to determine the impact of sports on the formation of tolerance among students.

Methods and structure of the study. At the theoretical stage of the study, the tasks of determining the role of mass sports as a tool for disseminating the idea of tolerant relations at the university were solved; disclosure of educational and social functions of sports activities of students; determining the educational potential of student sports in the formation of a culture of tolerance as its ability to ensure in the university environment the formation and development of a set of qualities of a tolerant

personality in a student. At the applied stage of the study, a mass online survey of UrFU students was implemented, the tasks of which covered a range of issues related to the role of sports as a factor in the formation of tolerant relations at the university in the views of students.

Results of the study and their discussion. In 1995, UNESCO adopted liberalism as the only way to deal with ethnic, political, religious and confessional divisions. The concept of tolerance focuses on differences in demographic characteristics such as race, religion, ethnicity, sexuality, gender, age, skin color, and advocates acceptance, respect and adaptation to "other" cultural practices [3, p. 392].

For decades, professional sports have been promoting multicultural justice, making a significant contribution to the development of understanding of sociocultural differences, respect and tolerance for them, and serving as a means to facilitate the understanding of "other" values and customs [5, p. 238]. Just like music, painting, cinematography, architecture and fine arts, sports develop the moral sphere of a person, fostering a sense of camaraderie, honesty, kindness [4, p. 285].

As a tool for spreading a culture of tolerance, sport has the advantage of being present at all levels of education. Sport creates social connections, it is massively practiced outside of school hours and is one of the rare activities where people meet voluntarily. This social mix is carried out on the basis of values based on respect for oneself and others. Promoting the educational and social function of sport means: developing access to sports practices; citizenship education; social and professional integration of youth; prevention and combating xenophobia and violence.

A survey of students (N=352), conducted at UrFU in June 2021, revealed that in addition to the fact that most of the students surveyed regularly engage in physical education to one degree or another, in their opinion, sports are a factor that increases the competitiveness of a university graduate in labor market [1, p. 53]. In May-June 2022, at UrFU, we conducted an online survey of students (N=627), the tasks of which covered a range of issues related to the role of sport as a factor in the formation of tolerance in students' minds.

Based on the fact that the formation of tolerance enhances the qualities that contribute to the identification of a person with a system of general civilizational values, the collective social identifications of students were studied.

Typical for the majority of respondents (more than 50%), students' social identifications are associated with the main primary groups. These are family (72%) and comrades in leisure hobbies (62%), also comrades in study (55%), associates in professional interests (52%), people with an active life position (51%) also got into "friends".

The second most common group of social identifications, covering 40-50% of respondents, is associated with large social groups: people who respect the traditions of their people, country (43%); fellow citizens (40%); people who respect the traditions of the community in which they currently live (43%); neighbors (44%); peers (41%); people with similar political views (40%); people of similar nationality, race (44%).

Identifications with lower prevalence (less than 40%) turned out to be associated with local communities: economic classmates (37%); "successful" (32%); "foreigners" (29%).

Thus, in the student's "friend or foe" coordinate system, sports partners ("comrades in professional interests") occupy a privileged position.

The interaction of students in sports can be built both on the basis of feelings of camaraderie and cohesion, and on the basis of competition and isolation on various grounds. On the basis of relationships, communicative tolerance is formed or not formed. It is important to identify sociocultural stereotypes that influence the formation of tolerant (intolerant) attitudes.

Most of the respondents tend to believe that interethnic sports are more likely to form mutual respect (78%) and cooperation (77%) than mercy (40%) and compassion (44%). Most of the students surveyed believe that playing sports together definitely contributes to the interracial and interethnic rapprochement of university students (61%) and joint activities of students of different races and nationalities contribute to the formation of tolerance among young people (67%).

The position of the students surveyed regarding the role of the university in enhancing the development of international university sports: unequivocally "for" - 51%, partially support this opinion - 38% of the respondents. About 1/3 of the respondents are of the opinion that professional sports divide, while amateur sports bring together university students of differ-

ent races and nations. Approximately one third of the students surveyed consider information and financial support for international university sports events at the university to be sufficient.

Conclusion. Sports activities of students are an essential factor in the formation of a multicultural educational environment of the university, an adequate tool for disseminating the idea of tolerant relations at the university.

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Monitoring the psychological state of hockey players in the pre-competitive period

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Abstract

Objective of the study was to substantiate the effectiveness of the use of express methods for monitoring the individual state of athletes in order to improve performance through timely correction of conditions.

Methods and structure of the study. An experimental study of the assessment of the psychological state of athletes specializing in hockey was carried out using express methods for monitoring the state. The contingent of the study was 27 people - young men in 2007, involved in hockey, members of the national team of the Ural Federal District. Testing was carried out with the help of psychodiagnostic methods of the computer complex AKME LLC "Scientific and applied center "AKME" (LLC "SAC "AKME"). The composition of the methods is determined by the specifics of sports activities.

Results and conclusions. The indicators of the individual psychological state of athletes were calculated: the total deviation from the autogenous norm, the vegetative coefficient, anxiety and performance factors. The indicator of unproductive tension of athletes is characteristic of only 7.4% of the sample. 88.9% of athletes show a tendency towards even use of energy costs. An increased level of anxiety was found only in 7.4% of the subjects. The level of stability of the individual psychological state is typical for 92.6% of the sample. The conducted research confirms the adequacy of the selection of test material for the monitoring system, taking into account the specifics of the implemented sports activities.

Keywords: *sport, athlete, monitoring, individual psychological state of the athlete.*

Introduction. At the present stage of sports development, high demands are placed on the optimization of control in the structure of athletes' training. One of the effective components of the sportsmen's condition management system is the monitoring of preparedness for participation in competitive activities [4].

To implement the monitoring of the state of athletes in the pre-competitive period, an effective, not time-consuming, but informative data collection tool that meets the requirements for the quality of measurements is needed.

Objective of the study was to substantiate the effectiveness of the use of express methods for monitoring the individual state of athletes to improve performance through timely correction of conditions.

Methods and structure of the study. An experimental study was conducted, in which young hockey players, members of the national team of the Ural Federal District in 2007, participants of the Sirius Cup tournament, the hockey program of the Sirius Educational Center, took part (n=27 people). Test samples were carried out in the pre-competition period from 11/03/2021 to 11/05/2021 in the morning free from training sessions. One of the days was a rest day.

Diagnostics was carried out using the computer program AKME LLC "SAC "AKME" (Laboratory of psychophysiological support, Novouralsk). The composition of the methods was determined by the specifics of sports activities: 1. To study the individual psychological tendency of the personality of athletes, the method of color test M. Luscher. 2. To determine the speed of

the visual-motor reaction - the technique "Simple visual-motor reaction (SVMR)". 3. To identify the speed of information processing and the dynamics of the formation of the speed of decision-making - "Reaction of choice". 4. Express-method "Tapping- test" by E.P. Ilyina - to assess the overall performance and endurance of the nervous system [3].

Results of the study and their discussion. In accordance with the obtained results of monitoring the color choice, indicators of the individual psychological state of athletes were taken into account and calculated: the total deviation from the autogenous norm, the vegetative coefficient, anxiety and performance factors. Average group results of experimental data are presented in table one.

According to Gorbunov G.D., Karpov D.A. and others, a typical condition in sports is unproductive neuropsychic tension (UPNT) [4]. The greater the deviation, the more the athlete's strength is spent on overcoming fatigue, which directly affects the level of performance [1, 3]. In our study, the indicators of only two athletes (7.4%) indicated a reduced level of performance, characterized by a low degree of activity.

When analyzing the results of the "Vegetative Coefficient" indicator, it was found that for athletes whose indicators correlate with an insignificant level of UPNT (59.26%, 16 people), the dominance of the sympathetic division of the autonomic nervous system in the manifestation of optimal mobilization of physical and mental resources is typical. In extreme situations of competitive activity for such athletes, one can predict a high speed of orientation, speed of decision-making, expediency and success of action [1, 2].

Athletes whose performance corresponds to a reduced level of the vegetative coefficient (7.4%, 2 people) are characterized by a set to inactivity, often associated with overwork. The results of only one person (3.7%) from the group of subjects indicated an overexcitation of the processes of the nervous system and the required normalization of the regime of work and

Table 1. *Indicators of the individual psychological state of athletes with different levels of unproductive neuropsychic tension (UPNT) according to the results of the M. Luscher test (M±SD, number of subjects (%), n=27)*

Index	Minor level UPNT	Average level UPNT	Enhanced Level UPNT
Total deviation from the autogenous norm (points, % of subjects)	16,25±2,20 59,26	12,56±6,07 33,33*	29,6±1,41 7,41*+
Vegetative coefficient (points, % of subjects)	1,18±0,8 88,9	0,43±0,01 7,4*	2,46±0,002 3,7
Anxiety factor (points, % of subjects)	0,59±0,023 92,6	-	2,5±0,007 7,4
Overall Health Factor (points, % of subjects)	20,1±1,05 92,6	8,9±0,65 7,4*	-

*Note: * - the differences are significant in relation to the indicators with a slight level of UPNT, p<0.05; *+ - the differences are significant in relation to the indicators of the average level of UPNT, p<0.05.*

Table 2. *Correlation matrix of individual typological indicators and the psychological state of athletes with different levels of unproductive neuropsychic tension (UPNT)*

Index	Deviation from the autogenous norm	Vegetative coefficient	Significance level (r)
Speed of a simple visual-motor reaction	0,69*	0,57*	< 0,05
Speed of a complex sensorimotor reaction	0,54*	0,49*	< 0,05
Information processing speed	0,37	0,29	> 0,05
Stability and concentration of attention	0,59*	0,61*	< 0,05
Nervous system endurance coefficient	0,61*	0,75*	< 0,05

Note: correlation coefficients (r) with the level of statistical significance are indicated: * - p<0.05: ** - p<0.001.

rest. The psychological state of such athletes has a direct correlation with an increased level of unproductive neuropsychic tension.

To determine the possible relationship between the studied indicators, a correlation analysis of individual typological indicators and the psychological state of athletes with different levels of unproductive neuropsychic tension was carried out (Table 2). The presented data indicate a direct relationship between the level of neuropsychic stress of the individual and the speed of response (r=0.69; 0.54). An increase in the level of tension entails a decrease in the stability of attention (r=0.59). And although the fact of the connection of the selected indicators with the speed of information processing has not been confirmed, nevertheless, the results indicate that the most effective activity is observed with an optimal balance of energy supply, corresponding to a not too high or low level of activation of the nervous system.

Conclusions. The conducted study confirms the adequacy of the selection of test material for monitoring the condition of athletes, taking into account the specifics of the implemented sports activities. The prospect of research in this direction is the development of a model of the state of athletes before important competitions, not only from a psychological point of view, but also from the side of biochemical processes occurring in the body of an athlete.

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Attention, pre-competitive state and mental reliability of billiard players depending on the level of sports qualification

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Abstract

Objective of the study was to compare the development of the psychological characteristics of billiard players.

Methods and structure of the study. The study involved 18 athletes - billiard players from the Republic of Kazakhstan, who were divided into two groups depending on the level of sports qualifications. For psychodiagnostics, three methods were used: Bourdon's attention test, the "Athlete's Mental Reliability" method (V.E. Milman), and the method of athletes' precompetitive state (D.N. Volkov).

Results and conclusions. The results obtained in the course of the study prove the important role of concentration and stability of attention in achieving sports results in billiards. It was revealed that the cognitive component of the precompetitive state, which is closely related to the development of attention, and the emotional component of the precompetitive state, which is determined by the level of self-regulation, have a greater impact on the results of billiard players.

The results of the study confirm significant differences between the indicators of attention, pre-start state (in terms of cognitive and emotional components) and mental reliability of billiard players, depending on the level of sports qualification.

The study revealed that external uncertainty is the most powerful stress factor in the competitive activity of billiard players, while personal stability is the most significant indicator of mental reliability of billiard players. The new data obtained can be used as the basis for the development of a program for the psychological support of billiard players.

Keywords: *billiards, billiard-players, attention, precompetitive state, mental reliability.*

Introduction. Attention, pre-competitive state and mental reliability are considered as important psychological indicators of the success of athletes in various sports [3, 5, 8, 9]. At the same time, almost no researches devoted to the study of the above psychological characteristics were carried out on a sample of billiard players [2]. It seems that the lack of objective information about the psychological resources of billiard players does not allow to effectively build a purposeful psychological work with them.

Objective of the study was to assess the development of attention, precompetitive states and mental reliability of billiard players depending on different levels of sports qualification.

Methods and structure of the study. In total, 18 billiard players from Kazakhstan aged 18 to 34 years old took part in the experiment, who were divided into two groups (athletes without a category and I category (w/c) and athletes of the master of sports and candidates for the master of sports (ms/cms), nine people in each group). When conducting a psychodiagnostic study, three methods were used: the Bourdon attention test [1, 107–111], the method of the pre-competitive state of athletes, which is based on the three-component structure of the mental state: physical state, emotional state and cognitive (mental) state [7], the method of “Mental reliability of an athlete”, developed by V.E. Milman [6].

Results of the study and their discussion. Evaluation of attention indicators according to the Bourdon test, such as volume (working capacity), concentration and stability, significantly differ depending on the level of sports qualification of billiard players (Table 1).

Table 1. *Comparison of average values in terms of attention of billiard players*

Attention metrics	Average values		Student's t-test
Volume (operability)	ms/cms	1113±15,4	p≤0,01
	w/c	817±74,5	
Concentration	ms/cms	5,77±2,3	p≤0,01
	w/c	11,8±3,4	
Stability	ms/cms	0,0021±0,004	p≤0,01
	w/c	0,006±0,002	

The difficulty of maintaining concentration and stability of attention in billiards is due to the fact that during the game, billiard players need to concentrate for a long time (up to 2-5 hours) on objects that are uniform in shape, size and color, and also perform monotonous actions during the competition.

A lower level of attention concentration is characterized by the fact that athletes are not always able to keep their concentration on any object or activity in general, which can negatively affect sports success. In turn, the lower stability of attention leads to the fact that billiard players are distracted and cannot focus on a particular object for a long time. The data obtained prove that attention plays a significant role in the effectiveness of the activities of billiard players.

The study of the pre-competitive state of billiard players in three components (physical, emotional, cognitive (mental) is presented in Table 2.

It was revealed that there are no significant differences in the physical (bodily) component in the groups of billiard players of different levels of sports qualification, while there are significant differences in the emotional (energy) and cognitive (mental) components.

This fact can be associated with the specifics of billiards, in which the physical and functional training of an athlete is not dominant in order to achieve a sports result.

Thus, it can be argued that the precompetitive state of billiard players largely depends on the cognitive component, which is closely related to the development of attention, and the emotional component, which is closely related to self-regulation.

Table 2. *Pre-competitive conditions of billiard-players depending on sports qualification*

Pre-competitive state	Average values		Student's t-test
Physical (body) component	ms/cms	20,66±3,02	–
	w/c	19,0±3,0	
Emotional (energy) component	ms/cms	20,6±3,02	p≤0,05
	w/c	21,6±3,02	
Cognitive (mental) component	ms/cms	23±3,02	p≤0,01
	б/р	20,5±3,02	

Table 3. *Comparison of average values for indicators of special personality traits depending on sports qualification*

Indicators of special personality traits	Average values		Student's t-test
Competitive emotional stability	ms/cms	1,8±0,2	p≤0,01
	w/c	-2±0,2	
Sports self-regulation	ms/cms	-1,8±0,2	p≤0,01
	w/c	-3±0,2	
Competitive motivation	ms/cms	3,8±1,2	p≤0,01
	w/c	-1±0,2	
Stability-noise immunity	ms/cms	1,8±0,2	p≤0,01
	w/c	0±0,2	

This conclusion is also confirmed by the study of the mental reliability of billiard players, the data are presented in Table 3-4.

As can be seen from Table 3, billiard-players without a sports category are characterized by reduced sports emotional stability, reduced competitive motivation and moderate stability, while billiard-players with ms/cms categories have moderate motivation, stability, and emotional regulation gets above-average values.

Sportsmen-billiard-players, having the qualification of ms/cms, give a more objective assessment of the situation and their emotional reactions are more adequate in the conditions of competitive performance. Our data are confirmed by the results of studies made on samples of athletes from other sports [4].

According to our data (Table 4), we can conclude that for billiard-players of both groups, the greatest sensitivity is found precisely to the stress factors of external uncertainty, it is moderate in athletes of ms/cms and high among athletes without a category. This fact can be explained by the high degree of complexity of the combination game in billiards.

When establishing the interdependence between the indicators of mental reliability and the components of the pre-competitive state of billiard players, it was revealed that there are significant direct relationships between personal stability and physical ($p \leq 0.05$), emotional and cognitive components ($p \leq 0.01$) of the pre-competitive state. This fact indicates that personal stability contributes to the creation of an optimal pre-start state of billiard players.

A significant inverse relationship between sensitivity to stress factors of external uncertainty and the cognitive precompetitive component ($p \leq 0.05$) indicates that an increase in sensitivity to stress factors of external uncertainty will reduce the cognitive component of the precompetitive state, and will also be accompanied by a decrease in concentration and stability of attention.

At the same time, a significant inverse relationship between sensitivity to a stress factor of internal significance and emotional and cognitive components ($p \leq 0.05$) of the pre-launch state suggests that with high sensitivity to a stress factor of internal significance (desire to win, high significance competition, high rank of competition, etc.) the emotional and cognitive components of the pre-start state may decrease.

The data obtained in the course of the study indicate that mental reliability has a strong influence on the pre-competitive state, on which the sports result largely depends.

Conclusions. In our opinion, the revealed patterns should be taken into account in the process of organizing psychological work with billiard players. The development of psychological support programs for billiard players should be focused, first of all, on increasing the stability of attention and the formation of personal stability, which to a greater extent have a positive impact on the pre-competitive psychological state of athletes.

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Table 4. *Comparison of average values in terms of sensitivity to stress factors depending on sports qualification*

Indicators of sensitivity to stress factors	Average values		Student's t-test
Internal uncertainty	ms/cms	3±1,2	p≤0,01
	w/c	2,5±0,2	
External uncertainty	ms/cms	4±0,2	p≤0,05
	w/c	4,8±0,2	
Internal significance	ms/cms	1,8±1,2	p≤0,01
	w/c	1,1±0,2	
External significance	ms/cms	1,8±0,2	p≤0,01
	w/c	0±0,2	

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Criteria for selecting volleyball team captain on the signs of their leader be-havior

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Abstract

Objective of the study was to experimentally substantiate the dependence of the cohesion of sports teams, the success of their performances, as well as the devel-opment of the personality of young volleyball players, on the degree of severity of the captains of these teams' propensity for various leadership options.

Methods and structure of the study. In the study of the components of leadership behavior of some of the athletes, a holistic approach was used, consisting in the use of both personal and team indicators. Two methods were also used as instrumental methods - a laboratory experiment and a closed survey. The subjects were female athletes of older adolescence (13-15 years old) involved in volleyball. The study was reduced to measuring indicators of leadership behavior, the main socio-metric indicator - team cohesion, successful performances.

Results and conclusions. The success of the team's performances, on the one hand, is determined by its cohesion, which, in turn, depends on the match "captain - expressive leader." The fact that the functions of the team captain and the instrumental leader coincide contributes to the competitive success of the athletes. The success of activities for the upbringing, education and rehabilitation of young female volleyball players to a certain extent depends on the level of team cohesion and on the match "captain - expressive leader". All this should be taken into account in the practical activities of trainers.

Keywords: *team captains, instrumental leaders, expressive leaders, realization of leadership potential, team cohesion, factors of successful performances, success of performances, pedagogical success.*

Introduction. As a rule, the voting on the election of team captains first takes place on the candidacy proposed by the coach. Coaches usually take into account his athletic performance and the presence of positive relationships in the “coach-captain” dyad. An assistant coach and a kind of organizer of the activities of a sports team can, and probably should, be its informal leader. The leader is one of its members, for whom the majority or all the rest recognize the right to make responsible decisions concerning the interests of the entire group [2]. However, coaches can err, because everyone can be the leader of one kind of leadership, but be led in relation to another kind.

The presence of an informal leader contributes to the achievement of competitive success [4]. However, the team also has an informal leader - its captain. Probably, in order to achieve high success in competitive activity, the most desirable is the manifestation of the functions of an informal leader in the person of a formal leader - the team captain. So far, the literature does not consider the interaction of formal and informal leaders (captain and leader).

The maximum effect in the organization of sports activities of a team of team players is achieved when its captain acts in accordance with the plans and tasks of the coach. So far, there is no data on the advisability of choosing team captains on the basis of their leadership behavior. And this despite the fact that back in 1986, Yu.A. Kolometsev argued that leaders have fairly wide opportunities to take part in the management of a sports team [5] and that it is precisely “... the phenomenon of leadership that interests scientists from the point of view of increasing the effectiveness of the group’s joint activities” [3, p. 9].

This kind of research is very important both in practical and theoretical terms.

Objective of the study was toexperimentally substantiate the dependence of the cohesion of sports teams, the success of their performances, as well as the development of the personality of young volleyball players, on the degree of severity of the captains of these teams' propensity for various leadership options.

Methods and structure of the study. The study was conducted in 16 children's volleyball teams of older adolescents aged 13-15, training groups. The number of subjects included 14-17 people from each team. All subjects, in the amount of 233 people, were female. In the course of the study, the following methods were used: "The ability to be a leader" by L.V. Anufrienko [1]; "Realization of the Leadership Potential of the Personality" A.N. Nikolaev [8]; instrumental leadership behavior - with the help of the homeostatic installation of V. I. Rumyantseva [4]; "Sociometry" (J. Moreno) [According to the book: 6]. The success of the activity of volleyball players was determined by the method of A. N. Nikolaev, which is based on the success of the activity of coaches in the implementation of the main functions of sports - educational, educational, health-improving and competitive [7].

To process the results, the c^2 criterion was used - chi-square. Each of the teams was divided into two groups according to indicators: successful - not successful (according to competitive success; 6/10); pedagogically successful - unsuccessful (in terms of upbringing, education and rehabilitation by means of sports; 9/7); cohesive - not cohesive (8/8); the same volleyball player is an expressive leader and team captain - different athletes (captain-EL; 9/7); the same volleyball player is the instrumental leader and team captain - different athletes (captain-IL; 6/10). The contingency of five pairs of indicators was determined.

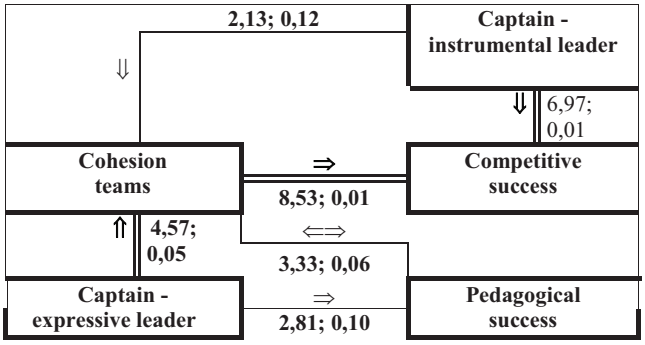
Results of the study and their discussion. Motives to become and be a leader among young volleyball players exceed both their capabilities (5.54>4.37) and their real embodiment (5.54>4.12). The expressive leadership behavior of female athletes is almost 2.5 times higher than their instrumental leadership (4.68>1.91; see table).

Indicators of leadership behavior of young female volleyball players (n=233)

Leadership behavior	$\bar{x}$	s	v %
Motivation to be a leader	5,54	1,03	18,6
Ability to be a leader	4,37	1,26	28,8
Realization of leadership potential	4,12	1,19	28,9
Expressive leadership in general	4,68	1,16	24,8
Instrumental leadership behavior	1,91	1,88	98,4

The following contingency indicators were obtained, reaching a significance level of p<0.05 (see figure).

The cohesion of the members of volleyball teams turned out to be a kind of linkage center, it is associated with three of their five characteristics - with competitive success (c^2=8,53; p < 0,01), which is closely related to the indicator of coincidence captain-IL (c^2=6,97; p<0,01).



Pleiad of contingency of team indicators of female volleyball players (n=16)

* *Explanations:* the contingency of indicators reaching 95% reliability and above is highlighted with a double line; the first number reflects the value of c^2, the second - the level of significance; the arrows show the direction of influence.

The success of the competitive activity of the team is determined by their cohesion, which depends on the coincidence of captain-EL (c^2=4.57; p<0.05) and captain-IL (c^2=2.13, though at p<0.12).

The pedagogical success of the coach is associated with the cohesion of the teams (c^2=3.33; p<0.06) and the coincidence of captain-EL (c^2=2.81; only at p<0.10).

Pedagogical success is not related to the success of team performances in matches.

In relation to criterion c^2, the regression coefficient is not calculated, but common sense suggests that the direction of influence should be as follows: when choosing a team captain who is an expressive leader, its cohesion increases, which is associated with successful performances. The successful choice of the team captain of the volleyball player who is its instrumental leader has a direct impact on the success of the performances of volleyball teams.

In volleyball teams with a captain who is an expressive leader, with a probability of 95%, a high level of group cohesion should be established, which cannot but increase the motives for the interaction of athletes with each other and, accordingly, increase the motives for playing volleyball. The cohesion of teams in team sports, in addition to improving the psychological climate, promotes mutual understanding, promotes teamwork.

When choosing captains of volleyball teams, it is advisable for a coach to focus on his predominant

professional orientation: mainly on sports results or on education, training and development. If for the first, then an instrumental leader is more in demand for the performance of captain's functions, and if for the development of the personality of his students, then expressive.

To identify leaders, you can use the methods, links to which are posted in this article. Other homeostatic settings can also be used to identify the instrumental leader.

Conclusions. The success of the performances of volleyball teams of educational and training groups, consisting of children of older adolescence, depends on how the captains of these teams have a tendency to instrumental leadership. The cohesion of these teams is another factor in the successful performances of young athletes, which, in turn, are largely due to the coincidence of the performance of the functions of team captains with the performance of the functions of an expressive leader. The choice of captains of volleyball teams on the basis of their leadership behavior is also expedient in that it contributes to a more complete implementation by coaches of other functions of sports - educational, educational and recreational.

The practical significance of the study is based on the fact that the choice of captains of volleyball teams on the basis of their leadership behavior is not difficult, but it has a significant effect in terms of competition, as well as in the success of the formation of young athletes as individuals. There is reason to believe that a similar effect can be found in other team sports as an example.

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Features of fitness management in sports and health clubs

UDC 796.062

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Abstract

Objective of the study was to identify the structure and features of the fitness management of sports and health clubs in the city of Tomsk.

Methods and structure of the study. In order to identify the criteria for fitness management of sports and health clubs in the city of Tomsk, a survey was conducted. 115 women took part in the survey. To determine the features of fitness management, taking into account the identified criteria, pedagogical observations of the organization of work and a comparative analysis of the fitness management of sports and health clubs in the city of Tomsk - Freestyle, Super Gym, Dynamite and Manila were carried out.

Results and conclusions. Based on the results of the survey, such fitness management criteria as pricing policy, activity in social networks, staff training, brand and recognition were identified. It is shown that when developing a fitness management strategy, it is necessary to correctly calculate the cost of an annual and monthly subscription, regularly introduce discounts, promotions and bonus programs. Those involved in fitness are attracted by additional services on the territory of the club: the presence of a bath, sauna, solarium, children's room. Events on the territory of the sports and health club significantly increase the recognition of the club.

Keywords: *fitness, health clubs, fitness management.*

Introduction. Today, fitness clubs occupy a large share of the health and beauty market in Russia. The Association of Fitness Professionals claims that this market is growing at an average of 20% per year [3]. If earlier it was difficult for the population to pay for what they could get on a state basis, now Russians are quite solvent to buy a subscription to a fitness club in their city [1]. This means that the popularity of this market is growing. With the development of the fitness industry, associations, academies, studios and health clubs began to appear in large numbers, which accordingly leads to an increase in competition between them [2]. Therefore, it is important for health club owners to understand the basic components of the management of their industry, and fitness professionals should pay attention to those factors that determine the quality of the service they receive.

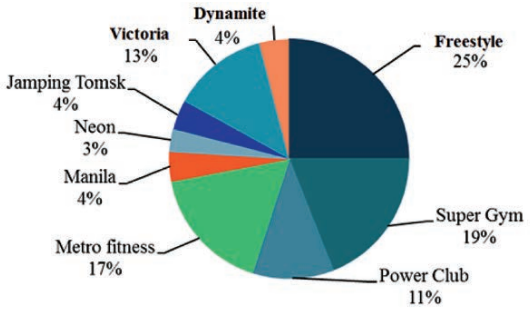
Objective of the study was to reveal the structure and features of the fitness management of sports and health clubs.

Methods and structure of the study. Scientific work was carried out from November 2021 to April 2022. In order to identify the criteria for fitness management of sports and health clubs in the city of Tomsk, a survey was conducted. 115 women took part in the survey. 50% of respondents are aged 20-27 years old, 40% - 27-45 years old and 10% - over 45 years old, regularly attending sports and health clubs. To determine the features of fitness management, taking into account the identified criteria, pedagogical observations of the organization of work and a comparative analysis of the fitness management of sports and health clubs in the city of Tomsk - Freestyle, Super Gym, Dynamite and Manila were carried out.

Results of the study and their discussion. The results of the survey made it possible to identify the most preferred sports and health clubs in the city of Tomsk, shown in the figure.

According to the results of the survey, the most popular fitness clubs are Freestyle (25%) and Super Gym (19%). It can be noted that narrowly focused clubs were also indicated in the survey: Neon (3%) - a pole dance studio and Jamping Tomsk (4%) - a fitness studio on mini-trampolines.

Among the reasons for choosing one or another sports and health club, the convenient location of the organization is in the lead. 29% of those involved prefer a club near home or near work for physical education.



Preferences of those involved in fitness in choosing a sports and health club

Pricing policy also plays an important role when choosing a sports and health club, as noted by 20% of respondents.

Table 1. *Comparative analysis of fitness management in sports and health clubs in Tomsk*

Fitness Management Analysis	«Freestyle» 25%	Super Gym 19%	«Dynamite» 4%	Manila 4%
Price policy				
The cost of an annual subscription	5990	25200	-	-
The cost of a one-time workout	400	500	250	450
The cost of personal training	700	850-1250	500	700
Availability of discounts, promotions, bonus programs	Holiday promotions	Pensioners, schoolchildren, students - 20%	Students - 50%	Free first workout, holiday promotions
Additional services	Showers	Showers, nutrition consultation	Showers	Showers, sauna
Social media activity				
Official site	https://freestyle-tomsk.ru/	https://supergym.tomsk.ru/	http://dinamit-tomsk.ru/	–
Social networks	Vkontakte	Vkontakte Odnoklassniki Youtube	–	Vkontakte
Activity score	Posts come out every day	2-3 posts every day	-	Posts come out every 2-3 months
Staff training				
Learning organization	Siberian College of Fitness	Super Gym training	–	–
Availability of a license	since 2014	–	–	–
Duration of study	2 months	2 weeks		
Cost of education	25000	27000		
Teacher Qualifications	University professors, practicing trainers	Practicing trainers		
Brand presence and recognition				
Souvenir products, availability of merch	Name badges for staff	Name badges for staff	–	–
Advertising	Banners, target «VKontakte»	Target «VKontakte», banners	Bnners	Flyers
Mentioned in newspapers, magazines	Magazine «Expensive Pleasure» Tomsk	–	–	–
Holding promotions and events	Participation in city day events	Super gym fest	–	Open Day

However, the emotional comfort of club visitors prevails, namely, classes in the company of acquaintances, as noted by 23% of respondents. The main source of information, according to the respondents, are friends and acquaintances (42%). That being said, word of mouth is still the most effective marketing tactic as it allows you to create trusted conversations among your target audience.

The value of social networks in the awareness of the population (39%) is significantly ahead of other means of advertising. Those involved in fitness clubs also highly appreciate the work of support staff (administrators, sanitary service, supply managers). Thus, 42% of the respondents gave the highest rating to the work of the staff, 39% of the respondents rated the work of these services as good, 13% as satisfactory, and 6% as bad.

Among the reasons for the low assessment of the work of support staff, respondents indicated a lack of awareness about the work of the club - 35%, incorrect communication with visitors - 27% and lateness - 20%. The work of fitness club trainers was rated "excellent" and "good" by 63% and 17% of respondents. The reasons for the low assessment of the work of trainers, according to the survey, are: inattention to clients (37%), lack of emotional contact between the trainer and trainees (28%), poor technique for demonstrating exercises (18%) and inappropriate appearance of the trainer (untidiness, defiant clothing and appearance - 17%).

To determine the features of fitness management, taking into account the identified criteria, pedagogical observations of the organization of work and a comparative analysis of the fitness management of sports and health clubs in the city of Tomsk - Freestyle, Super Gym, Dynamite and Manila were carried out (Table 1).

Analyzing the pricing policy of sports and health clubs and the availability of additional services included in the subscription price, it can be noted that even a lower subscription price and the existence of a discount system do not guarantee the success of a fitness club. A comparative analysis according to the criteria of "availability of an official website and activity in social networks" showed that in order to achieve better recognition of the club, better awareness of its customers, it is important not to neglect the fullness of electronic means. According to the third criterion - "training of employees", it was revealed that this is a separate business process in the work of a fitness club. The lack of a systematic approach to training is a mistake of the club's management, which brings problems to itself: a shortage of personnel, unsatisfactory work of the staff.

According to the fourth criterion - "presence and brand awareness" - it can be concluded that due to high competition, clubs lose their authentication and it is more difficult for the consumer to distinguish one club from another. Therefore, it is very important to use different channels: advertising, corporate identity, service, digital.

Based on the identified criteria and a comparative analysis of the fitness management of sports and health clubs in the city of Tomsk, practical recommendations were developed for the successful implementation of management in the fitness industry market, presented in Table 2.

Conclusion. As a result of the study, practical recommendations were developed for the successful implementation of the management of sports and health clubs in the fitness industry market, taking into account such criteria as economic resources, brand availability and recognition, employee training, social media activity and the work of support staff.

Table 2. Practical recommendations in the development of fitness management of a sports and health club

Fitness Management criteria	Economic resources	1. Competently calculate the cost of the annual and monthly subscription; 2. Regularly introduce discounts, promotions, bonus programs; 3. Have additional services available; 4. Carefully conclude an agreement with the landlord and other organizations
	Brand presence and awareness	1. Use promotion with souvenirs (merch, t-shirts) 2. Regularly hold promotions and events; 3. Advertising through sponsors; 4. Be mentioned in local newspapers, magazines
	Employee training	1. Have your own license to train employees, train staff; 2. Employ only trainers with special education; 3. Hire highly qualified teachers
	Social media activity	1. Have as many communication and promotion channels as possible (VK, Telegram, YouTube) 2. Maintain regular activity on social platforms; 3. Use promotional tools
	Staff work	1. Have incentive systems and awards for the title of the best employee; 2. Conduct regular planning meetings, receive feedback from employees

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Effect of immersion in cold water after training on subjective pain in the muscles in the aspect of theoretical analysis

UDC (796+57.043): 303

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Abstract

Objective of the study was to conduct a meta-analysis of English-language literature sources on the issue of the effect of immersion in cold water after exercise on subjective muscle pain.

Methods and structure of the study. A search was made for English-language scientific papers by keywords in various electronic databases (Pubmed, PEDro, Elsevier) for the period 2002-2022. Among the selected articles, those that addressed delayed muscle soreness syndrome and the effects of cold water immersion (CWI) immediately and/or 24 hours and/or 48 hours after high-intensity exercise were highlighted.

Results and conclusions. It has been shown that the duration of such immersion influences the severity of pain sensations. At the same time, the temperature of the water had no effect on the severity of these sensations. It is best to use cold water immersion immediately after exercise. The article also presents the likely limitations of the study designs used, which must be taken into account when designing your own studies using cold water immersion.

Keywords: *krepatura, delayed muscle soreness syndrome, DOMS, cooling, immersion in water, CWI.*

Introduction. Effective management of recovery processes after high-intensity physical activity remains an urgent problem, especially in conditions of limited time intervals of rest. The discrepancy between the rate of recovery processes and the depth of fatigue leads to the accumulation of fatigue, which can lead to negative consequences for the athlete's body. To eliminate this discrepancy, it is possible to use an active directed influence on the course of recovery processes. In sports practice, various means are used - pedagogical, psychological and medical. Cold water immersion (CWI) has a certain popularity [11]. The results of studies indicate that CWI can accelerate recovery processes, including reducing muscle damage caused by exercise [4]. At the same time, there is evidence of its negative impact on work performance [8], as well as the assumption of a placebo effect [9].

Objective of the study was to conduct a meta-analysis of English-language literature sources on the issue of the effect of immersion in cold water after exercise on subjective muscle pain.

Methods and structure of the study. A search was made for English-language scientific papers by keywords in various electronic databases (Pubmed, PEDro, Elsevier) for the period 2002-2022. according to the PRISMA protocol [9] – 1) cold water immersion OR cooling OR ice bath; AND 2) exercise performance OR sports performance; AND 3) fatigue OR recovery. Among the selected articles, those were highlighted that dealt with Delayed Onset Muscle Sorness Syndrome (DOMS) and the effects of cold water immersion immediately and/or 24 hours

and/or 48 hours after high-intensity exercise. For the qualitative selection of publications on this topic, the criteria for inclusion and exclusion of individual independent original studies in the meta-analysis were determined. The studies were supposed to involve people who received cold water immersion after training, where CWI was immersion in water with a temperature of ≤15°C. Selected studies were randomized controlled trials and crossover designs that examined the effect of post-exercise CWI on subsequent muscle soreness. Studies were excluded if the design of the experiment did not meet the requirements, there was a duplication of publication, the experiment was conducted on animals, the publication language was different from English. Data analysis was carried out using Revman 5.4 software.

Results of the study and their discussion. Seven articles were selected for analysis (see table) containing DOMS scores immediately, 24 and 48 hours after exercise. The results showed that the level of DOMS in the CWI group was significantly lower than in the control group immediately after 24 hours (0 h: SMD -0.59, 95%CL -0.90 to -0.28, n=6); (24 h: SMD -0.34, 95%CL -0.65 to -0.04, n=7). However, no significant difference was found at 48 hours (48 hours: SMD -0.25, 95%CL -0.58 to 0.07, n=6). Heterogeneity was found between literature data at 24 hours and 48 hours (24 hours: I2=67%; 48 hours: I2=66%), so a random effects model was chosen. The results showed that CWI immediately after training had a pronounced effect on the reduction of subjective pain sensations. While after 24 and 48 hours, there is no such effect.

To investigate whether interstudy heterogeneity was due to individual studies, a sensitivity analysis was performed using itemized literature exclusion. Heterogeneity was found to have decreased after the exclusion of Ingram, J. (2009), but the effect size did not change significantly (24 h SMD -0.26 95% CL -0.69 to 0.16, n=6) (48 h: SMD -0.08 95% CL -0.42 to 0.26, n=5). All this indicates stable results of the study. It should be noted that the water temperature did not affect the severity of DOMS.

Most of the studies had a high or unclear risk of bias, leaving the validity of most results uncertain. The main bias was caused by the disclosure of information in the experiments, since the use of the blind method in this case was limited.

The second problem was the distribution concealment procedure. Only four studies used random assignment of participants, two studies used an envelope to conceal allocation, and others used a computer to ensure random assignment.

A third limitation is that some studies used randomized trials and some used crossover trials. In crossover studies, there may be a risk of some pass-through effects that are not present in randomized control designs. Thus, it is necessary to qualitatively approach the formation of research design.

Characteristics of research objects selected for analysis

Study, year	Sample (gender (male:female), age)	Environmental conditions (T°C, humidity)	Exercise Protocol	Load intensity	Immersion in cold water	Control group	Variable and registration time after exercise (hour)
Amir et al., 2017	physically healthy young men; (16:0); 21.6 ± 2.3 years		Plyometric Loading Protocol	high	15 min at 15±1°C	15 min passive cooldown	DOMS (24; 48)
Argus et al., 2017	men; (13:0); 26±5 years		Weight training protocol (50 min)	high	14 min at 15°C	14 min passive cooldown	DOMS (0)
Glasgow et al., 2014	healthy volunteers; (32:18); 18-35 years old		Eccentric Load to Failure protocol (posterior thigh muscle group)	high	CWI 6: 10 min at 6°C; CWI 10: 10 min at 10°C	10 min passive cooldown	DOMS (24; 48)
Ingram et al., 2009	athletes; (11:0); 27.5±6.0 years		Game simulation (80 min) + shuttle run to failure (20 min)	high	5°C 2 min at 2.5 min intervals at 10°C	15 min passive cooldown	DOMS (0; 24; 48)
Machado et al., 2017	healthy men; (60:0); 18-25 years old	21°C-23°C; 40%-60%	Eccentric load (knee joint) - 5 °C 15 (30 seconds of rest between repetitions)	high	CWI 9: 15 min at 9°C; CWI 14: 15 min at 14°C	15 min passive cooldown	DOMS (0; 24; 48)
Peiffer et al., 2010	cyclists; (10:0); 29±6 years	35.0±0.3°C; 40.0±3.0%	Cycling (1 km at maximum speed)	high	15 min at 35°C air + 5 min at 14°C water	20 min at 35°C air	DOMS (0)
Wiewelhove et al., 2018	runners; (46:0); 30.5±10.9 years		Half marathon	high	15min at 15±1°C	15 min passive cooldown	DOMS (0; 24)

Conclusion. Thus, CWI immediately after training reduced DOMS, but did not have a significant effect after 24 and 48 hours. Using sensitivity analysis, it was found that heterogeneity between DOMS groups may be caused by the results of Ingram J. (2009). The reason for this may be the short duration of the CWI. It can be assumed that short-term immersion is less effective in relieving exercise-induced muscle soreness.

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Comparative assessment of sports activity in real and virtual space

UDC 796.015

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Abstract

Objective of the study was to conduct a comparative assessment of the sports activities of kart drivers in real and virtual space.

Methods and structure of the study. In total, 40 athletes took part in the experiment - 20 of them are e-sportsmen and 20 athletes of the technical type - the traditional motorsport direction "karting". At the first stage, a survey and additional interviews of the project participants were conducted to identify the motivation to engage in this sport, the features of the organization of the training process and the structure of recreational time, the assessment of eating behavior and self-awareness. At the second stage, an experiment was simulated, which consisted in the mutual exchange of types of training: karting drivers performed a training exercise in virtual reality, and cybersportsmen on a real circuit.

Results and conclusions. A certain similarity of e-sports with other technical sports is shown. The priority elements in these areas are the formation of psychological stability, the development of technical skills, hand-eye coordination and speed. In cybersports, developments in the organization of physical training from technical sports can be effectively used. In turn, in motor sports, some elements of cybersports can also be applied to increase the effectiveness of the training process.

Keywords: *cybersport, virtual sports, karting.*

Introduction. In recent years, the popularity of eSports has been growing among the youth. However, there is a lack of methodological developments and analysis of the experience of training approaches [3, 5]. A comparative analysis cybersport and technical sports is relevant to assess the possibility of using existing methodological developments [1, 2, 4].

Objective of the study was to conduct a comparative assessment of the sports activities of kart drivers in real and virtual space.

Methods and structure of the study. In total, 40 athletes took part in the study, of which 20 people are e-sportsmen and 20 athletes are representatives of the technical type - the traditional motorsport direction “karting”. Despite the absence of discriminatory gender attitudes, the gender composition reflected the main trend in these sports, only four girls (20%) cybersportswomen and two racers (10%) were represented in the sample. The survey was conducted among those involved in cybersports and technical sports clubs, in particular, karting sections in the city of Tomsk and the Tomsk region. The age category of respondents is from 16 to 25 years. All athletes have been practicing for at least two years, most of the respondents in these types of sports had achievements at the regional and interregional level. The predominant sports disciplines of cybersport players participating in the survey were: battle arena, real-time strategy, fighting and competitive puzzles. A technical simulator was introduced, but to a small extent. Athletes involved in karting drove vehicles of category KZ-2.

At the first stage, questionnaires were developed, a survey and additional interviews of project participants were conducted. Questionnaire questions contained blocks to identify the motivation to engage in this sport, general questions of the organization of the

training process, self-awareness and quality of life, eating behavior, the structure of recreational time, and others. Answers to some questions that require deeper disclosure were obtained as a result of additional interviews, combined with observation of the training process.

At the second stage, an experiment was modeled, which consisted in the mutual exchange of types of training. Six people from each group took part in a training exercise, while karting performed it in virtual reality, and e-sportsmen on a real circuit. To ensure the safety of young people with no real driving experience, the class of racing vehicles was lowered, which did not have a significant impact on most of the characteristics, the restrictions affected only the maximum possible speed. As a control group, six people were also invited from among students who are not involved in sports or eSports clubs. The expected results of the assignments were formulated in criteria that had similar elements both on the virtual and on the real site of the autodrome and were announced to the study participants before the start of the experiment.

Results of the study and their discussion. The analysis of the survey results showed that the main motives for choosing e-sports in this sample are: the possibility of using gaming and sports knowledge, gaining skills for other types of professional activities, social interaction, developing fantasy, avoiding everyday life, raising adrenaline, excitement, emotions, enjoyment realistic design and graphics, the availability of this sport. The choice of motorsport, including karting, is largely due to similar motives, such as gaining skills, including driving, making decisions in difficult situations that can be applied in other areas of professional activity. The organization of leisure, communication with peers, the emotional component and the rise of adrenaline were also present as motives for the choice of riders.

In many ways, the goals of the training process in these types also coincide. So, the main goal of esports game training is to develop technical skills and psychological stability in the game mode, this also includes high motor skills, such as hand-eye coordination and speed. All these elements are present to a large extent in the training process of motor sports.

The importance of physical activity and keeping fit for promoting a sports career was noted by 60% of cybersportsmen, 40% indicated that they are engaged in order to maintain their own health. For race car drivers, these figures were 80 and 20%, respectively, which indicates a more conscious role of physical training in the context of sports improvement among motorsport representatives in relation to cybersport.

On the issue of the leading role of a person or a technical device to achieve results, a significant part of cybersportsmen (80%) noted a computer and other equipment, while race car drivers (70%) pointed to the predominance of the human factor to ensure the results of competitive activity. There were some differences in the question of the importance of the role of the coach in preparing for sports events, for example, 90% of the racers emphasized the significant influence of the coach in preparing for the competition and the importance of communication with him at all stages of training activities, while e-sportsmen indicated the predominant role in only 60% of the answers. trainer, and 20% emphasized that they can prepare themselves to achieve significant results.

An important role in the effectiveness of the training of athletes in both groups is played by the recreational component. On average, esports players spend five or more hours playing on training days, while racing drivers spend about two hours driving. This is due to the limited resources of karting (fuels and lubricants, tire wear) and the need for time spent on the preparation and maintenance of sports equipment.

Of particular interest are data on the daily routine and nutrition of athletes. Cybersportsmen spend an average of 6-7 hours on sleep (excluding weekends), while there were single answers for less than 5 hours of sleep. Kart racers indicated the average duration of sleep in the range from 7 to 9 hours and noted higher satisfaction with the quality of night rest, in relation to the indicators of satisfaction with rest among e-sportsmen. In the structure of the recreational time of the riders, in general, active forms of leisure and recreation prevailed both in the weekly period and in the vacation period. Whereas only 20% of e-sportsmen displayed preferences for active forms of leisure and recreation, but 80% of respondents from this group indicated the predominance of passive forms of recreation in their free time.

In these groups, the use of specially designed nutrition systems was not recorded, moreover, nutrition in connection with the training process is given minimal attention in both groups, and here we see an opportunity to conduct relevant and appropriate research in this area to improve the efficiency of training athletes.

All respondents are students of higher educational, secondary special or general educational institutions. An analysis of academic results for the last two semesters also showed some differences. In the group

Assessing the potential positive and negative effects of cybersports and karting

Potential positive impact			Potential negative impact		
	Cyber	Auto		Cyber	Auto
Stress tolerance	+	+	Injury risk	-	+
Self control	+	+	Addiction	+	-
Hand-eye coordination	+	+	Sedentary lifestyle	+	-
High attention level	+	+	Physiological stress and tension	+	+
Task Switching Efficiency	+	+	Increased aggressiveness	+	+

of e-sportsmen, the average attestation score for the specified period was 4.3, and in the group of riders - 3.8. Whereas a great responsibility in attending educational institutions was noted by karting players, and a significant part of e-sportsmen admitted to systematic non-attendance of classes without good reason. These indicators may indirectly indicate a higher level of intellectual training of cybersportsmen in comparison with racers, but the latter demonstrate a higher level of discipline, including in training.

In the study, some positive and negative factors of influence on athletes in both types were identified and a comparison was made between them (see table).

Negative effects can largely be prevented due to professionally selected pedagogical approaches in the training process, while the benefits of positive aspects for athletes will also increase.

The experimental study made it possible to draw some conclusions about the relationship between virtual and real training of athletes. All riders, unlike the students of the control group, coped with the task in a virtual environment and achieved the stipulated result. But in the future, with the complication of the conditions of the task, they could not show significant achievements due to the lack of specialized skills and knowledge. The e-sportsmen also showed good results when completing the task on the autodrome. At the same time, one significant feature was established, these athletes, to a lesser extent than students from the control group, adhered to all safety conditions, which was recorded by objective assessments (displacement of restrictive cones, fixation of speedometer indicators), which may indicate an incomplete game switch from virtual reality.

Conclusion. Based on the results of the study, it can be concluded that cybersports is significantly similar to other technical sports. The priority elements in these areas are the formation of psychological stability, the development of technical skills, hand-eye coordination and speed. In this context, developments in the organization of physical training from technical sports can be effectively used in e-sports. In turn, in motor sports, some elements of cybersports can also be applied to increase the effectiveness of the training process.

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Full body training as a means of increasing muscle strength and body weight of power fitness persons

UDC 796.015

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Abstract

Objective of the study was to determine the effectiveness of FULL BODY training and its effect on increasing muscle strength and mass in people involved in strength fitness.

Methods and structure of the study. The scientific experiment was conducted on the basis of the Graphite fitness center in Aramil from 2019 to 2021. The experiment involved 14 clients of the fitness center, aged 19-30 years. Participants were randomly divided into two groups of seven. The first group trained according to the SPLIT methodology, according to which exercises were performed for two or three specific muscle groups per workout. The second group used the FULL BODY technique, in which one exercise per training session was performed per muscle group.

Results and conclusions. The data obtained in the course of the research work indicate the advantage of FULL BODY training in terms of increasing muscle mass and strength in people involved in strength fitness over SPLIT training, with an equal training volume. In particular, the FULL BODY group showed a significantly greater increase in muscle mass compared to the SPLIT group - 11.25% vs. 5.66%, as well as a significantly greater increase in muscle strength - in barbell squats 35.03% vs. 16.09%; in the bench press - 33.33% versus 20.97%. According to Student's t-test, these differences are considered significant and significant ($p<0.05$). The results obtained indicate a significant advantage of FULL BODY training. Thus, the conducted study showed the effectiveness of the experimental technique.

Keywords: *strength fitness, FULL BODY training, SPLIT training, muscle strength, muscle mass.*

Introduction. Currently, the fitness industry is a rapidly developing area in Russia. Among the whole variety of fitness, strength fitness can be singled out separately - this is a type of strength training in anaerobic mode using your own body weight, as well as free weights [5]. It is power fitness that is aimed at strengthening muscles and increasing muscle strength. Having high rates of strength development is important not only for athletes, but also for people who are not involved in sports. The results of a major scientific review, which has collected more than 140 scientific studies, have been published in the Annals of Medicine journal. Research results suggest that doctors, when assessing a person's health, should take into account the state of his muscles, and consider muscle mass as a new important indicator of human health [6].

Having studied the available methods in strength fitness that allow you to increase muscle strength and mass, we found that the main and most common methods are SPLIT and FULL BODY.

SPLIT (from the English. "Split" - split, divide into parts) is a method in which the student works out a specific muscle group in training.

FULL BODY (from the English "full body" - the whole body) is a training method in which muscle groups of the whole body are worked out in one session. According to foreign data, FULL BODY training is superior to common SPLIT training. Due to the fact that the existing scientific studies are of a short-term nature, the authors considered it necessary and possible to develop and conduct their own study on the benefits of FULL BODY training as part of a longer experiment.

Objective of the study was to determine the effectiveness of FULL BODY training and its effect on increasing muscle strength and mass in people involved in strength fitness.

Methods and structure of the study. The scientific study was conducted on the basis of the «Graphite» fitness center in Aramil in stages from 2019 to 2021. The experiment involved 14 clients of the fitness center, aged 19-30 years. Participants were matched for relatively equal baseline strength and training experience and randomly divided into two groups of seven. The first group trained according to the SPLIT methodology, according to which exercises were performed for two or three specific muscle groups per workout. The second group used the FULL BODY methodology, in which one exercise per training session was performed per muscle group. Other variables such as exercises performed, number of workouts per week, total training volume, rest interval, etc. were constant.

A complex of interrelated methods was used: analysis and generalization of literary sources on the problem under study, anthropometric methods, testing, experimental work, bioimpedance analysis, methods of mathematical statistics.

Results of the study and their discussion. Analysis of the scientific and methodological literature showed that there are several scientific theories of increasing muscle strength and mass during strength fitness. These are the studies of leading scientists in the field of theory and methodology of physical culture and sports: V.N. Seluyanova, D. Vader, T. Bompa [4, 2, 1].

After analyzing the existing methods and programs of strength fitness, having studied the advantages and disadvantages of each of the programs, we have developed a FULL BODY training program for clients aged 19-30, taking into account the conditions existing in the "Grafit" fitness center in Aramil, Sverdlovsk region. The training program consisted of 18 exercises for the main muscle groups. Participants were instructed to abstain from additional exercise throughout the study. Participants performed the same exercises and reps each week. Specific sets of exercises for SPLIT and FULL BODY are given in Table one.

Training took place three times a week for six months. The subjects performed the exercises in three sets, a total of 18 sets per session. Each set consisted of 8-12 reps with 90 seconds of rest between sets. The approaches were carried out until the moment of short-term concentric muscle failure - the inability to perform one more concentric repetition while maintaining the correct technique [3]. The load was

Table 1. *Contents of SPLIT and FULL BODY training programs*

Protocol	Day 1	Day 2	Day 3
SPLIT	Bench Press * 3	Traction of the upper block with a wide grip * 3	Barbell squats * 3
	Dumbbell press on an inclined bench * 3	Traction of the lower block with a narrow grip * 3	Lunges with dumbbells * 3
	Reduction of hands with dumbbells lying on a horizontal bench * 3	Barbell pull to the stomach in a tilt * 3	Leg curl in the simulator * 3
	Lifting the bar for biceps while standing * 3	Extension of the arms to the triceps in a crossover * 3	Sitting dumbbell press * 3
	Lifting dumbbells on biceps standing * 3	Extension of arms with dumbbells sitting from behind the head * 3	Breeding dumbbells to the sides while standing * 3
	Lifting the barbell on the biceps on the Scott bench * 3	Extension of the arm with dumbbells while standing in a tilt * 3	Barbell pull to the chin * 3
FULL BODY	Bench press * 3	Dumbbell press on an inclined bench * 3	Barbell squats * 3
	Traction of the upper block with a wide grip * 3	Traction of the lower block with a narrow grip * 3	Reduction of hands with dumbbells lying on a horizontal bench * 3
	Lunges with dumbbells * 3	Leg curl in the simulator * 3	Barbell pull to the stomach in a tilt * 3
	Lifting the bar for biceps while standing * 3	Lifting dumbbells on biceps standing * 3	Lifting the barbell on the biceps on the Scott bench * 3
	Extension of the arms to the triceps in a crossover * 3	Extension of arms with dumbbells sitting from behind the head * 3	Extension of the arm with dumbbells while standing in a tilt * 3
	Breeding dumbbells to the sides while standing * 3	Barbell pull to the chin * 3	Barbell pull to the chin * 3

adjusted for each exercise as needed on successive sets, which was a guarantee of failure in the subject in the target rep range. The repetition rate was performed with controlled concentric contraction and approximately two seconds of eccentric contraction. Attempts have been made to gradually increase the loads lifted each week as part of maintaining the rep range. Thus, the total training volume in both groups was the same.

For the first time, we have conducted the longest study ever, lasting six months, which directly assesses the hypertrophic response to different training frequencies of a muscle group. The data obtained indicate the advantage of FULL BODY training in terms of increasing muscle mass and strength in people involved in strength fitness over SPLIT training with an equal training volume. In particular, in the FULL BODY group, a significantly greater increase in muscle mass was demonstrated compared to the SPLIT group: 11.25% versus 5.66%, that is, almost twice. In addition, in the FULL BODY group, a significantly greater increase in muscle strength was demonstrated compared to the SPLIT group: in barbell squats - 35.03% versus 16.09%; in the bench press - 33.33% versus 20.97%. These indicators indicate a significant advantage of FULL BODY training. According to Student's t-test, these differences are considered significant and significant ($p < 0.05$).

An additional result of the survey was that in the FULL BODY group throughout the study, the level of muscle soreness was significantly lower than in the SPLIT group. This suggests that SPLIT participants experienced more muscle damage and supports the theory that muscle damage is not a mechanism for muscle growth. In addition, during the survey, the subjects in the FULL BODY group showed a more positive attitude towards classes, the desire to skip training occurred less frequently than the subjects in the SPLIT group.

As a result of the analysis of literary sources and our research, practical recommendations were formed on the use of individual training programs when doing strength fitness.

1. Exercise intensity should be around 70% of 1RM. Intensity in strength training refers to the weight of the weight.

2. The range of repetitions should be from 6 to 15. This range indicates that the work is carried out at sufficient intensity.

3. The range of approaches for each muscle group should be from 10 to 20 per week. Warm-up approaches are not included in this range.

4. The optimal frequency of training is three times a week.

5. Training should line up from more difficult exercises to easier ones. This approach is necessary in order not to violate the technique of the exercise.

6. Sufficient rest between sets is essential. Rest should provide the trainee with recovery for the further planned number of repetitions with the same intensity.

7. Do not strive for soreness in the muscles. Krepatura in the muscles after training is not associated with muscle growth. Moreover, maximum muscle growth occurs when krepatura is minimal. Therefore, it is necessary to strive for progress, and not for subjective morbidity.

8. If there is a sufficiently severe pain in the muscles, it is necessary to postpone the training of this muscle group. Firstly, there are chances to violate the technique of performing exercises, and secondly, this will not bring further development.

9. Do not chase the weight of the shells. By itself, increasing the weight on the bar is not something fundamentally necessary for muscle growth. This is only a consequence of growth, that is, the muscle becomes larger and is able to cope with more weight. The progression of the load is not only about increasing the weight on the bar. You can adjust the pace of the exercise, rest time, number of repetitions, approaches, concentration, and more.

Conclusion. In the course of the study, a methodology was developed based on FULL BODY training, which, unlike the classical methodology, was built in such a way that all major muscle groups were trained at each lesson. A positive dynamics of the tested indicators was revealed in both groups, but in the experimental group it is more pronounced. Thus, the conducted study showed the effectiveness of the experimental technique. The results obtained are recommended to be used both in the practice of fitness trainers and for people who lead a healthy lifestyle and wish to improve their health.

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Physical development of athletes of cyclic sports specializing in athletics and cross-country skiing

UDC 611.73

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Abstract

Objective of the study is a comparative assessment of the development of physical qualities and anthropometric indicators of athletes specializing in athletics and cross-country skiing.

Methods and structure of the study. 35 athletes took part in the study process. The level of sportsmanship of the studied - youth and adult sports categories; the average period of studies is 3.1±0.46 years.

Results and conclusions. Athletes training in middle-distance running have a lower percentage of fat and a higher percentage of the muscle component of the body relative to cross-country skiers, however, the differences do not have a statistical significance of the results. In the diagnosis of physical qualities, it was revealed that athletes-athletes are more physically developed than skiers. The greatest differences are reflected in the indicators of flexibility and strength. At the same time, in terms of the main quality of endurance for these specializations, cross-country skiers slightly, but surpass track and field athletes in terms of performance.

Keywords: *athletics, cross-country skiing, physical development, physical qualities, anthropometric indicators.*

Introduction. Studies show [1] that general and special endurance is the leading physical quality in middle-distance running and cross-country skiing. However, despite the fact that training of this quality is given considerable attention in sports training, experts note the need for the development of other physical qualities at all stages of training activity. The relevance of the study is also due to the possible influence of the appearance of muscle asymmetries [2, 3, 5] as a result of sports specialization, which are detected in high-class athletes. Regular assessment of the dynamics of the studied indicators will identify periods of the greatest change in the results.

Objective of the study is a comparative assessment of the development of physical qualities and anthropometric indicators of athletes specializing in athletics and cross-country skiing.

Methods and structure of the study. The study involved 35 athletes aged 12-13 years old involved in athletics (17 children: 7 boys, 10 girls) and cross-country skiing (18 children: 9 boys, 8 girls). The diagnostics was carried out among runners who train at medium distances (200 m, 400 m, 800 m) and cross-country skiers who train at distances of 3 km and 5 km. The level of sportsmanship of the studied - youth and adult sports categories. The average period of studies is 3.1±0.46 years.

Assessment of anthropometric parameters included: measurement of body length, weight, measurement of body girth (girth of the thigh, lower leg, shoulder and forearm) and skin-fat folds (folds in the scapula, chest, shoulder, forearm, on the abdomen, above the iliac crest, in thigh and calf areas).

Measurement of body girths and skin-fat folds (Fig. 1) was carried out according to the method of Martirosov E.G. (1982). The data were calculated using the following formulas: to determine the absolute and relative values of the fat component, the formulas of Parizkova and Roth (1972) were used, the average thickness of subcutaneous fat together with the skin was studied using the Matejka formula (1921), to determine the amount of muscle tissue, we used the

Matejka formula (1921), body mass index was determined by the Quetelet index [5].

The assessment of the state of development of physical qualities was carried out through motor tests: 30 m run, 6 min run, shuttle run 3x10 m, standing forward bend, torso lifting from the supine position for 1 min, flexion/extension of the arms in the lying position, long jump with places.

Results of the study and their discussion. The average body length index of athletics athletes was 163.27±2.12 cm; cross-country skiing - 163.9±2.23 cm. Average weight of runners - 48.31+1.92 kg; ski racers - 51.6 + 2.66 kg. The values of anthropometric indicators are shown in Figure 1.

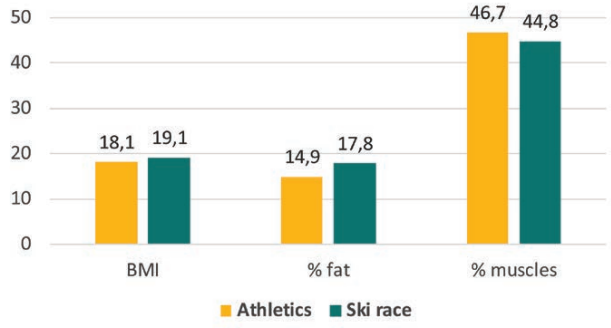

Figure 1. *Anthropometric indicators of athletes*

The results reveal the absence of statistical differences between the studied groups, the differences are insignificant, however, we note that the percentage of fat in athletes is less, in turn, the percentage of muscles is greater. The body mass index of skiers is in the normal range (18.5-24.99), athletes have a body mass deficit (<18.5).

The results of the diagnosis of physical qualities are presented in table 1. For visual representation, the percentage difference is shown in figure 2.

The greatest differences were found in the forward bending flexibility test: track and field athletes

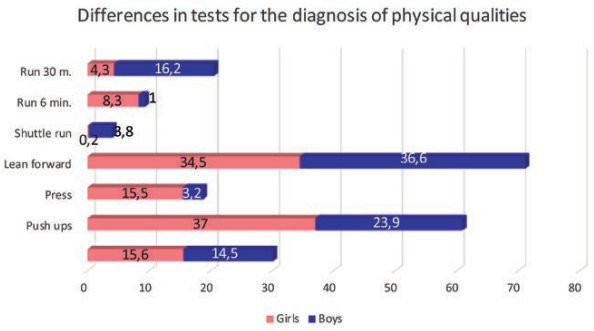

Figure 2. *Percentage of differences in motor tests between runners and cross-country skiers (%)*

have the best development of this quality and outperform girls by 34.5% in cross-country skiing, and 36.6% outperform boys. Significant differences are observed in strength indicators in female athletes - 37% higher in the push-up test and 15.5% higher in the abdominal test. The only test in which skiers showed results slightly higher than athletes was the 6-minute run test for endurance: by 8.3% in girls, by 1% in boys.

Conclusion. Athletics (middle distances) and cross-country skiing are similar in their resources. For athletes of both specializations, the leading physical quality is endurance, and in the technical performance of a profile sports motor action, coordinated work of the upper and lower extremities occurs.

As the study showed, middle-distance track and field athletes have a lower percentage of fat and a higher percentage of the muscle component of the body relative to cross-country skiers, but the differences are not significant. In the diagnosis of physical qualities, it was revealed that athletes-athletes are more physically developed than skiers. The greatest differences are reflected in the indicators of flexibility and strength. At the same time, cross-country skiers, especially girls, slightly outperform track and field athletes in terms of endurance.

Table 1. *Results of diagnostics of physical qualities, (M±m)*

Test	Girls		Boys	
	Athletics	Ski race	Athletics	Ski race
Run 30 meters, s	4.85±0.08	5.07±0.34	4.46±0.06	5.32±0.18*
Run 6 min., m	1197.14±28.51	1305±45	1421.25±29.47	1436.36±40.59
Shuttle run,s	8.14±0.21	8.12±0.48	7.75±0.11	8.06±0.23
Tilt forward, cm	19.86±2.5	13±3.39	7.75±2.78	4.91±1.73
Press, quantity	45.29±1.71	38.25±7.47	46.5±3.8	45±3.24
Push-ups, quantity	21.43±3.4	13.5±1.19	30±0	22.82±2.48*
Jump from a place on two legs, cm	209.14±5.06	176.5±9.14*	229.5±7.89	196.27±6.13*

Note: *p≤0.05 changes are significant in relation to the track and field athletics specialization.

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Improving the efficiency of training qualified athletes in the athletics heptathlon

UDC 796.093.61/.62

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Abstract

Objective of the study was to increase the efficiency of training athletes specializing in track and field heptathlon based on the design of key individual biomechanical parameters in individual disciplines.

Methods and structure of the study. A decision-making algorithm has been developed for the individualization of the training of qualified athletes specializing in track and field heptathlon. The latter was tested in the training process of the strongest all-around athletes in Belarus, and its effectiveness was assessed by the magnitude of the increase in sports results and indicators in individual all-around disciplines.

Results and conclusions. Following the decision-making algorithm when individualizing the training of athletes contributed to the increase in the total amount of the all-around due to the "pulling up" of the lagging disciplines to the indicators of the predicted model. Thus, the sports results of the five athletes who took part in the experiment improved by an average of 6.29%, and the performance in the technical disciplines of the heptathlon by 9.92% compared to the previous year. Particular attention is paid to the development of individual biomechanical model indicators, which serve as the basis for the formation of control training effects aimed at improving the technical training of all-round athletes.

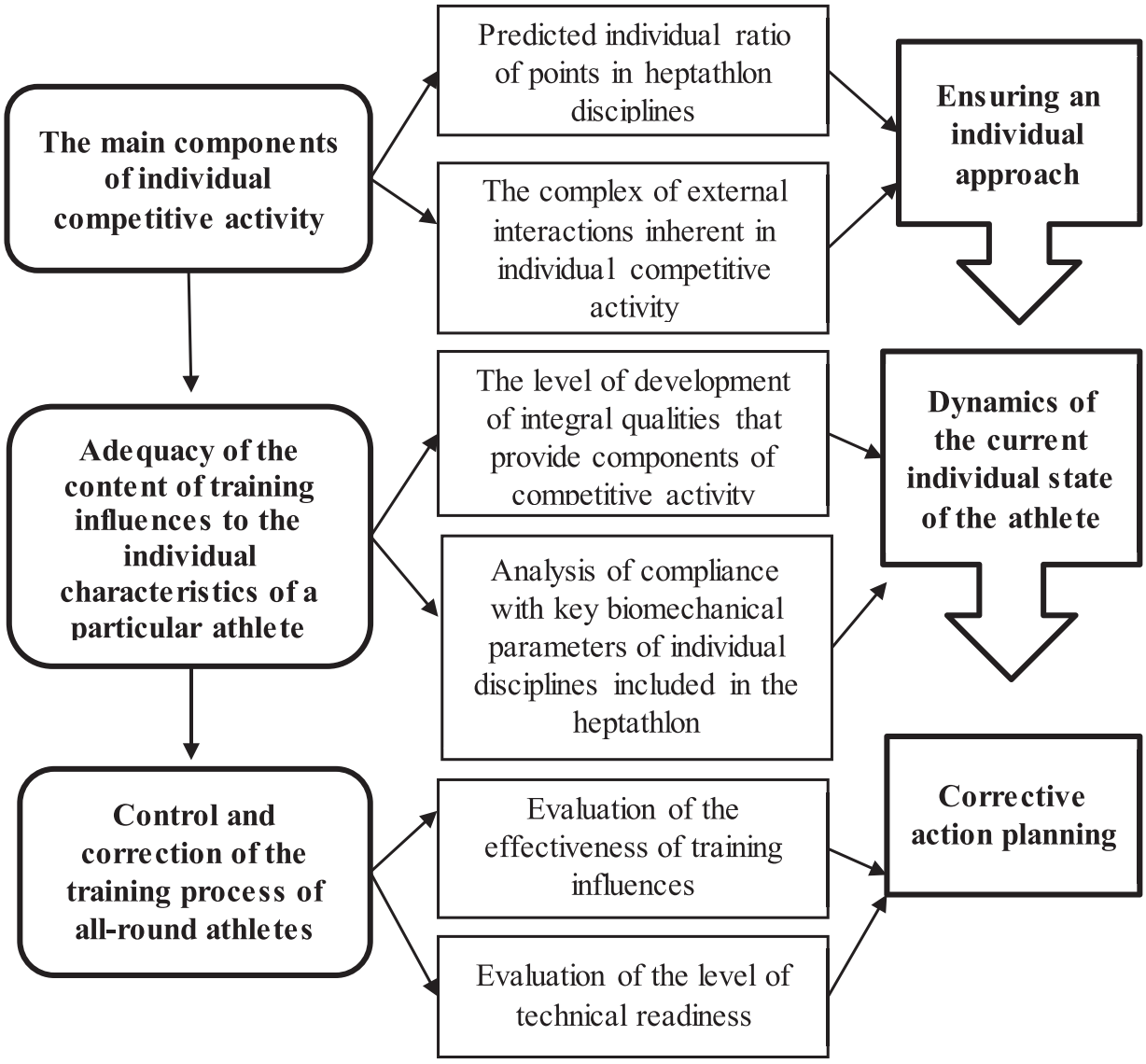
Keywords: *sportswomen, competitive activity, heptathlon, points, result, technical training, individualization.*

Introduction. The problem of increasing sports performance in women specializing in track and field heptathlon is solved mainly by increasing the volume and intensity of the training load, as well as indicators of the functional fitness of female athletes [3, 4, 6]. At the same time, not enough attention is paid to the search for methods to optimize the technical readiness of multiathlons, allowing to use their motor abilities to the maximum in each heptathlon discipline. In order for all-around athletes to fully use their motor potential, which is necessary for a two-day struggle with rivals and progressive fatigue, they need to have a stable technique for performing all disciplines included in the all-around [1, 5]. This actualizes the search for pedagogical influences and specially organized conditions aimed at increasing the efficiency of movements and the accuracy of fulfilling the parameters of competitive exercises, which will make it possible to achieve the maximum possible contribution of individual all-around disciplines to the total amount of points.

Objective of the study was to increase the efficiency of training athletes specializing in track and field heptathlon based on the design of key individual biomechanical parameters in individual disciplines.

Methods and structure of the study. An analysis of the literature [3, 4] and our own results of the study [1, 5, 6] contributed to the development of an algorithm (see figure) for making decisions in the individualization of the training of qualified athletes specializing in track and field heptathlon. The algorithm was tested in the training process of the strongest all-around athletes in Belarus, and its effectiveness was assessed by the magnitude of the increase in sports results and indicators in individual all-around disciplines.

Results of the study and their discussion. Following the developed algorithm assumes at the first stage the determination of the predicted individual



Decision-making algorithm for individualizing the training of qualified athletes specializing in heptathlon

ratio of points (in %) of an athlete in the heptathlon disciplines. To do this, you can use the data of the table, which presents the results of our analysis of the competitive activity of the strongest all-rounders in the world (n=35). 221 best results of the season in the heptathlon, shown by athletes during their sports careers aged 18 to 31, were subjected to statistical processing and the most significant age categories were selected. So, 18 years old is the age of the first serious international competitions with standard apparatus. This is followed by the age of 20 years - the period when the first significant jump is observed in the annual competitive result of heptathletes. The second most significant increase in competitive results occurs at the age of 23, and the maximum average amount was demonstrated by athletes at the age of 27. The increase in the average amount, compared with 23 years, amounted to 139.91 points.

The next stage is the creation of individual biomechanical models, which involves the use of a generally accepted technique for assessing technical skill in each of the heptathlon disciplines based on a video analysis of the competitive activity of female athletes. Thus, in the 100-meter hurdles, it is possible to analyze the timing of running sections of the distance, vertical fluctuations of the general center of mass of the body while overcoming the barrier, the time to overcome the obstacle itself and the support after leaving it. In the high and long jumps, the analysis is carried out according to the following indicators: the individual features of the rhythmic-tempo structure, the spatial and angular characteristics of the take-off run in multiathlons (especially the last three steps) are determined. The analysis of the competitive activity of heptathletes

The ratio of points in the heptathlon disciplines of the strongest athletes in the world, specializing in track and field heptathlon, in the age aspect

Age	Contribution of individual disciplines to the total score, %						
	100m hurdles	High jump	Shot put	200m run	Long jump	Javelin-throwing	800m run
18 years old	17,2	16,0	11,1	15,9	14,8	11,0	14,0
20 years old	16,3	15,7	11,9	15,2	14,8	12,2	13,9
23 years old	16,5	15,7	12,1	15,0	14,6	12,1	14,0
27 years old	16,4	15,6	12,2	14,7	15,0	11,9	14,2

in the shot put is carried out according to the kinematic indicators in the final phase of movement (speed, height and angle of the projectile, the duration of the acceleration of the shot and the push itself).

Technical mastery in javelin throwing is evaluated by kinematic characteristics at the moment of setting the right and left (stopping) legs, as well as angular characteristics at the moment of projectile release. Significant shortcomings were revealed in the technique of performing the final effort in the javelin throw among heptathletes, which did not allow them to fully realize their motor potential in this all-around discipline [1]. This is the lack of "overtaking" the projectile, depriving the athletes of the opportunity to use the energy of elastic deformation of the muscle-tendon structures in the throw; passive work of the right leg after setting, which leads to the absence of a two-support position and "crawling" from the right leg to the left; violation of the sequence of inclusion of muscles in the work, as a result of which the throw is performed with one hand, without engaging the strong underlying parts of the body.

The development of individual biomechanical model indicators serves as the basis for the further formation of point control training actions aimed at improving the technical training of female athletes [5]. This involves the development of special exercises, the application of which must be guided by the principle of dynamic compliance [2], according to which the latter should be adequate to the main competitive exercise according to the following criteria: muscle groups involved in the work; amplitude and direction of movement; accentuated section of the range of motion; the magnitude of the effort and the time of its development; movement speed; muscle work patterns. The main means can also be various imitation exercises with weights, which correspond to the structure of individual phases and elements of competitive exercises and are aimed at developing specific muscle groups. All this can be an effective approach to the problem of realizing the motor potential of all-around events in complex coordination disciplines of all-around events and will allow, without being carried away by an increase in the volume and intensity of the training load, as well as an increase in the indicators of the functional fitness of athletes, to increase the competitive result.

The final decision-making stage in the individualization of the training of qualified all-round athletes can be the organization (distribution and interconnection) of training means in the annual cycle and its structural formations, as well as the planning of corrective measures. At the same time, it is important not to forget the obligation to constantly clarify the content of the training effects of the adequacy of the current state of the body of a particular athlete during training sessions [7, 8].

Conclusions. Following the decision-making algorithm when individualizing the training of athletes specializing in athletics heptathlon contributed to the increase in the total amount of the all-around due to the "pulling up" of the lagging types to the indicators of the predicted model. Thus, the sports results of the five athletes who took part in the experiment improved by an average of 6.29%, and the performance in the technical disciplines of the heptathlon - by 9.92% compared to the previous year.

In our opinion, the development of rational variants of motor actions, in order to achieve the planned sports result, is one of the unused resources that can optimize the mechanism for managing the technical preparation of heptathlons. The use of individual biomechanical models, as a guideline in the formation of the accuracy of reproduction of the kinematic and dynamic structures of a competitive exercise in multiathlon, will optimize the training process and maximize the use of their motor potential in heptathlon disciplines, which will improve sports performance.

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Peculiarities of performing a throw uchi-mata under the conditions of a competitive battle

UDC 796.012

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Abstract

Objective of the study was to conduct a biomechanical analysis of the throw Uchi-Mata in conditions of high-level competitions.

Methods and structure of the study. To analyze the throw, a video was taken from the Internet, containing fragments of the fights of the Olympic champion in judo Toshihiko Koga. Next, the model was determined, due to which the throw was performed.

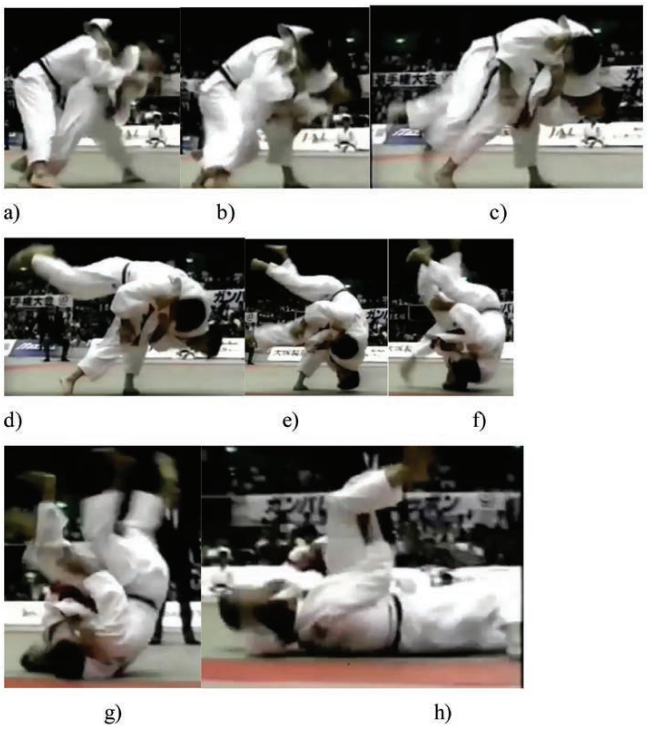
Results and conclusions. In the course of the analysis of the throw Uchi-Mata, the authors calculate the speed of the center of gravity modulo for both athletes, the changes in the speed of the center of gravity modulo, as well as the projections of these values on the coordinate axes. Based on the intervals of the values of the velocities of the centers of gravity, the projections of the velocities, it is concluded that in the process of preparing and performing the throw, the opponent accelerates in the horizontal plane. The trajectory of the center of gravity of the attacked athlete indicates his preliminary swinging in the vertical plane before the throw. The results of the study can be used in the wrestling training process at the stage of sports specialization.

Keywords: *Uchi-Mata, judo biomechanics, technical and tactical training.*

Introduction. Today we can note the growing popularity of wrestling. Judo, Greco-Roman wrestling, freestyle wrestling are firmly entrenched in the program of the Olympic Games. New directions and schools appear and develop. Tough competition is already evident at the level of youth tournaments. However, there is still a lack of research related to the biomechanics of this type of motor activity.

Objective of the study was to conduct a biomechanical analysis of the throw Uchi-Mata in conditions of high-level competitions.

Methods and structure of the study. To analyze the throw, a video was taken from the Internet, containing fragments of the fights of the Olympic champion in judo Toshihiko Koga. he analyzed part of the video recording, containing the execution of the catch throw, was divided into separate photographs – cyclograms. Next, the model was determined, due to which the throw was performed [1]. For each cyclogram, the coordinates of the center of gravity of both athletes were calculated. The distance that the athlete's center of gravity passed was measured in arbitrary units (in the size of the athlete's image). The speeds of the center of gravity of both athletes were calculated modulo, the projections of the speeds of the centers of mass, the changes in speeds during the transition between cyclograms and the projections of changes in speeds. The speed was measured in c.u./s. Changes in speed were calculated as the difference in speeds between two cyclograms and were measured, respectively, also in c.u./s. The intervals of values of the calculated quantities were determined. The following designations are adopted in this work:



Picture 1. *Throw performed by Toshihiko Koga [2]*

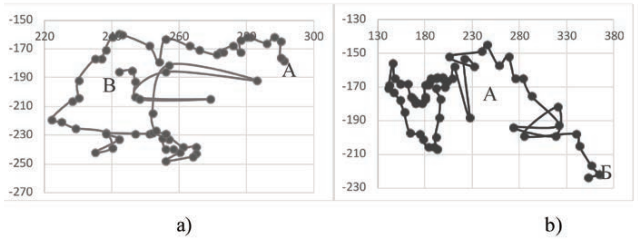
– projection of the speed of the athlete's center of gravity on the abscissa axis, – projection of the speed of the athlete's center of gravity on the ordinate axis, changes in the speed of the center of gravity modulo during the transition between cyclograms, – projection of the change in the speed of the center of mass on the abscissa axis, – projection of the change in the speed of the center of mass on the ordinate axis.

The athlete holding the hold was designated as Tori, the attacked athlete as Uke.

Picture 2. *Schematic representation of the models due to which the reception is performed: a) lever, b) mechanical block [2]*

Results of the study and their discussion. Picture 1 shows a throw performed by Toshihiko Koga in competition. This throw is a combination of a lever and a mechanical block. At the same time, it should be noted that in the process of performing the throw, the attacker changes the direction of movement.

Picture 3 shows the trajectories of the center of gravity for the attacking and attacked athletes.



Picture 3. *Trajectories of the center of mass of athletes in the process of performing a throw with a pickup. a) - the trajectory of the center of mass of Toshihiko Koga, b) - the trajectory of the center of mass of his opponent. A - the beginning of the trajectory, B - the end of the trajectory*

Picture 3 shows that in the process of preparing the throw, Uke's center of gravity makes oscillatory movements. In the video, you can see how Tori swings Uke in a vertical plane.

The table shows the intervals of the speeds of the centers of gravity by the module for both athletes, the projections of the speeds, the changes in the speeds by the module and the projections of the changes in the speeds.

It can be seen from the table that the length of the interval of velocities of the center of gravity is greater in modulus for Uke [0.00; 1.72] 1.2 times more than Tory's [0.04; 1.43]. This suggests that a process occurs with the center of gravity of Uke, as a result of which there are larger amplitude fluctuations in speed than those of Tori. The video footage shows Tori dispersing Uke before throwing, dragging him along or using his movement on himself. The interval of values of velocity projections on the Ox axis is larger for Uke [-1.71; 1.61] 3.32 c.u./s compared to Tori [-1.13; 1.08] 2.21 c.u./s., i.e. 1.5 times. This can be explained

Velocity intervals of centers of gravity modulo for both athletes, projections of speeds, changes in speeds, projections of changes in speeds

Athletes	v	v_x	v_y	a	a_x	a_y
Tori (T. Koga)	0,04;1,43	-1,13;1,08	-0,71;1,42	0,51;0,93	-2,21;1,17	-1,88;1,13
Uke	0,00;1,72	-1,71;1,61	-0,61;1,21	-1,01;0,94	-2,75;3,32	-1,61;0,96

by the fact that the attacking athlete makes more efforts in the horizontal plane, that is, he accelerates his opponent or stretches along the tatami.

The interval of values of projections of the velocities of the center of gravity on the Oy axis is larger for Tori [-0.71;1.42] 2.13 c.u./s than for Uke [-0.61;1.21] 1.82 c.u. e./s, that is, 1.2 times. This is explained by the fact that during the movement Tori had a relatively loose grip and Uke had the opportunity to partially control the movement of his center of gravity in the vertical plane. On video footage, he can be seen sliding down with Tori during the reception.

Intervals of change of speeds modulo at the transition between cyclograms by Tori [0.51; 0.93] 0.42 c.u./s, for Uke [-1.01; 0.94] 1.95 c.u./s. The length of the modulo speed change interval is 4.6 times longer for Uke. This also indicates that Tori is accelerating Uke in the process of preparing and delivering the move, or is using his effort.

The length of the interval of change of speeds in the projection on the axis Ox y Uke [-2.75; 3.32] 6.07 c.u./s, Tory's [-2.21; 1.17] 3.38 c.u./s, i.e. 1.8 times less. The length of the interval of speed change in the projection on the Oy axis y Uke [-1.61; 0.96] 2.57, Tori [-1.88; 1.13] 3.01 c.u./s.

Conclusions. The investigated throw belongs to the group of combined techniques. The considered pickup option is based on two models: a lever and a mechanical block. The trajectory of Uke's center of gravity indicates that before throwing, Tori swings him in a vertical plane. In the process of preparing and performing a technical action, the attacking athlete also accelerates his opponent. The intervals of values of the speed of the center of gravity and changes in the speeds of the center of gravity modulo during the transition between cyclograms are larger for Uke (1.2 times and 4.6 times, respectively). Moreover, the main contribution to acceleration is made by movement in the horizontal plane. The intervals of projections of velocities and projections of changes in the velocities of the centers of gravity along the abscissa axis are larger for Uke (1.5 times and 1.8 times, respectively).

Thus, it can be noted that in the training process in judo, as well as in any kind of wrestling or martial arts where throws are used, it is advisable to include in the preparation of the technique a preliminary swing of the opponent, acceleration in the horizontal plane, using the direction of the opponent's movement and changing the direction of movement during throw time. Swinging the opponent in the vertical plane, accelerating in the horizontal plane, changing the direction of movement require a sufficiently high level of physical and technical readiness and can be introduced into the training process not earlier than the stage of sports specialization.

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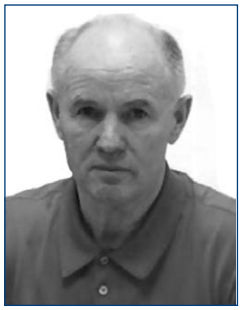
Model of organization of physical and health activity of employees of remote industrial facilities by means of information technologies

UDC 795.011.3



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Abstract

Objective of the study was to develop a model for organizing physical culture and health-improving activities of workers at remote industrial facilities based on information technology and evaluate its effectiveness.

Methods and structure of the study. Scientific work was carried out on the basis of enterprises of the oil and gas complex located in the northern regions of the Siberian Federal District. In total, 500 people working on a rotational basis were examined - men aged 25 to 50 years. Questionnaire and testing methods were used (calculation of biological age, Rufier's test, Stange's test, Harvard step test).

Results and conclusions. The developed model includes three blocks - diagnostic, organizational and activity and control. For each block, the main content is formulated, the implementation technologies and the results that will be obtained in this block are determined. The result is a personalized training program. In the course of its implementation, an automated control over the state of students is carried out according to the criteria presented in the control block of the model.

Keywords: *recreational physical culture, rotational work, mobile applications.*

Introduction. Shift workers in the conditions of the northern regions experience an excessive load, which is aimed at restructuring and adapting body systems to function in new conditions [1].

One of the ways to prevent health disorders in this case is the involvement of the working population in organized sports and recreational activities [3, 6]. Recognition of the importance of this problem is reflected in the Decree "On the national goals and strategic objectives of the development of the Russian Federation for the period until 2024", which sets the task of increasing the number of Russians systematically involved in physical culture and sports to 55%. Effective measures to implement the Decree are the national project "Sport is the norm of life." One of the main directions of the project "Sport is the norm of life" is the implementation of an information and communication campaign based on the use of modern automated technical means covering 70% of the population to organize their sports and recreational activities [5]. The target audience for which state policy measures are aimed is also citizens of the middle and older age groups (working-age population), whose indicators of involvement in systematic physical exercises for a number of reasons are lower than those of the younger generation [2].

The reasons for the low involvement of employees in organized physical culture and health-improving activities lie in the lack of conditions for its implementation at most enterprises, the inadequacy of its provision with modern methodological developments, the lack of a systematic approach and effective models of its organization, and the underestimation of the capabilities of modern technical means [4].

Objective of the study was to develop a model for organizing physical culture and health-improving activities of workers at remote industrial facilities based on information technology and evaluate its effectiveness.

Methods and structure of the study. Scientific work was carried out on the basis of enterprises of the

oil and gas complex located in the northern regions of the Siberian Federal District. In total, 500 people working on a rotational basis were examined - men aged 25 to 50 years. Questionnaire and testing methods were used (calculation of biological age, Rufier's test, Stange's test, Harvard step test), all tests were implemented remotely using the Google platform and mobile applications.

Results of the study and their discussion. The developed model is shown in Picture 1 and includes three blocks - diagnostic, organizational and activity and control. For each block, the main content is formulated, the implementation technologies and the results that will be obtained in this block are determined.

Scheme of the model of organization of physical culture and health-improving activities of employees of remote industrial facilities based on information technologies

The main content of the *diagnostic block* is an assessment of the level of health of employees of the enterprise, their physical activity in shift and inter-shift periods, as well as a description of the nature of work - physical activity, its nature and intensity, temperature conditions, forced postures and the presence of harmful factors. To solve the tasks, a questionnaire is used through the Google platform, as well as a number of functional tests performed using mobile applications - the calculation of biological age, the Rufier test, the Stange test, the Harvard step test. Based on the results of this block, a database was formed on individual health, physical activity and the nature of the work of employees, the needs for motor recreation were assessed, and a plan of physical culture and recreational activities was determined.

The main content of the *organizational and activity block* was the organization of physical culture and recreational activities of employees of remote industrial facilities using information technology. The structure of physical culture and health-improving work included target, active and control-evaluation stages. A complex of exercises of various intensity and orientation was compiled, aimed at people with different levels of health, physical activity and different nature of work. Algorithms for individual selection of exercises and the formation of physical culture and health programs were also developed, taking into account the results of the diagnostic block, as well as algorithms for current control in the process of implementing programs and correcting the intensity of the load. These algorithms were implemented as mobile applications for Android and IOS.

The *control block* was aimed at evaluating the effectiveness of the model implementation. It included both a questionnaire survey and objective monitoring of physical activity and the level of health of workers. For its implementation, a web portal was developed, which made it possible to provide information support to employees in planning, organizing, monitoring and managing the training process. The portal includes the main sections: "Health and Healthy Lifestyle", "Exercise System", "Control and Self-Control", "Questionnaires", "Forum and Chat". The web portal allows you to organize the constant interaction of project participants with consultant-trainers and doctors, provides automatic processing of incoming information, issuance of recommendations to participants and analytical reports to project managers and enterprises.

<table>
<tr><th>Content</th><th>Implementation</th><th>Results</th></tr>
<tr><td colspan="3">Diagnostic block</td></tr>
<tr><td>Health status</td><td>A set of simple tests performed using a smartphone, entering the results into a Google spreadsheet</td><td rowspan="3">Database on individual health, physical activity and nature of work of employees</td></tr>
<tr><td>Physical activity</td><td rowspan="2">Questionnaire survey implemented on the Google platform</td></tr>
<tr><td>The nature of labor</td></tr>
<tr><td colspan="3">Organizational and activity block</td></tr>
<tr><td>A set of exercises of various directions and loads</td><td rowspan="3">Mobile application for Android and IOS</td><td rowspan="3">Individual physical activity programs for employees, dynamic correction of their content and intensity based on the results of ongoing monitoring</td></tr>
<tr><td>Algorithm for individual selection of exercises, taking into account the results of diagnostics</td></tr>
<tr><td>Algorithm for load correction taking into account the results of current control</td></tr>
<tr><td colspan="3">Control block</td></tr>
<tr><td rowspan="2">Monitoring the results of the implementation of the model</td><td>Questionnaire</td><td rowspan="2">Experimental confirmation of the effectiveness of the model</td></tr>
<tr><td>Monitoring of motor activity</td></tr>
</table>

Conclusions. The proposed scheme of the organization model of physical culture and health-improving activities of employees of remote industrial facilities based on information technologies allows achieving the set goals. During the implementation of the organizational and activity block, planning of various types and forms of physical exercises is carried out, taking into account the individual characteristics of health, physical activity and the nature of the work of employees. The result is a personalized training program. In the course of its implementation, an automated control over the state of students is carried out according to the criteria presented in the control block of the model.

The implementation of the model of organization of physical culture and health-improving activities of workers at remote industrial facilities based on information technology has confirmed its effectiveness in terms of improving the health and physical fitness of workers in remote northern regions, as well as in terms of forming motivations for physical activity and a healthy lifestyle.

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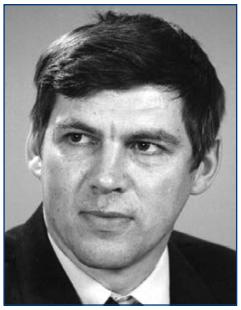
Voice control of a team with a computer coach in basketball (pirs online)

UDC 796.35



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Abstract

Objective of the study was to evaluate the effectiveness of using the voice control of a basketball team during a match based on PIRS technology.

Methods and structure of the study. As part of this experiment, Nano City bluetooth box earpieces were used, operating on Bluetooth 5 within a radius of 200 meters in open space and 50 meters indoors. The following options were considered: the use of software that synchronizes sound from a computer to a smartphone (sound wire program), a collective call in any messenger, software for creating virtual channels for connecting sound transmission devices for a computer (VAC control panel, Audio repeater).

Results and conclusions. For the experiment, we took the game of student combined institutes of Yekaterinburg. The unprofessional status of the players made the job difficult. Also, difficulties arose with unexpected substitutions or arrangements for the opponent, since a recalculation of all parameters was required. Some of the players could not adapt to the novelty during the match. It was possible to translate into real action only 36% of the recommended combinations. Nevertheless, we got a result 14 points better than when the same teams played a month earlier.

Keywords: *basketball, tactics, computer coach.*

Introduction. The PIRS technology and its various aspects have been repeatedly discussed in the pages of the journal [3, 5, 6]. Let us recall several aspects.

In team sports, the result - the difference between goals scored (S) and goals conceded (C) can be decomposed into the differences Si - Ci that make up the team of players. For each player, the similarly created difference Si – Ci can be decomposed into differences Sij – Cij of this player in terms of 50 components (technical-tactical martial arts, TTMA) of the game [1]. For the convenience of work, these always paired numbers are translated into one number - the rating. It is convenient that these ratings allow you to compare teams, players, players by game components for those teams that have not yet played with each other. A high degree of rating stability makes this possible.

Existing Instat, WyScout and other systems are forced to somehow work with the data of the team when it plays with the leader on his field and with the outsider on his own, which excludes the usefulness of their efforts. However, PIRS technology has a difficulty - it cannot be implemented online. As a rule, they get a miscalculation of the previous matches of both future opponents, after which the players of the ward team have to remember a lot of interactions and restrictions. The potential of the technology will be leveled by different abilities of players to memorize and reproduce recommendations. However, we have not yet trained a convolutional neural network (CNN) to qualitatively recognize the technical and tactical martial arts of players. Therefore, the first part of PIRS was done traditionally. The novelty was in the connection of a voice prompt to the player's micro-earphone, which was launched by the coach from among the solutions pre-formed by the computer.

Computer technologies are gradually being introduced into sports. However, several problems stand in the way of this process. First of all, this is the ability to translate the image of a sports duel into technical and tactical actions, techniques performed, etc. The very

model of a team sport causes great difficulties. As a rule, this problem is shifted to the same convolutional neural network (CNN). To do this, CNNs are trained on the decisions of an experienced trainer or statistical patterns. However, shifting the search for the optimal solution to a neural network is obviously an absurd way. CNN will simply repeat what it has been taught.

Objective of the study was to evaluate the effectiveness of using the voice control of a basketball team during a match based on PIRS technology.

Methods and structure of the study. The specifics of basketball is that 24 seconds are allotted for an attack, and a hint, say, for 15 seconds, is no longer relevant. The coach can use wireless earpieces to control the game. In the framework of this study, earpieces operating on Bluetooth 5 were used within a radius of 200 meters in open space and 50 meters indoors. Such micro-earphones are still little represented on the market. The Nano City bluetooth box has a K5 capsule size that is not visible in the ear. The kit includes a Bluetooth device, an earpiece, a usb cable and two batteries (337SR416SW). According to the duration of work, the bluetooth device works for 20 hours in talk mode, it takes 4-5 hours to charge. The batteries in the earpiece last for 3-4 hours, then it needs to be replaced with a new one. It is characteristic that the purpose of the goods is an earpiece for certification; for the session. Compatible with any smartphones, mobile

phones. It is necessary that the information of the computer assistant reaches 10 earpieces with a minimum time delay.

The following options were considered:

• use of software that synchronizes sound from a computer to a smartphone (sound wire program),

• collective call in any messenger,

• software for creating virtual channels for connecting sound transmission devices for a computer (VAC control panel, Audio repeater).

All options have been tried. The method with the sound wire program, which synchronizes sound between a computer and a smartphone, turned out to be inoperative. Bluetooth in a laptop supports the simultaneous operation of only one device, and in this version, you need to connect 10 smartphones to a laptop and 10 earpieces to smartphones. Then the option was tested with connecting one device to a laptop. The sound from the laptop was also synchronized by the sound wire program and a group call was made from this device to other smartphones. Microphones were connected to them. The sound from the laptop was transmitted to the smartphone connected to it. However, when calling to other devices, it was not audible. The only option left is software for creating virtual channels for connecting sound transmission devices for a computer (VAC control panel, Audio repeater), for this you need to connect all wireless headphones to a laptop and assign each one its own virtual communication channel, in this case the sound from the laptop really reaches everyone earpieces connected to it, but the transmission occurs gradually (from the first channel to the second, from the second to the third, etc.). At the moment, this is the most effective option. Another task is scoring from the side of the computer itself. For this, the capabilities of Excel were used (Fig. 1)

Figure 1. *Speak function in Excel*

Necessary information presented to the players. Initially, it is clear that the hint is needed in a timely manner and should not develop into a lecture. Players simultaneously heard information common to them. It was structured like this:

- replacements. Example: 16, 18 replacing 4, 8. Explanation - No. 16 and No. 18 leave. Come out No. 4 and No. 8

- changes in defence. Example: 4 and 6; 5 and 14; 18 and 64; 42 and 15; 82 and 11. Explanation - these are five pairs - the numbers of “our” and the opponent in the exchange when playing on the defensive. The player understands who to patronize.

- the most deviating from the required indicator. Example. No. 4 - 3-point shots - 4 on 2. Player No. 4 only needed to make two 3-point shots, and he already overshot to 4.

Attack combination. The most difficult aspect. There are about 200 combinations in the dataset, which can have an individual name. To advance in this matter, it was decided to name the exchange and the type of technical-tactical martial arts (TTMA).

Example: 4 and 8 “beating”, 16 and 8 - “throw”. Explanation. Player No. 4 of “our” team beats No. 8, pulls No. 8 onto himself and allows No. 16 to be thrown.

Clue moment during play: after a successful attack on both rings, time out or any stoppage of the game. In basketball, there are many stoppages of the game, which makes it much easier to bring information to the player. Receiving tips, the player gradually learns how best to act against this opponent. Even when it comes to counter-attacking, where the hint doesn’t keep up with the game.

The analyst-coach (Fig. 2) looks at the composition of the game participants, the formation, finds it in the match scenario and launches a voice prompt with previously planned solutions in PIRS technology.

The experiment was carried out during the tourna-

Figure 2. *Schematic representation of the operation of the voice assistant*

ment - the championship of the Student Basketball Association (ASB) division of the Sverdlovsk region. The participants are student men's basketball teams of the Nizhny Tagil State Social and Pedagogical Institute (NTSSPI) and the Ural State Economic University (USEU) (Table 1).

Results of the study and their discussion. Initially, there was doubt that non-professional players could remain motivated to play an undecided game and be able to follow directions. The effect increased during the game from the first quarter to the third. As fatigue accumulated, the desire for game creativity gradually disappeared.

In this case, two matches were played. The first allowed to collect information on the players of both teams. This game took place on 03/11/2022. The score of the first meeting was 87:82 in favor of NTSSPI. One of the authors (I. Kudryavtsev) is the coach of the USEU national team, and a study was done in favor of this team. The first match was lost by USEU with a difference of five points. The replay of the teams took place on 04/16/2022. The score of the game with the participation of PIRS online technology is 104:83 in favor of USEU. Thus, the first attempt led to a change in the score from -5 to +21. That is 26 points. However, the calculated limit value of the score with the ideal game of USEU gave 62 points of advantage. In the direction of growth, the most affected were:

- Three of the weakest players of the USEU team did not receive playing time. The team began to play in 1-2 substitutions;
- restrictions for each player on the number of shots made;
- the response of team players to a planned TTMA in the absence of such in case of improvisation.

Table 1. *Participants of the match*

NTSSPI		USEU	
Ve-v Danil	№ 6	Sa-v Ruslan	№ 4
Er-n Egor	№ 8	No-v Danil	№ 5
Le-v Vyacheslav	№ 11	Mi-n Daniel	№ 6
Mu-v Alexey	№ 13	Da-v Timothy	№ 7
Co-v Vitaly	№ 3	Che-y Arseny	№ 8
Fe-v Artem	№ 9	Av-v Eugene	№ 11
Hu-y Alexander	№ 2	Ku-v Roman	№ 12
Sht-y Artemy	№ 4	Hee-v Bogdan	№ 13
		Mi-ch Mikhailo	№ 14
		Ar-v Arseniy	№ 16
		Ep-v Vyacheslav	№ 17

Table 2. *Deviations of the overall balance of martial arts from the recommended level in the last quarter of the match*

Player	Attack		Defense		Deflection	
	Recommended	In fact	Recommended	In fact		
5	12	9	8	20	-9	↓
12	8	5	5	7	1	↕
11	6	10	13	11	-2	↕
13	6	7	6	4	1	↕
16	3	8	6	7	-6	↓

As an example, let's show table 2 for the last 4th quarter. First of all, the PIRS algorithm left five players on the field for the last quarter without substitutions. The players managed to get closer to the requirements for martial arts in the attack, but there was a big deviation when playing on the defensive. With a quick transition from defense to attack, players often did not have time to sort out the attackers on the recommendation.

Conclusions. The journal Theory and Practice of Physical Culture previously published articles on the

PIRS technology [2, 4, 5], which allows you to build a scenario for the upcoming meeting from exchanges, restrictions on game martial arts, combinations for the opponent's placement to achieve the maximum possible result. However, it is still unrealizable online and requires the player to memorize all the recommendations.

An attempt to transfer the technology online was associated with involvement in the management of the game with the help of micro-earphones, which are not visible from the outside. The algorithm calculated in advance the most effective solutions for each opponent's arrangement. During the game, the analyst-coach compared the picture on the field with the arrangement on the field, chose the matching option in the match scenario and included the voicing of the recommendation by the "speak cells" function in Excel. The signal was sent directly to the player's Bluetooth by the VAC control panel program.

For the experiment, we took the game of student combined institutes of Yekaterinburg. The unprofessional status of the players made the job extremely difficult. Nevertheless, we got a +21 result better than when the same teams played a month earlier.

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The influence of the physical culture and wellness program on the health of students of special medical groups

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Abstract

Objective of the study was to determine the impact of a sports and recreation program on the restoration of the health status of students of special medical groups.

Methods and structure of the study. The experiment was conducted at the Department of General Hygiene and Physical Culture of the Federal State Budgetary Institution of Higher Professional Education «North Ossetia State Medical Academy» of the Ministry of Healthcare of the Russian Federation (FSBI HPE «NOSMA» MOH Russia) from September 2020 to December 2021. We studied 40 students with heart failure, including 20 boys and 20 girls aged 18-19 years. The duration of the disease in most students is two to three years. During the study, treatment was carried out using individual physical education programs to normalize the condition of students.

Results and conclusions. At the end of the first year of research on the use of special individual physical exercises for this disease, a positive effect was obtained in restoring the health and working capacity of students of special medical groups.

The means of physical education in special medical groups are dosed physical exercises, as well as natural factors of nature and a rational, hygienically justified regimen that provides a healing effect on the body, excluding the formation of bad habits. The main means are therapeutic physical exercises (TPE).

A feature of the classes in special medical groups was a large number of exercises that specifically affect individual weakened body systems. It is recommended to conduct sparing mixed-type exercises, since the variety of means used and their modern alternation increase interest in them, give them an emotional coloring and prevent the appearance of fatigue.

Keywords: *special medical groups, use of special complex programs, therapeutic physical culture, state of health.*

Introduction. At present, a large number of scientific works are devoted to aspects of the influence of a physical culture and health program on the restoration of students' health [1-3]. The problem of the application of special complex physical exercises on the state of health of students of special medical groups and the study of the mechanism of their therapeutic action is topical. Most researchers [4-6] believe that the therapeutic effect is mediated through the nervous and humoral systems. The problem of increasing the efficiency of the body of students of special medical groups using complex physical exercises ensures the restoration of their health.

Objective of the study was to determine the impact of a sports and recreation program on the restoration of the health status of students of special medical groups.

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The duration of the disease in most students is two to three years. During the study, treatment was carried out using individual physical education programs to normalize the condition of students.

Results of the study and their discussion. At the end of the first year of research on the use of special individual physical exercises for this disease, we obtained a positive effect in restoring the health and performance of students of special medical groups.

In the studied students at rest before the experiment, the average heart rate was 83.4±21 beats/min, BP at rest was 128±13 mm Hg. Art., ADD - 77 ± 12 mm Hg. Art. After the experiment, the indicators improved: heart rate 79.3±16 beats/min, BP at rest - 112.3±14 mm Hg. Art., ADD - 64 ± 7 mm Hg. Art.

The means of physical education in special medical groups are dosed physical exercises, as well as natural factors of nature and a rational, hygienically justified regimen that provides a healing effect on the body, excluding the formation of bad habits. The main means are therapeutic physical exercises.

In classes, physical exercises are used that cause acceptable reactions of the cardiovascular system that correspond to the functional capabilities of the body. The degree of load is strictly controlled and regulated. In the initial period of training, low-intensity exercises were used, which increased heart rate by 25-30% of the initial level. Subsequently, dosed loads of medium intensity were included, which increased heart rate by 40-45%, as well as high-intensity exercises (with sufficient adaptation of the body to physical stress), which increased heart rate by 70-80%. Submaximal and maximum physical activity in classes with students of special medical groups is not used.

The basis of the training process is the use of endurance exercises that have the most beneficial effect on the activity of the cardiovascular system.

Exercises for strength and speed were included in the classes at first cautiously, and then, as the trainees adapted to physical loads, they began to train these qualities as well.

Physical exercises with objects (gymnastic sticks, balls, maces, etc.) are useful, as they increase the emotional saturation of classes, make them more interesting.

Dosed running was used in the classes. Initially, it was used in the form of light runs at a slow pace, and then gradually increased the load by increasing the length of the distance covered (but not by accelerating the run). Such a methodical technique contributed to the development of endurance and did not allow crossing the border separating aerobic loads from anaerobic ones. At the first signs of fatigue, students should be transferred to walking.

A feature of the classes in special medical groups was a large number of special exercises that specifically affect individual weakened body systems.

In special medical groups, it is recommended to conduct sparing mixed-type exercises, since the variety of means used and their modern alternation increase interest in classes, give them an emotional coloring and prevent the appearance of fatigue.

Conclusions. Normalization of the state of health of sick students in the process of therapeutic physical culture indicates an increase in metabolism in the myocardium and oxygen delivery, which leads to an improvement in the condition and performance of students of special medical groups, which indicates a neurohumoral theory of the action of therapeutic physical culture.

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Organization of physical education in the blended learning

UDC 374.1

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Abstract

Objective of the study was to develop a model for the organization of physical culture and sports in the process of blended learning.

Results and conclusions. The purpose of the model is to provide accessibility and increase the level of students' motivation for physical activity.

The developed model is based on such conceptual approaches of pedagogical activity as synergetic, person-centered and systemic. The article provides a theoretical substantiation of the application of these approaches in the process of physical education of various groups of students, and also presents the organizational, meaningful, motivational and productive components of the model.

The results of the implementation of the developed model are presented by subject results (knowledge of the role of physical culture and sports in modern society; the ability to use the self-control method to determine the level of health and physical fitness; maintain the proper level of physical fitness by regularly doing physical exercises), personal results (sustained interest and positive attitude to motor activities), meta-subject results (the ability to use the acquired knowledge and formed motor skills to ensure full-fledged social and professional activities).

Keywords: *physical education, blended learning.*

Introduction. Currently, due to the transition to online learning in the practice of specialists in physical culture and sports, a large number of materials have been developed for organizing classes in a remote format (these include plan notes, videos for independent motor activity of students, etc.), as well as the necessary skills to work in the electronic information and educational environment.

In our opinion, the totality of the developed means, methods and technologies should not be lost after returning to the traditional format of conducting physical culture and sports classes - one should work effectively in terms of promoting a healthy lifestyle of students and promoting their optimal physical activity.

Objective of the study was to develop a model for the organization of physical culture and sports in the process of blended learning.

Results of the study and their discussion. Distance learning with the use of modern information and communication technologies led to the creation of a new educational environment, which, within the framework of training, provided an opportunity for students to independently acquire knowledge in the context of constantly updated information. Students, having the opportunity to study remotely, are practically not limited by spatial and temporal boundaries, which allows them to form physical culture at any convenient time. At present, these characteristics can be used in the process of independent physical activity, which will help increase the motivation for physical exercises and maintain a healthy lifestyle of students.

Figure 1 shows the developed model of organizing the process of physical education of various groups of

students in conditions of blended learning, let's consider its structural elements.

The purpose of the model is to provide accessibility and increase the level of students' motivation for physical activity. The developed model is based on such conceptual pedagogical approaches as synergetic, person-centered and systemic.

According to I.R. Prigogine (1986), synergetics is a modern theory of self-organization, a new worldview associated with the study of the phenomena of self-organization, non-linearity, non-equilibrium, global evolution, the study of the processes of formation of "order through chaos" [3].

Self-organization of the system, in turn, allows you to create new connections between its elements, which is a transition from instability to stability, as well as self-development of the educational system, not only due to external attached, but through the use of existing elements [6]. Thus, the process of physical education,

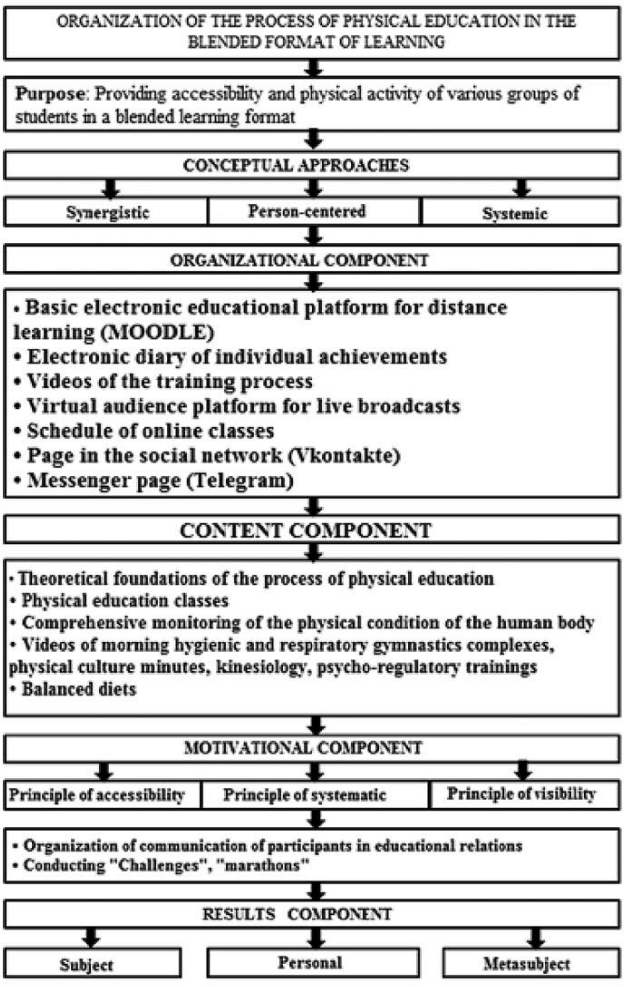

Figure 1. *The model of the organization of the process of physical education of various groups of students in a mixed learning format*

as a pedagogical system based on a synergistic approach, allows us to consider it from the point of view of "openness", orientation towards self-development and self-improvement [1].

The synergetic approach in pedagogical activity is closely related to such properties of the modern educational process as multivariance and diversification, which involve a variety of educational programs and conditions for their independence of choice, as well as the pace of learning.

In connection with the foregoing, it can be observed that the synergetic approach is closely related to systems theory, that is, to the systems approach. In the works of T.G. Trushnikova (2014) states that the systematic approach considers the pedagogical process as a single system aimed at studying the patterns and essence of such categories of pedagogy as education and training. A systematic approach reveals a complex of interrelated forms, means and methods aimed at creative development, as well as at the formation of a person's worldview. The orientation of the educational process to a systematic approach allows you to master the educational material in the shortest possible time [7].

To implement a systematic approach, it is necessary to rely on its basic principles: orientation towards the conscious mastering of the material; the interconnectedness of mastering the topics of the curriculum; continuity of the learning process at different stages of personality formation (kindergarten, school, university, postgraduate education); mastering the educational material in a spiral way (in case of insufficient mastering of the topic, do not move on to the next one, but return to it, achieve its assimilation and then continue studying in accordance with the curriculum); the use in the educational process of a form for remote work using modern information learning systems; orientation to the internalization of moral qualities, the desire for self-development and self-improvement.

It should be noted that a systematic approach in pedagogical activity plays a role not only in systematizing the elements of the system (determining their place and location in it), but also in their hierarchy, revealing interdependent relationships that imply the creation of more effective educational activities.

In the process of physical education of various groups of students, in addition to the implementation of the competence-based approach, one should not forget about the implementation of the humanistic approach, which is aimed at choosing and implementing

an individual trajectory of the educational route, at self-actualization and self-development of the individual. In the works of A.Kh. Maslow, K.R. Rogers, D. Freiberg, a self-actualizing personality is characterized by adequate self-esteem, a desire for self-knowledge, such a person is the main creator and expert of his own life, who can take responsibility for his actions [2, 5]. Therefore, today, in our opinion, it is necessary to move from the implementation of a person-oriented to a person-centered approach, which, in addition to the individual characteristics of a person, also takes into account his motivational component, where the person acts as the subject of his own life and the "center" of his own development.

These concepts make it possible to highlight the differences between the individual approach and the process of individualization of education, which lie in the degree of pedagogical influence on the student. In the organization of physical education based on the process of individualization and a personality-centered approach, the teacher acts as an observer, assistant and tutor, providing "tools" for educating the spiritual and developing the physical abilities of an individual student, selected on the basis of his individual characteristics and obtained in the subject-subject dialogue system. relations. In the conditions of modern education, it is necessary to focus on the process of individualization, aimed at the knowledge and development of the potential of the individual, and as a result, on the process of its self-actualization.

Considering the organizational, content and motivational components of the developed model for the implementation of the process of physical education of various groups of students in conditions of blended learning, one can single out their main criteria (Fig. 1). These criteria were obtained from the results of a survey of students, schoolchildren and parents of preschoolers. An analysis of the respondents' answers showed that they needed additional information about the means of physical development and active recreation, which was directly reflected in the content component of the model (providing plan notes and videos of morning hygienic and respiratory gymnastics complexes, physical culture minutes and pauses, kinesiological exercises and etc.). Also, the respondents had a need to provide information using social networks and instant messengers, such as VKontakte and Telegram [4].

As a motivational component, the model considers the organization and holding of "challenges" and "marathons" for the development of motor actions and the development of physical qualities. In the educational process, the communication of its participants is important, in this regard, the holding of “challenges” and “marathons”, as well as the creation of an electronic online platform can be an addition to the traditional system of communication of participants in educational relations.

Conclusions. The results of the implementation of the developed model are presented by subject results (knowledge of the role of physical culture and sports in modern society; the ability to use the self-control method to determine the level of health and physical fitness; maintain the proper level of physical fitness by regularly doing physical exercises), personal results (sustained interest and positive attitude to motor activities), meta-subject results (the ability to use the acquired knowledge and formed motor skills to ensure full-fledged social and professional activities).

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Dynamics of students' representations about physical culture as an academic discipline and lifestyle

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Abstract

Objective of the study was to evaluate changes in the students' perception of physical culture in the context of value orientations.

Methods and structure of the study. The results of two waves of a mass questionnaire survey of students in 2015 and 2022 were compared. The number of respondents included students involved in physical education both as part of an academic discipline and independently.

Results and conclusions. A decrease in the gap between the verbal statements of attitudes towards a healthy lifestyle and the real valeological behavior of students against the background of changes in value attitudes was found. The conclusion is made about the shift of physical culture from terminal to instrumental value, the possibility of involving non-traditional healthy lifestyle methods and youth subcultural sports in the educational process as an additional driver of sports.

Keywords: *physical culture, sports, healthy lifestyle, students, motivation, values, physical education as an academic discipline.*

Introduction. Positive changes in the attitude of Russian society, and especially its youth, towards physical culture and sports (PCS) have been recorded by researchers since the 2010s. This was facilitated by the implementation of comprehensive strategies [8] and programs [9] for the development of the PCS at the state, regional and departmental levels. One of the main results is a change in public ideas about health - from understanding it as an abstract good to a special resource that needs to be preserved and developed at the level of the individual, large social groups and society as a whole. In youth policy, the culture of a healthy lifestyle (HLS) and self-preserving behavior as a social value remains an important direction [1, p. 122].

Students as the intellectual vanguard of the youth community act as a "trendsetter" for healthy lifestyles and involvement in PCS classes for other youth groups. However, the authors note the persistence in this audience of a two-stage spasmodic trend towards a decrease in PCS classes, first after the end of the academic discipline, then after graduation [5, p. 11, 6, p. 78]. This trend persists for a long time (more than 10 years), despite the fact that the practice and implementation of this discipline in universities, and its scientific research is very solid [2, 4, 7].

Thus, the question remains how students develop a stable need for PCS classes. In this regard, it seemed important to fix the dynamics of students' attitudes towards physical culture as an academic discipline and way of life as a result of changes in value attitudes.

Objective of the study was to evaluate changes in the students' perception of physical culture in the context of value orientations.

Methods and structure of the study. The main method is to compare the results of two waves of a mass questionnaire survey of students on a quota target sample with a high degree of representativeness: 2015 - students of the Ural Federal University (N=600,

Table 1. *Students' perceptions of the most significant values by year (polyvariant question, up to three answers), % of respondents*

Answer options	2015	2022
Opportunity to realize your abilities	44	45
Health	34	33
Autonomy, independence, freedom	**15**	**29**
Family, my parents	*42*	*27*
Interesting and creative work	22	23
Chat with friends	18	21
Get as much pleasure out of life as possible	**16**	**21**
Money, wealth	12	16
Education, professionalism	11	16
Have your own business, do business, commerce	**7**	**15**
Personal safety	**5**	**12**
Family, my children	*31*	*10*
Beauty and physical perfection	12	10
Communication with nature	5	5
Power	6	4
Recognition of others, prestige	6	3
Satisfaction in intimate life	5	3
Average number of responses	2,89	2,93

printed distribution questionnaire, the general population - more than 24 thousand full-time students, including including 14.3 thousand mastering the disciplines "Physical culture", "Applied physical culture". The results of the primary analysis are published here: [7]); 2022 - students of universities in Yekaterinburg (N = 925, including UrFU - 615, Ural State University of Economics - 262, Humanitarian University (private university) - 25, other state and municipal universities - 19. General population - 33.8 thousand students of full-time education, including 17.8 thousand, mastering the disciplines "Physical culture", "Applied physical culture", electronic questioning using the google form). The number of respondents included students involved in physical education both as part of the academic discipline and independently.

Results of the study and their discussion. The two leading positions in the structure of value orientations have not changed, and health still ranks second after the possibility of self-realization. Changes in the structure of value orientations of students (Table 1) reveal a growing trend towards independent and free arrangement of living space, the manifestation of hedonistic moods, reinforced by the growing importance of one's own business.

The increased demand for personal security is quite understandable. A serious and negative trend is a decrease in the value degree of significance of both the parental family and the future family of the students themselves (reduction of the group by three times), which also manifests itself in relation to healthy lifestyles as a terminal value (Table 2).

Table 2. *Distribution of respondents' answers about their attitude to physical culture as a way of life, by years, % of the group (alternative question)*

Answer options	2015	2022	2015	2022
	Male		Female	
Physical preparation for a specific work activity	**19**	**27**	**15**	**19**
Being healthy, with a good figure is now fashionable	**31**	**39**	**25**	**44**
Healthy lifestyle for future children	*39*	*24*	*49*	*32*
To avoid ridicule from peers	–	2	–	2
To please the opposite sex	–	8	–	3
Your variant	11	–	11	–

Beauty and physical perfection - the most important indicator of physical culture - has shifted in the rankings from tenth to twelfth place. Already at this level, there is a gap between verbal statements and real valeological behavior. An even greater discrepancy is found when analyzing the answers about whether students consider themselves healthy (there is an increase in those who consider themselves healthy from 23 to 30%) and what physical culture means for them as a way of life (Table 2). Two trends are clearly visible in the students' answers: on the one hand, a significant increase in the fashion for a healthy lifestyle among the female audience and the importance of physical training in the future professional activity of the male part of the respondents. On the other hand, there is a sharp loss of understanding of a healthy lifestyle as a terminal value for the sake of future children (reduction in groups by sex by 15-17%).

The presence of problems in teaching physical culture as an academic discipline is evidenced by a decrease in 2022 in the number of those who rated it as necessary for all students, including those with disabilities, from 55 to 43% (and in this group there is also a decrease in the proportion of those who intend to continue PCS classes after university) and, conversely, the growth of those who noted the option "a useful additional discipline that should be studied by those who are interested in it" from 35 to 44%, and as unnecessary - from 10 to 13%. Students try to compensate for such shortcomings by extracurricular physical activity (Table 3).

Table 3. *Distribution of answers about the regularity of independent physical education, sports, depending on the group of specialties, 2022, an alternative question, % of the group*

Answer options	Specialty groups *				2022	2015
	1	2	3	4	Array as a whole	
Of course, I regularly visit the sports section, sports club, fitness room	19	**25**	23	*17*	**22**	**17**
I do from time to time when I feel the need	40	40	*36*	**47**	*39*	*45*
I used to work, but now I quit	24	20	27	26	24	18
I devote a minimum of time to my physical training	9	**10**	8	*7*	9	10
I didn't do it before and I don't do it now.	8	5	6	3	*6*	10

Note: * 2022. 1. Humanitarian. 2. Socio-economic, pedagogical, law, service. 3. Engineering and mathematical. 4. Natural science and medical.

In the process of studying, they more often began to choose the regularity of independent physical culture and sports (this is especially noticeable for students of socio-economic specialties) due to their understanding of the importance of maintaining health (an important factor for 81% of respondents in 2022), a way to strengthen the will (65%), an effective means of relieving stress (55%) and stimulating mental work (41%). It is noteworthy that students of the natural sciences and medical specialties are more often than others engaged in PCS periodically and "on demand". However, a negative trend can be considered an increase in the group of those who quit PCS self-study, which is somewhat offset by a reduction in the group of those who never practiced.

With regard to plans to engage in physical culture and sports after graduation, respondents in 2022 expressed more definite positions: definitely ready - 53% (group growth by 13%), rather ready - 28% (decrease by 8%), rather not ready - 5 % (minus 2%), not ready - 1% (minus 2%), undecided group - 13% (minus 1%). At the same time, bachelors and specialists (54% in 2022) more often than masters (22%) recorded a strong desire to study after receiving a diploma.

Comparison of respondents' answers about the nature of their behavior in relation to health, depending on plans to engage in physical education and sports after graduation, showed the following. Despite the fact that in the arrays as a whole the ratio of assessments remained practically unchanged (self-preserving - 46% in 2015 and 44% in 2022, neutral - 48%, self-destructive - 6% and 8%), there was a significant reduction in those who exactly will continue PCS classes, in the group rated as "self-preserving" - from 63 to 56%, and those who definitely do not gather in the "neutral" group - from 83 to 31% (which is positive). In the group with self-destructive behavior, there was a significant increase in those who are more likely not going to engage of PCS - from 15 to 23% and who are completely confident in this - from 8 to 39% (indicator of a negative trend).

In the group of factors motivating to engage PCS, the average number of answers to a multivariate question increased significantly - from 1.1 to 2.19, which gave a statistically significant increase for each of the proposed options, except for "the desire to be like others." The largest gap compared to the first wave was noted for the following positions: "gaining additional self-confidence" - from 15 to 61%, "desire to maintain health throughout life" - from 52 to 74%, "expanding contacts" - from 2 to 19%, "the desire to have a full-fledged family and healthy children" - from 17 to 31%.

In the group of demotivating factors, the average number of responses, on the contrary, decreased slightly - from 2.44 to 2.33%, and the dynamics of the main factors turned out to be multidirectional: the significance of the factors "little free time" decreased - from 61 to 52%, "laziness, inability to plan time" - from 29 to 23%, "lack of prospects for a sports career" - from 8 to 4%. The significance of the factor "no habit of constant sports, physical education" has increased - from 26 to 41%, economic factors (such as "lack of funds for sports - 18%), infrastructural (remoteness from the place of residence - an increase from 8 to 11%, lack of sports facilities - reduction from 4 to 3%) and methodological (insufficient experience of a teacher, trainer - 2%) did not change or changed little. Remained at the same level and the main factor - the lack of free time (53%).

More than half of the respondents (54% in 2015 and 52% in 2022) still named the organization of physical education classes using non-traditional developmental methods (yoga, wu-shu and etc.), the use of new, youth sports (mountain biking, roller sports, skating, etc. - a new version of 2022) - 36%. There is a pronounced demand for more competitions - an increase from 1 to 15%.

Conclusion. The general structure of young people's value orientations is preserved, but an increase in the need for independence, personal security, a de-

crease in the value degree of the significance of the family as such lead to the transformation of physical culture and sports from a terminal to an instrumental value. The narrowing of the gap between the verbal statement of the value of a healthy lifestyle and the actual valeological behavior of students indicates the success of the existing methods and programs for inclusion in the systematic classes of the PCS. The introduction of the discipline "Physical culture" into the master's curriculum can be one of the main tools in this direction. Non-traditional health practices and the use of youth sports subcultures can act as additional drivers for the formation of a culture of systematic PCS training after graduation.

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Technologies of managing attitude to a healthy lifestyle as prevention of deviations of students of the institute of physical culture

UDC 796:035

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Abstract

Objective of the study was to identify the effectiveness of the use of technologies for managing attitudes towards a healthy lifestyle as a prevention of student deviation in the university under study.

Methods and structure of the study. The empirical part of the study included three stages: Stage 1 - conducting a pre-project analysis using the questionnaire method (100 students were interviewed); 2nd stage - development and implementation of the project "Students-Healthy Lifestyle Center"; 3rd stage - determination of the effectiveness of the project implementation by the method of formalized interviews (20 people were interviewed).

Results and conclusions. The results of the study showed the presence of an average level of students' awareness of the technologies for managing attitudes towards healthy lifestyles as the prevention of youth deviations and the need to improve them. The authors developed and implemented the project "Students-Healthy Lifestyle Center", aimed at developing healthy lifestyle skills through managing their health, time, resources, nutrition, the results of which revealed that this project is a technology of social design and contributes to the modernization and increase in positive impact on young people of preventive techniques, which will reduce the number of deviations among young people.

Keywords: *health, healthy lifestyle, technologies, deviations, youth.*

Introduction. In modern society, in recent years, due to a number of reasons, including instability and intense social changes, the number of factors that cause deviant human behavior has increased, and often its degradation, which leads to complete self-destruction. It can also be observed how higher and higher demands are placed on the individual and self-determination. The need to study the problem of prevention of deviations among young people is due to the trend towards an increase in the number of young people prone to behavior that does not meet social norms, and the issue of preventing deviant behavior is one of the highest priorities for educational institutions. In this regard, the development and implementation of the project "Students-Healthy Lifestyle Center" at the Yekaterinburg Institute of Physical Culture (branch) of the Ural State University of Physical Culture (hereinafter - the university under study) is quite relevant.

Objective of the study was to identify the effectiveness of the use of technologies for managing attitudes towards a healthy lifestyle as a prevention of student deviation in the university under study.

Methods and structure of the study. The empirical part of the study was conducted in Yekaterinburg in 2022 and included three stages: Stage 1 - conducting a pre-project analysis using the questionnaire method (100 students were surveyed); 2nd stage - development and implementation of the "Students-Healthy Lifestyle Center"; 3rd stage - determination of the effectiveness of the project implementation by the method of formalized interviews (20 people were interviewed).

When conducting the study, we relied on the works of domestic and foreign scientists, including V.E.

Zmanovskaya [3], V.S. Nikolaev [7], O.S. Litovchenko [6], I.P. Uymanova [8] and others. In joint publications, we studied aspects of the resilience of student-athletes in terms of safe behavior, contributing to the formation of a safe type of behavior personality [4], preventological support for the safe behavior of students [1], as well as key problems of preventive work in universities [5].

Using the concept of "youth", we mean a socio-demographic group with an age range of 14 to 35 five years, characterized by certain physiological, psychological, social and pedagogical characteristics.

A healthy lifestyle is an optimal and conscious concept of human life, which determines the productive and rational work of both a single organism and its specific organs and systems. A healthy lifestyle acts as a key source of primary prevention in the fight against bad habits, a sedentary lifestyle, and also by overcoming adverse life situations [8, p. 64].

Deviant behavior is behavior that deviates from the standards and norms accepted by society. Characteristic manifestations of such behavior are: violation of moral standards, rules of conduct in public places, drunkenness, drug use, aggressiveness, vandalism, as well as criminally punishable acts.

Technologies for managing attitudes towards healthy lifestyles: pedagogical, recreational (restorative) and sports and recreation, health-saving, health-forming, training, sanctions, Wellness.

Results of the study and their discussion. The results of a survey of students from different faculties of the studied university showed the following. Slightly more than a quarter of students (27%) adhere to a healthy lifestyle, and only 6% categorically do not comply with it. Three quarters of students (73%) are interested in information about healthy lifestyles and ways to improve health. More than half of the students understand healthy lifestyles as: healthy eating, maintaining optimal physical fitness, giving up bad habits (63% each). Slightly more than half of the students go in for physical culture and sports to maintain their health (58%), keep proper nutrition and try to spend more time outdoors (52% each). The sources of information about healthy lifestyles for students are the Internet (58%) and expert advice (46%). Slightly more than half of the students (54%) prefer to spend their free time visiting sports and health centers, doing physical culture and sports.

In the studied university and its dormitories, one can observe such forms of deviant behavior as: tobacco use, rudeness, foul language, alcohol consumption. More than a third of students (38%) use smoking mixtures (cigarettes, electronic cigarettes, vape, hookah), almost half (46%) use alcoholic beverages. The motives for the use of drugs, cigarettes, and alcoholic beverages by young people are: stress relief, fatigue, curiosity (60%). Students believe that in order to increase awareness of the technologies of healthy lifestyle management, it is necessary to conduct trainings, courses, quests, sports and recreational, sports and competitive events.

The results of the study showed the presence of an average level of students' awareness of the technologies for managing attitudes towards healthy lifestyles as the prevention of youth deviations and the need to improve them.

Based on the problem identified by us, an analysis of existing practical technologies that are used in the activities of the university under study was carried out, the project "Students-healthy lifestyle center" was developed and implemented, aimed at developing healthy lifestyle skills through managing one's health, time, resources, and nutrition. When developing the project, we were guided by the recommendations of the Ural scientists L.N. Boronina and Z.V. Senuk [2].

The general goal of the project is to organize and conduct the course "Students-Healthy Lifestyle Center". The duration of the entire project was 60 working days. The training included organizing, conducting and monitoring the implementation of the project program for the prevention of deviations among students by the technology of managing healthy lifestyles, consisting of a training on rational nutrition, the training “We want to be healthy”, “Stress and health”, the seminar “Daily routine. Motor activity”, preventive action “Challenge “Live in the rhythm of a healthy lifestyle” and physical culture and health training.

We have identified project performance indicators: the number of project participants; planned and actual costs; coverage of posts in the official group on the VKontakte social network; positive impression of participants and desire to participate in subsequent years (according to feedback from participants); implementation of the project on schedule; increase in the number of students who have adopted healthy lifestyle values. These indicators made it possible to obtain a comprehensive overview of the project from different points of view, objects and subjects to be assessed.

In order to determine the effectiveness of the implementation of the "Students-Healthy Lifestyle Cent-

er" project, a formalized interview was conducted among students after its completion. It was recorded that after the implementation of the project "Students-Healthy Lifestyle Center", the students' attitude to healthy lifestyle changed for the better. For example, those who indicated that they did not use smoking mixtures (cigarettes, electronic cigarettes, vape, hookah) decreased by 10%, and the use of alcoholic beverages by 11%.

Conclusions. According to the results of the study, it was revealed that the project "Students-Healthy Lifestyle Center" is a technology of social design and contributes to the modernization and increase in the positive impact of preventive methods on young people, which will reduce the number of deviations among young people. The results of this study can be applied in the organization of educational work among all categories of young people, including university students of all specialties, as well as in the preparation of undergraduates in the direction "Preventology in the youth environment" specialty 39.04.03 "Organization of work with youth".

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