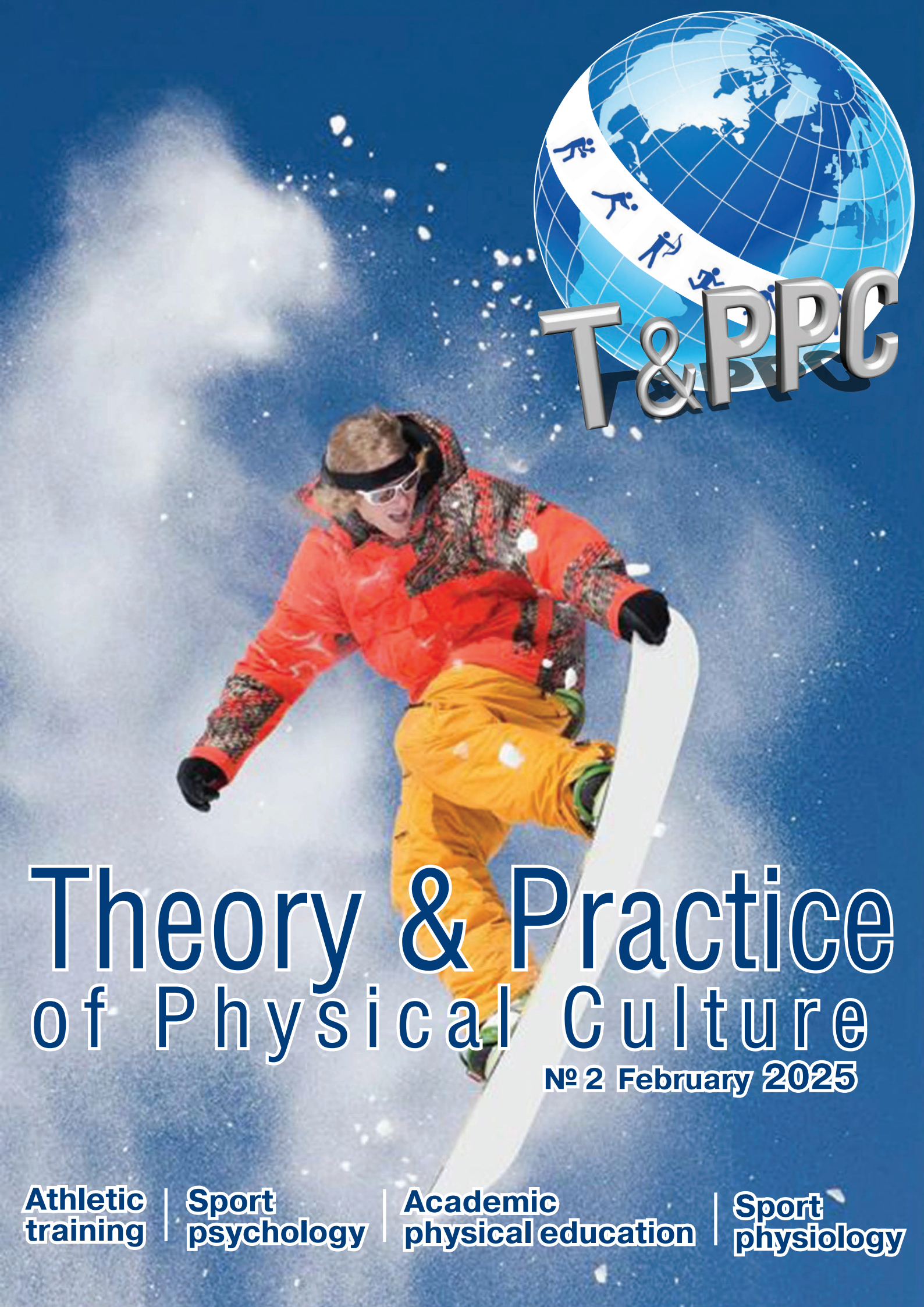

Theory & Practice of Physical Culture

№ 2 February 2025

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

Social responsibility of an athlete in the context of modern society

Modern sport, performing numerous social functions, is a multifunctional and multidimensional phenomenon. Within the framework of this type of activity, it is possible to solve an unusually wide range of problems: strengthening public health, distracting young people from the harmful influence of the street, satisfying the demand for entertainment services, economic incentives, protecting the honor of the country, forming patriotism, etc.

Everyone who connects their life with sports solves individual problems within the framework of one or another type of sports activity. In turn, the sports community forms certain requests for the status and behavior of an individual, which determines the formation of social responsibility in an athlete.

It is known that social responsibility, as a rule, is understood as an athlete's awareness of his role in society, as well as the use of image and personal resources to solve social problems, support important initiatives and inspire other people to positive changes.

Famous athletes often become role models for young people, so their behavior is of great importance for this target audience. An athlete, as a subject of society, striving to achieve heights in a professional career, must be aware not only of his own goals, but also of how his behavior can influence the society around him. This problem actualizes the need to develop social responsibility in an athlete.

The formation of social responsibility of an athlete should be considered as an integrative process of developing his qualities, on the one hand, related to the personal sphere and physical fitness, which allows achieving high sports results. On the other hand, - social qualities conditioned by the expectations of society, such as: civic responsibility, spirituality and culture, initiative and much more.

Sport, as a social institution, imposes certain social obligations on athletes. In this regard, the identification of subjective and objective factors allows us to form social functions that are in demand today, within the framework of which the social responsibility of an athlete is realized:

- charity work, participation in charity events, creation of funds, assistance to those in need, support of educational, environmental projects.
- promotion of traditional values, such as tolerance, equality, fight against racism, environmental protection and a healthy lifestyle.
– political and social activities, supporting changes in legislation and demonstrating normative initiatives.
– educational activities, including conducting master classes, opening sports schools and mentoring young sports talents.
– environmental activities related to solving environmental problems and supporting production that is safe for preserving natural resources.

The social responsibility of athletes is aimed at solving not only local problems, but also at forming a fair and socially oriented society.

The new vector of forming the social responsibility of an athlete requires the integration of various characteristics - from personal beliefs to taking into account global trends in social development. Athletes of the future must demonstrate awareness and an active position in society, being not only leaders in their sports disciplines, but also enthusiasts of social justice and environmental sustainability.

We invite scientists to publish the results of scientific research aimed at finding and studying the value meanings of physical culture and sports.

Editor-in-Chief of TPPC, Honored Worker of Physical Culture of the Russian Federation
Dr. Hab., Professor L.I. Lubysheva

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105122 Moscow,
Sirenevy blvd, 4.
e-mail: fizkult@teoriya.ru

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Theory and Practice of Physical Culture

Contents

The boundaries of pedagogical research in the realm of «Physical education for students» the emphasis of the articles in the journal «Theory and practice of physical culture»

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Dr. Hab., Professor **L.I. Lubysheva**[1]
PhD, Associate Professor **N.V. Minnikaeva**[2]
[1]The Russian University of Sport «GTSOLIFK», Moscow
[2]The Russian Presidential Academy of National Economy and Public Administration, North-Western Institute of Management, St. Petersburg

Corresponding author: fizkult@teoriya.ru

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Abstract

Objective of the study was to delineate the boundaries of pedagogical understanding in the area of «physical education for students» through a comprehensive review of empirical studies published in the journal «Theory and Practice of Physical Culture».

Methods and structure of the study. A comprehensive analysis of articles published in the journal «Theory and Practice of Physical Culture» between 2020 and 2024 was conducted. The analysis sought to answer two questions: 1. What pedagogical phenomena in the field of physical education of students are discussed in these articles? 2. Which pedagogical technologies in the field of physical education of students have been proven to be effective and are among the top 10% in terms of their impact?

The final database for the first question includes 27 articles, while the second question was answered based on 41 articles, which included empirical data with significant content.

Results and conclusions. The research paper delineates the boundaries of pedagogical expertise in the realm of physical education for students, as exemplified by the articles published in the journal Theory and Practice of Physical Culture. These boundaries encompass the following aspects: The concept of health promotion, which encompasses health preservation, health enhancement, and health development. The humanistic approach to improving the physical culture of students, emphasizing the importance of personal growth and self-actualization.

The existential perspective on physical education, which prioritizes individual choice and autonomy. Innovative educational approaches in the field of physical education for students. Local research initiatives in specific areas of physical education, which may not receive widespread attention due to their limited impact.

The study is a relevant account for establishing a fresh publishing strategy for the TPPC magazine, encompassing the advancement of scholarly material in the realm of physical culture and sports, and serving as a blueprint for exploring diverse facets of sports science.

Keywords: *frontiers of pedagogical science, students, physical education, journal «Theory and Practice of Physical Culture».*

Introduction. Physical education at the university is the most important vector for solving the problems of training a specialist. The social order for a healthy, psychophysically prepared and competitive graduate acts as a guideline in this sense and helps to determine the areas, the implementation of which is in the discipline sector of the Physical Education block. In accordance with the "Strategy for the Development of Physical Culture and Sports in the Russian Federation" for the period up to 2030, one of the priority areas of higher education for students is the formation of:

- a culture and values of a healthy lifestyle;
- skills and abilities in the field of physical culture and sports;
- a system of motivation of various categories of the population for physical development and a sporty lifestyle;
- a pool of opportunities for self-realization in the field of physical culture and sports;

• a system of sports training for young people, as well as conditions for the development of student sports.

Strengthening the health of student youth by creating conditions for a conscious attitude to it, improving the physical culture of an individual based on independence and initiative are the main tasks of general physical education. Physical education is implemented conditionally in a three-dimensional coordinate system:

• healthy students who have the opportunity to improve in the field of physical education and sports (the main health group);

• students who have minor deviations in health, the purpose of classes is general physical, professional and applied training, and psychophysical readiness for gradual transfer to the main group for classes;

• students who have significant limitations in health, they are enrolled in a special medical group and are engaged in partial programs aimed at restoring impaired body functions, as much as possible in the current state of health.

In essence, in the first two, the focus of educational activities is physical education and sports, in the third - health and adaptive physical education, adaptive sports.

The journal «Theory and Practice of Physical Education» is an outstanding, unique phenomenon in the history of not only Soviet, and then Russian, but also world physical education and sports periodicals. The origins of the journal date back to 1925, when for the first time in the arena of world physical education and sports science, the «Collection of Scientific Papers and Articles on Physical Education Issues» was published, dedicated to the problems of physical education of the broad masses of workers. Later, in 1966, it was transformed into a scientific and theoretical publication. In 1968-1986, the topical section «Physical Education of Student Youth» was formed, which covered issues related to the education, upbringing and health improvement of this category of the population. The demand for this section is evidenced by the number of works published during this period - more than 550 articles [2, 4]. Today, the section has practically retained its name and direction «Physical education of children, adolescents and youth», in each issue from 3 to 8 articles. The authors consider «burning» issues of theory and methodology, organizational aspects of the implementation of modern, innovative methods in such areas as: physical education; physical culture; sports; health and adaptive physical culture (sports).

Objective of the study was to delineate the boundaries of pedagogical understanding in the area of «physical education for students» through a comprehensive review of empirical studies published in the journal «Theory and Practice of Physical Culture».

Methods and structure of the study. A comprehensive analysis of articles published in the journal «Theory and Practice of Physical Culture» between 2020 and 2024 was conducted. The analysis sought to answer two questions: 1. What pedagogical phenomena in the field of physical education of students are discussed in these articles? 2. Which pedagogical technologies in the field of physical education of students have been proven to be effective and are among the top 10% in terms of their impact?

The final database for the first question includes 27 articles, while the second question was answered based on 41 articles, which included empirical data with significant content.

Results of the study and discussion. The term «frontier» has historically been defined as the boundary between «developed and undeveloped lands» (F.J. Turner, 2009), and is currently interpreted as a zone of development of an object of knowledge. In some scientific communities, frontiers are considered the «cutting edge of science» [5]. In this study, the following understanding of this phenomenon was adhered to: «the frontier of science» is defined as the study of scientific research topics related to the first 10% in the ranked series of distribution by level of significance for the previous year and characterized by a value of the significance index for this year that exceeds its average value over the past five years.

At the first stage of the work, the frontiers of pedagogical science were identified based on the neural network data: «Anthropogogy» studies the issues of education, upbringing and development of a person throughout his or her life. «Pedagogy of informal education» refers to the study of non-traditional methods and ways of teaching and upbringing. «Special pedagogy» deals with the issues of education and upbringing of children, adolescents and young people with physical and psychophysiological disabilities. «Philosophy of education/upbringing» is associated with identifying the role of philosophical teachings for understanding the essence of education, determining the ideology of education and upbringing, analyzing the main conceptual approaches to defining the goals of education and ways to implement them.

Further, the work reviewed trends in the field of physical education of students and found that the greatest publication activity is observed in the follow-

ing topics, presented in descending order of the number of articles:

• «Integration of modern educational technologies», which considers the problems of using digital resources and introducing interdisciplinary methods in physical education of students to increase the level of student involvement in physical education classes. Health-saving, competitive and information and communication technologies are popular today.

• «Individual focus of the educational process». This topic of articles is aimed at revealing and taking into account the characteristics of the student's personality, increasing pedagogical attention to his educational needs and requests in the process of physical education. In particular, most studies focus on the development of various individual training routes.

• «Free choice of the type of motor activity». The articles consider the methods and forms of organizing independent classes in motor activity with an emphasis on the formation of motives and taking into account the life plans of students, which is important in developing a positive attitude towards physical education and their own health.

• «Professional and applied physical training», which combines works devoted to identifying and developing a base of key motor skills, psychophysical abilities and professional competencies for the future career of graduates of various specialties used in organizing specialized practical classes.

At the second stage of the work, it was determined that the greatest publication activity is noted in the direction of «Physical Education» – 51 articles, followed by «Physical Culture» – 35 articles, the direction of «Health-improving Physical Culture» is covered in 18 articles, «Sport» – in 16 works and the smallest number of articles is noted in the topic of «Adaptive Physical Culture» (Figure 1).

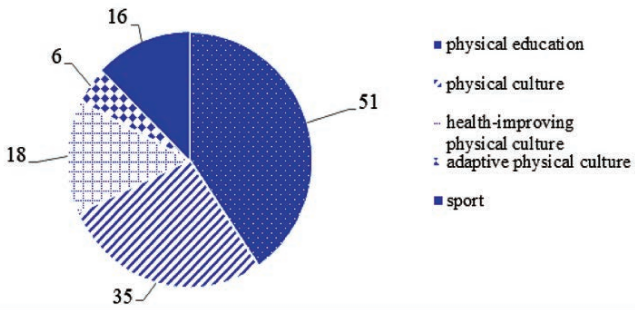

Figure 1. Publication activity of the areas of physical education of students in the focus of the journal «Theory and Practice of Physical Education» in the period 2020-2024.

The direction «physical education» rightfully takes the lead among the published articles, since the section of the journal «Physical education of children, adolescents and youth» specializes in this very problem. In this direction, organizational and methodological issues are discussed, for example: «Concentrated training in the educational environment of an elective course in aerobics» by E.G. Zuikova; «Individualization of physical education and sports classes at a university using gymnastics», L.G. Pashchenko; «Prognostic analysis of the development of psychophysiological qualities of medical students in the process of physical education at a university», M.A. Brusov, N.V. Peshkova; «Use of aesthetic and rhythmic gymnastics exercises in the physical education of female students», Yu.V. Korichko et al. «Development of flexibility in those practicing aero yoga», N.V. Valkina and others. The article examines pedagogical technologies and innovations in teaching methods of the disciplines of the block 2Physical Education and Sports». Particular attention is paid to the educational aspects of physical education as a pedagogical process, the authors draw attention to the possibilities of developing personal qualities in classes, such as moral-volitional, ethical and civic-patriotic.

The Physical Education direction is based on the concept of a scientific and theoretical journal, offering readers topics for reflection related to the value attitude to the phenomenon of physical education: «Attitude to Physical Education of Engineering Students as a Factor of High Competitiveness», A.V. Ponomarev et al.; «Students' Attitude to Physical Activity in Blended Learning», G.B. Glazkova, E.A. Lubyshev. Articles discussing the topics of interest and motives for classes are relevant: «Distinctive Features of Motivation for Physical Education Classes among First- and Graduating-Year Students», «Involvement of Technical University Students in Systematic Physical Education and Sports», D.B. Selyukin. As well as self-actualization and self-education: «Involving Students in Independent Physical Education Classes», A.V. Voronkov. Physical education of students has attracted public attention for over 30 years and is currently being transformed due to the digitalization of education, the introduction of new forms of teacher-student interaction, including distance and online technologies: «Application of individual programs for self-organization of students' motor modes», A.S. Sheplyakov; «Application of interactive technologies in physical education of students of a technical university», N.V.

Ryzhkin; «Digital technologies in physical education of students: experience of using a mobile application», A.A. Egiazaryan, P.V. Korolev, V.A. Grigoriev, B.A. Sviridov, N.B. Brilenok, and others.

The direction «health-improving physical culture» is characterized by publications of authors revealing issues of health and healthy lifestyle of students from the position of various methodological approaches and concepts: «Indicators for assessing the physical and socio-psychological health of student youth», Yu.A. Yakovleva et al.; «Improving the professional and applied physical training of students in a creative university taking into account the assessment of their health», N.V. Pakholkova et al. «Increasing the physical activity of modern youth as a necessary condition for their health preservation», O.P. Vlasova, V.A. Shalaev. The problematic field of research related to the field of fitness technologies was relevant in the period 2020-2024. The topic of «non-traditional Eastern systems» such as qigong, tai chi chuan, wushu and others stands out with a particularly wide range of publications. It is noteworthy that the authors themselves are often the bearers of the culture of this phenomenon: «Pedagogical technology of using physical culture and health-improving means in the context of students mastering an elective course in wushu», «Yoga as a psychological and pedagogical technology for the formation of a healthy lifestyle for students in the secondary vocational education system», T.A. Naumova, A.A. Baranov, and others.

The direction of «adaptive physical education» does not currently occupy a significant place in the studied section. This circumstance is due to the fact that articles of this profile are published in the journal «Adaptive Physical Education». Most of the articles are devoted to the topic of adaptation of physical education programs to the needs of rehabilitation after illnesses with a new coronavirus infection, in particular, stabilization of the respiratory and cardiovascular systems in the article «Fractal structure of ESG competencies in the use of physical education and sports in the fight against pandemic stress», authors: V.I. Grigoriev, E.G. Vakhnina, N.N. Sazonova, E.S. Novikova; article «Organization of a sports and health environment of a higher educational institution for students of a special medical department», authors: S.V. Radaeva, V.S. Sosunovsky, A.B. Sharafeeva, Zhang Yaqun et al.

The «Sport» direction includes the results of studies characterizing the state of issues related to the actualization of sport-based physical education: «Sportization of physical education of university students based on volleyball», L.A. Volkov, A.Yu. Pashchenko; «The influence of sport-based classes on students' flexibility indicators», O.S. Krasnikova et al., here the works written about the functioning of the sports club at the university were also taken into account: «Physical capabilities of adolescent students who began regular classes in the volleyball section», N.N. Voronova, V.Yu. Karpov, K.A. Astafyev, E.Sh. Petina, as well as articles covering the problems of implementing the All-Russian Physical Culture and Sports Complex GTO. The authors of «Features of preparing students for the multi-event programs of the GTO complex» A.V. Voronkov (2020); «Development of student sports and health tourism in the university», S.A. Grigan et al.

At the third stage, the main objective of the study was solved, and answers were received to two questions:

1. What pedagogical phenomena in publications are related to the field of physical education of students?

2. What pedagogical technologies in the field of physical education of students with proven effectiveness belong to the first decile (the first 10% in the ranked distribution series)?

We conducted an analysis of the content of publications, the purpose of which was to confirm the assumption that the phenomena found by neural networks (intellectual technologies) essentially reflect the «mainstreams» or «trends», and the frontiers can only be determined through expert assessment.

Since frontiers are understood as conceptual provisions and technologies of varying scale, degree of coverage and popularity, it is obvious that they can be divided into three levels [1]:

1) global (strategic) level of «frontier concepts», which are a set of specific scientific views, ideas and cannot be applied in the applied aspects of physical education in themselves without experimental justification;

2) the regional level of «frontier-narratives», which characterizes modern, innovative technologies developed on the basis of the established theoretical and methodological basis of physical education;

3) the local level of «frontiers of weak signals», which represents a group of highly specialized frontiers developing within the framework of a specific task or direction.

In the course of the study, we established that the «concept frontiers» correspond in semantic content to

the answer to the first question – «What pedagogical phenomena in publications are related to the field of physical education of students?» It was determined that if the subject of cognition is pedagogical phenomena (upbringing, development, education, training), then the paradigmatic approach in the field of physical education becomes the object of cognition. This statement is reflected in studies that reveal the following scientific ideas:

• paradigms of health saving, health preservation, health creation, health formation, authors: A.G. Madzhuga; I.P. Zaitseva, O.N. Zaitsev; N.V. Minnikaeva; A.B. Serykh; T.A. Shilko et al.

• humanistic paradigm, which involves the formation and improvement of positive personal qualities of students, the development of interpersonal communication skills in the classroom and personal growth, authors: N.V. Pakholkova; M.P. Spirina; K.N. Dementyev et al.

• existential paradigm of physical education aimed at recognizing freedom and the right to personal choice of physical activity, cooperation and co-creation, conscious and active attitude to classes, self-education and self-actualization (self-expression, realization of one's abilities, ideas, desires), authors: Yu.F. Kuramshin; V.D. Getman; R.M. Kadyrov et al.

«Frontiers-narratives» reveal modern, innovative technologies that have already been developed and experimentally tested and essentially contain the answer to the second question of the study «Which pedagogical technologies in the field of physical education of students with proven effectiveness belong to the first decile?» As confirmation, it is necessary to cite research in the field of digital educational technologies, such as: digital educational environment (author N.Yu. Surova); distance learning in the discipline (T.Yu. Pokrovskaya); digital socio-cultural space (D.Yu. Narkhov); use of mobile applications (V.V. Bobkov), etc.

«Frontiers of weak signals» reflect the content of the results of research on a narrow topic, in particular, related to the gender approach in physical education, for example, such articles as: «Development of strength endurance of female students majoring in construction» (O.V. Safonova); «Dynamics of endurance indicators in female students engaged in fitness aerobics» (O.V. Shilenko); «Component composition of the body of female students engaged in sports programs» (A.A. Govorukhina), etc.

At the final stage, a study was conducted to study the life cycle of publications, the characteristics of which were: a small proportion of publications, growth, plateau, decline, and again a small proportion of publications over a time period. During the substantive analysis of the articles, a striking example of the life cycle of publications on the topic was revealed: «optimization of the educational process in the discipline «Physical Education» in connection with the restrictions associated with the new coronavirus infection». Figure 2 shows the life cycle of publications on this topic.

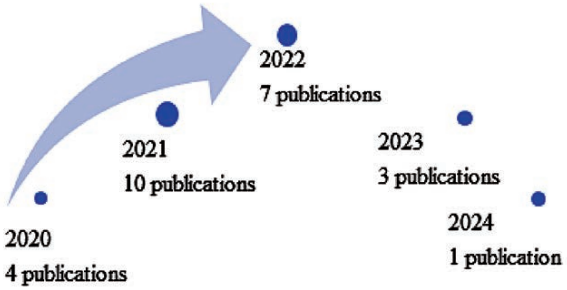

Figure 2. Life cycle of publications on topics related to the optimization of the educational process in the discipline «Physical Education» in connection with the restrictions associated with the new coronavirus infection

As can be seen from the figure, the peak of articles on this topic occurred in 2021, the authors drew attention to the following problems and their solutions: «Technological approach to distance learning in the discipline «Physical Education" in a university setting» by I.E. Korelskaya; «Modeling loads during the restoration and maintenance of physical performance of university students during online learning» by V.D. Getman; «Students' health as an indicator of the effectiveness of distance learning in elective disciplines of the subject «Physical Education»» by O.I. Kuzmina and others. Of course, the relevance of this topic was due to the unfavorable situation in the country. Along with this, the restriction of life activities became an impetus for the innovative development of distance learning, and in accordance with this, there was a surge in the development of online information technologies for teaching the discipline «Physical Education». Summarizing the conducted research within the framework of the meta-analysis of publications of the journal «Theory and Practice of Physical Culture», we note that a significant part of them corresponds to the «Strategy for the Development of Physical Culture and

Sports in the Russian Federation» for the period up to 2030. Thus, aspects of health preservation and health creation of student youth remain relevant and run like a "red thread" through the publications of 2020-2024. Studies devoted to the development of technologies and methods for improving motor skills and abilities, as well as physical abilities, have become timely. Of interest are articles that analyze the methods and forms of organizing physical education and sports work with students to form a sustainable motivation for physical education classes. At the same time, in our opinion, there is not enough scientific research on the problems of developing not only a healthy, but also a sporty lifestyle (style) in students. The scientific substantiation of the system of sportization of physical education of students, as well as the development of structural and organizational models for the development of student sports in collaboration with departments of physical education (physical culture), remain in demand. The organization of the educational process of students with health problems enrolled in a special medical group experiences a special need for scientific and methodological support. Pedagogical technologies for health formation by means of independent physical activity are currently relevant, while at the same time providing them with space for opportunities for self-realization in the field of physical culture and sports. It is necessary to continue research on the development of new information technologies based on online platforms, including the preparation of universal teaching aids, as well as mobile applications that are very popular among students [3].

Conclusions. Following the objective of the work, the frontiers of pedagogical knowledge in the field of physical education of students in the focus of publications in the journal «Theory and Practice of Physical Education» were identified. They were:

• «concept frontiers» representing the paradigmatic approach to the field of physical education: the concept of health preservation, health preservation, health creation, health formation: a humanistic paradigm of improving the physical culture of a student's personality aimed at developing communication skills and self-actualization by means of accessible physical activity; an existential paradigm of physical education based on the freedom of personal choice, within which pedagogical interaction is carried out at the level of cooperation and co-creation, which contributes to a conscious and active attitude of students to classes, and also acts as an incentive for self-education;

• «narrative frontiers» combining innovative technologies in the educational field of physical education of students;

• «weak signal frontiers» that reflect local research in narrow areas of scientific creativity, which is reflected in low publication activity.

The conducted study is a timely narrative for building a new publishing policy for the journal «TPPC» in the development of scientific content in the field of physical education and sports and a model for studying various areas of sports science.

References

1. Korenkova T.V., Remarchuk V.N. Metody opredeleniya i analiza nauchno-tekhnologicheskikh frontirov v deyatelnosti studentov tekhnicheskikh vuzov Rossii. Gumanitarnyy vestnik. 2022. No. 1 (93). Available at: https://cyberleninka.ru/article/n/metody-opredeleniya-i-analiza-nauchno-tehnologicheskih-frontirov-v-deyatelnosti-studentov-tehnicheskih-vuzov-rossii (date of access: 09.01.2025).
2. Lubysheva L.I. Teoriya i praktika fizicheskoy kultury: novyye vektory razvitiya. Teoriya i praktika fizicheskoy kultury. 2010. No. 9. pp. 3-5.
3. Minnikaeva N.V. Issledovaniye interesa k ispolzovaniyu tsifrovykh tekhnologiy vo vremya dvigatelnoy aktivnosti studentov spetsialnoy meditsinskoy grupp. Innovatsionnyy resurs sportivnoy nauki: kineziologicheskiye, sportizirovannyye i tsifrovyye tekhnologii. Proceedings of the scientific symposium dedicated to the memory of V.K. Balsevich, May 27, 2024. Moscow: RUS «GTSOLIFK» publ., 2024. pp. 73-78.
4. Sunik A.B., Pronin A.B. Teoriya i praktika fizicheskoy kultury: pervoye desyatiletiye. Teoriya i praktika fizicheskoy kultury. 2006. No. 5. pp. 4-10.
5. Terner F.Dzh. Frontir v amerikanskoy istorii. Moscow: Ves mir publ., 2009. 304 p.

The top nations in the medal table of the current olympic games

UDC796.0322

PhD, Associate Professor **A.V. Shvetsov**[1]
[1]Financial University under the Government of the Russian Federation, Moscow

Corresponding author: shvedcov2004@yandex.ru

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Abstract

Objective of the study was to determine the ranking of teams in the medal table and the contribution of athlete training systems in Olympic sports among the nations that have achieved the most success in the modern Olympic Games.

Methods and structure of the study. The final results of the competitions and the information from specialized literature on the history and statistics of the modern Olympic Games are being examined and summarized.

Results and conclusions. It has been confirmed that one of the key factors for the success of nations in the modern Olympic Games, as seen by fans, athletes, politicians, and the media, is the nation's position in the Olympic medal table.

At present, a group of 16 nations has emerged as the top contenders in the Olympic medal table, having secured at least 100 gold medals at the Olympic Games. The United States, the Soviet Union, and China currently lead the Olympic medal table. Among the nations with the most developed state-sponsored athlete training systems, China (ranked third) and Russia (ranked 13th) stand out.

The achievements of the other top nations in the Olympic medal table also demonstrate the significant influence of the state in fostering athletes in Olympic sports.

Keywords: *modern Olympic Games, unofficial team standings, ranking of the team medal standings, the system of training athletes in Olympic sports.*

Introduction. Clause 6.1 of the Olympic Charter [1] states: «The Olympic Games (OG) are competitions in individual or team sports among athletes, not among nations. They bring together athletes selected by the respective NOCs whose applications have been accepted by the IOC». This clause contains two opposing statements. The first is that «the OG are competitions ... among athletes, not among nations». The second sentence of clause 6.1 contradicts the previous one, since «athletes are selected by the respective NOC», that is, an organization representing a specific country. Thus, at the opening and closing ceremonies of the OG, delegations march through the stadium under the flag of their country, and at the awards ceremony, the flags of the countries that won prizes in the competitions are raised. Therefore, from the very first OG, official leaders and representatives of national teams, politicians, and various media outlets tried to identify the countries that performed most successfully in the past OG, for which, despite resistance, the IOC used the rating or position of these countries in the unofficial team classification. Most often, when determining the rating in the UTR, the system of awarding points for Olympic medals was used: 3-2-1 or 5-3-1. Less often, other options were used: for the first six, eight and ten places [2, 5]. Since about the second half of the 20th century, a more objective indicator has been used - the number of medals won by athletes of one country based on the results of performances at the Olympic Games. With this option, the advantage in the UTR goes to the country that has won a greater number of Olympic gold medals. In the event of a tie in gold awards, the number of silver medals is taken into account, and in the event of a tie in silver, the number of bronze medals. The same system is used to determine the position of countries in the overall team medal count (OTC) for all past modern Olympic Games. But it should be taken into account that, according to the IOC decision, the awards of countries that no longer exist are not added up to

the medals won by newly formed states. For example, Germany does not count medals from the United Team of Germany (1956-1964), the GDR and the FRG (1968-1988), and Russia does not count medals from the ROC team (2020).

Objective of the study was to determine the ranking of teams in the medal table and the contribution of athlete training systems in Olympic sports among the nations that have achieved the most success in the modern Olympic Games.

Methods and structure of the study. Study, analysis and generalization of the final results of competitions and data from specialized literature on the history and statistics of modern Olympic Games.

Results of the study and discussion. The first modern Olympic Games were held in Athens (Greece) in 1896. Representatives of 14 countries competed for 43 sets of medals in nine sports. Three times (1916, 1940 and 1944) the Olympic Games were not held due to world wars. The program of Olympic competitions expanded, and the number of participating countries gradually increased, and at the last XXXIII Olympic Games in Paris in 2024 (Olympic Games-24), 329 sets of medals were competed for in 39 sports, and athletes from 206 teams took part in the competitions. Over the past 30 modern Olympic Games, athletes from 115 countries and teams have become champions, and 158 have become medalists. If we compare the OMC indicators after the 2020 Tokyo Olympics [3] and after the 24th Olympic Games, the number of countries that have won 100 or more Olympic gold medals in the entire history of modern Olympic Games has increased from 14 to 16. South Korea and the Netherlands have become new members of the TOP-16. Romania is in 17th place with 93 gold medals. The position of these countries in the OMC and their indicators for the number of awards, number of victories in the OMC and participation in the Olympic Games are presented in the table.

The leading 16 countries in the modern Olympic Games (TOP-16) account for 2/3 of all Olympic medals awarded since 1896: 11626 out of 17829 (65,2%), including gold – 3884 out of 5790 (67,1%). According to the results of the last 24 Olympic Games, 12 countries from the TOP-16 (excluding the USSR, GDR, Russia and Finland, which has 0 medals) managed to win 210 gold (63,9%), and in total – 613 (58,7%) medals. It turns out that these 12 countries have won more Olympic medals than the other 194 teams. In our opinion, such achievements of the TOP-16 countries in Olympic sports are largely determined by the following factors: 1) high levels of industrial, scientific, technical and socio-economic development; 2) the number of participations in the Olympic Games; 3) the specifics

Ranking of leading countries in the OMC of modern Olympic Games (1 – victories in UTR; 2 – participation in Olympic Games)

Place	Country	Gold	Silver	Bronze	Total	1	2
1	USA	1096	871	774	2741	19	29
2	USSR	395	319	296	1010	6	9
3	PRC	303	226	198	727	1	12
4	Great Britain	298	340	343	981	1	30
5	France	240	281	297	818	1	30
6	Italy	229	201	228	658	--	29
7	Germany	218	220	255	693	1	18
8	Japan	189	162	191	542	--	24
9	Hungary	187	161	182	530	--	28
10	Australia	182	192	226	600	--	28
11	GDR	153	129	127	409	--	5
12	Sweden	152	180	182	514	---	29
13	Russia	147	125	150	422	--	6
14	Netherlands	110	112	134	356	---	28
15	South Korea	109	100	111	320	--	19
16	Finland	101	84	120	305	---	27
17	Romania	93	102	124	319	---	21

of the athlete training system, as well as the national and sports traditions characteristic of each of these countries [4]. The undisputed leader of the OMC is the United States, which has the best results both in individual medal categories (gold, silver and bronze) and in the total number of awards. The country has always been in the top three of the UTR: 19 times – first, 8 times – second and twice – third. The success of the United States is based on a strategy focused on training athletes in most types of the Olympic program with minimal government involvement and with an emphasis on medal-rich and commercially attractive ones, including track and field (357 + 282 + 222 = 861) and swimming (266 + 193 + 151 = 610). These sports account for more than half of the gold (57%) and all Olympic awards (54%) of this country.

The main competitors of the USA at the Olympic Games in the second half of the last century were the USSR and the GDR, in which all spheres of human activity, including the training of athletes, were fully provided and controlled by the state. From 1952 to 1992, the rivalry in the sports arenas between athletes of socialist and capitalist countries, and especially between the USA and the USSR, was always in the center of attention of athletes, fans, politicians and the media. Almost 35 years have passed since the USSR and the GDR ceased to exist, but to this day the USSR ranks 2nd and the GDR 11th in the OMC.

Soviet athletes performed most successfully in artistic gymnastics (72+67+47=182) and in track and field (64+55+74=193), in which they won a third of the gold (34%) and all Olympic awards (37%). The overall performance of the USSR at nine Olympic Games: second place in the OMC, six victories and three second places in the UTR. In direct competition, the USSR defeated the USA at five Olympic Games, and the USA outpaced the USSR at three sports forums.

The most significant change in the OMC ranking after the 24th Olympic Games in Paris can be considered the third place of the PRC, which continues to improve the state system of training athletes in relation to the peculiarities of the country's development. The best results of Chinese athletes were achieved in diving (55+26+11=92), weightlifting (46+16+8=70), table tennis (37+21+8=66) and artistic gymnastics (31+26+21=78). In total, these four sports brought the country 55.8% of gold and 42.1% of all Olympic medals. As for other changes in the ranking of leading countries in the OMC after the 24 Olympic Games, there are very few of them. Thus, Great Britain dropped from third to fourth place. France, Italy and Germany retained their positions. But Japan moved to 8th place, becoming third in the UTR for the second time in a row (2020 and 2024). Sweden also managed to get ahead of Russia and reached 12th place, coming close to the GDR. The Russian Federation has been independently competing in the Olympic Games since 1996 and, despite the enormous economic and social upheavals of the end of the last century, was able to preserve and adapt to new conditions the state system of training athletes inherited from the USSR. But the country, unlike China, is losing its positions in the OMC, which is influenced by the following reasons: the depletion of the reserves of the Soviet system of training athletes and doping disqualifications of Russians. Since 2015, Russia has been under constant sanctions from the World Anti-Doping Agency (WADA) and the IOC: Russian track and field athletes, rowers and weightlifters were not allowed to compete in the 2016 Olympic Games, and the Russians competed as the Russian Olympic Committee (ROC) team at the 2020 Olympic Games in Tokyo. Since March 2022, Russian athletes have been banned from all international competitions by decision of the IOC and international sports federations (ISFs). The reason for the isolation is the special military operation of the Russian Armed Forces in Ukraine. As a result, only 15 Russians took part in the 24 Olympic Games as «individual neutral athletes» (AIN), who managed to win one silver medal. Thus, after the last two Olympic Games, Russia was unable to improve its performance in OMC, and based on the results of doping tests and their re-tests, it lost 36 (9+16+11) medals from the Olympic Games from 2004-2016.

Conclusions. 1. Since the middle of the last century, the Olympic Games, which unite competitions in summer sports, have become an event of planetary scale and the pinnacle of Olympic sports development. One of the criteria for the success of countries' participation in modern Olympic Games for fans, athletes, politicians and the media is the country's rating in the Olympic medal count. Currently, among the leading countries of the Olympic Games, a group of TOP-16 has been formed, which have managed to win at least 100 gold medals at the Olympic Games. 2. The USA, USSR and PRC lead the Olympic Games. The absolute leader is the USA. The country is the only one of the TOP-16, in which, with minimal state support, the system of training athletes in Olympic sports has stood the test of time and proven its effectiveness. But

even greater effectiveness has been demonstrated by the state system of training athletes, which developed in the second half of the 20th century in the countries of the socialist camp. This can be evidenced by the phenomenal achievements of the USSR (2nd place in the OMC) and the GDR (11th place) in Olympic sports in the 1970-90s.

3. At present, the countries with a predominantly developed state system for training athletes from the TOP-16 include China (3rd place) and Russia (13th place). But if the results of the Russian Federation are gradually declining, and the chances of participating in the Olympic Games under the state flag in the near future are minimal (due to the geopolitical situation and doping scandals), then the achievements of the PRC in this century can indicate a struggle between this country and the United States for leadership in Olympic sports.

4. The achievements of the other leading countries in the OMC also indicate a significant role of the state in training athletes in Olympic sports. And if in the last century this was evidenced by the achievements of the socialist countries (mainly the USSR and the GDR), then at present all the states from the TOP-16, regardless of their political system, human and economic potential, are striving to increase the role of state structures in matters of developing Olympic sports.

References

1. Olimpiyskaya khartiya (v deystvii s 26 iyunya 2019 g.). [transl.]. Moscow: MOK, 2019. 55 s.
2. Platonov V.N., Guskov S.I. Olimpiyskiy sport. Textbook. Book 1. Kyiv: «Olimpiyskaya literatura» publ., 1994. 496 p.
3. Shvetsov A.V. Obshchekomandnyy medalnyy zachet sovremennykh Olimpiyskikh igr. Sport – doroga k miru mezhdu narodami. Proceedings VI International scientific-practical conference. Moscow: GTSOLIFK publ., 2022. pp. 208-213.
4. Shvetsov A.V. Olimpiyskiye zimniye igry: etapy razvitiya i strany-lidery obshchego medalnogo zacheta. Gumanitarnyye nauki. Vestnik Finansovogo universiteta. 2023. Vol. 13. No. 1. pp. 41- 49.
5. Entsiklopediya sovremennogo olimpiyskogo sporta. Kyiv: «Olimpiyskaya literatura» publ., 1998. 599 p.

The classification of technical devices in the training process of athletes playing games

UDC 796.015

Dr. Hab., Professor **V.P. Guba**[1, 2]
Dr. Hab., Associate Professor **A.V. Rodin**[2]
Dr. Hab., Professor **A.D. Skripko**[3]
PhD **A.A. Pleshakov**[4]
[1]The Russian University of Sport «GTSOLIFK», Moscow
[2]Smolensk State University of Sports, Smolensk
[3]Kalisz Academy named after Stanisław Wojciechowski, Kalisz, Poland
[4]Moscow Polytechnic University, Moscow

Corresponding author: smolguba67@mail.ru

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Abstract

Objective of the study was to examine, summarize, and categorize the technological instruments that enhance athletic performance in competitive sports.

Methods and structure of the study. In the course of this research, theoretical methods were employed, including the examination of existing literature, categorization, and the application of structural-functional and systematic approaches. The classification of technical devices used in sports games for different types of training was developed based on the theoretical and methodological works of V.G. Alabin, D.D. Donskoy, I.P. Ratov, G.I. Popov, S.P. Evseev, T.P. Yushkevich, and V.P. Guba.

Results and conclusions. The categorization of equipment employed in sports activities entails the establishment of distinct levels of classification.

To summarize the research conducted by Russian experts, it is important to highlight that in the realm of sports games, the fundamental classification levels encompass the structure, form, and purpose of the equipment utilized in the long-term training of basketball players, volleyball players, and football players, among others.

The categorization of equipment allows for the identification of the most effective tools for a specific aspect of sports training. The consolidation of classification features that pertain to the utilization of equipment in the training process of athletes contributes to the development of the theoretical and methodological framework for the chosen sport within the context of its respective training modalities.

Keywords: *sports games, training process, types of sports training, technical devices, classification features.*

Introduction. The current level of development of game sports requires the search for non-traditional means and methods of training that allow to significantly intensify the process of training athletes at various stages of their skill development, as well as to increase physical capabilities, effectively form motor skills, develop mental processes and master theoretical knowledge about the sport that ensure the effectiveness of competitive activities [2, 3].

The effectiveness of training effects at the stages of long-term training of athletes in game sports is determined by the use of modern technical devices that provide automated performance of motor actions during the game [4, 5, 6].

The classification allows to identify and group by similar features and properties all technical devices used in modern times that ensure an increase in various aspects of the preparedness of game athletes [1, 7, 8]. However, this direction has not been properly reflected in the modern theory and methodology of sports games. Thus, the problem of classifying technical devices for improving types of sports training in game sports is far from its optimal resolution; this fact emphasizes the relevance of the issue under consideration in the context of theoretical and methodological justification.

Objective of the study was to examine, summarize, and categorize the technological instruments

that enhance athletic performance in competitive sports.

Methods and structure of the study. The following theoretical methods were used in the research: analysis of literary sources; classification; structural-functional and systems methods. Classification is a descriptive method that allows stratifying, and then grouping and generalizing, depending on the types of training, all training devices currently used in sports games. Stratification of training types made it possible to identify classification levels, including the use of a specific training device that ensures the improvement of the physical, technical, tactical, psychological and theoretical components of sports training. The effectiveness of specialized technical devices is reflected in the stability of motor actions under the influence of confusing factors and the opponent's game behavior. The formation of classification levels used in game sports of technical devices for various types of sports training was carried out on the basis of theoretical and methodological works by V.G. Alabin, D.D. Donskoy, I.P. Ratov, G.I. Popov, S.P. Evseev, T.P. Yushkevich, V.P. Guba. The structural-functional method was used as a performance of mental operations describing the boundaries of relations and interrelations between the elements of the structure and the system as a set of stable characteristics of new scientific and theoretical knowledge about the classification of technical devices in game sports. The system approach served as the basis for the formation of a scientific methodology that made it possible to substantiate the classification of technical devices in the theory and methodology of sports games as a system with an integral complex of interconnected elements. As a result of generalizing the results, the system approach made it possible to identify in the methodology its own system, structure, process, function, state, system effect and structural optimization of the formation, development and functioning of technical devices in the process of long-term sports training.

Results of the study and discussion. Systematization of technical devices used in sports games involves identifying classification levels. Summarizing the works of domestic specialists, it should be noted that for game sports, significant classification levels are the structure, form of impact and purpose of the technical device used in the long-term training of basketball players, volleyball players, football players, etc. In the modern system of training game athletes, technical devices can be mechanical, electromechanical, with feedback and urgent information in their structure. The use of a mechanical, electromechanical, with feedback or urgent information technical device in the long-term training of athletes is determined by the form of impact and purpose, which are independent levels of the classification under consideration (see figure).

The next level of classification of technical devices used in the process of training players is determined by the integral, local or conjugated form of impact on the athletes' body. In turn, the form of impact determines the purpose of the technical device in the process of implementing various types of training: physical; technical; tactical; psychological; theoretical.In the process of implementing various types of training in the long-term training of athletes specializing in basketball, volleyball, football and other sports, specialists solve various problems. Technical devices can provide an effective solution to the problems of various types of training in conjunction with traditional approaches used in the training of game athletes.

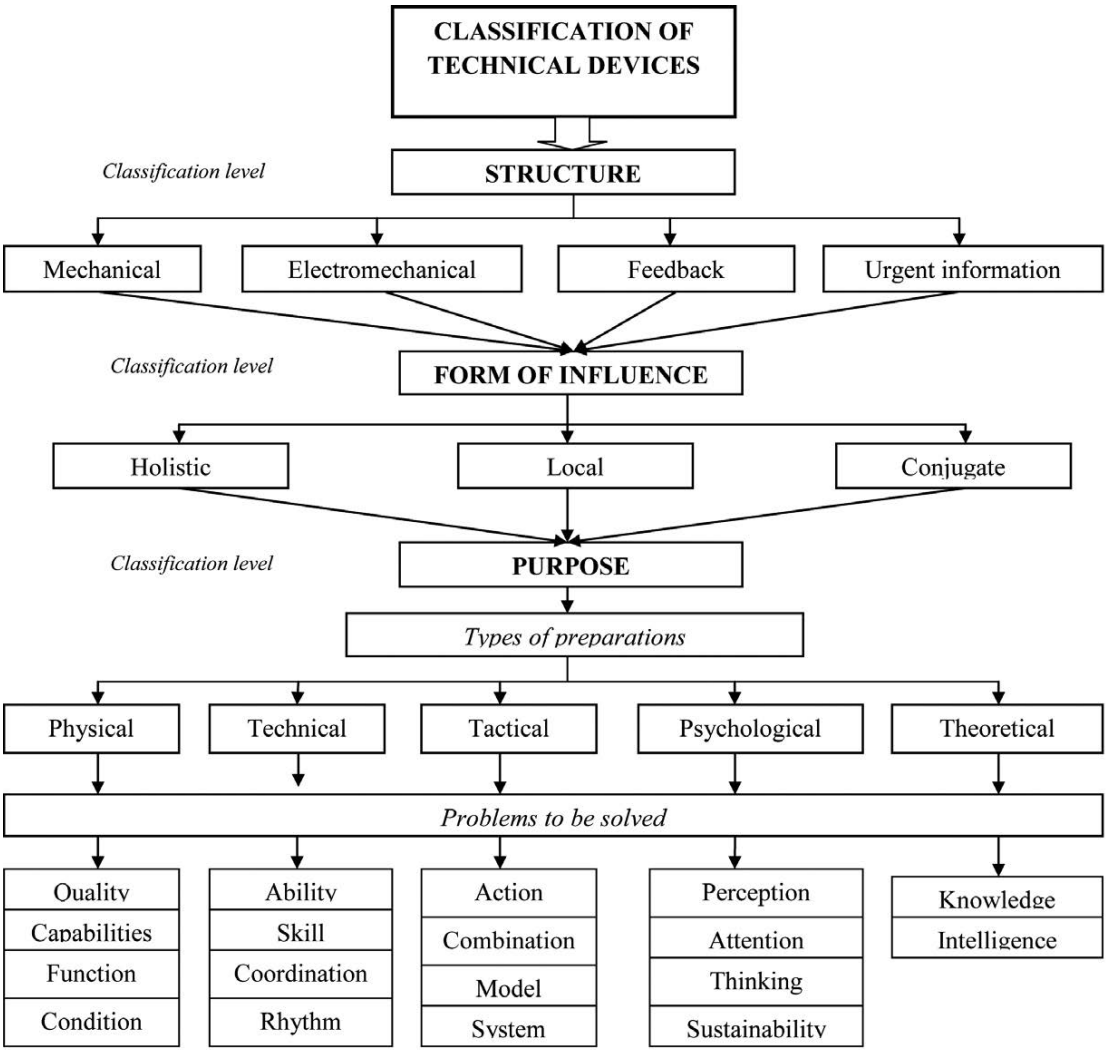
Physical training solves the problems of developing physical qualities and abilities, increasing functional and conditioning abilities. In this regard, it is advisable to use mechanical and electromechanical technical devices that can have a local or associated impact on the athletes' body.

Technical training solves the problems of developing motor skills and abilities, as well as coordination and rhythm of movements when performing a technical technique of the game. To develop motor skills, it is advisable to use technical devices that have a local effect, and for skills, coordination and rhythm of movements - a holistic effect, using mechanical and electromechanical devices.

Tactical training solves the problems of developing tactical actions, studying combinations, specific models and systems of play in attack and defense. For this purpose, holistic effects are applied using mechanical, electromechanical technical devices, as well as with feedback and urgent information.

Psychological training in sports games is aimed at developing perception, attention, thinking and increasing stress resistance. For this purpose, it is advisable to provide associated effects in the process of using technical devices with feedback and urgent information.

Theoretical training ensures the formation of knowledge about the game and the development of intellectual abilities. In this regard, it is necessary to



Classification of technical devices in sports games

apply holistic effects using electromechanical technical devices and feedback.

Conclusions. Classification of technical devices in game sports is necessary so that coaches in their professional activities could know the structure, form of impact and their purpose in the process of solving problems related to improving various types of training. Technical devices serve as applied means that contribute to the effective formation of sports skills of players in basketball, volleyball, football and other types of sports games.

References

1. Alabin V.G. Trenazhery i trenirovochnyye ustroystva v fizicheskoy kulture i sporte. Handbook. Minsk: Vysheyshaya shkola publ., 1979. 174 p.
2. Guba V.P. Osnovy sportivnoy podgotovki: metody otsenki i prognozirovaniya (morfobiomekhanicheskiy podkhod). Scientific-methodological guide. Moscow: Sovetskiy sport publ., 2012. 384 p.
3. Guba V.P. Teoriya i metodika sportivnykh igr. Textbook. Moscow: Sport publ., 2020. 720 p.
4. Donskoy D.D. Zakony dvizheniy v sporte: ocherki po teorii strukturnosti dvizheniy. Moscow: Sovetskiy sport publ., 2013. 176 p.
5. Popov G.I. Biomekhanicheskiye osnovy sozdaniya predmetnoy sredy dlya formirovaniya i sovershenstvovaniya sportivnykh dvizheniy. Doct. diss. (Hab.). Moscow, 1992. 625 p.
6. Ratov I.P. Biomekhanicheskiye tekhnologii podgotovki sportsmenov. Moscow: Fizkultura i sport publ., 2007. 118 p.
7. Skripko A.D. Tekhnologii konditsionnoy i sportivnoy podgotovki v sisteme fizicheskogo vospitaniya uchashchikhsya i studentov. Doct. diss. (Hab.). Moscow, 2004. 394 p.
8. Yushkevich T.P., Vasyuk V.E., Bulanov V.A. Trenazhery v sporte. Moscow: Fizkultura i sport publ., 1989. 320 p.

Model of Long-Term Improvement for the Efficiency of the Training Process in Greco-Roman Wrestling: Physiological, Psychological, and Technical Aspects, Individualization of Training

UDC 796.082

Specialist in Physical Culture and Sports, Greco-Roman Wrestling Coach, Independent Expert **A.I. Krymov**
orcid.org/0009-0009-5271-1027
Tbilisi, Georgia

Corresponding author: artemkrymov8@gmail.com

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Abstract

This article is dedicated to the study of long-term training methods for Greco-Roman wrestlers, focusing on the individualization of training and consideration of physiological, psychological, and technical-tactical parameters. The article presents a model of long-term improvement in the training process, taking into account the individual characteristics of athletes at different stages of their development. The stages of wrestlers' development from adolescence are examined, and methodologies adapted to anthropometric and psychophysiological characteristics are proposed. Particular attention is paid to a comprehensive approach that includes strength, endurance, and coordination development, injury prevention, and optimization of training loads considering the specifics of Greco-Roman wrestling. Coaches must consider each athlete's individual characteristics, such as their physical and psychological readiness level, to prevent injuries and burnout. Individualized training programs help improve preparation efficiency and develop technical-tactical skills crucial for successful competition performances. The proposed model of long-term improvement contributes to maintaining stable results at high-level competitions and ensuring the harmonious development of athletes in the long term.

Keywords: *Greco-Roman wrestling, long-term development model, individualization of training, technical-tactical mastery, psychological preparation.*

Introduction. Greco-Roman wrestling requires athletes to have a high level of physical and technical-tactical training as well as psychological resilience. Wrestlers develop through several key stages, starting from adolescence and continuing into maturity. To achieve high results, coaches must consider an athlete's individual characteristics: anthropometric data, physical, and psychological readiness levels. Modern wrestling training methodologies involve a comprehensive approach that helps balance strength, endurance, and coordination development while simultaneously improving technical-tactical skills. An essential aspect of preparation is the long-term development model, which adapts training processes according to athletes' age and individual characteristics at each stage of their sports careers. Proper load distribution and the use of recovery measures become key factors in preventing burnout and injuries in young athletes, promoting their long-term success and harmonious development.

Objective of the Study was to develop a long-term development model for Greco-Roman wrestling that focuses on individualization, integrating physiological, psychological, and technical aspects to optimize performance, prevent injuries, and support sustained athlete development.

Methods and Research Organization. The study involved 17 Greco-Roman wrestlers aged 9 to 22, who were under my pedagogical supervision for more than 10 years. The observation covered their entire training journey, from the initial stage to achieving a professional level, including selection for the national team

and winning titles at major international competitions. Methods used included anthropometric measurements, physical fitness testing, technical-tactical skill analysis, psychological readiness diagnostics, and literature analysis.

Results and Discussion. One of the key strategies for long-term wrestler training is the use of a multi-level development system, which allows training to be adapted at each stage of an athlete's growth. The foundation of this model is the concept of "Long-Term Athlete Development" (LTAD), which is widely used in various sports to ensure consistent and harmonious athlete growth [1, 4]. However, based on years of coaching experience in Greco-Roman wrestling, this concept has been adapted to reflect the specifics of this sport, including unique requirements for strength training, technical-tactical mastery, psychological resilience, and injury prevention. The adapted LTAD model for Greco-Roman wrestling also considers the sport's characteristics, such as high contact and injury risk, necessitating a focus on coordination, flexibility, and general physical preparedness at early stages.

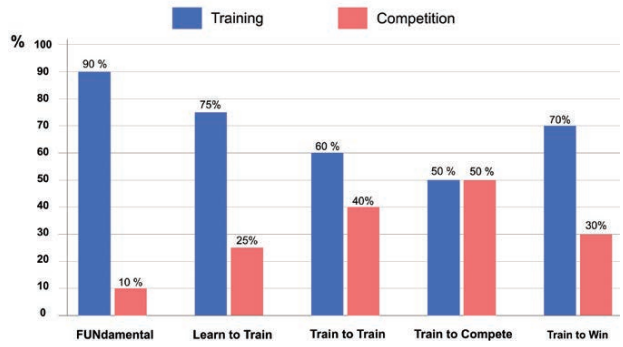

Fig. 1. Stages of Long-Term Sports Training Development in Greco-Roman Wrestling

1) FUNdamental (6-9 years): At this stage, the main focus is on developing basic motor skills such as running, jumping, throwing, and other elements. Training is conducted through play-based methods, making the process engaging and fostering children's interest. Games not only develop physical literacy but also maintain a high level of motivation, forming a positive attitude toward training and a healthy lifestyle. This stage also contributes to overall physical fitness, which is crucial for mastering more complex sports skills in the future [2, 6].

2) Learning to Train (9-12 years): At this stage, specialized training is introduced to develop wrestling skills and strengthen the muscular framework, taking into account the individual characteristics of athletes. The "window of accelerated adaptation" begins, where children develop general sports skills essential for further progress. It is important to refine motor skills by improving coordination, flexibility, endurance, and speed [1, 4].

3) Train to Train (12-16 years): At this stage, the focus is on technical and tactical training, endurance, and strength development. Athletes master complex wrestling techniques, body control, and tactical thinking. It is crucial to monitor progress, implement recovery procedures, and consider individual characteristics. Together with the coach, a match plan is developed to effectively control the situation on the mat [3, 8]. Psychological preparation is of key importance—managing emotions and maintaining composure in stressful situations.

4) Train to Compete (16-23+ years): At this stage, athletes focus on competition preparation, enhancing strength and technical-tactical skills. Training becomes more individualized, addressing each wrestler's strengths and weaknesses [2, 3, 7]. Opponent analysis through video helps in developing match strategies, considering possible scenarios, and anticipating the opponent's moves. Simulating competitive situations aids in adapting to combat conditions and stress. Physical training emphasizes aerobic endurance, strength, and speed, while psychological preparation focuses on emotional control and decision-making under pressure. Preventive breaks are included to avoid burnout and injuries [1, 6].

5) Training to Win (18+ years): This is the stage when athletes reach their peak physical and psychological form. The primary focus now shifts to maximizing results. Training programs become highly personalized, considering all aspects: physical, technical, tactical, and psychological preparation [2, 3, 4]. Athletes learn to manage their inner state, form a clear wrestling strategy, and impose their own fighting style, controlling pace and tactics. Training sessions are high in intensity and volume, including competition simulations, performance analysis, and strategy planning for specific opponents. Planned recovery periods are used to prevent physical and mental burnout [5].

Throughout the stages of long-term development in Greco-Roman wrestling, the recommended training-to-competition ratio evolves. Early stages, like the FUNdamental stage, focus on training (e.g., 90:10), with competition gradually increasing. By the 'Train to Compete' stage, it balances at 50:50, combining skill

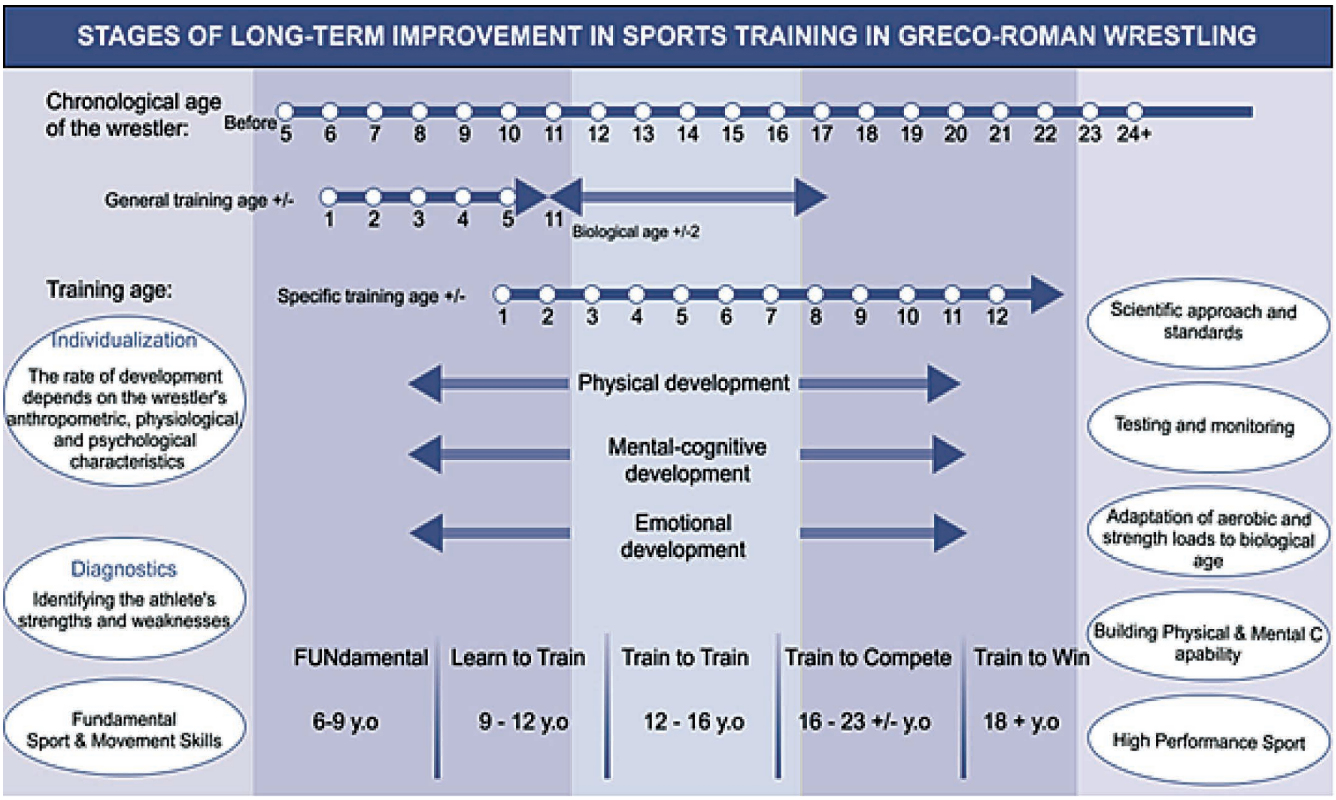

Fig. 2. Training-to-Competition Ratio at Different Stages of LTAD in Greco-Roman Wrestling

and competition preparation. At the highest level, the 'Train to Win' phase shifts to 70:30, prioritizing performance while maintaining a strong foundation. During individualization, the ratio may be adjusted based on the athlete's needs and development [1, 4, 5].

Individualization of the Training Process. An individualized approach in Greco-Roman wrestling is based on athletes' anthropometric, physiological, and psychological data. Analyzing height, weight, limb length, and body composition helps adjust training loads, optimize technical and tactical strategies, and improve overall training efficiency [2, 6].

Technical and Tactical Skills. As athletes mature, the development of technical and tactical skills progresses, with increasing demands on speed, precision, and automation of tactical combinations. Considering individual physiological characteristics—such as strength, endurance, and coordination—contributes to more effective skill enhancement [7].

Psychological Preparation. Psychological resilience plays a key role in a wrestler's competitive success. Athletes must develop concentration, manage emotions, and cope with stress [5, 8]. Psychological preparation methods include:

1) Meditation and breathing exercises to reduce anxiety. 2) Motivational discussions to maintain fighting spirit. 3)Goal-setting techniques to improve focus.

Prevention of Early Specialization and Burnout. Excessive training loads at an early age without proper recovery lead to burnout and injuries. Neglecting long-term development stages decreases motivation and increases the risk of exhaustion [4, 3]. The main causes of burnout include excessive workloads, lack of psychological support, and the absence of structured training periodization. Balancing training and rest is the key factor in burnout prevention. Recovery methods include massage, physiotherapy, and sauna sessions [2, 6, 8].

Injury Prevention. To reduce injury risks, it is crucial to strengthen vulnerable areas. Statodynamic exercises with dumbbells and resistance bands, stretching, and working in different ranges of motion with light weights reduce the risk of injuries and improve physical conditioning. A diverse training regimen—including gymnastics, track and field activities, and coordination exercises—at early training stages lays a solid foundation for the long-term development of wrestlers [3, 7].

Conclusion. Research results indicate that implementing a long-term development model and an individualized training methodology for Greco-Roman wrestlers over more than ten years has led to significant progress. This includes athletes achieving the title of Master of Sport, joining the national team, and winning top places in prestigious national and international competitions. The introduction of this training model has significantly improved physical conditioning, technical and tactical skills, and psychological resilience. Considering individual characteristics—such as anthropometric data, physical testing, and psychological readiness—allowed for training load optimization, which in turn enhanced performance. The structured age-based training stages provided optimal conditions for athlete development at each phase. These achievements confirm the high effectiveness of the proposed model, which fosters sustainable athletic progress, reduces injury risks, and improves stress tolerance. This methodology can be beneficial for training wrestlers across different age and skill groups, as well as for further scientific research on individualized approaches in Greco-Roman wrestling.

References

1. Balyi I., Hamilton A. Long-Term Athlete Development: Trainability in Childhood and Adolescence. Victoria: National Coaching Institute British Columbia & Advanced Training and Performance Ltd., 2004. pp. 6-7.
2. Kuznetsov A.S., Podlivaev B.A. Standard Training Program for the Sport "Wrestling," Discipline "Greco-Roman Wrestling" for Beginner Training Groups. Moscow: SPORT, 2020. 171 p.
3. Apoiko R.N., Tarakanov B.I. Wrestling: Evolution, Trends, Problems, and Priority Solutions. St. Petersburg: Polytechnic University Publishing, 2015. pp. 216–222.
4. Curby D.G. Sunrise to Sunset – Growth, Development & Maturational Issues in the Lifespan of the Wrestler. // International Journal of Wrestling Science. 2013. No. 2. pp. 61–66.
5. Ermakov V.A., Matevosyan A.A., Sheremetyev D.N. Systematization of Training Methods for Young Greco-Roman Wrestlers at the Initial Stage of Training. // Izvestia Tula State University. Physical Culture. Sport. 2021. No. 3. pp. 123–129.
6. Horswill C.A. Exercise and Sport Science. Philadelphia: Lippincott Williams and Wilkins, 2000. pp. 955–964.
7. Ismagilova T.V., Mikhailov V.S., Shakiev V.A. Current Issues in Long-Term Training of Highly Qualified Greco-Roman Wrestlers. // Current Problems in Training Highly Skilled Wrestlers: Proceedings of the All-Russian Scientific and Practical Conference. Omsk, 2014. pp. 113– 118.
8. Tunnemann H. Training and Science in Wrestling. // Modern Problems of High Quality in Wrestling: Proceedings of the FILA Conference. Moscow: Russ-Olimp, 2010. pp. 38–40.

Enhancing athletic gymnastics training through the use of artificial intelli-gence

UDC 769/799

PhD, Associate Professor **D.V. Shcherbin**[1]
PhD, Associate Professor **A.A. Tretyakov**[2, 3]
V.Yu. Putilina[1]
M.V. Shilova[1]
[1]Moscow Polytechnic University, Moscow
[2]Belgorod State National Research University, Belgorod
[3]Belgorod Law Institute of Ministry of the Internal of the Russian Federation named after I.D. Putilin, Belgorod

Corresponding author: shcherbin_sw@mail.ru

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Abstract

Objective of the study was to assess the efficacy of AI-powered programs in amateur athletic gymnastics training.

Methods and structure of the study. The research was conducted at the FIFTY GIM fitness center in Moscow. The participants were a woman and a man in their middle age, who regularly engaged in physical exercises. To evaluate the performance of AI-based programs, we proposed the following metrics: body weight and muscle mass were measured using the Omron BF-508 body composi-tion monitor; heart rate and blood pressure were assessed using the Omron auto-matic tonometer; emotional state was evaluated using the SAN method.

Results and conclusions. During the research, as part of the training with a coach, the indicators of muscle mass increased gradually, unlike when training with AI. The indicator of total body weight also changed in a similar manner. The changes in men's indicators were not as rapid. We can say that no significant changes were observed during the study. However, in his opinion, he preferred classes with AI.

Despite the sophistication of the software, human expertise remains crucial when designing physical education classes in sports. Perhaps a combination of both approaches would be the ideal solution. An experienced professional coach could use AI to clarify certain aspects.

Keywords: *physical education, athletic gymnastics, artificial intelligence, training process, trainer, optimization.*

Introduction. Artificial intelligence (AI) is one of the most innovative and promising technologies that finds application in various spheres of life. Physical education and sports are no exception [3, 4].

In recent years, people have become more interested in their health, physical fitness and functional training, as well as ways to regulate them. With the development of artificial intelligence technologies, these areas of physical education and health activities have received a new impetus. Modern technologies based on artificial intelligence make it possible to use accumulated volumes of data and, based on them, issue training program options, as well as methods and ways to achieve the necessary goals [2, 6].

Some modern athletes and coaches are focused on using AI to optimize training loads and achieve maximum results [5, 7].

Objective of the study was to assess the efficacy of AI-powered programs in amateur athletic gymnastics training.

Methods and structure of the study. The research was conducted at the FIFTY GIM fitness center in Moscow. The participants were a woman and a man in their middle age, who regularly engaged in physical exercises. To evaluate the performance of AI-based programs, we proposed the following metrics: body weight and muscle mass were measured using the Omron BF-508 body composition monitor; heart rate and blood pressure were assessed using the Omron automatic tonometer; emotional state was evaluated using the SAN method.

Results of the study and discussion. AI has the ability to process and analyze large amounts of data. In physical education and sports, this can be used to

analyze statistical data, biometric measurements, and other parameters related to training and the condition of the athlete. Machine learning algorithms can identify patterns and trends in this data, which can help coaches optimize training programs and strategies.

Thanks to AI, training programs can become more personalized. Analysis of data about the athlete, his physical condition, preferences, problems, and needs makes it possible to develop an optimal training program. This allows for an individual and balanced load that takes into account the level of preparation and the set final goals.

AI can also be used to model and simulate game situations in sports. Athletes can train in virtual reality or augmented reality. To improve their skills, make quick decisions, and respond to a changing game environment, various game situations can be modeled and repeated if necessary. AI can greatly improve the ability of coaches and analysts to make informed decisions. Algorithms analyze a large amount of data about matches, training sessions, and opponents.

Professional coaches know how to motivate and support athletes throughout the training session. They provide feedback and help create a positive emotional environment, which can increase motivation and determination in those involved.

When considering AI, you can ask a question to any of the currently popular GPT chats. Any request would have been answered, but it was decided to use a more professional approach and choose a specialized application.

A number of sports apps were considered. Fitbod was the preferred one. This program uses machine learning algorithms to create customized workouts in the gym. It specifies goals, preferences, and level of physical fitness. As a result, the application creates an optimal training plan that takes into account all of the above. The subjects were a man who had been training with a professional trainer at a fitness club for over a year, and a woman who had been training with a personal trainer for a year and a half. They were asked to adjust their training program over two months. The first month was devoted to a training program using Fitbod, and the second month - with a trainer. The content of the training sessions was compiled in both cases based on the approaches of L.S. Dvorkin [1]. The difference was in the ability of the AI to take into account various indicators of the physical condition of the trainees. Throughout the study, the necessary measurements (body weight and muscle mass, heart rate (HR) and blood pressure (BP), emotional state (ES)) were recorded. Training sessions were held twice a week. The training program for the participants in the experiment, compiled with the help of AI, assumed the improvement of functional abilities, increased endurance, strength and flexibility. This direction is characteristic of functional training, which indicates the similarity of approaches with the methodology proposed by L.S. Dvorkin. The results obtained after two months of training are presented in Table 1.

Analyzing the woman's results, we can conclude that training with a trainer is more effective. Muscle mass growth is noted, but judging by the heart rate, it is more intense and energy-consuming.

The man's results indicate the opposite pattern. Preference was given to the program with AI. Muscle mass growth and a decrease in the overall body mass index were noted.

In general, we can conclude that if we take into account the opinion of amateurs, it is contradictory. As a result of the study, the man gave preference to training with AI. He noted that the training was more varied and less intense. The woman, on the contrary, made her choice to train with an individual trainer. She noted the need for eye contact and the importance of the communicative component for understanding the correctness of the exercises, as well as a positive emotional mood.

For a more detailed examination of the changes in the studied indicators, the results were noted for each

Table 1. Dynamics of the studied indicators

Those involved		Weight, kg	Muscle mass, %	BP, mm Hg		Heart rate, beats/min	ES, conl. units.
				Syst.	Diast.		
Woman	1 month	50,5±1,2	46,1±0,8	112±0,4	73±1,1	76±0,8	4,1±0,6
	2 months	49,4±0,5	43,5±0,9	120±0,6	75±1,3	81±1,1	5±0,4
Man	1 month	73,8±2,1	54,1±1,1	117±0,7	83±1,9	74±0,9	4,6±0,4
	2 months	74,5±1,8	52,5±0,8	120±0,9	79±2,1	72±0,8	4,5±0,5

Table 2. Changes in body weight of subjects during the study

Training	Woman				Man			
	Weight, kg		Muscle mass, %		Weight, kg		Muscle mass, %	
	1 month	2 months	1 month	2 months	1 month	2 months	1 month	2 months
1	50	48,5	47	43	74	75,6	54	50
2	50	48,9	47	43	74,3	75	54	53
3	51,2	50	46	40	73	75,1	54	53
4	51,2	49,5	46,5	40	73,6	74,9	54	53
5	51	49,5	46,5	43	74	74	54	53
6	51	49	46	45	74	74,2	54	53
7	50	50	45	47	74	74	54	53
8	49,8	50	45	47	74	74	54	54

training session. The results obtained are presented in Table 2.

Table 2 clearly shows that during the study, muscle mass indicators gradually increase in the context of training with a trainer, in contrast to training with AI. The total body mass indicator changes in a similar way. The indicators for the man do not change as quickly. And it can be said that significant changes cannot be noted during the study. Although, taking into account his opinion, he preferred training with AI.

Conclusions. The conducted research demonstrates that the final decision on whether to use a professional trainer or artificial intelligence depends on the personal preferences of the person involved, the availability of resources and goals. Despite the perfection of software, human qualities remain a priority when organizing physical education classes in sports. Perhaps the only and correct option will be a symbiosis of both approaches. When an experienced professional trainer will use artificial intelligence to clarify some issues.

References

1. Dvorkin L.S. Atleticheskaya gimnastika. Metodika obucheniya. Study guide. Moscow: Yurayt publ., 2024. 148 p.
2. Egiazaryan A.A., Korolev P.V., Grigoryev V.A. et al. Tsifrovyye tekhnologii v fizicheskom vospitanii studentov: opyt ispolzovaniya mobilnogo prilozheniya. Teoriya i praktika fizicheskoy kultury. 2024. No. 2. pp. 61-63.
3. Ermakov A.V., Skarzhinskaya E.N., Novoselov M.A. Tsifrovaya transformatsiya professiy v otrasli «Fizicheskaya kultura i sport». Teoriya i praktika fizicheskoy kultury. 2022. No. 3. pp. 6-8.
4. Zenkova T.A. Tsifrovyye tekhnologii v sportivnoy industrii. Prepodavatel vysshey shkoly v XXI veke. Proceedings of the International scientific-practical conference. Rostov-on-Don, 2022. pp. 233-238.
5. Makarova E.V., Zheleznyakova M.V., Cherkasova E.V., Shcherbakova E.E. Programmirovaniye fizkulturno-ozdorovitelnykh zanyatiy aerobikoy so stu-dentkami razlichnogo urovnya fizicheskogo sostoyaniya. Chelovek. Sport. Meditsina. 2023. Vol. 23. No. 4. pp. 102-108.
6. Petrov P.K. Vozmozhnosti i problemy tsifrovoy transformatsii fizkul-turnogo obrazovaniya i sfery fizicheskoy kultury i sporta. Vestnik Udmurtskogo universiteta. Seriya Filosofiya. Psikhologiya. Pedagogika. 2023. Vol. 33. No. 2. pp. 162-173.
7. Popova E.A. Ispolzovaniye tsifrovykh tekhnologiy na osnove iskusstvennogo intellekta v podgotovke prepodavateley fizicheskoy kultury obrazovatelnykh organizatsiy. Sovremennaya shkola Rossii. Voprosy moderniza-tsii. 2022. No. 3-1 (40). pp. 156-157.

The physical activities of generation z and the use of digital technologies in the training of boxing students

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Dr. Med., Professor **O.S. Kogan**[1]
PhD, Associate Professor **R.M. Yamileva**[1]
PhD, Associate Professor **M.G. Bresler**[1]
PhD, Associate Professor **A.V. Greb**[1]
[1]Ufa State Petroleum Technological University, Ufa

Corresponding author: oskogan@mail.ru

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Abstract

Objective of the study was to discern the unique characteristics of Generation Z students' preferences in sports at the university, and to assess the impact of incorporating innovative technologies into the training process for boxing students.

Methods and structure of the study. The study examines the prevalence of esports and digital sports among students at Ufa State Petroleum Technical University (USPTU). The study compares the effectiveness of training athletes in boxing using innovative technologies (digital sports) with a control group of athletes who use traditional methods. The study measures the performance of athletes in the tapping test, sensorimotor reaction time, and the correction test.

Results and conclusions. Based on the research and analysis of USPTU students' perspectives, it is evident that competitions in digital disciplines, which incorporate the use of cutting-edge technologies in e-sports, robotics, IT, and AI, are gaining popularity among young people. The integration of digital sports technology into the training regimen of boxers in AFP classes has been shown to enhance their reaction time and focus, resulting in improved performance.

Keywords: *athletes-boxers, esports, digital sports, innovative computer technologies in sports, reaction speed, concentration of attention.*

Introduction. Historically, sport has always been a form of leisure. At the same time, leisure of modern youth, as a rule, reflects their own interests and is always closely connected with the latest trends in society, for example, mastering types of activities and physical activity based on computer technologies. Young people want to make their sporting lifestyle as free as possible. As V.V. Kasyanov and co-authors note: «… social adaptation of young people presupposes optimal functioning of the individual in interaction with the environment, optimal self-realization in interaction with the environment, the degree of personal integration in the interaction of the individual with the social environment» [4]. The rapid development of communication and information technologies entails changes in the forms and methods of functional activity of young people. A major breakthrough is observed in switching the attention of young people, namely student youth, from traditional sports activities to participation in eSports and sports games in the «phygital sports» format.

Objective of the study was to discern the unique characteristics of Generation Z students' preferences in sports at the university, and to assess the impact of incorporating innovative technologies into the training process for boxing students.

Methods and structure of the study. The analysis of the popularity of eSports and phygital sports among young people was conducted based on the data of scientific literature and on the opinion study of students of the Ufa State Petroleum Technological University by means of a questionnaire. Along with this, the effectiveness of the application of innovative technologies (phygital sports) in the training process of boxers aged 18-21 with the sports qualification of the 1st category and a candidate for master of sports, who were divided into a control and experimental group, was assessed. During the study, the indicators of reaction speed and attention concentration were determined according to the tapping test, sensorimotor reaction and correction test in the experimental group (12 people) and boxers

(12 people) in the control group, engaged in standard training methods. The general physical training program for the experimental group during the 1st month included a game in the format of Godof War, Halo, Unreal Tournament, Grand Theft Auto and Callof Duty, on a computer for 40 minutes during a training session, in the next room to the gym (on three computers alternately). The reaction speed and attention concentration indicators for the tapping test, sensorimotor reaction and proofreading test were recorded for five days before the experiment and a month later, for five days after the experiment. The statistical significance of the differences in the indicators in the dynamics in the groups and between the groups was assessed using the Mann-Whitney criterion (unrelated samples) and the Wilcoxon criterion (related samples). Differences were considered reliable at $p<0,05$.

Results of the study and discussion. There are certain problems of adaptation of young people to a rapidly changing society. «The most typical problems of young people include unrealistic life aspirations, mismatch of expectations and real possibilities. Therefore, too often in case of difficulties on the way to the set goal, they have such a tendency as the need to distance themselves, to immerse themselves in the world of illusions and fantasies», says M.P. Chelombitskaya [6]. The most common form of escape from negative emotions and stress of the younger generation is immersion in virtual reality. There is a certain opinion of psychologists who consider absolute immersion in the virtual world for a young person undesirable and dangerous because he can no longer live in the ordinary world, interact with ordinary people. Further ordinary life may seem hopeless to him, there will be a shift in value orientations, spiritual devastation. However, there is another point of view, indicating that the full social adaptation of young people, which occurs as a result of successful interaction in online communications, is beneficial for shy people, those with a hidden inferiority complex, those who are unable to create real personal contacts, etc. Modern youth, or generation Z, people of the era of information and digital technologies, do not distinguish between real and virtual spaces - in their view, these are complementary worlds, if not even a single, integral world. Faced with a large flow of information every day, they have learned to quickly analyze and process it, cutting off all unnecessary information and leaving the essence. Their life priorities are maximum comfort and safety, in conditions in which self-identification and self-realization are possible for them [8].

The official website of the eSports federation provides a definition of the term «computer sports»: «eSports», electronic sports (English esports) is a type of competitive activity and special practice of preparation for competitions based on computer and/or video games, where the game provides an environment for interaction of control objects, ensuring equal conditions for competitions between people or teams.

Special software superimposes virtual elements on the real world, mixing digital content with the user's physical environment. These technological advances have opened up new opportunities for integrating digital elements into traditional sports and expanded the range of impressions received from competitions.

Table 1. Results of the proofreading test in boxing athletes

Observation group	Proofreading test indicators (M±m)			
	Number of errors		Working time, min.	
	Before training	After training	Before training	After training
Martial arts (boxing)	6,4 ± 1,4	7,2± 1,3	4,1 ± 0,9	5,8± 0,8*
Control	5,3 ±1,2	9,6 ± 1,3	3,8 ±0,8	9,6± 0,7

Note: Here and in Table 2. The differences are statistically significant: * – after training between the main and control groups $p<0.05$.

Table 2. Tapping test and simple sensorimotor reaction indicators in boxing athletes

Observation group	Test results (M±m)			
	Tapping test, touch frequency		PSMR, time, ms	
	Before training	After training	Before training	After training
Martial arts (boxing)	7,8 ± 1,0	6,8 ± 0,9*	190,4 ± 11,0	220,5 ± 9,9*
Control	8,0 ± 1,3	4,2± 1,1	207,9 ± 10,2	256,1 ± 10,8

We studied the opinion of student youth on the importance of sports activities based on computer technologies for them. Among the student youth of USPTU, 300 students aged 18-21, boys and girls of various fields of study, were interviewed. Of these, 205 people (68,3%) note that they fully accept the philosophy of eSports, 16 people of whom have repeatedly participated in eSports games, the rest – 189 people, plan to participate in such games in the future. 29 people (9,7%) do not see the need to engage in «such nonsense», the rest – 66 people (22%), have not decided on this issue, but do not refuse to be spectators, if there is pleasant company. In phygital sports, it is important that competitions include not only interaction with the digital environment, but also the transition to real competitions. Thus, players can initially compete in a video game format, and then go to the site intended for competitions in football, basketball, hockey or martial arts. One way or another, at present, eSports is a world where virtual battles become real events, uniting millions of spectators and fans around the globe [7]. Specialists in the field of physical culture and sports try to creatively change the general physical training program for training athletes in order to increase the effectiveness of the training process. Thus, coaches A.B. Dashiev and M.O. Aksenov suggest using the CrossFit system for training martial artists, «as a system of general physical training (GPT), functional training, the introduction of a variety of exercise types into the training system, which make the training process much more interesting and effective. The system is designed to cause the widest possible adaptive response of the body. The athlete receives uniform and complete physical development of many body systems at the same time» [2]. V.L. Dementyev and S.V. Sizyaev attach great importance to ideomotor training, based on the use of emotionally charged images of combat to regulate the psychological pre-start states of a martial artist [3]. Yu.A. Aleksandrov notes the importance of developing the strength and variability of motor skills as one of the leading conditions for the stability and reliability of competitive activity, which can be significantly reinforced by the formation of a stable dynamic stereotype of combat techniques [1].

In the context of the general development of innovative technologies, the use of eSports in training sessions for boxers is gaining a certain interest. An action game requires fast processing of sensory information and quick actions, which forces players to make decisions and perform reactions much faster than is usually the case in everyday life and the format of a regular training session [5]. Virtual combat involves effective psychological preparation of the athlete and earlier formation of a dynamic stereotype of combat techniques. In our studies, phygital sports technologies were included in the training process of the experimental group of boxers, in which the athletes first fought virtually for 40 minutes in the format of the games *Godof War, Halo, Unreal Tournament, Grand Theft Auto and Callof Duty,* then conducted regular physical training sessions. In the control group, all physical training sessions were conducted using the standard training method. Background indicators of reaction speed and concentration were recorded for 5 days before the experiment and 5 days after the experiment of boxers in both groups. The average indicators of athletes in the experimental and control groups were compared (Tables 1, 2).

The athletes in the experimental group showed a significant increase in reaction speed and concentration according to the results of the tapping test, simple sensorimotor reaction and correction test after the first month of training.

C**onclusions.** Sports classes in phygital disciplines, which involve the use of developments in the field of cybersport, robotics, information technology, are widely supported by the youth environment; the majority of surveyed USPTU students support the choice of sports activities of modern youth in the form of cybersport and phygital sports. The conducted studies have shown the effectiveness of the use of phygital sports technology in the process of training boxers.

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References

1. Aleksandrov Yu.M., Kolesnik I.S. Prochnost i variativnost dvigatelnogo navyka kak faktor povysheniya sportivnogo masterstva. Pedagogiko-psikhologicheskiye i mediko-biologicheskiye problemy fizicheskoy kultury i sporta. 2013. No. 4 (29). pp. 24-30.
2. Dashiev A.B., Aksenov M.O. Sovershenstvovaniye spetsialnoy fizicheskoy podgotovlennosti sportsmenov yedinobortsev s ispolzovaniyem silomera «KIKTEST-9». Vestnik Buryatskogo gosudarstvennogo universiteta. Filosofiya. 2014. No. 13. pp. 79-82.
3. Dementyev V.L., Sizyaev S.V. Ideomotornaya trenirovka kak osnova formirovaniya boyevoy gotovnosti sportsmena. Available at: http://lib.sportedu.ru/Press/SP/2009N2/p29-36.htm
4. Kasyanov V.V., Shkuropiy O.I., Gafiatullina N.Kh. Spetsifika sotsialnoy adaptatsii molodezhi kak mekhanizm profilaktiki povedencheskikh addiktsiy. Gumanitarnyye, sotsialno-ekonomicheskiye i obshchestvennyye nauki. 2019. pp. 70-74.
5. Kibersport kak instrument dlya podgotovki sportsmenov. Available at: https://trreg.ru › kibersport-kak-instrument-dlya-podgoto...
6. Chelombitskaya M.P. Virtualnaya realnost kak proyavleniye odnoy iz osnovnykh form eskapizma v molodezhnoy srede. Nauchnyy zhurnal «Arkhivarius». 2022. Vol. 7. No. 1 (64). pp. 36-39.
7. Nagornyy N. Fidzhital-sport novoy epokhi: pochemu stoit im zanyatsya. Vserossiyskoye obshchestvo Znaniye. November 9, 2023. Available at: https://znanierussia.ru/library/video/fidzhital-sport-novoj-epohi-pochemu-stoit-im-zanyatsya-3954
8. Bresler M. Specifics of perception of historical and cultural heritage by generation Z in the conditions of network existence. E3S Web of Conferences: EBWFF 2023 - International Scientific Conference Ecological and Biological Well-Being of Flora and Fauna. Part 1. Blagoveschensk, Amur region, Russia, May 22-25, 2023. Vol. 420. Blagoveschensk, Amur region, Russia: EDP Sciences, 2023. pp. 06018.

The approach to long-term training in all-round karate, encompassing technical, tactical, and competitive aspects

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A.V. Akopyan[1]
PhD, Associate Professor **A.A. Shakhov**[1]
[1]Bunin Yelets State University, Yelets

Corresponding author: shakhov-art@yandex.ru

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Abstract

Objective of the study was to creating a plan for sustained technical, tactical, and competitive training in the comprehensive discipline of karate.

Methods and structure of the study. The examination of information sources and the accumulation of personal coaching experience over time, the consultation with experts, the analysis of competitive matches through video recordings, the creation of simulations, and the application of statistical methods are all part of the process.

Results and conclusions. The current situation has been assessed, and a comprehensive plan for long-term technical, tactical, and competitive training in all-round karate has been formulated. This plan is based on a classification of technical and tactical moves, a system for monitoring technical and tactical preparedness, and a model profile of a Russian champion.

Keywords: *all-style karate, technical and tactical training, competitions, strategy, training content.*

Introduction. At present, a large number of different karate styles are cultivated in the world, many of them are popular in Russia. In order to develop unified approaches to the development and management of these sports, their recognition at the state level, a new unified sport was created in our country - all-style karate. This type contains three groups of disciplines: limited contact (LC), full contact (FC), full contact in protective equipment (FPE). Competitive activity can take the form of a duel and kata (demonstration of technique). Kata can be performed both individually and in pairs (groups)[1], [2].

It can be stated that according to the established tradition, athletes in all-style karate represent various styles of karate (ashihara, kyokushinkai, fudokan, wado-ryu, shotokani, etc.). This circumstance, coupled with the disciplines of all-style karate, leads to chaotic multi-year technical-tactical and competitive training of athletes. During the year, a karateka without determining a priority for himself in a competitive discipline can participate in style tournaments and certifications, in fights and kata (LC, FC, FPE), which at the first stages of training can be welcomed (the athlete «searches» for himself), but subsequently this leads to excessive competitive load and violation of the principle of highly specialized training.

Objective of the study was to creating a plan for sustained technical, tactical, and competitive training in the comprehensive discipline of karate.

Methods and structure of the study. Analysis of information sources and many years of personal experience in coaching, survey of specialists, video analysis of competitive fights, modeling, methods of mathematical statistics.

Results of the study and discussion. In our previous studies, we developed a classification of techni-

[1]The rules of the sport “all-style karate” were approved by the order of the Ministry of Sports of Russia dated 22.02.2019 No. 156. Available at: https://askarate.moscow/static/docs/prikaz_156.pdf (date of access: 1.11.2024).

[2]Federal standard of sports training in the sport “all-style karate”, approved by order of the Ministry of Sports of Russia dated 23.11.2022 No. 1068. Available at: http://publication.pravo.gov.ru/Document/View/0001202212210009?index=2 date of access: 1.11.2024).

Strategy of long-term technical-tactical and competitive training in all-style karate

Stages of preparation, duration	Technical and tactical training	Competitive activities
Basic training, 2 years	1. Study of all techniques of style and all-style karate. 2. Study of basic aspects of tactics of technical actions, tactics of conducting a fight, tactics of participation in competitions	Participation in 3-5 competitions in style and all-style karate in various disciplines (kata, fights)
Educational and training (sports specialization), 4 years	1. Improving the entire technique of style and all-style karate. 2. Improving the tactics of conducting technical actions, tactics of conducting a fight, tactics of participation in competitions. 3. By the end of the stage, it is necessary to determine the individual arsenal of technical and tactical actions	Participation in 5-7 competitions in style and all-style karate in various disciplines (kata, fights). By the end of the stage, it is necessary to decide on the choice of sports discipline and the form of competitive activity of all-style karate
Improving sports skills is not limited	Individual technical and tactical training.	Two formats are possible: – participation in all-style karate competitions in one of the selected disciplines of competitive activity forms: athletes «Martial Artists», athletes «Katists»; – participation in all-style karate competitions in several disciplines and forms of competitive activity: athletes «Universals»
Highest sportsmanship, not limited	Improving individual technical and tactical preparedness	Participation in competitions with the aim of joining national teams and achieving the sports titles of Master of Sports of Russia and Master of Sports of Russia of International Class

cal and tactical actions in all-style karate, formulated a technology for monitoring technical and tactical preparedness, developed some model characteristics of the Russian champion, and determined the current state of practice of technical and tactical and competitive training [1-3]. Accumulating the results of these studies, we developed a strategy for long-term technical and tactical and competitive training in all-style karate (see table).

Of course, the presented strategy is of a framework nature and in practice can be adjusted depending on certain circumstances. For example, at the stages of sports improvement and higher sports mastery, an athlete can participate in competitions in style karate, but only if this does not contradict the overall strategic goal (development of sports mastery in all-style karate).

Conclusions. The conducted research allowed us to determine the current state and develop a strategy for long-term technical, tactical and competitive training in all-style karate.

References

1. Akopyan A.V., Shakhov A.A., Semyannikova V.V. Popytka razrabotki modelnykh tekhniko-takticheskikh kharakteristik vo vsestilevom karate. Uchenyye zapiski universiteta im. P.F. Lesgafta. 2021. No. 6 (196). pp. 6-9.
2. Akopyan A.V., Shakhov A.A., Semyannikova V.V. Analiz sorevnovatelnoy deyatelnosti uchastnikov chempionatov Rossii po vsestilevomu karate distsipliny «Polnyy kontakt». Teoriya i praktika fizicheskoy kultury. 2022. No. 10. pp. 29-31.
3. Akopyan A.V., Shakhov A.A. Kontrol za tekhniko-takticheskoy podgotovlennostyu vo vsestilevom karate. Teoriya i praktika fizicheskoy kultury. 2024. No. 8. pp. 104-106.

Competitive game technology at the stage of sports specialization of freestyle wrestlers in the Sakha Republic

UDC 796

Dr. Hab., Professor **V.V. Ponomarev**[1,2]
Postgraduate student **A.A. Efimov**[1]
PhD, Associate Professor **L.A. Bartnovskaya**[3]
PhD, Associate Professor **V.M. Kravchenko**[3]
[1]Siberian Federal University, Krasnoyarsk
[2]Prof. V.F. Voino-Yasenetsky Krasnoyarsk State Medical University, Krasnoyarsk
[3]Reshetnev Siberian State University of Science and Technology, Krasnoyarsk

Corresponding author: vaspon59@mail.ru

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Abstract

Objective of the study was to theoretically substantiate and develop the content of competitive gaming technology at the stage of sports specialization of freestyle wrestlers of the Republic of Sakha and test its effectiveness in experimental work.

Methods and structure of the study. The study was conducted at the Amginskaya Children and Youth Sports School of Freestyle Wrestling in the Sakha Republic from 2022 to 2024. The experimental work involved 31 people aged 11–13 years, involved in freestyle wrestling at the stage of sports specialization. Using a random sample, the participants were divided into two groups: a control group of 15 people and an experimental group of 16 people. The control group was trained according to the traditional sports training program, and the experimental group was trained based on the design of competitive game technology into the sports process. The following classical research methods were used in the experimental work: analysis of scientific and methodological literature on the topic of the work, systematization, abstraction, modeling, questionnaires, conversations, pedagogical observations, experimental activities, testing general physical fitness and special physical fitness, mathematical statistics, etc.

Results and conclusions. Based on the results of the conducted experimental work, a competitive-game technology was developed and tested, including blocks of national sports and competitions of the peoples of the Sakha Republic, which were projected into the training process of the sports specialization stage. Model indicators of physical and special physical fitness for freestyle wrestlers at the sports specialization stage were also developed. The experimental competitive-game technology introduced into the sports process contributed to an increase in physical fitness in the experimental group by 20,02% ($P < 0,05$), in the control group – only by 5,1% ($P > 0,05$); in special physical fitness by 10,6% ($P < 0,05$), while in the control group – by 4,5% ($P > 0,05$). Thus, the overall average increase in sports fitness at this stage in the experimental group was 15,3% ($P < 0,05$), in the control group – only 4,8% ($P > 0,05$). Thus, the results of the conducted experimental work allow us to recommend the competitive-game technology based on national sports, games and competitions of the indigenous people of the Sakha Republic in the practice of sports training in free-style wrestling for the younger generation of the republic.

Keywords: *competitive gaming technology, stage of sports specialization, freestyle wrestlers, Sakha Republic*

Introduction. At present, progress in sports results depends not only on modern digital and sports-pedagogical technologies, rehabilitation medicine, modular material and technical support, etc. As practice shows, high sports results are also achieved by athletes whose nationality is taken into account when building the training process, namely, their formed psychophysical potential and motor genetics in accordance with the climatic and geographical conditions of residence and development. A modern sports teacher should include in the training process national games and competitions characteristic of the people and area where the ward was born and raised, for further harmonious and progressive psychophysical development in combination with modern sports methods and technologies. This scientific work has been carried out in this direction.

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ing technology at the stage of sports specialization of freestyle wrestlers of the Republic of Sakha and test its effectiveness in experimental work.

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Results of the study and discussion. In the process of research activities on the subject of the work, a theoretical definition was formed «Competitive-game technology at the stage of sports specialization of freestyle wrestlers of the Republic of Sakha» - this is a sports and pedagogical process that includes blocks of game and competitive motor exercises formed on the basis of local national traditions and culture for folk-applied physical training of the younger generation, contributing to effective cultural and everyday activities in unfavorable climatic and geographical conditions of residence of the local population in the Republic of Sakha. Based on the national traditions of physical training of young people, an experimental competitive-game technology of sports training of freestyle wrestlers aged 11-13 years of the Republic of Sakha at the stage of sports specialization was formed.

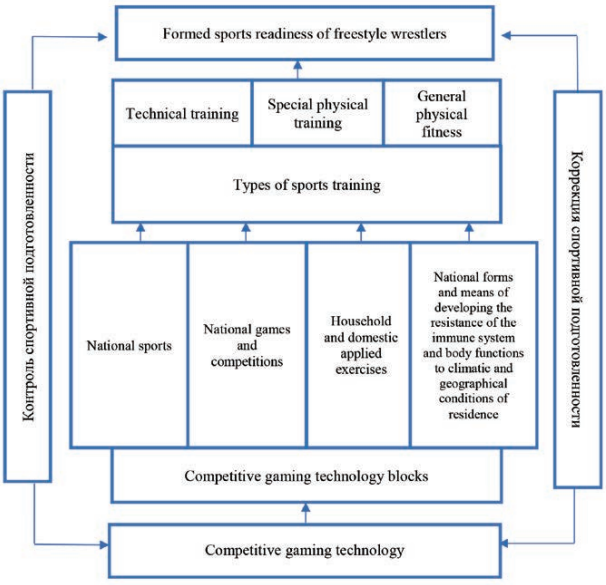

Figure 1 – Structure and content of competitive-game technology (C-IT) at the stage of sports specialization of freestyle wrestlers of the Republic of Sakha

Figure 1 shows the structure and content of the experimental competitive gaming technology.

As shown in Figure 1, the blocks of the experimental competitive-game technology were distributed in the sports training of freestyle wrestlers aged 11–13 years in the Republic of Sakha at the stage of sports specialization as follows:

to develop physical fitness, the following were used: household and applied exercises (clearing snow; preparing firewood for the winter; making a fire; preparing ice; walking and running on snow in a forest zone; simulating hunting skills; preparing hay, etc.); national forms and means of hardening the body (walks in the tundra and taiga, hardening with water and snow; spending the night in a tent, physical exercises in nature, etc.);

technical preparedness: national sports (Yakut national wrestling «Khapsagay», «Mas-wrestling», Yakut «vertushka», games «Vodopoi» and «Khabylyk», throwing «lasso», etc.);

special physical training: jumping over sleds, national Yakut multi-faceted long jumps, throwing various objects over the head and in different directions, pushing out of the circle, carrying heavy objects and partners at speed, etc. Upon completion of the experimental work, a theoretical and statistical analysis of the effectiveness of introducing a competitive-game technology for training freestyle wrestlers at the stage of sports specialization was carried out (Table 1).

The statistical results presented in Table 1 show the effectiveness of the competitive gaming technology at the stage of sports specialization of freestyle wrestlers aged 11–13 years in the Republic of Sakha at the stage of sports specialization, where the average increase in sports fitness in the experimental group was 15,3% ($P<0,05$), and in the control group – only 4,8% ($P>0,05$).

Conclusions. The theoretically substantiated, developed and tested competitive-game technology

Table 1 – Statistical results of testing the competitive gaming technology at the stage of sports specialization of freestyle wrestlers of the Republic of Sakha

№	Control exercises	Groups	Physical fitness $\bar{X} \pm \sigma$		Growth, in %	P
			Beginning of the experiment, September	Completion of the experiment, May		
1	2	3	4	5	6	7
	Pull-ups on a high bar, number of times	E	7,8±1,8	9,9±1,6	26,9	<0,05
		C	7,9±1,9	8,5±1,8	7,6	<0,05
	Run 30 m, s	E	5,7±0,38	5,4±0,31	5,3	<0,05
		C	5,6±0,37	5,5±0,38	1,8	>0,05
	Forward bend from standing position, cm	E	6,1±1,8	9,0±1,6	47,5	<0,05
		C	6,4±1,9	7,1±1,9	10,1	<0,05
	Long jump from the spot, cm	E	166,8±11,8	176,9±11,7	6,1	<0,05
		C	167,9±11,9	171,7±11,8	2,3	>0,05
	Torso lifts per minute, number of times	E	41,2±4,1	47,1±3,9	14,3	<0,05
		C	41,7±4,2	43,2±4,3	3,6	>0,05
Special physical training						
1	2	3	4	5	6	7
	Running onto the «bridge», s	E	22,8±1,4	19,9±1,2	12,7	<0,05
		C	22,7±1,5	21,4±1,6	5,7	>0,05
	Running on hands, s	E	23,7±1,1	21,9±1,1	7,6	<0,05
		C	23,5±1,3	22,8±1,4	3,0	>0,05
	One-arm running, s	E	26,7±2,9	24,8±2,8	7,1	<0,05
		C	26,6±3,1	25,4±3,0	4,5	>0,05
	Rollover from the bridge position, 10 times, s	E	22,4±1,3	18,9±1,2	15,6	<0,05
		C	22,3±1,4	21,1±1,5	5,4	>0,05
	Leg passes, 10 times, s	E	21,5±1,3	19,1±1,1	11,2	<0,05
		C	21,4±1,4	20,9±1,5	2,3	>0,05
	Windmill throws, 10 times, s	E	26,2±1,4	23,1±1,1	11,8	<0,05
		C	25,9±1,5	24,1±1,6	6,9	>0,05
	Throws «poker», 10 times, s	E	25,1±1,3	23,0±1,2	8,4	<0,05
		C	25,0±1,4	24,1±1,5	3,6	>0,05

based on the inclusion of national sports, games and competitions of indigenous people in the process of sports training of freestyle wrestlers aged 11-13 years in the Republic of Sakha contributed to an increase in average physical fitness in the experimental group by 20,02% ($P < 0,05$), in the control group – 5,1% ($P > 0,05$); in special physical fitness in the experimental group – 10,6% ($P < 0,05$), while in the control group – 4,5% ($P > 0,05$). These experimental results allow us to recommend the experimental competitive-game technology in the practice of sports training in freestyle wrestling for children aged 11-13 years in the Republic of Sakha at the stage of sports specialization.

References

1. Efimov A.A., Yatsenko S.V., Ponomarev V.V. Natsionalnaya borba «khapsagay» kak bazovaya osnova v sportivnoy podgotovke yunykh bortsov volnogo stilya Respubliki Sakha. Teoriya i praktika fizicheskoy kultury. 2024. No. 4. 41 p.
2. Ponomarev V.V. Pedagogicheskiye tekhnologii fizkulturnogo obrazovaniya shkolnikov Kraynego Severa. Doct. diss. (Hab.). Tyumenskiy gosudarstvennyy universitet, 2002. 290 p.
3. Markelov A.V., Ponomarev V.V. Prikladnaya napravlennost narodnykh sostyazaniy v fizicheskom vospitanii studentov vuza. Teoriya i praktika fizicheskoy kultury. 2014. No. 12. pp. 72-73.
4. Markelov A.V., Ponomarev V.V. Narodnyye sostyazatelno-igrovyye traditsii v fizicheskom vospitanii studentov vuza: teoreticheskiye i prakticheskiye osnovy. Monograph. Krasnoyarsk: SibGTU publ., 2014. 152 p.

Identification of diving athletes' sports specialization through their physical and functional attributes

UDC 612.087

PhD, Associate Professor **E.N. Konopleva**[1]
Associate Professor **E.V. Redi**[1]
[1]Reshetnev Siberian State University of Science and Technology, Krasnoyarsk

Corresponding author: Russlen90@mail.ru

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Abstract

Objective of the study was to determine the physical and functional attributes of athletes who excel in sailing, sprinting, and underwater sports.

Methods and structure of the study. The research was conducted by a group of scuba divers, ranging in age from 18 to 25 years, consisting of 15 male and 15 female participants. Each participant is a member of the Krasnoyarsk Territory national team and holds a sports title of at least Master of Sports of Russia. The research employed a variety of methods, including the assessment of anthropometric and morphofunctional parameters, as well as the application of mathematical statistical techniques.

Results and conclusions. Athletes who specialize in diving disciplines belong to the second type of morphofunctional physical development (MFTFR), according to the classification of O.N. Moskovchenko. These athletes have an athletic build and are typically of above-average height and light weight, which helps them to more easily overcome the surface of the aquatic environment. Scuba divers who specialize in sprinting and other underwater disciplines also belong to this group. Swimmers, on the other hand, have a longer body and higher weight, which allows them to perform speed and power work at a high level. Data obtained from the study can be used as an effective tool in training scuba divers, as it provides insight into the interrelation between sports specialization and morphofunctional characteristics. This information can serve as a scientific foundation for organizing the training process.. The dynamics of changes in morpho-functional parameters depending on specialization provide an opportunity to justify the choice of an underwater sport, which allows predicting a high performance of an athlete and personalizing the training process.

Keywords: *underwater swimmers, training process, morphofunctional characteristics, sports specialization.*

Introduction. Underwater swimming is a sport based on swimming, diving and diving under water using special equipment, devices, apparatus and equipment [10]. The high level of achievements of athletes in the Russian and world arenas places increased demands on the level of training due to an increase in the volume and intensity of physical activity [11]. However, the volume and intensity of the load cannot be increased indefinitely, since the athlete will reach an adaptation limit and the growth of results will stop [1]. This indicates the need to use innovative approaches in the training process. Morphotype is one of the indicators of individual characteristics of the body and its adaptation to physical activity [4, 5, 7]. Sports experts and scientists have proven that taking into account morphofunctional characteristics contributes to the achievement of high results [2, 3, 6, 7]. Authors of scientific papers who conducted research in various sports point to the need to take into account the morphofunctional characteristics of the body when planning physical activity and choosing a sports specialization [8, 9, 12]. However, only a small number of works are devoted to the study of the morphofunctional characteristics of the body in underwater sports, which determined the relevance of this study.

The purpose of the study is to identify the morphofunctional characteristics of scuba diving athletes specializing in sailing, sprinting and underwater disciplines.

Methods and structure of the study. The following methods were used in the research: analysis of data from literary sources and methodological materials; method of assessing anthropometric indicators (height, weight, chest circumference measurement); method of assessing morphofunctional indicators (heart rate, systolic blood pressure (SBP), vital capacity (VC), minute blood volume (MBV)). The method of mathematical processing was used to ensure the reliability and validity of the research results. The following were carried out: 1) correlation analysis of the relationship between the sports result, body weight, height and VC among sprinters, 2) correlation analysis of the relationship between the sports result, height, body weight and VC among long-distance runners, 3) correlation analysis of the relationship between the sports result, body weight, height and VC among athletes swimming underwater exercises. Mathematical processing of the results was carried out on a personal computer using the programs Microsoft Word and Microsoft Excel. The study involved underwater swimmers aged 18 to 25 years (15 boys and 15 girls). All athletes are members of the Krasnoyarsk Territory national team and have a sports title of at least Master of Sports of Russia.

Results of the study and discussion. Competent construction of the training process taking into account individual anthropometric indicators increases the reserve capacity of the body, increasing its biological stability and reliability of the system. Considering that the morphofunctional characteristics of underwater athletes have not been studied, we decided to conduct a comparative analysis, generalizing the data obtained during the study on members of the Krasnoyarsk Territory national team depending on gender and specialization (Table 1).

Based on the results of the study, the following conclusion can be made: athletes specializing in long-distance running can be attributed to the second morphofunctional type of physical development (MFTPD), which is characterized by harmony, average values of anthropometric indicators in relation to age-sex standards without significant changes in morphofunctional indicators, satisfactory adaptation of the cardiovascular system (CVS) and morphofunctional indicators.

Athletes-divers specializing in sprint distances and underwater exercises can be attributed to the third MFTPD, which is characterized by well-developed bone and muscle tissue, high and above average val-

Table 1. Physical development indicators of underwater athletes depending on gender and specialization

Indicators	Women	Men
Sprinters		
Height (body length) (cm)	167-178	168-194
Weight (body mass) (kg)	61-71	66-92
Chest circumference (cm)	77-80	95-102
Vital capacity (ml)	3800 - 4200	5000-6900
SBP (mmHg)	110 - 115	110-120
Resting heart rate (bpm)	60 – 64	60-63
Stayers		
Height (body length) (cm)	166-177	165-184
Weight (body mass) (kg)	56-67	62-85
Chest circumference (cm)	75-78	90-95
Vital capacity (ml)	3700 - 4600	5000-7000
SBP (mmHg)	115 - 120	105-120
Resting heart rate (bpm)	59 - 64	55-60
Submariners		
Height (body length) (cm)	163-171	171-189
Weight (body mass) (kg)	53-76	79-95
Chest circumference (cm)	83-87	106-113
Vital capacity (ml)	4300 - 5200	6000-7900
SBP (mmHg)	105 - 120	110-120
Resting heart rate (bpm)	60 - 64	61-63

Table 2. Comparative analysis of the relationship between sports results and physical parameters of highly qualified underwater athletes

Anthropometric parameters	Correlation coefficient	Correlation coefficient
Sprinters	**Women**	**Men**
Height	0,32	0,43
Weight	0,73	0,75
Vital capacity	0,51	0,63
Stayers	**Women**	**Men**
Height	0,21	0,30
Weight	0,54	0,51
Vital capacity	0,69	0,71
Submariners	**Women**	**Men**
Height	0,30	0,29
Weight	0,76	0,81
Vital capacity	0,75	0,78

Note: (r<0,30) – low degree of dependence; (r from 0,31 to 0,50) – weak; (r from 0,51 to 0,70) – average; (r from 0,71 to 0,80) – good; (r from 0,81 to 0,90 and higher) – strong.

ues of anthropometric parameters in relation to age-sex standards, high adaptive capabilities of the CVS.

Athletes specializing in long-distance swimming have an athletic build, average - above average height and low weight. This helps to overcome the surface of the water environment more easily. Submariners and sprinters have the largest body length and weight indicators, which is important when performing speed-strength work. The morphotype largely determines the functional capabilities of the athlete, which will ultimately be reflected in the predisposition to the choice of specialization in a particular sport. The correlation dependence between the morphofunctional parameters of underwater athletes and their sports specialization is presented in Table 2.

From the analysis of Table 2 it follows that weight has a good degree of dependence on the sports result among sprinters in men and women (r=0,75 and r=0,73), the vital capacity indicator has an average value for both men and women (r=0,63, r=0,51). There is a weak correlation between height and men and women (r=0,43, r=0,32). Among long-distance runners, the vital capacity indicator has a good correlation among men (r=0,71), and an average correlation between this indicator and women is observed (r=0,69). The height indicator has a low degree of dependence for both men and women (r=0,30, r=0,21). Weight in this specialization of underwater sports, for men and women, has an average degree of dependence (r=0,51, r=0,54). A strong correlation with weight is observed in scuba diving athletes in both men (r=0,81) and women (r=0,76). A good correlation is also observed in men and women with VC (r=0,78, r=0,75). A low correlation is observed in men and women with height indicators (r=0,29, r=0,30).

Conclusions. A high level of sports achievements, competition for the right to be the first require constant improvement of quality, efficiency and individualization of the training process. The growth of achievements in underwater sports is largely determined by the constant improvement of methods for training qualified athletes. Using data on morphofunctional characteristics, a coach can correctly determine the specialization for an athlete, which in the future, at the stage of sports improvement and the stage of higher sports skills, will allow individualizing training methods, on the basis of which the highest sports results can be achieved. Taking into account individual anthropometric indicators and competent construction of the training process, the reserve capabilities of the body increase, increasing its biological stability and reliability of the system.

The established morphofunctional markers can be successfully used in determining specialization, as well as in sports selection and technical training of athletes.

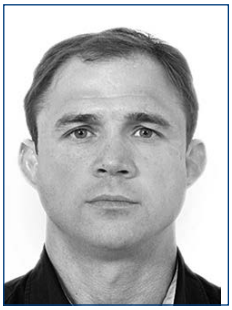
References

1. Uilmor Dzh. Kh., Kostill D.L. Fiziologiya sporta. Textbook. 1997. pp. 273-274.
2. Dudchenko O.A., Dudchenko P.P. Primeneniye gipoksicheskoy trenirovki dlya podgotovki plovtsov v lastakh na baze tulskoy SDYUSSHOR «Delfin». Universitet XXI veka: nauchnoye izmereniye. Proceedings of the scientific conference of scientific and pedagogical workers, postgraduate students of TSPU named after L.N. Tolstoy. 2017. pp. 329-330.

3. Zhukova E.S., Aslaeva V.E. Sovershenstvovaniye sorevnovatelnoy deyatelnosti v skorostnom plavanii v lastakh u sportsmenov 13-14 let. Voprosy funktsionalnoy podgotovki v sporte vysshikh dostizheniy. 2017. No. 1. pp. 35-40.
4. Kononova E.V. Adaptatsiya detey i molodezhi k sovremennym sotsialno-ekonomicheskim usloviyam na osnove zdorovyesberegayushchikh tekhnologiy. Morfofunktsionalnyye tipy fizicheskogo razvitiya lits s raznym dvigatelnym rezhimom. Abakan, 2015. pp. 148-150.
5. Koryagina Yu.V., Matuk S.V. Morfologicheskiye osobennosti sportsmenov, kak rezultat adaptatsii k zanyatiyam raznymi silovymi vidami sporta. Omskiy nauchnyy vestnik. 2010. No. 4 (89). pp. 140-142.
6. Maksimov A.L., Sukhanova I.V., Vdovenko S.I. Osobennosti funktsionalnogo sostoyaniya u yunoshey g. Magadana v zavisimosti ot tipa konstitutsii. Ekologiya cheloveka. 2012. No. 12. pp. 25-30.
7. Martirosov E.G., Sergeev Yu.P., Chtetsov V.P. Sovremennyye problemy sportivnoy morfologii. Collection of scientific papers. Moscow, 1977. Issue 2. pp. 8-29.
8. Martirosov E.G. Morfofunktsionalnaya organizatsiya i sportivnyye dostizheniya bortsov vysokoy kvalifikatsii. PhD diss. abstract. Moscow, 1968.
9. Moskovchenko O.N., Shumakov A.V. Valeologicheskiy podkhod k otboru i upravleniyu podgotovkoy bortsov greko-rimskogo stilya na etape uglublennoy spetsializatsii. Monograph. Krasnoyarsk, IPTS KGTU publ., 2005. 158 p.
10. Moskovchenko O.N., Tolstopyatov I.A., Aleksandrov A.V. Podvodnyy sport i dayving. Study guide. Dictionary-reference book. 2nd ed., rev., sup. Krasnoyarskiy gosudarstvennyy pedagogicheskiy universitet im. V.P. Astafyeva. Krasnoyarsk, 2014. 316 p.: il.
11. Moskovchenko O.N., Tolstopyatov I.A., Redi E.V. et al. Analiz zakonomernosti prirosta mirovykh rekordov v podvodnom sporte (plavaniye v lastakh). Teoriya i praktika fizicheskoy kultury. 2019. No. 3. pp. 70-72.
12. Myasnikova T.I. Otsenka trenirovannosti kvalifitsirovannykh plovtsov-podvodnikov s ispolzovaniyem standartnykh nagruzok razlichnoy intensivnosti. Aktualnyye problemy fizicheskoy kultury i sporta v obrazovatelnykh organizatsiyakh. Proceedings of the All-Russian scientific-practical conference with international participation. Uralskiy federalnyy universitet im. Pervogo Prezidenta Rossii B.N. Yeltsina. 2016. pp. 267-272.
13. Moskovchenko O., Ivanitsky V., Zakharova L., Tolstopiatov I., Kattsina T., Redi E., Shumakov A., Lylina N., Shibin D.Morphofunctional markers of kinetic aptitude in a sport selection system. Journal of Physical Education and Sports. 2018. pp. 670-676.

The evolution of performance metrics in the competitive arena of freestyle wrestling olympic finalists

UDC 796.81



Dr. Hab., Professor **S.V. Latyshev**[1]
[1]Don State Technical University, Rostov-on-Don

Corresponding author: slatyshev1975@gmail.com

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Abstract

Objective of the study was to examine the evolution of performance metrics for wrestlers in the discipline of freestyle wrestling at the Olympic Games, both before and after the rule modifications implemented in 2013.

Methods and structure of the study. The following methods were used in the work: analysis of scientific and methodological literature, video analysis and timing of competitive duels for first and third places in each weight category at the Olympic Games in Paris (2024) in men's wrestling (discipline – freestyle wrestling), methods of mathematical statistics.

Results and conclusions. In the research, we calculated specific metrics for the performance of the finalists in the wrestling competition at the Beijing Olympics (2024). These metrics included the average duration of each bout, the average time spent in the standing and clinching positions, activity, effectiveness, the number of high-scoring moves, and the reliability of the wrestler's offensive and defensive strategies. We then compared these findings with the results of our previous studies, which analyzed the performance of wrestlers at the Olympic Games in Atlanta (1996) and Sydney (2000).

A comparative study revealed that the alterations in the rules governing competition in 2013 had a substantial effect on the performance of competitive activities, resulting in a shift towards enhancing the entertainment value of competitive matches. Specifically, the average duration of fights decreased due to an increase in the number of early victories. The intensity and overall effectiveness of the fights increased approximately twofold. The reliability of offensive actions decreased, while defensive actions increased. The proportion of high-scoring TTA remained relatively stable.

Keywords: *Olympic Games, freestyle wrestling, competitive activity.*

Introduction. One of the main criteria for inclusion and preservation of a sport in the Olympic Games program, along with popularity, attractiveness for young people and advertisers, is entertainment value. Entertainment value in wrestling is understood as the general accessibility and simplicity of perception of combat by spectators, active performance by athletes of effective, impressive, delightful, diverse, highly valued, effective technical and tactical actions [2, 6]. Based on this definition, entertainment value can be quantitatively assessed by the following indicators of competitive activity: activity - the number of real attacks (assessed and unassessed) carried out by an athlete per unit of time, effectiveness - the number of points won by an athlete per unit of time, (high-scoring) - the share of high-scoring TTA in the total number of assessed TTA. The International Federation of Unified Wrestling Styles (UWW) constantly makes changes to the points of the competition rules in order to increase the spectacle and objectivity of the evaluation of competitive fights, which significantly affects the indicators of competitive activity, which, in turn, determine the directions for correcting the training methods [1, 5]. These attempts were most active in the period from 1996 to 2013, the rules changed almost every Olympic cycle. The total time of the fight, the number of periods, the scores for the technical and tactical actions (TTA), the punishment for passive wrestling, etc. were adjusted. In 2013, the rules underwent significant changes, and since then only minor amendments

have been made to date. At the same time, the question remains relevant: has UWW managed to increase the spectacle of the fights; have the quantitative indicators of the competitive activity of wrestlers at the Olympic Games changed.

Objective of the study was to examine the evolution of performance metrics for wrestlers in the discipline of freestyle wrestling at the Olympic Games, both before and after the rule modifications implemented in 2013.

Methods and structure of the study. The following methods were used in the work: analysis of scientific and methodological literature, video analysis and timing of fights for first and third places in each weight category at the Olympic Games in Paris (2024) in men's wrestling (discipline - freestyle wrestling), methods of mathematical statistics. At the beginning of the study, a video analysis of competitive fights at the Olympic Games in Paris (2024) was conducted, on the basis of which the following indicators of the competitive activity of wrestlers were calculated: average bout time, average time of wrestling in a standing position and on the ground separately; activity, overall performance, as well as performance in wrestling in a standing position and on the ground separately, high-scoring, reliability of the wrestler's attack and defense. Then the obtained data were compared with the results of our previous studies on the analysis of the competitive activity of wrestlers at the Olympic Games in Atlanta (1996) and Sydney (2000) [3, 4]. At the end of the work, the conclusions of the study were formulated.

Results of the study and discussion. The table presents the calculated indicators of the competitive activity of wrestlers (discipline - freestyle wrestling) in the final fights for first and third places at the Olympics in Atlanta (1996), Sydney (2000) and Paris (2024).

The table shows that the number of weight categories decreases from Olympics to Olympics, while the number of fights for medals remains at the same level. This is due to the fact that women's competitions were introduced into the Olympic Games program in 2004, due to the reduction of weight categories for men, and the fact that since 2008 two bronze medals have been played out in each weight category. The average time of a fight in Paris has significantly decreased: by 23 seconds compared to Atlanta and by 30 seconds compared to Sydney due to early, bright victories, which indicates an increase in the spectacle of even the final fights, in which wrestlers prefer to act more reliably, avoiding increased risk. It is interesting to note that the ratio of time spent fighting in a standing position to time spent fighting on the ground has increased fourfold from 1,63 in Atlanta (1996) and 1,62 in Sydney (2000) to 6.5 in Paris (2024). In a standing position, the athletes in Paris performed 82 techniques, which were rated by the judges at 139 points, while in Atlanta and Sydney these values are 65/82 and 49/66, respectively, with a comparable number of fights. These data allow us to calculate the effectiveness of fighting in a standing position, which in Paris is 0,82 points per minute, versus 0,57 and 0,56 in Atlanta and Sydney. An even more significant increase in the effectiveness

Performance indicators of wrestlers in the final bouts for first and third place at the Olympic Games in Atlanta (1996), Sydney (2000) and Paris (2024)

Indicators	Atlanta 1996	Sydney 2000	Paris 2004
Number of weight categories	10	8	6
Number of fights for medals	20	16	18
Average contraction time	5 min 50 sec	5 min 57sec	5 min 27sec
Average time of fighting in a standing position, %	62	61,9	86,5
Average time of fighting on the ground, %	38	38,1	13,3
Number of assessed techniques in a standing position	65	49	82
Number of points won in the rack	82	66	139
Number of assessed techniques on the ground	11	18	23
Number of points won in the ground game	20	29	45
Activity	-	-	1,11
The effectiveness of the fight	0,44	0,50	0,94
Efficiency of standing fight	0,57	0,56	0,82
Effectiveness of ground fighting	0,23	0,4	1,71
Attack reliability, %	57	65	43
Security reliability, %	43	35	57
High score, %	6,6	4,4	5,7

of fighting is observed on the ground. Thus, in Paris (2024) this indicator is 1,71 points per minute, while in Atlanta (1996) and Sydney (2000) it is 0,23 and 0,4, respectively, which is 7,4 and 4,3 times more. Calculation of the overall efficiency for the entire fight shows that it increased in Paris, compared to Atlanta and Sydney, by 2,13 and 1,88 times, respectively. These results indicate a significant increase in one of the main indicators of entertainment – efficiency.

Activity, also one of the significant performance indicators, was not calculated at the Atlanta and Sydney Olympics. At the same time, it can be argued that activity in Paris increased more than efficiency, since these indicators are quite tightly linked through attack reliability, and at the last Olympics this indicator (attack reliability) noticeably decreased, which means activity grew faster than efficiency. It should be noted that defense reliability at the Paris Olympics increased significantly: by 14% compared to Atlanta and by 22% compared to Paris. This is probably explained by the fact that recently special attention has been paid to defense in the best teams and, especially, to counterattacks, which is confirmed by the increase in the share of counter-techniques in the composition of TTA performed by high-class athletes. In conclusion, let us move on to the analysis of such an entertainment indicator as high-scoring. The table shows that its value at the Paris Olympics is approximately equal to the arithmetic mean of the high-scoring values of the previous Olympics. This suggests that all the rule changes did not affect this indicator. It can be assumed that with a significant increase in the reliability of protection, athletes prefer more reliable, albeit less evaluated TTA, especially in the final fights at the Olympic Games.

Conclusions. A comparative analysis of the competitive activity of wrestlers – finalists of the Atlanta (1996), Sydney (2000), Paris (2024) Olympics (discipline – freestyle wrestling) showed that the changes in the 2013 competition rules significantly changed its indicators towards increasing the spectacle of competitive fights. The average time of a fight in Paris decreased: by 23 seconds, compared to Atlanta and by 30 seconds, compared to Sydney, due to the increase in the number of early victories. The activity and overall effectiveness of the fight increased approximately twofold. The reliability of attacking actions decreased by 14%, compared to Atlanta, and by 22%, compared to Sydney, the reliability of defensive ones increased by the same values. At the same time, the share of high-scoring TTA remained approximately at the same level, which suggests that UWW has not been able to solve this separate problem to date.

References

1. Apoyko R.N. Vliyaniye izmeneniy pravil po sportivnoy borbe na effektivnost i zrelishchnost sorevnovatelnoy deyatelnosti bortsov: mneniya spetsialistov praktikov. Uchenyye zapiski universiteta im. P.F. Lesgafta. 2015. No. 2 (120). pp. 7-11.
2. Gabov M.V. Formirovaniye tekhniko-taktich-eskikh deystviy kvalifitsirovannykh bortsov greko-rimskogo stilya. PhD diss. Chelyabinsk: Ural-GAFK, 2004. 163 p.
3. Latyshev S.V. Analiz taktiko-tekhnicheskikh deystviy bortsov svobodnogo stilya na Igrakh XXVI Olimpiady v Atlante. Teoriya i metodika fizicheskogo vospitaniya i sporta. 2000. No. 2-3. pp. 20-23.
4. Latyshev S.V., Gromakov A.Yu., Chocharay Z.Yu. Sravnitelnyy analiz kharakteristik sorevnovatelnoy deyatelnosti bortsov volnogo stilya na Olimpiyskikh igrakh v Atlante i Sidnee. Pedagogika, psikhologiya i metodiko-biologicheskiye problemy fizicheskogo vospitaniya i sporta. sb. nauk. trudov. Yermakov S.S. [ed.]. Kharkov, 2001. No. 26. pp. 45-52.
5. Latyshev S.V., Aleshin E.V. Perestroyka metodiki podgotovki i sorevnovatelnoy deyatelnosti bortsov volnogo stilya v svyazi s novymi pravilami sorevnovaniy. Proceedings scientific-practical conference of universities of the Donetsk region. DonDISHI, publ. 2005. pp. 37-39.
6. Piloyan R.A. Filosofiya i sotsiologiya sporta v XXI veke. «Kruglyy stol». Teoriya i praktika fizicheskoy kultury. 2000. No. 6. 49 p.

The pace and tempo of running in the analysis of the performances of the top hurdlers at the Olympic games in Paris

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Dr. Hab., Associate Professor **A.L. Ogandzhanov**[1]
PhD **G.V. Samoylov**[2]
PhD, Associate Professor **M.B. Salamatov**[3]
PhD, Associate Professor **E.S. Tsyplenkova**[4]
[1]Moscow City University, Moscow
[2]Victoria Sports School, Moscow Region
[3]The Russian University of Sport «GTSOLIFK», Moscow
[4]Tula State University, Tula

Corresponding author: Oga2106@mail.ru

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Abstract

Objective of the study was to pinpoint the key kinematic features that contribute to the success of the world's top male hurdlers in the 110m hurdles race, we conducted a thorough examination of the performances at the Paris Olympics.

Methods and structure of the study. The examination of official records, the study of video footage of elite hurdlers in competition, and the application of statistical techniques are all part of the process.

Results and conclusions. It has been discovered that in modern men's short-distance hurdling, the athletes run at a rapid pace between the hurdles, with some of the top athletes even reaching a pace that is faster than that of highly skilled sprinters, reaching up to 5.3-5.5 steps per second. The limited distance between the hurdles and the high height of the hurdles force the athletes to achieve speed primarily through their pace of running steps, rather than through their length. The running style of the Olympic champion G. Holloway (USA) is characterized by the efficiency of his motor actions in terms of technical execution at the hurdle distance. As the athlete increases their speed and improves their competitive result, their pace of running steps also increases, resulting in a faster barrier step. In these circumstances, the athlete's barrier step is perceived as a running step performed with a greater amplitude and a higher trajectory than a regular running step, while the entire distance is visually perceived as a single continuous movement.

Keywords: *hurdles, biomechanical analysis, competitive activity, rhythm-tempo structure.*

Introduction. In the 110 m hurdles, the determining factors for success are the hurdlers' ability to quickly overcome obstacles, maintain a high pace of running movements between hurdles, and the ability to maintain a stable rhythm of movements at all sections of the distance without slowing down due to fatigue [1-3]. In men's 110 m hurdles, the clear favorite in recent years has been the long-term leader of the world ranking, American G. Holloway (12,86 s at the 2024 US Olympic selection). The best places in the final were claimed by the winners of the US Olympic selection F. Kritenden (12,93 s), D. Robertson (12,96 s), and the European champion, Italian L. Simonelli (13,05 s). Other high results before the Olympic Games were shown by O. Bennett from Jamaica (13,09 s), Japanese R. Muratake (13,07 s) and S. Izumya (13,10 s), Spaniard E. Lyopis (13,10 s), and Jamaican champion R. Broadbell (13,09 s).

Objective of the study was to pinpoint the key kinematic features that contribute to the success of the world's top male hurdlers in the 110m hurdles race, we conducted a thorough examination of the performances at the Paris Olympics.

Methods and structure of the study. An analysis of documentary materials was conducted[1,2,] video analysis of the competitive activity of the world's leading hurdlers using the Dartfish software, methods of mathematical statistics.

Results of the study and discussion. In the course of the video analysis of the competitive activ-

[1] Available at: https://en.wikipedia.org/wiki/Athletics_at_the_2024_Summer_Olympics.
[2] Available at: https://worldathletics.org/.

Table 1. Average hurdle step tempo and hurdle step time of athletes participating in the 2024 Paris Olympic Games in the semi-final and final races

№	Athlete	Country	Stage	Tempo	$T_{bar.step}$	BRS	CR	CR- BRS
				s/s	S	S	S	S
1	G. Holloway	USA	Final	5,28+0,24	0,43+0,03	12,86	12,99	0,13
			semi-final	5,35+0,26	0,44+0,02	12,86	12,98	0,12
2	D. Roberts	USA	Final	5,16+0,14	0,45+0,1	12,96	13,09	0,13
			semi-final	5,33+0,40	0,47+0,1	12,96	13,10	0,14
3	R. Broadbell	Jamaica	Final	5,25+0,15	0,45+0,1	13,09	13,09	0,00
			semi-final	5,09+0,35	0,45+0,1	13,09	13,21	0,12
4	E. Lyopis	Spain	Final	4,92+0,16	0,42+0,02	13,09	13,20	0,11
			semi-final	5,02+0,42	0,44+0,01	13,09	13,17	0,08
5	R. Muratake	Japan	Final	5,52+0,15	0,48+0,01	13,07	13,21	0,14
			semi-final	5,37+0,41	0,49+0,02	13,07	13,26	0,19
6	F. Critenden	USA	Final	5,43+0,08	0,48+0,02	12,93	13,32	0,39
			semi-final	5,15+0,22	0,46+0,01	12,93	13,23	0,30
7	O. Bennett	Jamaica	Final	5,22+0,15	0,46+0,01	13,09	13,34	0,25
			semi-final	5,29+0,32	0,46+0,02	13,09	13,09	0,00
8	H. Parchment	Jamaica	Final	5,26+0,16	0,46+0,02	13,18	13,39	0,21
			semi-final	5,14+0,41	0,45+0,01	13,18	13,19	0,01

Note: BRS – best result of the season; CR – competition result; Tbar.step – time of the hurdle step.

ity of hurdlers in the semi-final and final races of the 2024 Olympic competitions in the 110 m hurdles, we identified the main factors influencing the efficiency of the hurdlers' actions, as well as the degree of their influence on the final competitive result. For this purpose, the following were determined: the frequency of steps on each inter-hurdle segment and the time of performing a hurdle step on each obstacle. The time of performing a hurdle step (the time interval from the moment the foot is placed on the support during the push-off to the moment it touches the track during the landing after the hurdle) is largely determined by the time it takes to overcome the obstacle. At the same time, it is interpreted as a running step performed over the obstacle, which corresponds to the target tasks of hurdle running:

Table 2. Statistical relationship indicators for the tempo of inter-hurdle steps, time of hurdle step and time to overcome inter-hurdle blocks among the finalists of the 2024 Olympic Games.

№	Athlete	Country	Stage	Correlation relationship indicators		
				$Temp/T_{bar.step}$	$T_{Bar.step}/T_{block}$	$T_{block}/Temp$
1	G. Holloway	USA	Final	**-0,635**	**0,888**	**-0,917**
			semi-final	**-0,613**	**0,859**	**-0,919**
2	D. Roberts	USA	Final	-0,306	**0,761**	**-0,827**
			semi-final	0,306	0,370	**-0,761**
3	R. Broadbell	Jamaica	Final	-0,005	**0,621**	**-0,779**
			semi-final	0,015	**0,743**	**-0,633**
4	E. Lyopis	Spain	Final	0,410	**0,648**	-0,420
			semi-final	-0,318	**0,628**	**-0,930**
5	R. Muratake	Japan	Final	-0,522	**0,872**	**-0,854**
			semi-final	0,507	0,418	-0,564
6	F. Critenden	USA	Final	-0,328	**0,913**	**-0,648**
			semi-final	-0,064	**0,667**	**-0,763**
7	O. Bennett	Jamaica	Final	-0,476	**0,771**	**-0,910**
			semi-final	-0,230	**0,813**	**-0,731**
8	H. Parchment	Jamaica	Final	-0,351	**0,697**	**-0,901**
			semi-final	-0,265	**0,617**	**-0,912**

Note: Tbar.step – time to complete a barrier step; Tblock – time to overcome a barrier block.

Table 3. Time on individual sections of the distance for athletes participating in the 2024 Olympic Games in the semi-final and final races in the 110 m hurdles

№	Athlete	Country	Stage	1st barrier	2-5 barrier block	6-10 barrier block	Difference	Finish	CR
				S	S	S	S	S	S
1	G. Holloway	USA	Final	2,46	3,89	4,16	0,27	1,47	12,99
			semi-final	2,50	3,89	4,17	0,28	1,45	12,98
2	D. Roberts	USA	Final	2,49	4,08	4,11	0,03	1,36	13,09
			semi-final	2,51	4,02	4,12	0,10	1,40	13,10
3	R. Broadbell	Jamaica	Final	2,59	4,04	4,08	0,04	1,34	13,09
			semi-final	2,60	4,10	4,10	0,00	1,38	13,21
4	E. Lyopis	Spain	Final	2,58	4,04	4,15	0,11	1,38	13,20
			semi-final	2,58	4,02	4,12	0,10	1,40	13,17
5	R. Muratake	Japan	Final	2,61	4,05	4,14	0,11	1,36	13,21
			semi-final	2,61	4,10	4,15	0,05	1,36	13,26
6	F. Critenden	USA	Final	2,62	4,10	4,16	0,06	1,38	13,32
			semi-final	2,60	4,09	4,13	0,04	1,37	13,23
7	O. Bennett	Jamaica	Final	2,57	4,08	4,19	0,07	1,45	13,34
			semi-final	2,53	3,98	4,14	0,16	1,39	13,09
8	H. Parchment	Jamaica	Final	2,63	4,10	4,16	0,06	1,44	13,39
			semi-final	2,60	4,00	4,12	0,12	1,43	13,19

"to overcome obstacles with a running step, not a jump" [2]. In the table. 1 shows the average hurdle step tempo and hurdle step execution time of the participants in the semi-finals and finals of the Paris Olympic Games in the 110 m hurdles.

Video analysis of competitive activity of hurdlers showed that changing the rhythm of steps in hurdling significantly affects the final sports result. It would be logical to assume that as the speed of overcoming the hurdle blocks increases, the time of performing steps between the hurdles should decrease in parallel (i.e., the step tempo should increase) and, in parallel with this, the time of overcoming the obstacle should decrease (i.e., the hurdle step time should decrease). This should be expressed in the form of a direct statistical relationship between all three characteristics. But in practice, this is not achieved by all athletes, but only by the Olympic winner G. Holloway (USA), whose indicators show the indicated reliable relationships (Table 2). High statistical relationship between the time of overcoming the inter-hurdle block with the tempo of inter-hurdle steps ($r = -0,919–0,917$, $p < 0,001$) and the time of performing the hurdle step ($r = 0,859–0,888$, $p < 0,01$) in both races. An obvious statistical relationship was also found between the step tempo and the hurdle step time ($r=-0,613–-0,635$, $p<0,05$). That is, with the increase in the distance speed, the athlete's step tempo increases and the speed of the hurdle step execution increases. Under these conditions, the hurdle step is perceived as one of the running steps, executed with a greater amplitude and along a higher trajectory, and visually the entire run is perceived as a single step.

The Olympic champion's running is appropriate and logical in terms of solving technical problems from start to finish. Other athletes lack such integrity and stability of technique. The only downside to G. Holloway's running is a slight drop in speed in the second half of the distance. The athlete covered the first four inter-hurdle blocks in the semi-finals and finals in 3.89 sec, the last four blocks in 4,16 sec and 4,17 sec, respectively, i.e. the time loss was 0,27 – 0,28 sec. This is undoubtedly the reserve of an athlete who is already potentially ready to set a new world record at this distance. In general, the running of most finalists can be characterized as follows: as the speed increases and the time to overcome the inter-hurdle blocks decreases, athletes primarily increase the pace of steps between the hurdles. This is clearly demonstrated by the running of 6 out of 8 finalists, for whom the level of correlation in relation to the pace of steps in the best runs exceeds 0,8 ($p < 0,05$). There are far fewer athletes who, as the speed of hurdling increases, reliably improve the time of execution of the hurdle step. Olympic champion G. Holloway, despite the high frequency of running steps between the hurdles, demonstrates running movements with a large amplitude and active interaction with the support. This is what allows

him to maintain a purely running character of movements over most of the distance (Table 3).

Conclusions. 1. Modern men's short-distance hurdling is characterized by a high tempo of running steps between obstacles, which among leading athletes reaches 5,3-5,5 steps per second. It is very important that with such a high tempo of steps between obstacles, the running retains its integrity and naturalness, as well as the amplitude necessary for more active interaction with the support and reduction of vertical oscillations of the athlete's CM.

2. High-level athletes, finalists of the 2024 Olympic Games, have a best sports result faster than 13,10 s, the average time to complete a hurdle step from 0,46±0,02 s, the average tempo of steps between obstacles is 5,24±0,16 steps/s. The electronic time to overcome the first hurdle varies from 2,46 to 2,61 s. The time to overcome inter-hurdle blocks 2-5 is from 3,89 to 4,10 s, the time to overcome inter-hurdle sections of blocks 5-9 is from 4,10 to 4,17 s. The time of the finishing section fluctuates from 1,36 to 1,47 s.

3. The run of the Olympic champion G. Holloway (USA) from the beginning to the end of the hurdle race distance is appropriate and logical from the point of view of solving technical problems. With the growth of the distance speed and competitive result, the athlete's step tempo increases and the speed of the hurdle step execution increases. Under these conditions, the hurdle step is perceived as one of the running steps, performed with a greater amplitude and along a higher trajectory than the running step, while the entire run along the distance is visually perceived as a single step.

References

1. Mikhaylov N.G., Yakunin N.A., Aleshinskiy S.Yu., Lazarev I.V., Balakhnichev V.V. Biomekhanika baryernogo bega. Lecture for students and listeners of the Higher School of Trainers of the State Central Institute of Physical Culture. Moscow, «Soyuzsportobespecheniye» publ. 1982. 33 p.
2. Ogandzhanov A.L. Kompleksnaya otsenka sorevnovatelnoy deyatelnosti i tekhnicheskoy podgotovlennosti mnogobortsev v baryernom bege s ispolzovaniyem videoanaliza. Vestnik sportivnoy nauki. 2020. No. 2 pp. 10-14.
3. Stolyar L.M., Kuznetsov V.S., Stolyar K.E. Beg s baryerami: teoriya, metodika obucheniya i trenirovka. Moscow, Prometey publ. 2005. 48 p.

The impact of swimming on the motor activity of children with mental retardation

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PhD, Associate Professor **S.A. Grigan**[1]
PhD, Associate Professor **N.A. Zakharova**[2]
[1]Russian Academy of National Economy and Public Administration under the President of the Russian Federation, North-Western Institute of Management, St. St. Petersburg, Russia

Corresponding author: svetlana-grigan@mail.ru

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Abstract
Physical education and sport is a complex system aimed at solving problems of not only physical but also social development. Small physical activity maintains human health. Today, adaptive sports are becoming a part of the lives of many people with disabilities and changing their lives, both physically and psychologically. The state is actively developing this area of public relations and is making progress in this area. Adaptive sports are becoming a part of the lives of many people with disabilities and changing their lives, both physically and psychologically. Today, adaptive physical education is one of the most important parts in the field of health care and continues to develop rapidly, involving more and more people with disabilities in physical education and sports. Moreover, every year the state is increasingly striving to create the most comfortable conditions for sports for people with health problems. Adaptive physical education not only helps to strengthen, restore and maintain body functions, but also self-realization, develop social aspects of life and integrate into society. The aim of the study is to examine the effect of swimming classes on improving physical, intellectual and emotional indicators in children with mental development problems. According to the results of the study, it can be concluded that swimming classes improve the physical condition of those involved, help keep the body in good shape, despite the difficulties caused by health problems. Moreover, swimming improves coordination, cardiovascular and nervous systems. Classes have a positive psychological effect on this group of people. They do not feel such strong discrimination due to their characteristics and find like-minded people.

Keywords: *adaptive physical education, swimming, people with disabilities, improving physical condition.*

Introduction. Adaptive sports have become an integral part of life for many people with disabilities, transforming their lives both physically and psychologically. Today, adaptive physical culture is one of the most significant components of the healthcare sector and continues to develop rapidly, engaging more individuals with disabilities in physical activities and sports. Furthermore, each year, the government is increasingly focused on creating the most comfortable conditions for individuals with health issues to engage in sports. Adaptive physical culture not only strengthens, restores, and maintains bodily functions but also promotes self-realization, the development of social aspects of life, and integration into society [1].

Currently, adaptive physical culture remains a vital component of healthcare and continues to expand, involving an ever-growing number of individuals with disabilities in physical activities and sports. Additionally, the government aims to ensure these conditions are comfortable not only from the perspective of physical accessibility but also in terms of psychological well-being. By popularizing physical culture among people with disabilities, the government fosters a favorable environment that includes many individuals facing similar challenges. This allows them to find like-minded individuals and feel a sense of comfort.

According to statistics from the Ministry of Sports of the Russian Federation, published on the official Federal Statistics website, as of the first quarter

of 2024, the number of people engaged in adaptive physical culture is 1.7 million. Regional data are presented in the table below:

It is worth noting that the total population of Russia at the beginning of 2024 is 144 million, with 11 million of this number being individuals with severe congenital diseases or disabilities. This indicates that only about 16% of people with disabilities, or 1.5% of the country's total population, are involved in adaptive physical culture. However, it is important to highlight that this percentage is much higher among children with disabilities, reaching 80%. As can be observed, the number of people participating in adaptive sports has been steadily increasing each year, driven by the establishment of appropriate conditions, which are continuously expanding.

According to G.N. Karelova, Deputy Chairperson of the Upper Chamber of the Federal Assembly of the Russian Federation, one of the priority goals in the field of sports is to increase the percentage of individuals with disabilities involved in sports to 40% by 2030.

As mentioned earlier, the number of people with disabilities in Russia is 11 million. These individuals often face significant challenges in socialization, finding understanding, and receiving tolerant attitudes from others. Many experience prejudice and are subject to stereotypes suggesting that people with disabilities have no place in sports, especially professional sports, and that their needs should be addressed only by special services or rehabilitation centers. However, it is crucial to understand that adaptive physical culture not only helps strengthen, restore, and maintain bodily functions but also facilitates self-realization, the development of social skills, and integration into society. The psychological aspect of adaptive sports is inherently rehabilitative, significantly influencing the outlook of people with disabilities and contributing to their treatment and overall well-being [1].

Adaptive physical culture has several distinctive features that must be considered. Below are its key aspects:

1. Individual approach: Working with people with disabilities requires a personalized approach due to their unique characteristics and health-related physical capabilities.

2. Specialized technologies and equipment: Adaptive sports necessitate the use of specific technologies and equipment, such as specialized exercise machines (including those for wheelchair users), and appropriately equipped facilities.

3. Qualified professionals: This group requires specialists with appropriate qualifications, as general trainers may not always be able to design suitable exercises that are both safe and effective.

4. Improvement of emotional well-being: Adaptive sports enhance the emotional state of individuals with disabilities, making them feel more complete, free, and improving self-perception. It also helps them find like-minded individuals and form connections.

Number of people engaged in adaptive physical culture and sports from 2018 to 2023 in major regions of the Russian Federation.

Whole country	2018 1,3 million	2019 1,44 million	2020 1, 49 million	2021 1,56 million	2022 1,65 million	2023 1,75 million
Central Federal District	301 thousand	331 thousand	353 thousand	356 thousand	376 thousand	398 thousand
Moscow	45 thousand	46 thousand	47 thousand	47 thousand	58 thousand	60 thousand
Northwestern Federal District	206 thousand	220 thousand	215 thousand	221 thousand	240 thousand	244 thousand
St. Petersburg	139 thousand	149 thousand	142 thousand	147 thousand	160 thousand	163 thousand
Southern Federal District	201 thousand	213 thousand	212 thousand	223 thousand	231 thousand	239 thousand
Far Eastern Federal District	34 thousand	55 thousand	55 thousand	55 thousand	59 thousand	78 thousand
Zabaykalsky Krai	7 thousand	10 thousand	4 thousand	5 thousand	4 thousand	18 thousand
Irkutsk Region	10 thousand	12 thousand	13 thousand	16 thousand	18 thousand	22 thousand
Kemerovo Region	16 thousand	17 thousand	17 thousand	18 thousand	19 thousand	22 thousand
Novosibirsk Region	16 thousand	17 thousand	17 thousand	25 thousand	26 thousand	28 thousand

The Aim of the Study. The study aimed to examine the impact of swimming lessons on improving physical, intellectual, and emotional indicators in children with mental developmental challenges.

Methods and Organization of the Study. The experiment was conducted at Boarding School No. 1 from January to May. The research analyzed the influence of adaptive swimming lessons on improving the physical, intellectual, and emotional indicators of participants with mental developmental challenges. The study involved 30 children (aged 10-12) with intellectual disabilities, divided into a control group and an experimental group of 15 participants each. The experimental group engaged in physical exercise and swimming, while the control group participated in physical exercise only.

Results of the Study. Before the experiment, both the control and experimental groups underwent baseline tests:

1. Balance test ("Swallow");
2. Shuttle run (3x5);
3. Ball throw;
4. Balance test by walking along a sports bench.

Training in the experimental group was conducted in three stages:

Stage 1: Over the course of one month, children were prepared for physical activity through light exercises on a regular basis.

Stage 2: This stage lasted three months and involved coordination-improvement activities in the pool.

Stage 3 (Final Stage): This month-long stage focused on consolidating the results.

The sessions lasted 40 minutes and included warm-ups, developmental exercises, water games, and stretching and breathing exercises at the end.

At the conclusion of the experiment, control measurements were taken, yielding the following results:

1. Balance test ("Swallow"): Measurements showed no significant changes.

2. Shuttle run (3x5): Performance improved by 8%, with an average time of 9.5 seconds compared to 16.1 seconds at the start of the experiment.

3. Ball throw: Performance increased by 36.9%.

4. Balance test by walking along a sports bench: Results showed no significant changes.

Additionally, both the control and experimental groups participated in a survey assessing psychological adaptability and emotional intelligence.

The data obtained demonstrate that the psychological adaptability indicators in the experimental group are significantly more favorable than in the control group: 62.3% of the experimental group students are capable of maintaining control, compared to only 41.1% in the control group. The experimental group is almost seven times more psychologically adaptable, with students in the experimental group spending 60% less time in a state of conflict and being 23% more likely to attempt solving their problems independently.

Conclusions. From the results of the study, the following conclusions can be drawn: In the control group (which did not participate in swimming), it was revealed that children struggled to understand the material presented and had issues with coordination.

Regarding the balance tests ("Swallow" and walking along a sports bench), it was evident that more than five months of training would be needed to observe significant results. However, the second and third indicators improved, indicating the positive impact of adaptive sports combined with additional swimming lessons on improving physical capabilities, psychological adaptability, and emotional intelligence in students with health limitations.

Impact of Adaptive Sports: Adaptive sports contribute to improving the physical condition of participants, helping them maintain body tone despite health challenges. Moreover, adaptive sports improve coordination, cardiovascular, and nervous systems. These activities also have a positive psychological effect on this group of individuals, reducing the feeling of discrimination due to their specific characteristics and helping them find like-minded peers.

In the Russian Federation, adaptive sports are developing steadily year by year. Various organizations, including government bodies, pay significant attention to this area, attracting more people with disabilities to adaptive sports. Qualified coaches and other specialists create a supportive environment for children with mental developmental challenges. They motivate these children and teach them to believe in their abilities. As a result, athletes with disabilities improve their self-perception and develop a better relationship with their own bodies.

References

1. 1. Grigan, S.A. The Impact of Health Systems on the Physical and Mental State of Students in Special Medical Groups / S.A. Grigan // Herzen Readings. Physical Culture and Sports in the Educational Space: Innovations and Development Prospects. Collection of Materials from the All-Russian Scientific and Practical Conference. St. Petersburg, 2024. pp. 331–334.

The application of the lower view lock to improve posture and develop walking abilities in individuals with cerebral palsy

UDC 376.2

PhD, Associate Professor **L.M. Kielevyainen**[1]
U.S. Volkova[1]
[1]Petrozavodsk State University, Petrozavodsk

Corresponding author: kielev@mail.ru

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Abstract

Objective of the study was to assess the impact of employing low-vision obstructions on the development of ambulation abilities and posture improvement in individuals with cerebral palsy.

Methods and structure of the study. The research was conducted at the Center for Adaptive Physical Culture of Petrozavodsk State University over an eight-month period. The experimental group comprised ten individuals aged between 12 and 23, all of whom had been diagnosed with cerebral palsy.

During the study, the participants engaged in adaptive physical education sessions, which involved a combination of traditional exercises in an upright position with movements and a more advanced approach — the lower field of peripheral vision was obscured using dribbling glasses, similar to those used in basketball.

Results and conclusions. The evaluation of the outcomes at the conclusion of the trial revealed that the participants were able to decrease the time required to traverse a straight line of 5 meters by an average of 57%. Nine out of ten participants enhanced their accuracy in measuring distances, completely eliminating any spikes. The duration of maintaining balance in the Romberg test increased by more than twofold. The findings of the investigation can be applied in the development and improvement of walking for children with cerebral palsy.

Keywords: *walking skill, visual analyzer, coordination, cerebral palsy, adaptive physical education.*

Introduction. Despite some differences in the symptoms of the disease, the walking stereotype in children with cerebral palsy (hereinafter CP) with spastic diplegia syndrome has typical features [6].

The disorders are manifested in a decrease in stability when walking; along with this, there is a rephasing within the support phase, the time of support on the heel and the entire foot decreases and the time of support on its forefoot increases [7].

Children with musculoskeletal disorders cannot, as a rule, stably maintain an upright position. In the worst case, this does not allow them to sit, stand and walk, and in the case of maintaining the vertical, it affects the correct pattern of taking poses and gait, as well as the successful development of motor skills during rehabilitation classes [3].

Impaired support ability, manifested in the distribution of body weight over the entire area of the feet of both legs, the transfer of support to the anterior, posterior, lateral and medial parts of the feet while standing, walking, running, directly affects the state of posture. Pathological changes in the lower extremities reduce the cushioning of the feet and increase the vibration impact on the spine [7].

Walking in children with cerebral palsy is formed on the basis of the already formed vertical position of the head and body and the ability to maintain a standing position, leaning on each leg [9].

Straightening reactions in cerebral palsy develop incorrectly due to unquenched and intensifying tonic reflexes. The lack of formation of the righting reflexes affects posture - lordosis does not form in the cervical and lumbar regions, and thoracic kyphosis is excessively pronounced.

The visual system, along with the somatosensory and vestibular systems, is one of the leading components of postural control and balance maintenance [2]. The ability to maintain balance is one of the main

requirements for the formation of walking skills. Accordingly, the visual analyzer plays an important role in this process, taking an active part in maintaining balance - with a sharp change in position and the risk of falling, stability is maintained due to the visual and vestibular receptors [4]. Lower visual field defect is a disorder observed in cerebral palsy due to dysfunction of the dorsal stream.

The interaction of sensory systems, such as proprioceptive, vestibular and visual, is the basis of complex coordination activity. The sense organs play an important role in the development and manifestation of coordination abilities, since it is necessary to recognize the surrounding space in the process of motor mobility.

The study by K. Onerge, H. Evrendilek, R. Sert, N.E. Akalan, F. Bilgili showed that with a limitation of the vertical lower visual field in healthy people, the support area during walking significantly increases [10].

According to other studies [1, 5], when visual control is disabled, the efficiency of movement performance decreases, and an increase in the oscillation of the center of gravity is observed. In the absence of special training, the visual analyzer has a strong influence on maintaining balance and controlling one's own movements. Therefore, the limitation of the visual analyzer is a complicated condition for performing habitual actions and can be used as a means of training coordination.

Objective of the study was to assess the impact of employing low-vision obstructions on the development of ambulation abilities and posture improvement in individuals with cerebral palsy.

Methods and structure of the study. The research was conducted at the Center for Adaptive Physical Culture of Petrozavodsk State University for 8 months. The experimental group consisted of 10 people aged 12-23 years with a diagnosis of cerebral palsy (3 people with spastic diplegia, 7 with spastic tetraparesis), the motor functions of all participants correspond to the second - third level according to the GMFCS classification.

Throughout the study, in adaptive physical education classes, traditional exercises in a vertical position alternated with a more complex method - the lower field of peripheral vision was blocked using dribbling glasses used in basketball. A simple Romberg test and independent overcoming of a five-meter distance limited in width to 30 cm with measurement of speed and number of steps were chosen as control exercises. One subject moved with the help of Nordic walking poles. Comparative values were determined using photo fixation, the angle of inclination of the body and head were measured using the Physio Master program. At the ascertaining stage, control exercises with alternating blocking of the lower view and without it (a total of 6 series) were performed for three weeks. To avoid possible errors caused by fatigue of the trainees, the exercises were performed at the beginning of the lesson.

The average value of overcoming a straight 5 m in glasses with blocking of the lower view was 34.6 seconds with the number of steps 1.6 times, without glasses - 53.6 seconds with the number of steps 4.6 times; the time of performing the Romberg test with glasses and without, was 36 and 22 seconds, respectively.

Thus, with blocking of the lower view of vision, the exercises are performed more successfully, possibly due to the fact that the head is raised and the gaze is directed forward. It was decided to include this method when performing exercises in a vertical position and with movements in the training program and to determine its effectiveness. The program included cyclic exercises aimed at developing endurance, passing an obstacle course, strength exercises aimed at strengthening the extensor muscles of the upper and lower extremities, exercises for statokinetic stability and joint gymnastics.

Results of the study and discussion. Analysis of the results at the final stage of the experiment showed that the participants managed to reduce the time to overcome a straight 5 m by an average of 57%, 9 out of 10 participants improved the accuracy of the distance to the complete elimination of step-overs. The balance time in the Romberg test increased more than 2 times (Table 1).

Table 1. Results of the Romberg test (mean value, s)

Practice attempts (without glasses/ with glasses)	Without glasses (s)	In glasses
1 week	22	36
2 week	30	40
Final testing	54	73

Comparison of the angle values between the vertical axis and the body in glasses with and without blocking the lower view showed minor differences: from 3 to 5 degrees. The difference in the position of the head relative to the vertical is more significant, since the use of glasses for dribbling limits the lower field of view, which is why participants are forced to direct

Table 2. Head tilt angle when walking (degrees)

Review	1	2	3	4	5	6	7	8	9	10
Head tilt without glasses	56	55	33	31	23	27	34	19	28	49
Head tilt with glasses	41	38	27	22	19	20	33	15	11	35

their gaze forward and upward and concentrate on the situation in front (Table 2). This leads to a decrease in the forward head tilt angle relative to the vertical axis by 7-17 degrees.

During the observations, it was found that some participants experienced an increase in the stability and steadiness of the body during unsupported walking, and the stride length of the weaker leg increased. Some participants noted a particular ease in performing exercises without limiting peripheral vision after training with dribbling glasses.

C**onclusions.** The results obtained in the course of the study allow us to propose the use of blocking the lower view in the process of correcting the walking skill as an effective way to perform a motor action. The use of non-standard equipment makes it possible to expand the range of means used in classes with children diagnosed with cerebral palsy.

References

1. Bredikhina Yu.P. Rol zritelnogo analizatora v koordinatsii dvigatelnykh deystviy u tantsorov-balnikov. Sovremennyye problemy nauki i obrazovaniya. 2013. No. 2. pp. 204-210.
2. Vlasenko S.V., Pavlenko V.B., Orekhova L.S. et al. Dinamika stabilometricheskikh pokazateley u bolnykh DTSP, spasticheskaya diplegiya pod vliyaniyem zanyatiy na stabilometricheskoy platforme, robotizirovannom komplekse «Ekzokist-2» v sochetanii s sanatorno-kurortnom lecheniyem. Uchenyye zapiski Krymskogo federalnogo universiteta im. V.I. Vernandskogo. 2023. Vol. 9 (75). No. 4. pp. 15-25.
3. Gross N.A., Sharova T.L., Berkutova I.Yu., Bukanova G.V. Vertikalnaya ustoychivost u detey-invalidov s narusheniyem funktsiy oporno-dvigatelnogo apparata pri vypolnenii fizicheskikh uprazhneniy s ispolzovaniyem trenazhernykh ustroystv. Teoriya i praktika fizicheskoy kultury. 2017. No. 2. pp. 43-45.
4. Gutchel A.A. Lateralnaya dominantnost organa zreniya u detey starshego doshkolnogo vozrasta. Maykop: IP Kobleva M.Kh. publ., 2015. 140 p.
5. Kapilevich L.V., Buravel O.I., Koshelskaya E.V. Koordinatsiya dvizheniy u futbolistov pri vypolnenii udara po myachu: rol zritelnogo analizatora. Vestnik tomskogo gosudarstvennogo universiteta. 2012. No. 361. pp. 140-143.
6. Kielevyaynen L.M. Razvitiye koordinatsii pri khodbe u detey s detskim tserebralnym paralichom. Teoriya i praktika fizicheskoy kultury. 2021. No.10. pp. 83-85.
7. Kharchenko L.V., Litosh N.L. Razvitiye lokomotornoy funktsii khodby u doshkolnikov s detskim tserebral'nym paralichom v usloviyakh sanatorno-kurortnogo lecheniya. Sovremennyye voprosy biomeditsiny. 2017. Vol. 1. No. 1 (1). 11 p.
8. Chechetin D.A. Dinamika antropometricheskikh pokazateley pozvonochnika i stop v protsesse reabilitatsionnykh meropriyatiy pri narusheniyakh osanki u detey. Mediko-biologicheskiye problemy iznedeyatelnosti. 2021. No. 2 (26). pp. 85-90.
9. Shapkova L.V. Chastnyye metodiki adaptivnoy fizicheskoy kultury. L.V. Shapkova [ed.]. Moscow: Sovetskiy sport publ., 2007.
10. Onerge K., Evrendilek H., Sert R., Akalan N.E., Bilgili F. How does walking with dribbling goggles affect foot pressure behavior? Elsevier: Gait & Posture, 2021. Vol. 90. pp. 164-165.

Biological foundations of optimization of training loads of athletes

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Postgraduate student **Mintszyunke Shan**[1]
M.S. Kozhedub[1]
Dr. Hab., Professor **E.P. Vrublevskiy**[1, 2]
[1]Skorina Gomel State University, Gomel, Belarus
[2]Smolensk State University of Sports, Smolensk, Russia

Corresponding author: vru-evg@yandex.ru

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Abstract

Objective of the study was to consisted in studying the main approaches of the coaches of Belarus and China to taking into account the biorhythmological characteristics of the athletes' body when planning their training process and determining the dynamics of the manifestation of speed and strength abilities during the OMC among athletes specializing in various sports.

Methods and structure of the study. A questionnaire was developed and a survey was conducted of coaches (n=16) involved in the training of track and field athletes in the Republic of Belarus and specialists (n=12) who train hockey players in China. Also, to determine the well-being, changes in mental state, performance, tolerance of training and competitive loads in various phases of the body's biorhythmics, a survey and testing of 18 qualified Belarusian runners at various distances and 23 Chinese female athletes involved in hockey were conducted.

Results and conclusions. Analyzing the data of the coaches' questionnaire, it can be stated that most specialists, when planning the training process, do not take into account the phase of the ovarian-menstrual cycle of athletes, which negatively affects the tolerability of the proposed loads, the functional state and well-being of girls. The results of the survey and the results of testing of athletes indicate the presence of significant phase changes in the indicators of motor abilities of runners and hockey players in each of the phases of the OMC.

Keywords: *sportswomen, training, questioning, features of the female body, OMC.*

Introduction. It is known that the adaptation processes and activity of functional systems in the female body differ from those in men, which is due to the main biological feature of the female body - the presence of the reproductive function, which is quite complex in its neurohumoral regulation [4, 5]. Research by many authors has shown that the cyclicity of the ongoing processes corresponds to the phases of the biological rhythm and affects not only the general condition of the female body, but also its individual organs and systems, which largely determines the performance and the extent of the manifestation of motor qualities in female athletes [2, 3, 6, 7]. Thus, it is obvious that in practical activities, coaches need to take into account the biorhythmological features of the body of a particular athlete, which significantly affect athletic performance.

Objective of the study was to study of the main approaches of coaches from Belarus and China to taking into account the biorhythmological characteristics of the body of female athletes when planning their training process and determining the dynamics of the manifestation of speed-strength abilities during the OMC in athletes specializing in various sports.

Methods and structure of the study. A questionnaire was developed and a survey was conducted among coaches (n=16) involved in training female athletes in the Republic of Belarus and specialists (n=12) who train female hockey players in China. Also, to determine self-assessment of well-being, changes in mental state, performance, tolerance of training and competitive loads in various phases of the body's biorhythms, a questionnaire and testing were conducted among 18 qualified Belarusian runners of various distances and 23 Chinese athletes involved in hockey. The age of the subjects is 16-20 years, and their sports experience is 3-9 years.

Results of the study and discussion. The analysis of questionnaires of coaches from Belarus and

China allowed us to obtain the following data. Thus, 68.8% of the surveyed Belarusian and 58,3% of Chinese specialists, when planning their work, do not take into account the phases of the female athletes' menstrual cycle. Accordingly, 12,5 and 16,7 percent do take into account, and 18,8 and 25,0% use information about the cycle partially, depending on the characteristics of its course. It is characteristic that 75,0% of respondents from Belarus and 83,3% from China are convinced of the mandatory conduct of training sessions in the menstrual phase, the rest do not see the need for this or approach the solution of this issue individually, depending on the athlete's well-being.

The respondents expressed the following opinions on the optimal amount of load in the menstrual phase of the menstrual cycle. Thus, 43,8% of Belarusian and 41,7% of Chinese coaches believe that training impacts during this period should be reduced by half, respectively 25,0 and 16,7% reduce the volume of the load by 20-30 percent from the maximum, the remaining respondents of the two countries do not change the planned volume depending on the psychophysiological and physical condition of the athletes. It was revealed that 56,3% of Belarusian and 58,3% of Chinese coaches consider the use of imitation exercises of a technical nature, aimed to a greater extent at developing flexibility, to be effective in the menstrual phase. At the same time, 18,8% of runners' coaches and 25,0% of hockey players believe that general physical training classes are more productive in this phase. Without exception, all Belarusian and Chinese specialists note the presence of psychophysiological changes occurring in the body of female athletes in the menstrual and, especially, in the premenstrual phase. Most often (as indicated by 81,3% of coaches in Belarus and 66,7% of coaches in China), this manifests itself in the fact that their trainees become irritable and psychologically unstable. Some athletes (18,8 and 16,7%, respectively) experience some lethargy, apathy towards the training process, lack of confidence in their abilities, and sometimes fear and reluctance to participate in competitions. Many coaches (56,3% of Belarusian and 66,7% of Chinese) have personal experience working with athletes whose OMC has virtually no effect on the effectiveness of the training process. The remaining specialists in the two countries claim that absolutely all of their trainees are significantly susceptible to the impact of the body's biorhythms on sports activities. 75,0% of the surveyed specialists in Belarus and 83,3% in China confidently stated that a female athlete with somatic and psychological properties typical of men can achieve success in sports. Thus, the coaches of the two countries do not have a single conceptual opinion in the approach to planning the educational and training process of female athletes in terms of biorhythmological features of the body and determining the optimal state in which it is possible to set the necessary training effects.

To study the course of the menstrual function and its relationship with the psychophysiological state of girls in various phases of the body's biorhythms, a survey of female athletes from two countries was conducted. During the experiment, they recorded the state of the body in self-monitoring diaries every day, and we kept a log of the subjects' biological cycle.

An analysis of the questionnaire data shows that the RB runners began to play sports at 10,3 years old, the PRC hockey players at 9,5 years old, and the OMC stabilized in most girls from both countries by the age of 14-15. The duration of the OMC in 55,6% of runners and 56,5% of hockey players is 27-29 days. Accordingly, 22,2% and 30,4% have 23-26 days, 16,7% and 8,7% have 21-22 days, and 5,6% and 4,3% have more than 30 days.

It should be emphasized that a shortened OMC (21-22 days) is difficult in itself for planning the training process, and the presence of any violations of the specific biological cycle in an athlete exacerbates these difficulties.

The duration of menstruation in 68,3% of all surveyed athletes is five days, 14,6% - four days, 9,8% - three days, 7,3% - six to seven days. At the same time, 85,4% of athletes feel worse before and during menstruation, pain in the pelvis, headaches. Reduced performance accompanies the premenstrual phase in 65,9 percent of respondents and the menstrual phase in 87,8 percent of respondents. All athletes participate in competitions regardless of the cycle phase, however, 85,4% of girls note that during menstruation this causes faster and deeper fatigue, and the recovery process takes longer than usual.

Analysis of data on the psycho-emotional state showed the following. 26,8% of respondents complain of increased fatigue, imbalance and unreasonable irritability in the first phase (menstrual), 4,9% in the second (postmenstrual), 12,2% in the third (ovulatory), 7,3% in the fourth (postovulatory) and 48,8% in the fifth (premenstrual). According to the subjective feelings of female hockey players, their physical and emotional state worsens in the ovulatory, premenstrual and menstrual phases of the cycle, against which precise spatial orientation decreases, muscle sensations worsen, the

Indicators of vertical jump height (cm) in different phases of the OMC in female athletes

Phases OMC	Before training		After training	
	Runners	Hockey players	Runners	Hockey players
	$\bar{O}$ ±S	$\bar{O}$ ±S	$\bar{O}$ ±S	$\bar{O}$ ±S
I	39,7±2,8	38,2±2,5	36,5±2,7	35,8±2,9
II	43,4±1,1	42,2±1,6	42,8±1,0	41,9±1,8
III	41,1±1,3	40,1±1,7	39,3±1,5	38,7±1,9
IV	45,0±1,2	44,2±1,6	43,9±1,4	43,1±1,6
V	40,3±2,0	40,6±2,1	37,2±2,3	38,3±2,1

time when athletes play slowly increases, and, consequently, the performance of individual players and the team as a whole decreases. As for runners, according to their perception, the best manifestation of special motor qualities is expressed in the II and, especially, IV phases of the cycle, while in the I, III and V phases there is a decrease in the implementation of dominant abilities. It is characteristic that, according to research data [1, 3, 7], it is the postmenstrual (II) and postovulatory (IV) phases of the cycle that are characterized by a high level of hormone concentration. Interesting data were obtained when analyzing the results of the Abalakov vertical jump, which the athletes performed daily before and after training (see table). Not only the phase of the OMC in which the jump test was conducted was taken into account, but also the volume and direction of training effects during this period.

It was found that the height of the vertical jump before training fluctuates on different days of the cycle in athletes from two countries from 38,2 to 45,0 cm, after training – from 35,8 to 43,9 cm. In both cases, the lowest results are shown in the menstrual (I), and the highest - in the postovulatory phase (IV). It is significant that the greatest difference is recorded in the jumps that were performed after training, and the greatest variability of indicators is observed in the menstrual phase. Moreover, the most significant variation is recorded after training, which is associated with both the implementation of training effects of different volume and direction, and with the individual reaction of the athlete's body to them.

Thus, the data of the study indicate the presence of phase changes in the indicators of motor abilities of athletes during the OMC, and the strongest effect of training loads on their motor potential is observed during unfavorable phases of the body's biorhythms.

Conclusions. It can be stated that in their work with the female contingent, coaches do not focus on the OMC, which negatively affects the functional state of athletes and, as a result, their athletic performance. At the same time, the training process organized taking into account the biorhythmological features of the female body will not only ensure higher overall performance, the proper level of special training of athletes, but will also preserve their reproductive health. At the same time, monitoring the individual dynamics of the functional indicators of a specific athlete in various phases of the biological cycle and, in this regard, the individualized focus of the applied training effects, largely optimize strategic approaches in preparation for the main competitions of the season.

References

1. Vrublevskiy E.P. Individualizatsiya trenirovochnogo protsessa sportsmenok v skorostno-silovykh vidakh legkoy atletiki. Moscow: Sovetskiy sport publ., 2009. 232 p.
2. Kozlov A.V., Budarnikov A.A., Zhuravleva Yu.S. Planirovaniye trenirovochnoy nagruzki v pauerliftinge s uchetom biologicheskikh osobennostey organizma sportsmenok. Uchenyye zapiski universiteta im. P.F. Lesgafta. 2018. No. 2 (156). pp. 101-107.
3. Kostyuchenko V.F., Vrublevskiy E.P., Kozhedub M.S. Vliyaniye bioritmiki organizma kvalifitsirovannykh sportsmenok na dinamiku ikh dvigatelnykh sposobnostey. Uchenyye zapiski universiteta im. P.F. Lesgafta. 2018. No. 4 (158). pp. 159-164.
4. Nikitushkin V.G. Zhenskiy sport. Textbook for universities. Moscow: Yurayt publ., 2022. 277 p.
5. Shakhlina L.Ya.-G. Mediko-biologicheskiye osnovy sportivnoy trenirovki zhenshchin. Kyiv: Nauk. dumka publ., 2001. 326 p.
6. Shakhlina L.Ya.-G. Osobennosti funktsionalnoy adaptatsii organizma sportsmenok vysokoy kvalifikatsii k bolshim fizicheskim nagruzkam. Sportivna meditsina. 2012. No. 1. pp. 20-30.
7. Sevdalev S.V., Kozhedub M.S., Vrublevskiy E.P., Mitusova E.D. Biorhythm-based individualization of training of female different distance runners. Teoriya i praktika fizicheskoy kultury. 2020. No. 5. pp. 83-85.

Ideas about the image of one's own body in women with physical activity

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Dr. Psych., Professor **O.V. Zashchirinskaya**[1, 2, 3]
PhD, Associate Professor **E.V. Zinovyeva**[1]
PhD, Associate Professor **N.A. Medina Bracamonte**[1]
PhD, Associate Professor **I.V. Kuznetsova**[1]
[1]Saint Petersburg State University, St. Petersburg
[2]The Herzen State Pedagogical University of Russia, St. Petersburg
[3]Russian Christian Academy for Humanities named after Fyodor Dostoevsky, St. Petersburg

Corresponding author: zaoks@mail.ru

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Abstract

Objective of the study was to broadening of perspectives on women's self-perception, with a focus on physical movement in daily life.

Methods and structure of the study. The research encompassed 30 women between the ages of 20 and 30. The research employed the psychodiagnostic technique, the "ASI-R" questionnaire on body image perceptions, the «MAIA-R» multidimensional assessment of interoceptive body awareness, and the «5PFQ» five-factor personality questionnaire.

Results and conclusions. For a period of two and a half months, a group of women aged between 20 and 30 (M = 24) underwent psychodiagnostics and kept a diary to explore their thoughts about their body image, taking into account their daily physical activity.

The study revealed five key factors that influence women's perception of their body image: physical activity, a positive attitude towards physical contact, a lack of self-care, a busy social life, and a heightened awareness of their body.

Young women who engage in physical activity, are conscious of their appearance, and enjoy physical contact tend to have a more positive body image.

Keywords: *body image, corporeality, body contact, body satisfaction, physical activity, self-monitoring of activity.*

Introduction. Men are more likely to engage in sports activities in their free time [1-4, 8]. Women have sufficient motivation to engage in physical exercise, but it is not sufficiently realized as a regular activity ($p<0,01$) [5-7, 12-15]. Among high school girls, absences from physical education classes were found not due to illness, but due to shyness and lack of interest in classes [1]. Women's use of physical activity is associated with their subjective ideas about their own bodies. Body image is a complex psychological construct with components characteristic of each person - evaluative, emotional, cognitive and behavioral. Self-assessment of body parts, shapes, weight and general appearance is associated with indicators of self-satisfaction. The emotional component manifests itself against the background of interaction with others, who, in the process of communication, indicate their attitude to the woman's physical characteristics. The cognitive emphasis in self-perception includes beliefs about the body, as well as anxiety when it does not match internalized ideals. The behavioral component often includes motor practices, including turning to various types of physical activity [3, 8, 10]. In modern everyday life, under the influence of information technology and social networks, the image of the female body becomes a dominant theme in experiences about oneself. Studies show that by adolescence, more than 70% of girls can report a desire to change their weight or figure [7, 9, 13]. The development of negative ideas about their physical indicators contributes to a general deterioration in

physical and mental health [6, 14]. Passive experiences do not help to predict the prospects for improvement based on existing bodily experience [5, 7]. An active personal position regarding the embodiment of one's dreams of a beautiful body provides a person with the opportunity to get used to constant movement in everyday life [5, 11]. Women who engage in physical activity are more likely to be able to sense their body and consciously experience it as the most important resource of their capabilities [7].

Objective of the study was to broadening of perspectives on women's self-perception, with a focus on physical movement in daily life.

Methods and structure of the study. Thirty women aged 20 to 30 (M=24) years took part in the study of their ideas about their body image. Observation using two-week diary entries was chosen as the main empirical method. Such data recording allowed for a qualitative analysis of ideas and experiences about their own body, as well as a more accurate determination of the daily physical activity of the study participant. In addition, a psychodiagnostic method was used, which included the questionnaire of ideas about appearance «ASI-R» (adapted by N.I. Khramtsova), a multidimensional assessment of interoceptive awareness of one's body «MAIA-R» (adapted by R.R. Popova and O.G. Lopukhova) and a five-factor personality questionnaire «5PFQ» (adapted by A.B. Khromov). Data were collected through Google forms, in which the respondents had to fill in all the points of the methods and keep a daily diary for two weeks. Data collection was carried out over two and a half months. During the survey, more than 100 people did not complete self-observation and answers to the questions of the methods, stopping at the first week of filling out the diary. Mathematical and statistical analysis of the obtained indicators was carried out in the SPSS Statistics 23 program using multivariate methods - regression and one-factor variance analysis (ANOVA).

Results of the study and discussion. The hypothesis of the study was that women with sufficient physical activity are better aware of their body features, are focused on self-care of their physical appearance and consider physical contact with loved ones to be significant.

The hypothesis of the study was that women who regularly engage in physical activity in their everyday lives are better aware of their body features, are focused on self-care of their physical appearance and consider physical contact with loved ones to be significant. For a convenient explanation of the context of the study, a simple formulation was proposed regarding interest in the image of one's own body – «listening to my body».

Based on the content analysis of the diaries, the entire female sample was divided into three groups taking into account the severity of the main studied indicator «Physical activity».

The first group of physically inactive women included those surveyed who practically did not report any types of activity that involved physical activity. In the second group, women mention it only a few times, while in the third group, they point out the importance of a lifestyle with physical activity and sports, associating these ideas with the motivation to maintain good physical shape. The results of the variance analysis allow us to detect certain significant differences in the groups under consideration. The participants of the third group, who mentioned the importance of physical activity in their diary entries more often than others, are characterized by regular monitoring of their own physical characteristics and the possibilities for improving them (p=0,037) (Figure 1). Women from the second group who periodically mentioned physical activity, compared to those surveyed in the first group, note greater dissatisfaction with their own body (0,017), as well as an increased desire to examine it, compared to women demonstrating high physical activity (p=0,022). Perhaps dissatisfaction with one's body, its study can cause emotional reactions that lead to periodic, but not systematic physical exercise.

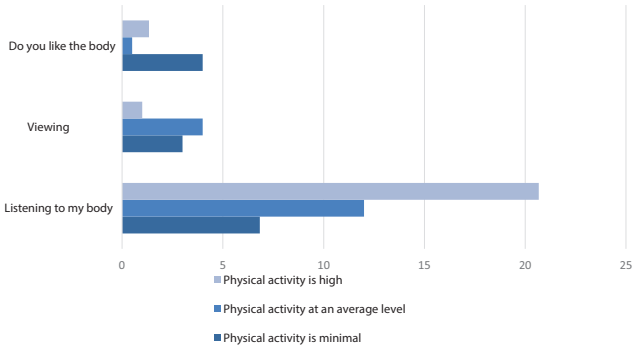

Figure 1. Comparative analysis of attitudes towards one's body in women with different levels of physical activity

Frequent observation of their bodily features was reported in the diaries by women who, for two weeks, did not mention the presence of physical activity in their usual work schedule and free time activities. They led a measured, sedentary lifestyle. The bodily aspect in their reflection on themselves was significant, but was not associated with the experience of an active position for change. In self-reports, they indicated that they looked at their bodies without demonstrating any emotions. When interpreting the obtained results of the study, five integral indicators were identified that are associated with women's ideas about their bodies: physical activity, a positive attitude towards physical contact, insufficient care of their bodies, active interaction with other people in everyday life, and attentiveness to their bodies (Figure 2).

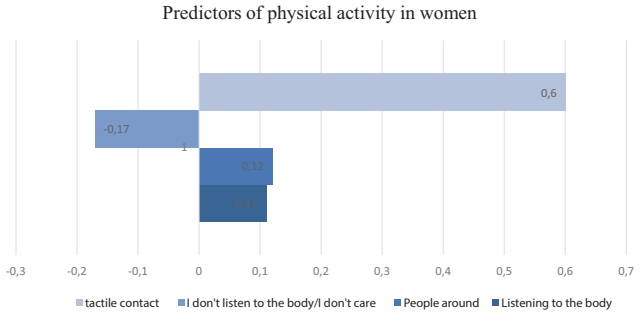

Figure 2. The influence of a number of indicators on women's physical activity

For women, the most important among the identified indicators is definitely «tactile contact». Apparently, the emphasis on pleasant interaction with loved ones, the importance of tactile contact with them can increase the importance of physical activity to achieve results in improving the parameters of one's own body.

Among all five indicators, «attentiveness to one's body» is of lesser importance for women, which may indicate a certain weakness of the volitional component in determining the necessary physical activity to achieve the desired changes in one's body image and the absence in their value-semantic sphere of orientation on the importance of attention to one's own corporality, the perception of one's body as a «value».

Based on the obtained results of the study, it can be assumed that young women who pay attention to their body, think about its parameters in the context of their own appearance, show an intention to improve their physical appearance. They reflect on ways to implement self-care. In bodily self-knowledge, the reactions of people around them during tactile interaction with them are important. Against the background of subjective ideas about one's body, motivation for changes arises, which, in turn, will contribute to an increase in physical activity.

Conclusions. The study confirms the hypothesis that attention to one's own body, understanding of one's own physical needs and emphasis on corporality when interacting with close significant people become internal intentions for increasing the physical activity of young women. One of the important internal experiences with increasing attention to one's own body and care for it may be an increase in negative assessments both in relation to the individual characteristics of one's body and in the actions taken to maintain oneself in good physical shape, which may determine a positive revision of personal orientation toward an active lifestyle.

References

1. Anokhina O.V Lichnostno-oriyentirovannyy podkhod dlya povysheniya fizicheskoy aktivnosti u devushek starshey shkoly na zanyatiyakh fizicheskoy kultury. Istoricheskaya i sotsialno-obrazovatelnaya mysl. 2017. No. 1. pp. 10-13.
2. Bolotin A.E., Mironova O.V., Lukina S.M., Yarchikovskaya L.V. Soderzhatelnyye i organizatsionnyye aspekty formirovaniya navykov zdorovogo obraza zhizni u studentov vuzov. Teoriya i praktika fizicheskoy kultury. 2016. No. 6. pp. 18-20.
3. Koval T.E., Yarchikovskaya L.V., Oshina O.V. Ispolzovaniye kombinirovannogo podkhoda v tekhnologii proyektirovaniya ozdorovitelnykh programm. Teoriya i praktika fizicheskoy kultury. 2015. No. 2. pp. 98-100.
4. Lobanov Yu.Ya., Kovalenko V.N., Mironova O.V., Tokareva A.V. Kharakter proyavleniya fizicheskikh kachestv v zavisimosti ot tipologicheskikh osobennostey konstitutsii studentov. Uchenyye zapiski universiteta im. P.F. Lesgafta. 2018. No. 2 (156). pp. 122-126.
5. Matveeva I.S., Usenko A.I., Karpenko M.M. Fizicheskaya kultura kak kompensator snizheniya fizicheskoy aktivnosti v sovremennom obshchestve. Uchenyye zapiski universiteta

im. P.F. Lesgafta. 2021. No. 12 (202). pp. 232-234.
6. Mironova O.V., Bushma T.V., Sharonova A.V., Bondarchuk I.L. Teloslozheniye kak faktor individualizatsii zanyatiy po fizicheskoy kulture studentov vuzov. Teoriya i praktika fizicheskoy kultury. 2022. No. 7. pp. 32-34.
7. Moskalenko I.S. Venediktov I.N., Sharonova A.V. et al. Metodika sovershenstvovaniya professionalno vazhnykh dvigatelnykh kachestv budushchikh spetsialistov zhenskogo pola na osnove professiogrammy. Uchenyye zapiski universiteta im. P.F. Lesgafta. 2021. No. 12 (202). pp. 242-247.
8. Skugarevskiy O.A., Sivukha S.V. Obraz sobstvennogo tela: razrabotka instrumenta dlya otsenki. Psikhologicheskiy zhurnal. 2006. No. 4. pp. 40-48.
9. Sharonova A.V., Sastamoynen T.V., Nikolenko O.A., Shigabudinov A.V. Regulyarnaya dvigatelnaya aktivnost kak osnova zdorovogo stareniya. Kultura fizicheskaya i zdorovye. 2024. No. 2 (90). pp. 355-359.
10. Yarchikovskaya L.V., Tokareva A.V., Mironova O.V., Kovalenko V.N., Ustinova O.N. Formirovaniye elementov zdorovogo obraza zhizni u studentov v protsesse zanyatiy fizicheskoy kulturoy. Teoriya i praktika fizicheskoy kultury. 2018. No. 2. pp. 85-87.
11. Alpkaya U. (2019). The relationship between the physical activity efficacy and physical activity of the middle school students. Pedagogics, psychology, medical-biological problems of physical training and sports. No. 23(2). pp. 59-65.
12. Del Busso L.A, Reavey P. (2011). Moving beyond the surface: a poststructuralist phenomenology of young women's embodied experiences in everyday life, Psychology & Sexuality.
13. Muennig P., Jia H., Lee R., Lubetkin E. I Think Therefore I Am: Perceived Ideal Weight as a Determinant of Health, American Journal of Public Health 98. No. 3. pp. 501-506.
14. Synofzik M., Vosgerau G., Newen A. I move, therefore I am: a new theoretical framework to investigate agency and ownership. Conscious Cogn. 2008. Vol. 17. pp. 411-424.
15. Wertheim E.H., Paxton, S.J. (2011). Body image development in adolescent girls. In T.F. Cash & L. Smolak (Eds.). Body image: A handbook of science, practice, and prevention (2nd ed., pp. 76-84). The Guilford Press.

Prevention of stress conditions of students by means of physical culture and sports

UDC 796

Dr. Sc.Phil., Professor **O.S. Mavropulo**[1]
PhD **L.M. Demyanova**[1]
PhD, Associate Professor **A.A. Tashchiyan**[1]
D.A. Zhikharev[1]
[1]Don State Technical University, Rostov-on-Don

Corresponding author: tashiyan@sfedu.ru

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Abstract

Objective of the study was to discover methods for preventing students from experiencing stress through physical activity and sports.

Methods and structure of the study. The research was carried out at the Don State Technical University in Rostov-on-Don, involving two groups of second-year students. The experiment took place from January to February 2024. To assess the stress levels of the students, a survey was administered.

Results and conclusions. For students experiencing high levels of stress, a tailored set of classes is recommended, which includes physical exercises designed to improve health, enhance the body's resilience, and promote a healthy lifestyle. These activities also help develop perseverance, endurance, and coordination. The study demonstrated the effectiveness of this comprehensive approach.

Keywords: *physical fitness, stress, sports, students, psychological state.*

Introduction. The educational process of students is associated with constant stress and irregular schedule, which is why stressful conditions often arise, which sometimes flow into depressive ones [2]. Stress factors include: poor sleep, debts, lack of interest in academic activities, fatigue - that is, heavy workload and lack of rest, conflicts with classmates, irregular meals, heavy academic workload [3]. Students often use various techniques to relieve stress. This includes communication with friends, walks in the fresh air, hobbies - for example, drawing, reading literature. According to many sources, fatigue and anxiety can be relieved by physical education and sports [1]. This can be any physical activity that distracts a person from anxiety, bad thoughts: for example, athletics, boxing, football, basketball.

Objective of the study was to discover methods for preventing students from experiencing stress through physical activity and sports.

Methods and structure of the study. The analysis of the necessary theoretical information on the specified issue was carried out, a scientific and practical study was organized and conducted, including a comparative pedagogical experiment and a questionnaire.

To achieve the stated goal, a pedagogical experiment was conducted at the Don State Technical University in Rostov-on-Don by involving two groups of 2nd year students. The experiment was conducted from January 2024 to February 2024. The control group was in the specialty «Pedagogical Education» (the program «Organization and Management of Preschool Education»), and the experimental group was in the specialty «Advertising and Public Relations» (the program «Digital Communications and Public Relations»). The age category of the study groups has a criterion from 18 to 25 years. The first group has 15 girls and 15 boys, the second group has 12 girls and 18 boys.

The study was conducted in stages. At the first stage of the survey, respondents, namely two groups, were asked questions of the following content to un-

derstand the initial data of both groups. Do you do physical education and sports outside of school hours? How often do you experience emotional or psychological tension? Are you often in a state of stress?

Based on the presented results, it was determined that the state of stress and emotional tension is present in both groups in approximately equal quantities. In other words, more than half of the respondents often experience stress, which confirms the need to prevent stressful conditions.

The second part of the questionnaire had an open answer. The following results were obtained during the study. The stress level had to be assessed on a five-point scale. 3 people assessed the stress level as one point, 8 people as two points, 15 people as three points, 27 people as 4 points, and 7 people as 5 points. Respondents answered the question about sleep time as follows: less than 6 hours a day – 25 people, 6-8 hours – 23 people, more than 8 hours – 12 people.

The next stage involved the proposal to introduce sports and physical education into the extracurricular activities of one of the groups – the experimental group, studying in the Advertising and Public Relations specialty (the Digital Communications and Public Relations program) and consisting of 30 people. For a month, the experimental group had to follow the instructions of the authors of the current study – the teachers. The list of tasks is presented in Table 1. This table shows the most common and basic ways of doing physical education as a means of reducing stress.

Throughout the experimental period, the study group was required to monitor the degree of fatigue in accordance with the signs indicated in Table 1.

Results of the study and discussion. After a month, namely in February 2024, the experimental group completed a control survey. Respondents assessed the degree of fatigue and stress after physical education and sports outside of school hours.

During the last study, we obtained the following results:

After the experimental period, more than 60% of the subjects showed an increase in their performance level, an improvement in their mood, a normalization of their sleep, an increase in the quality of their studies, and a decrease in their irritability. That is, such stress indicators as decreased performance, autonomic disorders, sleep disorders, and the appearance of fatigue during mental stress significantly decreased their indicators due to physical activity. The degree of overfatigue of the body and stress was assessed as incipient by 65% of respondents. The degree of overfatigue of the body and stress was assessed as mild by 25% of respondents. The degree of overfatigue of the body and stress was assessed as severe by 7% of respondents. The degree of overfatigue of the body and stress was assessed as severe by 7% of respondents.

Based on the presented data, we can talk about the high efficiency of using physical training tools to reduce and prevent stress levels in the body. In addition, students were asked one last question: will you continue to engage in physical education and sports outside of school hours? 90% of respondents answered positively.

C**onclusions.** According to the results of the experiment, the experimental group significantly increased their level of physical fitness, and at the same time reduced the level of stress in the body. The students of the experimental group increased their level of stress resistance and performance when completing assignments. Engaging in a set of physical activities aimed at strengthening health, hardening the body, develop-

Table 1 – Standard template for a personal physical training plan

№	Task	The means and methods used	Contents of funds
1.	Strengthening health, hardening the body, inclusion in a healthy lifestyle	Morning exercises, physical exercises, hygienic and natural factors, daily routine	A set of 10 exercises (their description); contrast shower, air baths; adherence to the daily routine, sleep, nutrition; a 30-minute walk before bed; moving from home to work (to study) and back on foot
2.	Developing persistence	Mandatory fulfillment of the planned daily and weekly tasks	Wake up at 6:30 a.m., go to bed at 11 a.m.; 45 minutes of physical exercise at 6 p.m.; self-study from 7 p.m. to 9 p.m.
3.	Development of coordination skills	Exercises to develop coordination of movements	Description of exercises, number of series and their repetitions
4.	Cultivating Endurance	Running, hiking, cycling, etc.	Running alternating with walking, gradually reducing it over the course of 30 minutes; hiking, cycling for 2-4 hours.

Table 2 – Brief description of the degree of fatigue and stress

Sign	Degree of fatigue and stress			
	Beginning	Easy	Expressed	Heavy
Decrease in capacity	Little expressed	Noticeably expressed	Expressed	Sharply expressed
The appearance of fatigue during mental stress	Under increased load	Under normal load	With a light load	No visible load
Sleep disorder	Difficulty falling asleep or waking up	Constantly having difficulty falling asleep or waking up	Daytime sleepiness	Insomnia
Vegetative disorders	Sometimes there is a feeling of heaviness in the head	Often a feeling of heaviness in the head	Occasional headaches, loss of appetite	Frequent headaches, loss of appetite

ing endurance, developing perseverance, outside of school hours contributed to the prevention of stressful conditions of the students of the experimental group. Thus, engaging in the set of 10 exercises proposed by us, a contrast shower, observing the daily routine, sleep and nutrition, as well as a 30-minute walk before bed, walking from home to school and back, getting up at 6:30 a.m., going to bed at 11 a.m., running alternating with walking with a gradual reduction in it for 30 minutes, hiking, cycling for 2-4 hours - indicates the high effectiveness of physical activity in preventing stressful conditions of modern students.

References

1. Bodrov V.A. Psikhologicheskiy stress: k probleme yego preodoleniya. Problemy psikhologii i ergonomiki. Tver. 2014. No. 4. pp. 43-52.
2. Internet – izdaniye «Gazeta.SPb». 2023. No. 4 Available at: https://gazeta.spb.ru/2515407-fom-bolshe-poloviny-rossiyan-zhivet-v-stresse-s-2022-goda/?ysclid=lq68hn3w2r247449378 (date of access: 10.06.2024).
3. Kondrasheva M.N. Reaktsii zdorovya. Nauka i zhizn. 2022. No. 11. pp. 19-23.

The significance of triumphing in adolescence: the perspective of the parent-child relationship

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PhD **T.B. Pozdnyakova**[1]
[1]Saint Petersburg State University, St. Petersburg

Corresponding author: tat_pozdnyakova@mail.ru

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Abstract

Objective of the study was to explore the correlation between achievement and well-being in boys and girls, as well as their parents.

Methods and structure of the study. 146 people (university students and their parents) took part in the research. The main diagnostic tool was the TS 36 method (value orientations – 36 positions). In addition, the Parable test, the KOSKOM method (Communicative and social competence), the Self-Assessment test (author of the methods V.N. Kunitsyna), and the 16-factor questionnaire by R. Cattell were used.

Results and conclusions. It has been established that success is highly valued by young people and their parents, with children having a higher level of importance. Interestingly, they value their own health even more than success in their chosen field. Health is of great importance for both children and parents, but for children, the importance of self-care, including attention to their health, appearance, interests, and status, is particularly relevant. For parents, there is a clear connection between health and caring for it, whereas some young people appreciate health but attach great importance to preserving, strengthening, and improving it, while others are indifferent to healthy lifestyles. The significance of success among children and parents does not have a statistically significant relationship with healthy lifestyles.. In a family, parents and children have different approaches to balancing the importance of achieving success with taking care of their health. They also have a direct connection to the value of good health.

Keywords: *values, achieving success, healthy lifestyle, health, self-care, adolescence, parent-child relationships.*

Introduction. In the modern world, a person's achievement of success in the professional sphere or personal life is one of the key vectors of his development, an indicator of his social maturity [1, 3, 7]. At the same time, success is often interpreted as the achievement of set goals. The result obtained should bring satisfaction both to the person himself and be positively assessed by the people around him [3].

On the way to prosperity, people's lifestyle is often far from being «healthy», since it is filled with low mobility, poor nutrition, smoking and alcohol consumption. At the same time, there are examples of a harmonious combination of activities aimed at achieving the intended goals and a healthy lifestyle.

In adolescence, questions of success arise in the light of making plans for life. Researchers note that the extent to which young people have a formed idea of success determines their personal growth and further effectiveness in life [6].

Adolescence is also the time of formation of the value structure of the individual. Parents play a major role in this process, influencing the formation of children's value orientations [5].

Expressing the importance of various aspects of reality for a person, values determine his relationships with other people and himself and act as important regulators of behavior and activity. In particular, they are of decisive importance in maintaining a lifestyle that promotes the preservation, strengthening and improvement of health [2].

It should be noted that at this age stage, it is extremely important to pay attention to the assimilation

of the principles of a healthy lifestyle. Habits formed in youth often persist into adulthood.

Objective of the study was to explore the correlation between achievement and well-being in boys and girls, as well as their parents.

Methods and structure of the study. The study sample included university students and their parents (mothers). The total number of respondents was 146 people.

The diagnostic tools included the TS 36 method (value orientations - 36 positions), the Proverbs test, the KOSCOM method (Communicative and social competence), the Self-esteem test (author of the methods V.N. Kunitsyna), and the 16-factor questionnaire by R. Cattell.

The values of achieving success and a healthy lifestyle, including the importance of health and self-care, were determined using the TS 36 method and reflected the importance for a person of striving to achieve their goals, prosperity; absence of physical and mental ailments; attention to their health, appearance, interests, status.

Results of the study and discussion. The average group indicators obtained on the sample of children and parents indicate that the value of achieving success is highly significant for children (M=9,11 out of 12 maximum possible points). Only the values of safety of loved ones (M=10,7; =1,27), understanding and trust in the family (M=9,4; =1,55) and one's own health (M=9,4; =1,75) are ranked higher. Self-care, including attention to one's health, is also included in the group of relevant values, but is slightly lower in the value row (M=8,46; =1,76). For parents, achieving their goals is important, but to a slightly lesser extent (M=7,86; =1,89). They place much higher importance on protecting family and loved ones (M=11,29; =0,98), understanding and trust in the family (M=10,63; =1,21) and their own health (M=9,97; =1,89). In addition, values that reflect principles in relation to themselves are more relevant for them: responsibility (M=8,64; =1,45), honesty (M=7,99; =2,11), having life goals (M=8,14; =2,06) and commitment (M=8,04; =1,98). Taking care of oneself is included in the group of average significant values (M=7,26; =2,18). As the calculation of Student's t-criterion showed, the difference between children and parents in the level of significance of the value of achieving success is statistically significant (t=3,65, p<0,001). For today's youth, the desire to achieve goals at the present time is more important than for their parents.

As for the values associated with a healthy lifestyle, on the one hand, there were no statistically significant differences in the level of importance of health (t=1,77, p>0,05). It is equally highly valued for both children and parents. On the other hand, caring for one's health, as well as one's appearance, status and interests, is more relevant at the level of statistical significance for children (t=3,67, p<0,001).

According to the data obtained, a statistically significant relationship exists only between the values of health and self-care for parents. Thus, the more important their own health is for them, the more attention they pay to caring for it, taking steps to maintain, strengthen and improve it.

Children also have a similar positive relationship between these values, but only at the trend level. Accordingly, among young people there are those who, while highly valuing health, also attach great importance to caring for it, and there are those who are absolutely indifferent to maintaining and improving their health.

At the same time, it should be noted that young people have a fairly strong negative relationship between the values of achieving success and health at the trend level. Thus, often the more they express their desire to succeed, the less attention they pay to their own health. At the same time, also at the trend level, a

Table 1. Indicators of the relationship between the value of achieving success and personality traits in adolescent respondents

Personality properties	The value of achieving success
Ignoring strategy	-0,269*
Factor I (rigidity – sensitivity)	-0,247*
Self-assessment of endurance (work capacity)	0,239*
Self-assessment of dexterity (dexterity, enterprise, practicality)	0,261*
Self-assessment of influence	0,235*

Note: * p< 0,05.

Table 2. The relationship between value orientations of the personality of children and parents

Values	The value of achieving success		Values	The value of achieving success	
	Children	Parents		Children	Parents
Welfare	0,275*	0,237*	Independence	0,141	0,252*
Ability to forgive	-0,262*	-0,173	Meaning of life	-0,043	0,236*
Authority	0,224	0,256*	Ambition	0,055	0,329**
Self-esteem	0,028	0,345**	Courage	-0,023	0,330**
Choosing your own goals	0,168	0,406***	World of beauty	-0,019	0,298*

Note: *p<0,05; **p< 0,01; ***p< 0,001.

positive but weak relationship was revealed between the values of achieving success and caring for oneself, which may indicate a combination of the desire to achieve goals and caring for one's appearance, interests, status and health.

In contrast, parents have positive relationships between the value of achieving success and values related to a healthy lifestyle. Parents, in their desire to succeed, attach greater importance to their own health and caring for it.

In the table 1 presents data on the relationship between the value of achieving success and certain personality traits, obtained from a sample of children.

It was found that the importance of achieving success among young respondents is directly related to a certain rigidity in relation to other people, rationality and practicality, high assessment of their own enterprise, efficiency and ability to influence other people, and a lack of inclination to ignore difficulties that arise in relationships. These connections are quite natural, since they reflect the focus of young people on achieving their goals.

In addition, statistically significant connections were found between the value of achieving success and other value orientations of the individual (Table 2).

The objectives of the study also included studying the relationship between the values of children and parents.

It was found that the indicators of the value of achieving success for children and their parents are not statistically interrelated ($r = 0,103$, $p > 0,05$). Accordingly, there may be families with both the same and different degrees of relevance of achieving the goals for children and parents.

As for the values related to a healthy lifestyle, the results are directly opposite.

The relationship between the indicators of the importance of one's own health is statistically significant ($r = 0,288$; $p < 0,05$). There is a direct correspondence between the relevance of health for children and parents. At the same time, the values of self-care are not related to each other at the level of statistical significance ($r = 0,199$, $p > 0,05$). Which in turn indicates the presence of families with different degrees of relevance for children and parents of attention to maintaining, strengthening and improving their health.

Conclusions. 1) Achieving success is of great value to young people and their parents. At the same time, the degree of its importance is higher for children.

2) Health, which implies the absence of physical and mental ailments, is of great importance for both children and parents. At the same time, the importance of self-care, including attention to one's health, appearance, interests and status, is more relevant for children.

3) Parents have a connection between the values of health and caring for it. The more important their own health is to them, the more attention they pay to caring for it, taking steps to preserve, strengthen and improve it. In contrast, among children, there are those who, while highly valuing health, also attach great importance to its preservation, and there are those who are absolutely indifferent to a healthy lifestyle.

4) The value of achieving success among children and parents does not have a statistically significant connection with the values of a healthy lifestyle. At the same time, at the trend level, we can say that parents often combine the desire to succeed with the importance of health and attention to it. In children, the value of achieving goals is often consistent with the irrelevance of the absence of physical and

mental ailments for them and the high importance of self-care.

5) The value of achieving success in adolescence is combined with the importance of material wealth, as well as with a set of properties that reflect a focus on achieving results, including: rationality, practicality, efficiency, influence, rigidity in defending one's position, unwillingness to forgive other people for mistakes.

6) In the family, children and parents have a direct correspondence in the value of health for them and there are different options for combining the relevance of achieving success and the importance of self-care, including attention to one's own health.

References

1. Baturin N.A. Psikhologiya uspekha i neudach. Study guide. Chelyabinsk: YUUrGU publ., 1999. 100 p.
2. Vasina E.A. Tsennostnyye oriyentatsii: fenomenologiya, struktura, dinamika. Monograph. Arkhangelsk: Tipografiya A4 publ., 2013. 83 p.
3. Labunskaya V.A. Psikhologiya uspeshnogo povedeniya lichnosti. Sotsialnaya psikhologiya lichnosti v voprosakh i otvetakh. Study guide. V. A. Labunskaya [ed.]. Moscow: Gardariki publ., 1999. pp. 52-87.
4. Lukyanchenko N.V., Dovydenko L.V., Alikin I.A. Tsennosti uspekha v predstavlenii studencheskoy molodezhi pokoleniya Z. Sotsialnaya psikhologiya i obshchestvo. 2019. Vol. 10. No. 2. pp. 82-94.
5. Semya v sovremennom mire. V.N. Kunitsyn [ed.]. St. Petersburg: Sankt-Peterburgskogo universiteta, 2010. 232 p.
6. Usynina N.I. Opredeleniye sushchnosti ponyatiya «molodezh». Vestnik Udmurtskogo universiteta. Filosofiya. Sotsiologiya. Psikhologiya. Pedagogika. 2013. Issue. 1. pp. 26-28.
7. Roberts A.R., Levine E.E., Sezer O. Hiding Success. Journal of Personality and Social Psychology. 2021. Vol. 120. No. 5. pp. 1261-1286.

The organization of the outcomes of student athletic progress within the framework of higher physical education in the Penza region

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PhD, Professor **A.N. Lutkov**[1]
PhD, Professor **V.G. Volkov**[1]
[1]Penza State University, Penza

Corresponding author: valeryvolkov@mail.ru

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Abstract

Objective of the study was to examine the historical phases of student sports in the context of higher physical education at Penza State University.

Results and conclusions. The article outlines the findings of a study examining the origins of Penza student sports. The article highlights the significant contributions made by the faculty of the specialized Faculty of Physical Culture, which later became the Institute of Physical Culture and Sports at PSU, in fostering the development of sports within the higher education system of the Penza region.

The article demonstrates that the institute, rooted in the rich history and traditions of previous generations, is now thriving in response to the current needs of society. It is actively engaged in the training of highly skilled coaches and professionals in the field of physical culture and sports.

Keywords: *student sports, sports club, physical education, institute of physical education, faculty of physical education, all-Russian Universiade.*

Introduction. The Institute of Physical Culture and Sports of Penza State University was founded in 2013 and is the successor of the Faculty of Physical Education at the Penza State Pedagogical University named after V.G. Belinskiy (PSPU). Since the beginning of its activities, the Institute has been actively promoting sports activities, in connection with which, at present, it includes five departments: «Theoretical Foundations of Physical Culture and Sports», «Gymnastics and Sports Games», «Cyclic Sports», «Physical Education and Sports», «Physical Education».

Objective of the study was to examine the historical phases of student sports in the context of higher physical education at Penza State University.

Results of the study and discussion. Since the opening of the faculty, sports work at PSPU has significantly intensified, in particular, volleyball, basketball, and ski teams of the university are sent to participate in competitions of various levels. The teachers and administration of the physical education department are actively involved: B.I. Kuvshinov, S.E. Frenkel, V.A. Polyakov, V.I. Lebedev. The faculty is establishing an unprecedented phenomenon in the history of the fatherland – the All-Union Voluntary Sports Society «Burevestnik». In the USSR, the society united students, faculty, and employees of higher educational institutions, as well as their family members on a semi-professional basis; it was organized in 1957.

As in the whole country, in PSPU (currently PSU) the basis of sports, its primary organization, was the sports club, which was created in the university, as a rule, by student and local trade union committees. The sports club of PSPU named after V.G. Belinskiy, and later of the entire Penza State University, has a colorful history, outstanding achievements in team and individual sports. In different years,

the sports club was headed by well-known specialists in the field: V.G. Dunaev, V.P. Soprunenko, V.N. Supikov, A.A. Loginov, V.S. The Institute has a good educational, methodological and sports base: a gymnasium, games halls, halls for weightlifting and powerlifting, an athletics stadium, a swimming pool, ski bases, a football field and scientific and methodological offices. Among the graduates of the institute are participants, winners and prize winners of regional, Russian and international competitions, European and World Championships, Olympic Games, 31 Honored Teachers of Physical Education, more than 150 teachers of the highest category, 29 Honored Trainers of the Russian Federation, eight Honored Workers of Physical Culture of the Russian Federation, 11 Honored Masters of Sports, nine Olympic champions. Famous hockey players studied within the walls of the institute, such as V. Pervukhin – Honored Master of Sports of the USSR, silver medalist of the Winter Olympic Games (Lake Placid, 1980), Olympic champion (Sarajevo, 1984), 11 seasons played for the USSR national team in the European, World Championships and Olympic Games, in which he won 15 gold, one silver and three bronze medals; A. Gerasimov – Honored Master of Sports, Olympic champion (Sarajevo, 1984); A. Kozhevnikov is an Honored Master of Sports, two-time Olympic champion (Saraevo, 1984 and Calgary, 1988); S. Yashin is an Honored Master of Sports, Olympic champion (Calgary, 1988). There were successes in other sports, but it is not possible to cover them within the framework of this article.

The search for new forms of improving the quality of the educational process requires constant understanding and systematization of the use of teaching methods, and the solution to this problem is possible only on the basis of the development of modern theoretical means of educational technologies, taking into account the structure and principles of training.

A significant role in the formation of the intellect of physical education teachers that meets the interests of modern society is played by the organization and work of the student scientific society (SSS) circles, in which the institute poses problems related to the improvement of the educational and training process and the results of research work are reported at traditional scientific and practical conferences of the university. Participating in SSS circles, students acquire the skills of pedagogical observations and setting up pedagogical experiments, learn to process and interpret the results obtained.

In addition, speaking in front of students and teachers in the audience, they acquire the skills of logical presentation of their thoughts, which has a beneficial effect on the formation of organizational skills of future physical education teachers.

It is necessary to emphasize the high role of independent work of students, where the existing bank of scientific and methodological information in the departments is used for its implementation. Here we also note the focus of individual work with students, which consists of a deep study of the specifics of the teaching methods of the curriculum disciplines and the development of sports exercise techniques, which is the basis for successful teaching activities.

Over the course of 70 years, the number and names of specialties in which training was conducted at the faculty changed in accordance with state requirements and changes in the labor market. These specialties include the following: 1977 – «physical education», 1988 – «basic military training and physical education», 1993 – «life safety and physical education», 1995 "physical education and sports" with the additional specialization «valeologist-rehabilitation specialist», 1996 – «physical education and sports» with the additional specialization «teacher-valeologist», 1998 – «physical education and sports», 2001 – «physical education» with the additional specialization «manager in physical education», 2001 – «pre-conscription and physical training», 2006 – «physical education» with the additional specialization «sports coach», «physical rehabilitation», «physical education» with the additional specialization «safety life activity», «physical education» with an additional specialization «organization of children's and youth sports», 2011 – «pedagogical education» (profile «Physical education», graduate qualification – Bachelor), 2013 – «physical education» (profile «Sports training in the chosen sport», graduate qualification – Bachelor)», «pedagogical education» (profile «Physical education», graduate qualification – Master).

In 2012, PSU named after V.G. Belinsky was merged with Penza State University, the faculty of physical education entered the structure of PSU and in December 2012 was renamed the Institute of Physical Education and Sports (IPES).

Today, the structure of the institute has five departments: Department of «Theoretical Foundations

of Physical Education and Sports»; Department of «Gymnastics and Sports Games»; Department of Cyclic Sports; Department of Physical Education and Sport; Department of Physical Education.

In 2024, the Center for Sports Training, headed by Doctor of Pedagogical Sciences A.A. Pashin, was included in the structure of the Institute of Physical Education and Sport. The main areas of activity of the Center for Sports Training:

- organization of educational and training activities;

- organization of psychological and pedagogical support for the training of highly qualified university student athletes;

- organization of sports and mass work of PSU.

Currently, more than 600 full-time and part-time students - citizens of the Russian Federation and foreign citizens - are studying at the Institute of Physical Education and Sport.

The Institute annually organizes and hosts scientific conferences and physical education Olympiads for schoolchildren.

During its work, the Institute, and earlier the faculty, has graduated thousands of specialists, including dozens of outstanding sports leaders, coaches, physical education teachers, world-famous athletes. Traditionally, graduates of the Institute become sought-after employees of law enforcement agencies, special forces, and servicemen of the Russian Armed Forces.

The Institute of Physical Culture and Sports and its sports facilities are the base for physical education classes for all PSU students; dozens of department teachers conduct practical classes for students of all specialties, combining this work with scientific developments and sports work in the PSU sports club and the Sports Training Center. Over the past five years, students and graduates of the institute have inscribed their names in the PSU Sports Hall of Fame: Russian skier Alexey Aleksandrovich Chervotkin, Olympic champion in the relay (2022), Denis Mikhailovich Ablyazin – Russian gymnast, Olympic champion in team all-around (2020), Alexander Aleksandrovich Bolshunov – Russian skier, three-time Olympic champion (2022),

The Internet media «Studentsport.ru» published a ranking table of universities by the number of medals of students and graduates - participants in the 2022 Olympic Games in Beijing (see figure).

Ranking of Russian Universities at the Winter Olympic Games in Beijing

A total of 16 universities are represented in the ranking. Penza State University holds the lead. PSU has four medals. They were brought to the university's Olympic collection by Alexander Bolshunov, a Master's student at the Institute of Physical Education and Sports (gold in the relay, gold in the skiathlon, and silver in the individual start race) and Alexey Chervotkin, a graduate of the Institute of Physical Culture and Sports (gold in the relay). In April 2023, Alexander Gulyakov, Chairman of the Council of Rectors of Universities of the Penza Region, Rector of Penza State University, and Alexander Lutkov, Professor of the Department of Cyclic Sports, Senior Coach of the PSU Cross-Country Skiing Team, Honored Coach of Russia, were included in the Strategic Council of the Penza Region.

Conclusions. The conducted research allowed to highlight the main organizational features of the formation and development of student sports in the Penza region over the past almost seventy years. Thanks to the initiative of the enthusiastic founders of the physical culture movement in the region, student sports became the starting point for many outstanding coaches and teachers.

Unfortunately, the achievements and path of development of student sports at the Penza Polytechnic Institute (later PSU) in the years before the reorganization of the two largest universities in the Penza region were left outside the topic of this

study. The latter is interesting, first of all, because student sports at the Penza Polytechnic University were developed by graduates of the physical education faculty of the pedagogical institute.

In conclusion, three stages of the formation and development of student sports at the university can be identified. 1956-1991 - the stage of sports development on the basis of the UVSS «Burevestnik»; 1992-2012 – the stage of development of student sports under the auspices of sports clubs of two subsequently united universities; 2012 to the present day – the stage of work of the sports club of the largest university in the Volga region, the organization and work of the Sports Training Center.

References

1. Volkov V.G., Lyapin R.I., Khmelkov A.N. Gimnastika. Stanovleniye i pervonachalnoye razvitiye na territorii Penzenskoy gubernii. Study methodological guide for physical education teachers, students of the physical education faculty. Penzenskiy gosudarstvennyy pedagogicheskiy universitet im. V.G. Belinskogo. Penza, 2006.
2. Volkov V.G. Nekotoryye osobennosti formirovaniya i kharakteristika osnovnykh shkol sambo penzenskoy oblasti. Aktualnyye problemy fizicheskogo vospitaniya, sportivnoy trenirovki i adaptivnoy fizicheskoy kultury. Proceedings of the All-Russian scientific-practical conference with international participation, dedicated to the 65th anniversary of the Institute of Physical Culture and Sports of Penza State University, Penza, November 16-17, 2021. V.V. Belyaeva, A.A. Rogov, A.N. Lutkov [ed.]. Penza: Penzenskiy gosudarstvennyy universitet, 2021. pp. 40-46.
3. Fakultet fizicheskoy kultury. Ocherki istorii k 50-letiyu FFK PGPU im. V.G. Belinskogo. V.G. Volkov [ed.]. Penza: OOO «Tipografiya Tugusheva» publ., 2006. 107 p.
4. STUDENTSPORT.RU podvel itogi neofitsialnogo reytinga rossiyskikh vuzov na Zimnikh Olimpiyskikh igrakh (21.02.2022). Rossiyskiy studencheskiy sportivnyy soyuz. [Official website]. Available at: https://studsport.ru/21.02.2022_studentsportru_podvel_itogi_neofitsialnogo_reytinga__rossiyskih_vuzov_na_zimnih_olimpiyskih_igrah (date of access: 05.12.2024).

A hybrid approach to teaching physical education students the skills of managing and organizing sporting events

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I.P. Golyakov[1]
A.S. Busyreva[1]
Dr. Hab., Professor **E.K. Gitman**[1]
[1]Perm State Humanitarian Pedagogical University, Perm

Corresponding author: golyakov_ivan@mail.ru

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Abstract

Objective of the study was to demonstrate the feasibility and efficacy of incorporating game design techniques into a blended learning approach for aspiring physical education instructors seeking to enhance their abilities in organizing children's sports play.

Methods and structure of the study. The research was conducted at the Perm State Humanitarian Pedagogical University. The study included 36 students from the Faculty of Physical Education, specializing in 44.04.05 Pedagogical Education with two profiles: «Physical Culture» and «Additional Education». The article outlines the process of developing the components of future physical education teachers' readiness to organize children's play activities in the context of hybrid learning. The article also presents a modified version of the game design technology as a versatile tool for the organizer of game forms.

Results and conclusions. The findings of the educational experiment demonstrated a substantial superiority of the blended learning approach in acquiring the skills of game development over the conventional lecture-based instructional method.

Keywords: *readiness to organize children's play activities, hybrid learning, play design technology.*

Introduction. In connection with the transformation of the educational process of the university in the context of global digitalization, the need to create an innovative educational space has been identified, one of the elements of which is the introduction of distance and hybrid learning formats into practice. Hybrid learning (Hybridlearning) is a complex learning model that includes synchronous implementation of online and offline components of the educational process [5]. A hybrid lesson provides an opportunity for students to simultaneously participate in the classroom and remotely, combining synchronous and asynchronous learning, which creates a unique learning dynamic, erases the boundaries between the physical location of students, expanding the target audience. This format allows you to involve remote students in the continuous learning process who are unable to attend classes, which is often associated with participation in competitions and training camps, and their interaction with both the teacher and students present in the classroom [6]. The hybrid learning format can be used quite successfully in the process of training future physical education teachers to ensure their readiness to organize various types of children's activities, including play. Thus, the question arises about the need to develop students' readiness to organize children's play activities. Generalization of the results of various studies [2, 4] allows us to identify a number of skills that make up the content of this type of readiness, namely the skills to: select and develop new play forms; predict educational activities based on the gradual involvement of the child in play activities; organize and creatively apply play activities; adapt known play forms to specific conditions; diagnose pedagogical interaction with a group of children, forming their own reflexive position;

To form the listed components of readiness, we modified the technology of game design as a universal tool in the activities of the organizer of game

forms. Game design is a creative activity of a teacher that allows analyzing, developing, formalizing, testing, adjusting and modifying known and inventing new forms of play activities, choosing the best ones from them, taking into account specific conditions. The technology of game design allows teachers to create an infinite number of new games [3].

Objective of the study was to demonstrate the feasibility and efficacy of incorporating game design techniques into a blended learning approach for aspiring physical education instructors seeking to enhance their abilities in organizing children's sports play.

Methods and structure of the study. The pedagogical experiment was conducted with second-year students of the Faculty of Physical Education, studying in the field of training 44.04.05 Pedagogical Education (with two training profiles «Physical Education» / «Additional Education»), in which 36 people took part. The students were equally divided into the experimental and control groups. The following methods were used to determine the level of readiness of the subjects to organize children's game activities: competence-oriented tasks, pedagogical observation, assessment of the products of students' creative activity, expert assessment of the implementation of game forms in practice. During the third semester, from February to May 2024, within the framework of the discipline "Game Technologies" developed by us, students of the experimental group mastered the technology of game design with the introduction of a hybrid learning format. The interaction of the teacher and students in the classroom and students absent from the lesson was carried out on the Teams platform. Students of the control group mastered the discipline "Game Technologies" in the classical lecture form. During the classroom group work, students were expected to create a fundamentally new game form, or an original modification of already known forms. In order to develop a stable skill of game creativity, students were offered tasks of varying complexity and focus during the training.

The first type of tasks were reproductive exercises to identify and master existing game mechanics, which were discussed in detail in the field of game design [4]. Students were offered tasks to identify and reproduce game strategies within the framework of active games (for example, game mechanics: «Achievement», «Avoidance», «Gradual information feedback», "Joint research", «Countdown», «Deterrents», «Modifiers», «Lottery», etc.).

The second type of tasks were variation exercises using tools from the theory of inventive problem solving [1]. Based on this system, we developed a game constructor on the online platform Miro, where students in the experimental group were asked to synthesize new game models by combining various game functions: catch up, touch, hit, find, hide, repeat, etc., setting different game constraints: time, physical, informational, etc. The third type of tasks are exercises based on a number of combinatorial manipulative operations – typical fantasy techniques formulated by G.S. Altshuller [1]. The first group of techniques includes qualitative and quantitative changes in the properties (characteristics) of a game object (playing field, number of players, additional inventory): change in shape, color, material, state of aggregation, spatial position, purpose, increase/decrease in size, increase/decrease in quantity. The second group of techniques includes: copying and stylization, trend method, specialization, fragmentation and unification, animation, inversion, dynamization/statics, acceleration/deceleration. The hybrid format for mastering these techniques involved group interaction of students in the experimental group on the Didipad platform, which allows creating, publishing and editing multimedia joint stands in a vertical classroom on an interactive whiteboard. The game development stage was followed by the stage of designing a new game form – a description of the essence and conditions of the game and its visualization. This stage of game design technology was implemented in a hybrid format on the Supa graphic editor platform, designed to create and edit visual game products of joint creative activity.

Results of the study and discussion. At the beginning of the formative experiment, the following indicators of the formation of students' readiness to organize children's play activities were observed in the experimental and control groups, respectively: low level in 42,72% and 44,0% of students; average level – in 38.15% and 36.0%; high level – in 19,13% and 20,0% of students. At the end of the experiment, similar indicators were as follows: low level in 24,12% and 7,0% of students; average level – in 45,75% and 38,4%; high level – in 30,13% and 54,6% of students. A comparative analysis of the results of the study of students' readiness to organize children's sports play

activities showed greater efficiency of the hybrid format of studying the technology of game design compared to the traditional lecture and seminar approach to teaching.

During the educational practice of the second year, new forms of play activities were tested. In the event that the pedagogical feasibility and educational potential of the new forms developed by the students were recognized, they were recommended for use within the framework of industrial summer teaching practice in a children's health camp in the third year.

Conclusions. In the course of the conducted pedagogical study of the process of formation of students' readiness to organize children's gaming activities, the possibility and effectiveness of studying the technology of game design in a hybrid format was proven. Students mastering this technology in a hybrid format showed more significant dynamics in such indicators as the ability to carry out diagnostics of pedagogical interaction with a children's group, the ability to form their own reflexive position of their activities, the ability to adapt new game forms to conditions and the ability to organize and creatively apply game activities. In our opinion, this is due to the continuity and visibility of the hybrid educational process, a transparent system for assessing results in real time, unlimited access to educational materials and support of the educational process by the teacher.

References

1. Altshuller G.S. Nayti ideyu. Vvedeniye v teoriyu resheniya izobretatelskikh zadach. Petrozovodsk: Skandinaviya publ., 2003. 240 p.
2. Irkhina E.N. Podgotovka studentov fizkulturnykh vuzov k osushchestvleniyu podvizhnoy igrovoy deyatelnosti v fizicheskom vospitanii rastushchego cheloveka. Kultura fizicheskaya i zdorovye. 2024. No. 1 (89). pp. 90-96.
3. Kudashov G.N. Igrovoye konstruirovaniye. Tyumen: OOO «Pechatnik» publ., 2018. 102 p.
4. Orekhov E.F., Bykov E.V. Sovremennyye aspekty podgotovki spetsialistov v sfere fizicheskoy kultury. Teoriya i praktika fizicheskoy kultury. 2016. No. 5. pp. 3-5.
5. Smirnova V.V., Torgovitskaya K.Yu. Kachestvo obrazovaniya v usloviyakh gibridnogo obucheniya. Sovremennoye obrazovaniye: soderzhaniye, tekhnologii, kachestvo. 2023. Vol. 1. pp. 175-177.
6. Tkachenko P.V., Petrova E.V., Belousova N.I. Gibridnoye obucheniye kak sposob povysheniya effektivnosti obrazovaniya. Azimut nauchnykh issledovaniy: pedagogika i psikhologiya. 2021. Vol. 10. No. 3 (36). pp. 277-279.

The framework and syllabus of the optional course in physical education, «Phygital-sport»

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PhD **S.S. Sidorov**[1]
Dr. Hab., Professor **V.P. Sushchenko**[1]
Postgraduate student **A.A. Usovich**[1]
[1]Peter the Great St. Petersburg Polytechnic University, St. Petersburg

Corresponding author: sidorovss10@mail.ru

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Abstract

Objective of the study was to support the educational framework of the optional physical education course «Phygital Sport».

Methods and structure of the study. The framework is built upon a thorough examination of educational and instructional materials on the arrangement of educational and training processes and comprehensive pedagogical assessment in the following sports: computer gaming, basketball (3x3), mini-football, and track and field. In the creation of the pedagogical model, we adhered to the following principles: incrementalism, coherence, engagement, balanced development, and gamification.

Results and conclusions. The fundamental aspects of the curriculum, the allocation of time by subject and semester, the typical format of the lessons, the logistical support for the course, and the criteria for evaluating the quality of the course are outlined. The outcomes of this research can be applied in the implementation of physical education programs that incorporate phygital sports in educational settings.

Keywords: *phygital physical education, elective physical education, phygital sport, z-generation, pedagogical model, computer sport, phygital sport.*

Introduction. Currently, there is a decrease in the motivation of student youth for physical education and sports activities. Researchers note the negative dynamics of attendance of physical education classes among senior students compared to first-year students [4, 2], as well as the index of satisfaction with the organization of teaching [5]. The task of activating cognitive interest in physical education classes in accordance with the principle of independent choice of an elective course and taking into account individual characteristics is relevant. Modern students and schoolchildren born before 2010-2012 are representatives of the «Z-generation» or the generation of virtual communication. Their education took place in the information society, so they are characterized by obtaining most of their knowledge from the Internet using a variety of multimedia devices, as well as spending a significant amount of time on social networks and video games. The authors note [3] that employees of the physical education and sports sphere need to turn to the positive characteristics of the new generation in the educational process: quick inclusion in the tasks that interest them, digital competence, focus on achievements, striving for self-realization, ambition. Thus, among the 1st and 2nd year students of economic and technical universities of Moscow, 93.5% of people from the study group noted an interest in studying physical education in the form of gamification [8]. In order to improve the educational process in physical education classes, Russian universities began to use interactive teaching methods with elements of phygital sports. For example, in physical education classes at the Baltic State Technical University «VOENMEKH» named after D.F. Ustinov in 2023, the phygital sports discipline «Rhythm Simulator» was

successfully introduced [1]. The authors of another work propose including VR technologies and computer simulators of game sports in the structure of the elective course «Winter Football» in the amount of up to 20% of the training time [6]. It is noted that elements of phygital technologies reliably increase attendance at physical education classes, performance indicators and have a beneficial effect on the development of teamwork. Thus, the combination of active activities in the physical and digital environments using electronic devices for gamification of the educational process in the «Z-generation» environment seems to us to be a promising trajectory for the development of physical education in higher education.

Objective of the study was to support the educational framework of the optional physical education course «Phygital Sport».

Methods and structure of the study. The development is based on the analysis of educational and methodological literature on the organization of educational and training activities and comprehensive pedagogical control in the following sports: computer sports, 3x3 basketball, mini-football and track and field. The choice of these areas was due to the material and technical conditions that were created within the framework of the Priority 2030 program on the basis of the phygital center of Peter the Great St. Petersburg Polytechnic University [7]. When developing the pedagogical model, the following principles were observed: gradualness, consistency, activity, harmonious development, gamification.

Results of the study and discussion. The pedagogical model of the elective course «phygital sport» was developed in February 2023 and represents a set of interconnected components of the educational process, which are aimed at solving the following problems: harmonization of physical development, health improvement and reduction of the level of physical inactivity; development of mental abilities and physical qualities for mastering a rational technique for performing actions in a digital environment and on a sports ground; formation of communication skills and teamwork; study of the history of the development of phygital sport and the phygital movement, rules and features of sports competitions of a new format; stimulation of

Distribution of academic hours by topics and semesters

Topic name	Total	Semester			
		1	2	3	4
Topic 1. Safety precautions (safety precautions during the lesson; safety and self-safety techniques; preparing the workplace for educational activities)	16	4	4	4	4
Topic 2. Physical training (drill exercises; gymnastic exercises; track and field exercises; general physical training; special physical training; outdoor games and special types of physical activity in the preparation of a phygital athlete)	48	12	12	12	12
Topic 3. Features and modern development vectors of phygital sports (history of the phygital movement development; sports competitions in the format of the Future Games; categories «tactics», «sport», «technology», «strategy», «speed»; requirements and specifics of organizing phygital sports competitions; digital devices, sports equipment and equipment used in phygital sports competitions; software products used in phygital sports competitions)	8	4	4	0	0
Topic 4. Physical part of phygital sports disciplines (basketball 3x3; mini-football)	24	6	6	6	6
Topic 5. Digital part of phygital sports disciplines (battle arena DOTA 2; tactical 3D battle CS2; sports simulators NHL, FIFA, NBA; fighting games Tekken and Mortal Kombat; technical simulator Assetto Corsa; rhythm simulator)	52	14	14	12	12
Topic 6. Tactics of individual and team play in types of phygital sports programs (analysis of game moments influencing the situation in the physical and interactive part of the selected type of program; tactics of individual play depending on the role of the athlete in the physical and interactive part of the selected type of program; team tactical techniques in the physical and interactive part of the selected type of program)	28	6	6	8	8
Topic 7. Organization and holding of competitions in the phygital format (regulations on the competition, panel of judges, schedule of games and results table, site preparation, holding of competitions, summing up)	24	4	4	8	8
Assessment of physical fitness, passing control standards	16	4	4	4	4
Independent work of students	96	24	24	24	24
Credit	16	4	4	4	4
TOTAL	**328**	**82**	**82**	**82**	**82**

students' motivation by realizing their "I" and transferring the strongest to the university phygital sport team. The development of the elective course program is designed for 328 academic hours. The distribution of hours by topics and semesters is shown in the table. From the data provided, it is clear that the workload is 54 hours of practical classes and 24 hours of independent study each semester during the 1st-2nd years of study.

The distribution of activities during classes corresponds to the principle of harmonious development. Each semester, students spend 50% of their time actively engaged in the digital environment using personal computers, game consoles, virtual reality systems, and car simulators based at a specialized phygital center. The remaining 50% of the time, students spend in the physical environment on sports grounds using sports equipment. The content of the physical part of the phygital sports disciplines is dominated by general physical training, and sports training is aimed at developing basic practical skills in 3x3 basketball and mini-football: stances and movements, individual ball handling techniques in attack and defense, team tactics of players in defense and attack. The content of the digital part of the phygital sports disciplines in the first semester is aimed at familiarizing with the main sports video games, and in the following semesters – at in-depth specialization in one of the following areas: combat arena, tactical 3D combat, sports simulators, fighting games, technical simulator or rhythm simulator.

The structure and principles of constructing a lesson on the elective course «Phygital Sport» are classical: a preparatory part (20-25 min), the main part (60-65 min) and the final part (5-10 min). Within the framework of one lesson, it is proposed to solve problems either with active activity in the digital environment, or only in the physical one. This is due to the peculiarities of the material and technical support of the discipline, the peculiarities of information perception by representatives of the «Z-generation» and the hygienic factor. Conducting training sessions on the sports ground corresponds to the generally accepted methodological rules. A typical lesson using digital devices in the preparatory part includes performing a set of exercises in a standing position at a digital device and special «Rasklik» exercises in accordance with the chosen discipline. In the middle of the main part of the lesson, students perform a set of exercises at a digital device with elements of finger gymnastics, as well as gymnastics for the eyes. The final part includes a set of breathing exercises. Special material and technical support for the discipline includes: personal computers with peripherals and a headset (20 pcs.), assembled car simulators (2 pcs.), PlayStation5 game consoles with a set of peripherals (2 pcs.); Oculus Quest 2 virtual reality systems (2 pcs.). This volume of digital devices will allow conducting classes in study groups of up to 30 people. The main criteria for assessing the quality of mastering the discipline are: the results of student attendance at classes; the results of passing control standards for physical and special training; the results of the control survey of students (at the level of familiarization); the result of participation in competitions and judging practice. The following exercises are used as control tests to assess physical fitness: 100 m run, 2000 m run (girls), 3000 m run (boys), forward bend from a standing position on a gymnastic bench, long jump from a standing position with a push of two legs, pull-ups from a hanging position lying on a low bar 90 cm (girls), pull-ups from a hanging position on a high bar (boys). To assess special fitness, the following exercises are used, posted on the online portal cyberten.ru: special coordination, reaction speed, speed of thinking, visual memory, Aim training, click test, fine motor skills, concentration, target control, switching attention.

Conclusions. The proposed pedagogical model of the elective course «Phygital Sport» is a set of interconnected components of the educational process. The program is designed for 328 academic hours during the 1st-2nd year of study. The distribution of activities corresponds to the principle of harmonious development. Each semester, students actively engage in the digital environment at a specialized phygital center for 50% of the time and spend 50% of the time in the physical environment on sports grounds. The content of the physical and digital parts depends on the material and technical support of the discipline and includes general physical training, sports and outdoor games, as well as computer areas.

References

1. Blinova A.V., Solovyev M.M., Svyatchenko P.B. Ispolzovaniye elementov fidzhital-sporta na zanyatiyakh po fizicheskoy kulture v vuze. Kultura fi-

zicheskaya i zdorovye. 2024. No. 2 (90). pp. 24-28.
2. Butchenko E.K., Tagirova N.D. Effektivnost vozdeystviya muzykalnogo soprovozhdeniya na poseshchayemost studentami zanyatiy po fizicheskoy kulture. Uchenyye zapiski universiteta im. P.F. Lesgafta. 2022. No. 5 (207). pp. 70-75.
3. Vasilyeva N.V., Matveeva N.A. Otnosheniye predstaviteley pokoleniya Z k fizicheskoy kulture i sportu v vuze. Vestnik Chuvashskogo gosudarstvennogo pedagogicheskogo universiteta im. I.Ya. Yakovleva. 2021. No. 1(110). pp. 105-111.
4. Gut Yu.N., Kabardov M.K., Kosheleva Yu.P., Zhambeeva Z.Z., Osnitskiy A.K. Dinamika osobennostey motivatsii k fizicheskoy kulture u studentov nesportivnykh spetsialnostey. Teoriya i praktika fizicheskoy kultury. 2023. No. 1. pp. 73- 75.
5. Zyukin A.V., Shelkova L.N., Leppik M.E., Barchenko S.A. Dinamika urovnya fizicheskoy podgotovlennosti studentov, pedagogicheskikh spetsialnostey v zavisimosti ot motivatsii k zanyatiyam fizicheskoy kulturoy. Nauchnoye mneniye. 2018. No. 4. pp. 54-59.
6. Kapilevich L.V., Ilin A.A., Wang Ya., Li T. Struktura elektivnogo kursa po fizicheskoy kulture «Zimniy futbol» s ispolzovaniyem fidzhital-tekhnologiy. Teoriya i praktika fizicheskoy kultury. 2024. No. 9. pp. 49-51.
7. Sidorov S.S., Kerimov Sh.A., Sushchenko V.P. Osobennosti sozdaniya materialno-tekhnicheskikh usloviy dlya razvitiya fidzhital-sporta v obrazovatelnykh organizatsiyakh. Studencheskiy sport: innovatsii, tekhnologii i tsifrovaya transformatsiya. Proceedings of the I All-Russian scientific-practical conference dedicated to the 40th anniversary of the Higher School of Physical Education and Sports of the Immanuel Kant Baltic Federal University, Kaliningrad, March 30-31, 2023. Kaliningrad: Baltiyskiy federalnyy universitet im. Immanuila Kanta, 2023. pp. 221-224.
8. Simina T.E., Loginov O.N., Tatarova S.Yu. et al. Analiz vospriyatiya sovremennoy studencheskoy molodezhyu novykh podkhodov k organizatsii uchebnogo protsessa po fizicheskoy kulture. Uchenyye zapiski universiteta im. P.F. Lesgafta. 2023. No. 4 (218). pp. 377-381.

The social impact and factors influencing the «Phygital football – everyone plays» festival

UDC 796

PhD, Associate Professor **G.B. Glazkova**[1]
Postgraduate student **A.A. Dubrov**[1]
PhD, Associate Professor **N.N. Uvarova**[1]
M.V. Nachevskiy[1]
[1]Plekhanov Russian University of Economics, Moscow

Corresponding author: glazkova_fitnes@mail.ru

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Abstract

Objective of the study was to scientific and empirical validation of the social impact of phygital football festivals at the local level.

Methods and structure of the study. The Kursk region was selected as the pilot location for the implementation of the project «Social and Sports Festival «Phygital Football — Everyone Plays!» (Festival) in 2024. The project was supported by experts from the Plekhanov Russian University of Economics, who provided scientific, methodological, informational, research, and analytical assistance.

Results and conclusions. During the execution of the project, the following social impacts were observed: a surge in interest in phygital football among young people, with students continuing to play friendly matches between their departments after the official competitions, thanks to the dissemination of information about the new sport through meetings with university leaders, the involvement of renowned athletes as promoters, and the participation of girls, including international students. The emotional aspect of digital football, the chance to engage in digital sports regardless of geographical location, and the potential for students to participate in regular physical activity and mass sporting events in the face of contemporary social challenges.

Keywords: *phygital football, schoolchildren and students, social and sports festival, social effects, development determinants.*

Introduction. The modern younger generation (phygital generation Z) is characterized by psychological and physiological characteristics (virtual life, digitalization of education and communications, passive recreation with gadgets, low physical activity, decreased physical development and fitness), which lead to deterioration of their health [4].

The modern younger generation (phygital generation Z) is characterized by psychological and physiological characteristics (virtual life, digitalization of education and communications, passive recreation with gadgets, low physical activity, decreased physical development and fitness), which lead to deterioration of their health [4].

The current situation determines the need to develop phygital sports in educational organizations (EO), combining classical and computer sports. Such integration will resolve pedagogical and social problems of involving students in regular physical activity, balance the ratio between digital and traditional types of their leisure and sports activities [1, 2]. Phygital football is currently gaining popularity among school and university students. It combines playing with a ball in a virtual environment and on a sports field, and opens up opportunities for the implementation of communication and cooperation skills of those involved, as well as the demonstration of their physical abilities.

Objective of the study was to scientific and empirical validation of the social impact of phygital football festivals at the local level.

Methods and structure of the study. The Kursk region was chosen as the experimental site, where

the project «Socio-sports festival «Phygital football - everyone plays!»» (Festival) was implemented in 2024 in order to attract students to participate in phygital football competitions to improve their psychophysical health, successful socialization and self-realization in the context of modern challenges. Scientific, methodological, informational, research and analytical support for the project was provided by representatives of the Plekhanov Russian University of Economics. The project was implemented in educational organizations (schools, secondary vocational schools, universities) of urban and rural settlements of the Kursk region (more than 10000 participants) the final matches were held at the Plekhanov Russian University of Economics. The project «Socio-sports festival «Phygital football - everyone plays!»» included the following stages of implementation: informational and research, operational and practical, scientific and methodological and analytical.

During the information and research stage the following were defined:

- target groups of participants: schoolchildren, students, families of refugees, internally displaced persons (DPR, LPR, Zaporizhia and Kherson regions);

- project geography (educational and physical education and sports organizations of urban and rural settlements of the Kursk region);

- development prospects (football is the most popular sport in the Kursk region, which determines the successful development of phygital football in urban and rural settlements, however, the expected increase in the number of people involved in phygital football determines the training of specialists in this sport);

- sociological research: questionnaire No. 1 of project participants to identify interest in phygital football competitions, both in physical and digital formats; questionnaire No. 2 of Festival participants on satisfaction with the phygital football competitions held and improving the quality of the Festival, allowing for an analysis of the project promotion in the Kursk region;

- the optimal direction for the development of phygital football in the region, taking into account the SWOT analysis of the organization and promotion of the project, which allowed identifying the weaknesses and risks of the project, developing solutions that contribute to the successful promotion of the project. More than 10,000 respondents took part in the sociological study within the framework of the project: 45% of males (teenagers, young men and men) and 41% of females (teenagers, girls and women) took part in the 1st survey, 57% and 43%, respectively, in the 2nd survey.

Results of the study and discussion. The study presents the results of the analytical stage of the project «Socio-sports festival of the Kursk region «Phygital football - everyone plays!»», namely, a comparative analysis of sociological surveys, a summary of the results of the project promotion, identification of qualitative and quantitative indicators and social effects of the Festival for the development of phygital football in other subjects of the Russian Federation.

In survey № 1, low recognition of phygital football as a sport was revealed: only 9% of students answered the question «What is phygital football?». After the Festival, an increase in the level of knowledge was re-

Table 1. Analysis of the sociological study of project participants

№	Questions	№ question naires	gender	No	Play	Look	Play and Look
1	Do you like football?	1	male	23%	16%	8%	10%
			female	30%	4%	4%	5%
		2	male	5%	30%	10%	12%
			female	12%	8%	9%	14%
2	Do you like virtual FIFA football matches?	1	male	8%	27%	3%	12%
			female	28%	14%	2%	6%
		2	male	3%	29%	5%	15%
			female	12%	20%	4%	12%
				Viewer	Athlete	Judge	Volunteer
3	In what capacity would you like to participate in the competition?	1	male	29%	17%	3%	0%
			female	39%	10%	2%	0%
	In what capacity did you take part in the Festival competitions?	2	male	12%	36%	1%	2%
			female	17%	28%	1%	3%

vealed - 62% of respondents answered correctly (Table 1).

As the results showed, male respondents initially spend more time playing computer games (the figures at the initial stage were quite high and the increase was small). After the Festival, female respondents showed a great interest in cyber football, which shows the exciting format of phygital football.

The survey revealed that before the Festival, respondents did not want to take part in competitions, possibly due to their limited knowledge of this sport. The final survey revealed a large increase (especially among female respondents) in those who took part in phygital football competitions and want to compete in this exciting and fascinating functional-digital format. A comparative analysis of the responses to the question of the 1st survey, «In what capacity do you want to participate in the phygital football competitions?» and the 2nd survey, «In what capacity did you participate in the Festival competitions?» showed the following results:

- 68% of respondents wanted to be spectators (29% male and 39% female), 27% of respondents took part as spectators (12% and 17%, respectively), which indicates that respondents switched to other groups;

- 27% wanted to be athletes (17% male and 10% female), 64% took part in the competitions (36% and 28%, respectively). It should be noted that in survey #2, the answers to this question showed that phygital football, which includes a digital part (cyber game), captivates girls and young women so much that they happily move to the sports ground to play mini-football (the physical part of phygital football) to finish the match. In confirmation of the survey results, the formation of female phygital football student teams, including foreign students, was recorded.

Analysis of respondents' answers to this block of questions showed a large increase in athletes, which was facilitated by the following factors:

- meetings of the project organizers with the heads of educational organizations with a presentation of «Phygital Football» to promote information within organizations;

- viral dissemination of information about the Festival among students of the Kursk region (exciting format of the games, positive emotions from victories were passed on to friends in other educational organizations);

- media publications «Phygital Football Festival in the Kursk Region».

To confirm this, let us consider the answers of the Festival participants to the question «From what sources did you learn about the phygital football tournament in the Kursk region?». The largest increase in the transfer of information about the Festival occurred between the participants themselves: 19% of male and 15% of female respondents learned about the competitions from friends.

In second place in terms of information transfer were social networks, which was facilitated by the work of the project team promoters in the VK group «Phygital football - everyone plays» (15% and 16%, respectively), and female respondents communicated more, learning information on social networks. It is also worth noting the dissemination of information about the competitions from coaches, since football is the leading sport in the Kursk region, coaches distributed information between coaches and students.

The involvement of parents in recommendations to children about phygital football competitions indicates, on the one hand, a desire to involve children in a new sport, and on the other, trust in the project team, promoting functional-digital activity in the context of modern challenges. The prolonged effect of the project «Phygital Football - Everyone Plays!» was already revealed at the first stage of the Festival:

- after the official competitions in secondary vocational and higher education institutions, friendly matches between students in phygital football continued;

- the heads of the educational institutions, seeing the interest of students in the competitions, began to plan the introduction of phygital football into the curricula and sections.

To the next question «Did you like the events organized within the framework of the Festival?» the respondents divided their opinions between the answers: I liked it very much and it was exciting (27% and 26%; 9% and 12%, respectively). Noting the large increase in this festival of participants, it is worth emphasizing that for them this format was exciting. At the same time, boys, young men and men showed a greater desire to increase the number of competitions in the Festival formats.

The analysis of the second questionnaire showed how the attitude of the Festival participants to the phygital football competitions changed (Table 2).

Males are seriously interested in this sport (34%); 47% of participants are ready to recommend phygital

Table 2. Attitude of Festival participants to competitions

№	Questions	gender	Yes, I want to get serious about it	The spectators liked to support the team	No, it hasn't changed
1	Has your attitude towards phygital football changed after participating in the festival?	male	34%	16%	5%
		female	18%	17%	10%
			Yes	I want to create my own team	Involve your relatives
2	Would you recommend your friends to participate in this event in the future?	male	47%	11%	2%
		female	32%	6%	2%

football to their friends; 11% want to create their own phygital team. 18% of females are seriously interested in phygital football; 32% are ready to recommend it to their friends and 6% of participants are ready to create their own phygital team.

The results obtained indicate the positive impact of the Festival events, which contributed to the development of students' interest in functional-digital sports (phygital football), increased physical activity, improved health, and the development of team spirit, determination and the will to win.

Conclusions. The social effects of the project «Socio-sports festival of the Kursk region «Phygital football - everyone plays!»» include the following:

- rapid development of interest in phygital football among young people, when after the official competitions students continued to play friendly matches between faculties, which is due to the dissemination of information about the new sport through meetings of the project team with university leaders, the involvement of famous athletes-promoters;

- involvement of girls, including foreign students, which is explained by the exciting format of phygital football, where the digital part (cyber game) aroused sports excitement in girls and the desire to continue sports competition on the sports field (mini-football); as well as the rules of the unrated phygital football tournament, taking into account the psychophysical fitness of athletes;

- the emotional background of phygital football, which contributed to the development of international communication between students from different countries;

- the opportunity to engage in phygital sports regardless of geographic affiliation. In particular, at the Festival competitions, teams from rural schools beat teams from city schools that were professionally involved in classic football.

Thus, the introduction of a social and sports model for involving schoolchildren and students of the Kursk region in mass sports through phygital football contributed to the greater involvement of students in regular physical activity, participation in mass sports events in the context of modern social challenges.

The socially oriented sports festival of the Kursk region «Phygital Football - Everyone Plays!» is a clear positive demonstration of innovative mechanisms for successful socialization, adaptation and integration of participants into modern society, which are the basis for the idea of holding phygital competitions.

References

1. Galitsyn S.V. Perspektivy razvitiya fidzhital-sporta na studencheskom urovne. Uchenyye zapiski universiteta Lesgafta. 2023. No. 8 (222). [Electronic resource]. Available at: https://cyberleninka.ru/article/n/perspektivy-razvitiya-fidzhital-sporta-na-studencheskom-urovne (date of access: 10.06.2024).
2. Dubrov A.A., Mamonova O.V., Lubyshev E.A., Glazkova G.B. Professionalnyye kompetentsii spetsialistov v inklyuzivnoy fizkulturno-sportivnoy srede vuza. Teoriya i praktika fizicheskoy kultury. 2024. No. 4. pp. 57-58.
3. Uvarova N.N., Glazkova G.B., Dubrov A.A. Rol soft skills v formirovanii zdorovogo obraza zhizni i fizicheskoy kultury lichnosti podrastayushchego pokoleniya. Kultura fizicheskaya i zdorovye. 2023. No. 3(87). pp. 91-95.
4. Kharitonov V.Yu., Uvarova N.N. et al. Razvitiye fidzhital-sporta (fidzhital-futbola) v subyektakh RF (na primere Kurskoy oblasti) kak sredstvo sotsializatsii uchashcheysya molodozhi. Problemy sovremennogo pedagogicheskogo obrazovaniya. Collection of scientific papers. Yalta: RIO GPA publ., 2024. Issue. 85. Part. 3. pp. 340-345.

National sports and competitions in applied physical education of schoolchildren of the Sakha Republic: theoretical aspect

UDC 796.06

Postgraduate student **A.A. Efimov**[1]
Dr. Hab., Professor **V.V. Ponomarev**[1,2]
PhD, Associate Professor **D.S. Prikhodov**[2,3]
[1]Siberian Federal University, Krasnoyarsk
[2]Prof. V.F. Voino-Yasenetsky Krasnoyarsk State Medical University, Krasnoyarsk
[3]Reshetnev Siberian State University of Science and Technology, Krasnoyarsk

Corresponding author: vaspon59@mail.ru

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Abstract

Objective of the study was to theoretically substantiate and develop the program content of applied physical education for schoolchildren of the Sakha Republic based on national sports and competitions and recommend it for practice.

Methods and structure of the study. The study was conducted during 2024 in schools of the Sakha Republic. The program and methodological support of applied physical education of schoolchildren was analyzed, pedagogical observations, conversations, questionnaires were conducted, the accumulated factual material was systematized, applied skills and abilities of household, hunting, fishing and other economic activities for productive life in local climatic and geographical conditions of residence were tested.

Results and conclusions. An analytical review of scientific and methodological literature on the subject of the work, pedagogical observations of practical classes, conversations, and software analysis showed that insufficient attention is paid to applied physical education in the schools of the Sakha Republic, training the younger generation for effective and productive economic, social, and everyday activities in difficult climatic, geographical, and natural conditions of life in the Sakha Republic. Based on the collected and systematized factual material, a variable program of applied physical education of schoolchildren of the Sakha Republic was developed, which includes the following sections: national sports of the Sakha Republic; applied exercises that form economic skills for traditional Yakut life; national exercises that form applied hunting and fishing skills; applied survival skills in the taiga and traditional forms of hardening the body from low temperatures. A correctly formed program of applied physical education of schoolchildren of Yakutia contributes to the formation of economic and everyday readiness of the younger generation for effective activity and living in the harsh natural and climatic conditions of the Sakha Republic.

Keywords: *program, applied physical education, national sports and competitions, schoolchildren, Yakutia.*

Introduction. At present, the applied focus in physical education of children and youth is of great importance, which includes, first of all, the preparation of the younger generation for future life, the formation of skills and abilities of household and household orientation, applied motor skills for professional activities, readiness to defend the Fatherland and to act in adverse natural conditions, in various natural disasters, calamities, environmental catastrophes, etc. Of particular importance is the applied focus of physical education of schoolchildren of the Sakha Republic living in adverse climatic and geographical conditions. As practice shows, insufficient attention is paid to the applied focus in physical education based on national sports and competitions in schools of the Sakha Republic. This national-applied approach allows us to prepare the younger generation of the Sakha Republic for optimal and safe life in local conditions, to support age-old national traditions and historical ties that contribute to the survival of the local population in the harsh conditions of the North, to improve and perfect their surrounding life, etc. All this as a whole determined the relevance and subject matter of our research.

Objective of the study was to theoretically substantiate and develop the program content of applied physical education for schoolchildren of the Sakha Republic based on national sports and competitions and recommend it for practice.

Methods and structure of the study. The study was conducted during 2024 in schools of the Sakha Republic. The program and methodological support of applied physical education of schoolchildren was analyzed, pedagogical observations, conversations, questionnaires were conducted, the accumulated factual material was systematized, applied skills and abilities of household, hunting, fishing and other economic activities for productive life in local climatic and geographical conditions of residence were tested.

Results of the study and discussion. As a result of the collected factual material and analysis of the traditions of the motor and competitive cultures of the local ethnic group, a variable program of applied physical education for schoolchildren of the Sakha Republic was developed based on national sports and competitions (Table 1).

The sections of the variable program of applied physical education based on national sports and competitions presented in Table 1 consistently form applied skills of household activities and safe behavior in the tundra and taiga in schoolchildren of the Sakha Republic in primary school, then in basic school the skills of cross-country running, hunting and fishing are consistently formed, hardening forms and means for the body from low temperatures of the environment are offered. In secondary school, sports skills of practicing national sports are formed: «hapsagay» - Yakut national wrestling; stick tug (mas-wrestling); jumping over sleds; Yakut jumps: on one leg, multiple jumps and long jumps with a run; Yakut «vertushka», etc. Upon completion of each practical section of the program, control of the formed applied skills and abilities is carried out.

Conclusions. The developed variable program of applied physical training of schoolchildren of the Republic of Sakha allows for the progressive formation of applied skills of economic and national activities and life of the indigenous population in the younger generation of the republic, maintaining traditions and improving the national motor culture taking into account the requirements of modern reality and further progressive development and filling of the historical heritage and experience of the new generation of the Republic of Sakha.

References

1. Efimov A.A., Yatsenko S.V., Ponomarev V.V. Natsionalnaya borba «khapsagay» kak bazovaya osnova v sportivnoy podgotovke yunykh bortsov volnogo stilya Respubliki Sakha. Teoriya i praktika fizicheskoy kultury. 2024. No. 4. 41 p.
2. Ponomarev V.V. Pedagogicheskiye tekhnologii fizkulturnogo obrazovaniya shkolnikov Kraynego Severa. Doct. diss. (Hab.). Tyumenskiy gosudarstvennyy universitet, 2002. 290 p.

Table 1 – Variable program of applied physical education of schoolchildren of the Republic of Sakha based on national sports and competitions

№	Program material (sections)	Hours	Classes		
			1-4	5-9	10-11
1.	**Theoretical section:**	**8**	**2**	**3**	**3**
1.1.	National life, traditions and culture of the indigenous people of the Sakha Republic	2	1	1	-
1.2.	National games and competitions	3	1	1	1
1.3.	National sports	2	-	-	2
1.4.	Applied focus of national competitions and games	1	-	1	-
2.	**Practical section:**	**50**	**14**	**20**	**16**
2.1.	Exercise for developing household skills	12	8	4	-
2.2.	Applied exercises for developing hunting and fishing skills	11	2	6	3
2.3.	Formation of readiness for safe behavior and life in the conditions of taiga and tundra	8	2	4	2
2.4.	Formation of skills for hardening the body and readiness for the effects of unfavorable natural and climatic and geographical living conditions on the body	9	2	4	3
2.5.	National sports and competitions	10	-	2	8
3.	**Control section:**	**10**	**1,5**	**4**	**3,5**
3.1.	Functional control	2	-	1	1
3.2.	Physical fitness control	3	1	1	1
3.3.	Control of the formation of applied motor skills and abilities	2,5	-	1,5	1
3.4.	Theoretical control of knowledge of applied physical education based on national sports and competitions	1,5	0,5	0,5	0,5
4.	Total number of hours by sections	68	17,5	28	22,5

Employing digital tools to facilitate self-directed learning in aerobics classes

UDC 378.147

PhD, Associate Professor **T.V. Bushma**[1]
PhD, Associate Professor **E.G. Zuykova**[1]
PhD, Professor **L.M. Volkova**[2]
PhD, Associate Professor **A.Yu. Lipovka**[3]
[1]Peter the Great St. Petersburg Polytechnic University, St. Petersburg
[2]Saint-Petersburg State University of Civil Aviation named in honor of Air Chief Marshal A.A. Novikov, St. Petersburg
[3]Lesgaft National State University of Physical Education, Sport and Health, St. Petersburg

Corresponding author: bushmat@mail.ru

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Abstract

Objective of the study was to examination of the potential of information and communication technologies (ICT) in facilitating self-directed learning in recreational aerobics classes.

Methods and structure of the study. The research was conducted through a variety of methods, including: a review of a wide range of scientific and methodological literature, encompassing both domestic and international publications on the integration of ICT in physical education; an examination of our own practical teaching experience; quantitative research techniques, such as testing and surveys, to evaluate the impact of ICT from the perspective of students; qualitative methods, such as observing the educational process when ICT is employed; statistical analysis of the collected data using specialized software to identify trends and correlations.

Results and conclusions. The effective use of information and communication technologies in the independent work of students is a crucial element of modern education. The successful integration of ICT can enhance student motivation, improve educational outcomes, and prepare them for the demands of the information society.

The technological factors that contribute to the success of independent work are identified, and the required student skills are defined, aligned with the objectives for independent work at each stage of professional training.

Keywords: *aerobics, information and communication technologies, independent work, students, educational process.*

Introduction. In modern higher education, independent work of students is presented as one of the mandatory forms of the educational process, which is allocated a significant part of the academic load [3, 5].

The use of computer technologies is a necessary condition for the high-quality organization of independent work of students and today is considered in the context of an effective toolkit of a teacher and pedagogical technology, which is reflected in the formation of a new style of work, both for a teacher and a student. Informatization of the discipline «Elective Physical Education and Sports» is aimed at the process of providing the methodology and subject content of practical developments, the creation of an integrated system of independent work and creative tasks [2, 4, 12].

An analysis of modern publications indicates the growing role of information and communication technologies (ICT) in the modernization of the process of teaching physical education [8, 9-11]. Education is in a state of constant renewal, characterized by the rapid development of software and the emergence of innovative digital applications. These dynamics do not simply change the means and methods of teaching, but fundamentally transform the content of educational activities, making them more independent, creative and individualized [1, 9]. Students gain access to an unlimited amount of information, which stimulates them to search, analyze and critically understand data, increasing their motivation for learning and promoting the development of self-education skills [6, 7]. In this context, studying the use of ICT in the organization and management of physical education and sports, as well as their impact on teaching methods in higher education institutions, is particularly relevant. It is necessary to deeply explore how new technologies

can not only improve the quality of education, but also help adapt the educational process to the individual characteristics of students and increase the effectiveness of the training process.

Objective of the study was to examination of the potential of information and communication technologies (ICT) in facilitating self-directed learning in recreational aerobics classes.

Methods and structure of the study. The following methods were used to conduct the study: study and in-depth analysis of a vast array of scientific and methodological literature, including both domestic and foreign publications devoted to the use of ICT in physical education; analysis of my own practical teaching experience, including observation of students, analysis of their results and feedback; detailed analysis of the ways in which students use ICT when completing independent work; quantitative research methods, such as testing and questionnaires, allowing us to assess the effectiveness of using ICT from the students' point of view; qualitative methods, such as pedagogical observation of the educational process using ICT; statistical processing of the obtained data using special software packages to identify patterns and correlations. The use of information technology in physical education classes opens up wide opportunities for improving the effectiveness of learning. Online platforms and mobile applications provide access to extensive databases with exercises, video lessons, training programs, which allows students to create individual training programs, track their progress and access information anytime and anywhere.

Results of the study and discussion. Independent work of students plays a key role in the academic discipline «Elective Physical Education and Sports» in the specialization «Health Aerobics». The increased importance of this activity emphasizes the need to take into account the individual and personal characteristics of students. Students' desire to independently manage their personal time and achievements also plays a significant role.

Thus, a necessary condition for the full-fledged education of a modern student is the creation and updating of an educational and methodological complex in the information space. In the specialization, an attempt was made to present the educational material as informative, practice-oriented and in demand in modern realities as possible. For this purpose, an information and communication environment was created, including:

- structured video materials of educational programs with a large amount of visual material for 1st and 2nd year students;
- a block of educational and methodological manuals;
- a block of information and methodological support for independent work of students;
- scales for assessing the success of students' motor activity;
- parameters and criteria for assessing independent work at all stages of training. In addition, ICT promotes cooperation and communication between students and teachers. Online forums and chat groups allow interaction, exchange of experience, and instant help and support. Video recordings of classes allow students to review the material and clarify unclear points, and study the technique of performing exercises. Online testing and assessment systems allow the teacher to quickly and objectively assess the knowledge and skills of students, and students to track physical activity and progress. The specialization has developed a block of independent work and creative tasks, an algorithm for their implementation by semesters, which is based on the Bloom system of educational goals, which is based on the most basic goals and corresponding skills and abilities, and at the peak - complex and multi-component ones. This algorithm has been tested in the educational process, which made it possible to create conditions for active independent activity of students. Target settings at all stages of training are aimed at achieving a given educational result. At the end of each semester (stage of training), students must demonstrate a certain level of practical skills acquired in the process of performing independent work and creative tasks. Computer technologies have made it possible to create an information data bank for performing creative tasks and independent work, systematize pedagogical information, promptly present it at the request of students, analyze and evaluate the results of pedagogical influence. The presented model specifies the goals, main stages, principles and conditions for the effective use of ICT in the educational process of specialization.

The authors used sociological methods to assess the degree to which students use information technology in the educational process. The sub-

jects were 238 first-year students and 88 second-year students studying in the Health Aerobics specialization at SPbPU.

The survey results showed that the majority of students (75.2%) agree that without the use of digital technologies, the productivity of learning will decrease and, accordingly, it will be more difficult to achieve a significant effect from training and get high results from learning. However, only 10.1% of the surveyed students would like to switch completely to e-learning in Elective Physical Education.

92.9% of respondents use ICT in preparation for practical classes, in independent work and when completing creative tasks. Watching videos stimulates cognitive activity in the subject being studied in 85.9% of respondents, and 85.3% of respondents were able to apply the acquired special knowledge and skills in practice. Teachers noted that the implementation of ICT as a means of methodological support for classes helps students master and perform exercises more quickly, reduces the time for explaining the material, and notes the effect of increasing the motor density of the lesson. The results of pedagogical observation showed that the following should be noted among the positive factors of using ICT:

• students' concentration on the educational material;

• manifestation of stable motivation for systematic classes, 88.3% of respondents plan to do physical exercises in the future;

• acquisition of personal experience in the creative use of these technologies and tools in classes in their free time;

• manifestation of independence and creative activity.

However, the introduction of ICT in the process of teaching physical education is associated with certain difficulties. This may include lack of funding, lack of necessary modern equipment, lack of competence of teachers in the field of ICT. It is also important to take into account the psychological aspects of using ICT, for example, the risk of digital addiction and the negative impact on the health of students. Only an integrated approach that takes into account all aspects of the introduction of ICT will achieve maximum efficiency in the educational process in physical education.

Conclusions. 1. High-quality organization of independent work of students using information and communication technologies is an important aspect of the modern educational process. Successful implementation of ICT can significantly increase students' motivation, improve the quality of education and prepare them for the challenges posed by the information society. 2. Technological features that affect the success of organizing independent work of students have been identified, the level of necessary student competencies has been formulated, corresponding to the target settings when performing independent work at all stages of training in the specialization. 3. Teachers constantly monitor and evaluate the effectiveness of using ICT, adapting teaching methods to constantly changing technologies and the needs of students.

References

1. Grigoryev V.I., Yarchikovskaya L.V., Sharonova A.V., Byakova T.G. Forsayt perestroyki fizicheskoy kultury na preodoleniye posledstviy pandemii COVID-19. Uchenyye zapiski universiteta im. P.F. Lesgafta. 2021. No. 2 (192). pp. 71-77.
2. Katrenko M.V., Kulikova T.A., Poddubnaya N.A., Zhuravleva Yu.I. Tsifrovyye tekhnologii v obrazovatelnom protsesse po fizicheskoy kulture. Vestnik Severo-Kavkazskogo federalnogo universiteta. 2023. No. 2 (95). pp. 222-232.
3. Kudryavtseva E.Yu., Gavrilova T.G., Tabakaeva I.V. Vozmozhnosti ispolzovaniya informatsionnykh obrazovatelnykh tekhnologiy pri organizatsii samostoyatelnoy raboty studentov. TSITISE, publ. 2017. No. 4(13). 33 p.
4. Lipovka A.Yu., Bushma T.V., Zuykova E.G. et al. Organizatsiya obucheniya distsipline «Elektivnaya fizicheskaya kultura» so studentami v usloviyakh distantsionnogo obucheniya. Uchenyye zapiski universiteta im. P.F. Lesgafta. 2022. No. 5(207). pp. 261-266.
5. Lubysheva L.I. Optimizatsiya samostoyatelnoy raboty studentov v sisteme fizicheskogo vospitaniya na osnove elektronnykh obrazovatelnykh resursov. Teoriya i praktika fizicheskoy kultury. 2022. No. 6. 105 p.
6. Mironova O.V., Bulavchenko K.V., Sharonova A.V., Kiprushina I.I. Programma trenirovok dlya devushek-pervokursnits, osvaivayushchikh razdel samostoyatelnoy raboty distsipliny «Fizicheskaya kultura i sport». Teoriya i praktika fizicheskoy kultury. 2021. No. 12. pp. 82-83.
7. Tokareva A.V., Mironova O.V., Moskalenko I.S.,

Bolotin A.E., Yarchikovskaya L.V. Formirovaniye navykov organizatsii samostoyatelnykh aerobnykh trenirovok u studentov vuzov dlya uspeshnoy sdachi ekzamenatsionnoy sessii. Teoriya i praktika fizicheskoy kultury. 2016. No. 9. pp. 12- 15.

8. Sharonova A.V., Mironova O.V., Yarchikovskaya L.V., Bulavchenko K.V. Sravnitelnyy analiz obrazovatelnykh onlayn-platform dlya realizatsii distsiplin «Fizicheskaya kultura i sport» i «Elektivnyye kursy po fizicheskoy kulture i sportu» v usloviyakh distantsionnogo obucheniya. Aktualnyye voprosy v pedagogicheskikh, mediko-biologicheskikh i psikhologicheskikh aspektakh fizicheskoy kultury i sporta. Interuniversity collection of scientific articles of the interuniversity scientific-practical conference in memory of the Olympic champion N.V. Puzanov. St. Petersburg, 2022. pp. 197-203.
9. Sharonova A.V., Mironova O.V., Dementyev K.N. Ispolzovaniye elementov distantsionnogo obucheniya v protsesse osvoyeniya distsipliny «Elektivnyye kursy po fizicheskoy kulture i sportu». Pedagogicheskiye paralleli. Proceedings VI International scientific-practical conference. St. Petersburg: SPbGASU publ., 2018. pp. 931-934.
10. Sharonova A.V. Sotsiologicheskiy analiz ispolzovaniya onlayn-platform dlya realizatsii obrazovatelnykh programm v usloviyakh distantsionnogo obucheniya (na primere distsipliny «Fizicheskaya kultura i sport»). Kachestvo professionalnogo obrazovaniya: traditsii i perspektivy. Proceedings of the Interregional scientific-practical conference. 2022. pp. 220-225.
11. Sharonova A.V., Lesheva N.S. Sravnitelnyy analiz obrazovatelnykh onlayn-platform po fizicheskoy kulture v usloviyakh distantsionnogo obucheniya. Teoriya i praktika fizicheskoy kultury. 2021. No. 6. pp. 52-54.
12. Yusupov Sh.R., Pokrovskaya T.Yu., Krupennikova D.E. Ispolzovaniye informatsionnykh tekhnologiy v obrazovatelnom protsesse v oblasti fizicheskoy kultury i sporta. Nauka i sport: sovremennyye tendentsii. 2022. Vol. 10. No. 3. pp. 116-123.

The physical fitness profile of female students serves as a criterion for selecting participants in fitness aerobics

UDC 796.011.3

Postgraduate student **A.N. Levitskaya**[1]
Dr. Hab., Professor **V.V. Ponomarev**[1,2]
Applicant **N.N. Zheleznov**[1]
[1]Siberian Federal University, Krasnoyarsk
[2]Prof. V.F. Voino-Yasenetsky Krasnoyarsk State Medical University, Krasnoyarsk

Corresponding author: vaspon59@mail.ru

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Abstract

Objective of the study was to validate and enhance the model parameters of physical fitness for female students who are candidates for sports classes in fitness aerobics at a technical university.

Methods and structure of the study. The research was conducted at the Siberian Federal State University of Education from 2021 to 2024. The study involved 270 female students who participated in the university's fitness aerobics sports program. Over the course of three years, the study was conducted in stages, focusing on the following aspects: physical development, physical fitness, and mobility of the musculoskeletal system.

Results and conclusions. The analysis of the expert assessment revealed the key indicators of physical fitness for female students, including the long jump from a standing position, torso lifting in a minute, arm flexion and extension in a prone position in a minute, running distances of 100 meters and 2000 meters. Additionally, the assessment encompassed physical development parameters such as height, weight, chest circumference, hand dynamometry, and Vital capacity. The study also examined the mobility of the musculoskeletal system through exercises like bending forward from a seated position, performing the «bridge» exercise from a prone position, and demonstrating the transverse and longitudinal splits. The findings of this research underscore the significance of developing methodological frameworks for physical education that incorporate sport-based approaches, with a focus on identifying the structure of physical fitness and establishing model characteristics for its various components.

Keywords: *students, technical university, selection, model characteristics, fitness aerobics, sports training.*

Introduction. The sports-specific approach is a sports-pedagogical direction of modern physical education of students at a university based on classes in choosing a sport using modern technologies for training athletes adapted to the educational process of students and contributing to the implementation of individual motor potential and needs, the formation of a sports culture, improving the physical and applied preparedness of student youth during the period of receiving professional education and further cultivation of the chosen sport in future social and labor activity (S.A. Doroshenko, V.V. Ponomarev, 2010). At the same time, for active and productive classes of students in various sports at a university, scientific and methodological developments are needed that would contribute to the correct selection, control and organization of sports training of student youth, taking into account the specifics of the educational process in higher education. At present, a modern and productive direction for improving physical fitness and motor activity of student youth based on the sports-specific approach, especially girls, is the conversion of popular fitness technologies into the educational process of physical education of students.

Objective of the study was to validate and enhance the model parameters of physical fitness for female students who are candidates for sports classes in fitness aerobics at a technical university.

Methods and structure of the study. The research was conducted at the Siberian Federal State University of Education from 2021 to 2024. The study involved 270 female students who participated in the university's fitness aerobics sports program. Over the course of three years, the study was conducted in stages, focusing on the following aspects: physical development, physical fitness, and mobility of the musculoskeletal system.

To compile model characteristics based on data on the

physical fitness of female students, the method of expert assessments was used. The experts were 25 fitness aerobics trainers and teachers from Krasnoyarsk Krai. Standards for indicators by types of fitness were calculated based on average values for a specific sample.

Results of the study and discussion. A large number of types of motor actions in fitness aerobics require consideration of such aspects as the time to master a new movement or combination, their coordination complexity, accuracy of execution, maintaining stability when imbalanced, stability of execution.

In fitness aerobics, the boundaries between the means of general and special physical training are conditional, since the motor combinations include elements of a general developmental nature, such as running movements, push-ups, hops and jumps. It should also be noted that each level of proficiency in any technical technique must always correspond to a certain level of development of the necessary motor qualities (Shtoda M.A. L., Mironov D.L., 2013).

Thus, as a result of the expert assessment, the following model indicators of physical development of female students for selection for sports fitness aerobics classes were obtained: height, weight, chest circumference, hand dynamometry and VC (Table 1).

Table 1. Model indicators of physical development of female students for selection for fitness aerobics classes at a technical university

Physical development indicators	$\bar{X} \pm \sigma$
Height, cm	165±2,1
Weight, kg	54,1±1,3
Chest circumference, cm	87,2±1,1
Dynamometry of hands, kg: - right hand - left hand	 30,2±1,1 29,1±0,4
Vital capacity, cm^3	3100±66,7

Table 2 presents model indicators of physical fitness of female students: standing long jump, body raise, push-ups, 100 m and 2000 m runs.

Table 2. Model indicators of physical fitness of female students for selection for fitness aerobics classes at a technical university

Physical fitness indicators	$\bar{X} \pm \sigma$
Long jump from a standing position, cm	178,8±2,5
Lifting the body from a lying position in a minute, number/times	38,1±2.8
Bending and unbending arms in a lying position, number/times	23,3±1,1
Running 100 m, s	16,8±0,4
Running 2000 m, min/s	11,02±0,23

Table 3 presents the mobility indicators of the musculoskeletal system (MSS) of female students for selection for fitness aerobics classes.

Table 3. Model indicators of mobility of the musculoskeletal system of female students for selection for fitness aerobics sports classes

Mobility indicators of the musculoskeletal system	$\bar{X} \pm \sigma$
Forward bend from a sitting position on the floor with your feet together, cm	3,92±0,8
Performing the bridge exercise from a lying position, cm	4±0,7
Transverse split, cm	3,88±0,7
Longitudinal right split, cm	4,32±0,6
Shoulder girdle twists, cm	3,84±0,8

Conclusions. This study actualizes the need for designing a sports-specific approach in the modern practice of physical education of student youth in non-physical education universities, aimed at the formation of a sports culture and increasing the level of motor activity of students. Based on the above, one of the important tasks in creating methodological support for physical education using sports-based forms of classes is to identify the structure of physical fitness of students and create model characteristics of its various aspects.

References

1. Doroshenko S.A., Ponomarev V.V. Sportivno-vidovoy podkhod v fizicheskom vospitanii studentov v vuze: teoreticheskiye i prakticheskiye aspekty. Monograph. Krasnoyarsk: SibGTU publ., 2010. 178 p.
2. Zheleznyak Yu.D., Petrov P.K. Osnovy nauchno-metodicheskoy deyatelnosti v fizicheskoy kulture i sporte. 6th ed., rev. Moscow: «Akademiya» publ., 2013. 288 p.
3. Ivanova V.V., Ponomarev V.V. Integratsiya umstvennoy rabotosposobnosti i dvigatelnoy aktivnosti studentov tekhnicheskogo vuza v protsesse professionalnoy podgotovki. Monograph. Krasnoyarsk: SibGTU publ., 2012. 194 p.
4. Levitskaya A.N., Ponomarev V.V. Differentsirovannaya metodika formirovaniya podvizhnosti oporno-dvigatelnogo apparata studentok vuza. Monograph. Krasnoyarsk: SibGTU im. M.F. Reshetneva publ., 2018. 155 p.
5. Shtoda M.L., Mironov D.L. Modelnyye kharakteristiki fizicheskoy podgotovlennosti kvalifitsirovannykh sportsmenov v fitnes-aerobike. Izvestiya TulGU. Fizicheskaya kultura. Sport. 2013. No. 1. pp. 288-292.

Development of flexible competencies in the process of physical education classes in the educational space of higher education

UDC 796.01

PhD, Associate Professor **A.A. Novikova**[1]
Dr. Hab., Professor **L.L. Mekhrishvili**[1]
[1]Federal State Budget Educational Institution of Higher Education «Industrial University of Tyumen», Tyumen

Corresponding author: novikovaaa@tyuiu.ru

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Abstract

Objective of the study was to determine the relationship between the approaches to physical education employed in the classroom at a higher technical institution and the development of students' adaptable skills.

Methods and structure of the study. Within the context of the project «Enhancing the adaptive abilities of students» at the Tobolsk Industrial Institute, a research was conducted to assess the level of development of the elements of «soft» skills through physical education. The study involved 110 students from the second and third years of study.

Results and conclusions. The investigation showed that the educational approaches and techniques employed in physical education classes contribute to the enhancement of students' abilities to collaborate effectively, fostering a sense of responsibility for their actions. Additionally, these approaches promote the development of cognitive and creative skills in tackling both specific and general tasks through exercises and participation in sports activities, such as chess tournaments and mini football matches. Furthermore, they cultivate the ability to make informed decisions and achieve desired outcomes.

Keywords: *flexible competencies, physical education methods, higher education.*

Introduction. The basic model of soft skills is presented by the well-known «4K» scheme, which includes «critical thinking» as a way to think critically and analyze facts, events, phenomena, and also to see cause-and-effect relationships; «creativity» as an expression of creative skills and a way to think outside the box; «communication competencies» – an important skill for building business and personally-oriented communication in different interaction situations; «coordination» – as an aspect of managing the effectiveness of teamwork, developing leadership qualities, etc. [3, 10, 11, 12].

The relevance of developing and the importance of soft skills in the VUCA world is unconditional. As T.N. Anufrieva notes, soft skills give hard (professional) skills the necessary plasticity and adaptability, regardless of professional qualifications [1, pp. 120-132].

Yu.V. Pushkarev, E.A. Pushkareva reveals the factor of sufficient influence of soft skills on academic performance and success of students. The authors consider the factors and interrelation of cognitive and emotional, motivational, linguistic, creative components of development, and also substantiate the need to create an adequate educational environment that takes into account the psychophysiological characteristics of age, contributing to an increase in the level of motivation and cognitive activity [8, p. 111]. Interest in the study of meta-skills, analysis of the components and structure of the construct in modern scientific discourse is growing. According to K. Kenton and V. Blumer, soft skills include attributes and personality traits that help employees interact with other people and achieve success in the workplace [13, p. 77].

Objective of the study was to determine the relationship between the approaches to physical education employed in the classroom at a higher technical institution and the development of students' adaptable skills.

Methods and structure of the study. Mastering students' universal skills in physical education classes creates the opportunity for practical implementation

of skills and abilities in all spheres of life, including successful mastering and inclusion in the educational process [3, 5, 6]. At the Tobolsk Industrial Institute, as part of the development of the topic «Development of flexible competencies of students», a study was conducted to identify the degree of development of the components of «soft» skills through physical education, in which 110 students of the 2nd and 3rd years took part.

Results of the study and discussion. In the sections of the work program for the disciplines: «Physical Education and Sports», «General Physical Fitness», «Applied Physical Education», the didactic units are: athletics, volleyball, basketball, general physical training, mini football, table tennis, etc., the implementation of which is due to the variable interval, control, competitive, individual, group, frontal, circular and other methods used in the course of classes.

In the course of the study, it was revealed that educational technologies and methods used in physical education classes influence the development of communicative competencies in the context of teamwork, while at the same time, students develop responsibility for their actions; development of cognitive and creative competencies in solving narrowly focused and general problems when performing exercises and participating in sports games, chess tournaments, mini football matches; formation of decision-making skills and the skill of achieving results. Based on the entrance testing of first-year students and the control testing of students at the end of the first to third years, using the questionnaire «Flexible skills 4K» on the platform of the State Budgetary Institution of Additional Education for Children and Youth Creativity «Na Lenskoy», the following indicators of the development of flexible skills were identified (Table 1). Table 2 shows the coefficient of growth of competencies.

Conclusions. The obtained results allow us to conclude that there is a direct correlation between the methods used in physical education classes and the indicators of the development of students' soft competencies. Students of the second and third years attending physical education classes at a higher technical school demonstrate a high level of development of soft «super-subject» skills.

In modern Russian society, the role of physical education is increasing, which is declared from high tribunes of various levels, emphasizing the influence of physical education classes on the personal development of young people not only in terms of physical health and development, but also the development of flexible competencies.

The role of physical education in the spectrum of development of soft «super-subject» skills of students in the educational space of a higher technical school is underestimated, which is proven by the results of the study. Analysis of the data obtained as a result of the study allows us to identify a correlation between the methods used in physical education classes: group, individual, competitive, frontal, interval and the level of development of critical thinking, communication, teamwork, creativity.

It seems appropriate, when organizing the educational process at a university, within the framework of the implementation of the competency model, to develop criteria for the levels of formation of «supra-subject» skills of students through disciplines not only in the technical, natural sciences and social and humanitarian fields, but also in physical education.

References

1. Anufrieva T.N. Kontent-analiz ponyatiya «gibkiye navyki» (soft skills). Vestnik Tomskogo gosu-

Table 1. Level of development of students' flexible competencies (≈ average value)

Competencies	Entry score	Control Score. Level of development	Methods of formation
Critical thinking	58	81,2 (high)	project; individual, competitive, group
Communication skills	73	93,8 (high)	group; competitive; frontal; project
Teamwork	66	89 (high)	competitive, group
Creativity	63	78 (above average)	project; individual, competitive; group

Table 2. Competency growth rate

Critical thinking	Creativity	Communication skills	Teamwork
≈ 40%	*≈ 25%*	*≈ 20 %*	*≈ 35 %*

darstvennogo pedagogicheskogo universiteta. 2023. Issue. 2 (226). pp. 120-132.
2. Golub M.D., Kudryavtsev M.D., Galimov G.Ya. et al. Rol i znacheniye fizicheskoy kultury v sovremennom obshchestve. Fizicheskaya kultura, sport, nauka i obrazovaniye [Physical culture, sport, science and education]. Proceedings of the II All-Russian scientific conference. Yakutsk: FGBOU VO «Churapchinskiy gosudarstvennyy institut fizicheskoy kultury i sporta», 2018. pp. 119-122.
3. Ermakov D.S. Model myagkikh navykov. Sovremennoye obrazovaniye i Soft Skills. Obrazovatelnaya politika. 2021. No. 4(88). pp. 42-51.
4. Lubysheva L.I. Sotsiologiya fizicheskoy kultury i sporta. Study guide for students of higher educational institutions studying in the specialty «Physical Education». Moscow: «Akademiya» publ., 2010. 270 p.
5. Mikhaylova T.A. Problemy sporta i fizicheskoy kultury v rossiyskikh sotsiologicheskikh issledovaniyakh: istoriya i perspektivy razvitiya. Chelovek. Soobshchestvo. Upravleniye. 2017. Vol. 18. No. 4. pp. 121-136.
6. Novikova A.A. Issledovaniye vliyaniya sovremennykh obrazovatelnykh tekhnologiy na formirovaniye kognitivnoy kompetentnosti obuchayushchikhsya. Science for Education Today. 2023. Vol. 13. No. 2. pp. 57-77.
7. Pushkarev Yu.V., Pushkareva E.A. Faktory, opredelyayushchiye razvitiye kognitivnykh sposobnostey v usloviyakh tsifrovizatsii protsessov obrazovaniya: obzor tekushchikh issledovaniy. Science for Education Today. 2022. Vol. 12. No. 6. pp. 111-136.
8. Sirotkina O.V. Sotsialno-pedagogicheskoye obespecheniye formirovaniya tsennostnogo otnosheniya k zdorovyu sovremennykh studentov. PhD diss. abstract. 2022. 24 p.
9. 9. Fedorova T.A., Rybnikova O.L. Formirovaniye «gibkikh» navykov v professionalnom obrazovanii pedagoga po fizicheskoy kulture. Gumanitarnyye i sotsialnyye nauki. 2020. No. 2. pp. 331-339.
10. Chedova T.I. Formirovaniye universalnykh kompetentsiy u studentov vuzov na teoreticheskikh zanyatiyakh po fizicheskoy kulture. Mezhdunarodnyy zhurnal eksperimentalnogo obrazovaniya. 2023. No. 4. pp. 32-36.
11. Yarkova T.A. Formirovaniye gibkikh navykov u studentov v usloviyakh realizatsii professionalnogo standarta pedagoga. Vestnik Tyumenskogo gosudarstvennogo universiteta. Gumanitarnyye issledovaniya. Humanitates. 2016. Vol. 2. No. 4. pp. 222-234.
12. Kenton K.J., Blumer B. 8 - Metacognitive skills and online search behavior. Improving Student Information Search. A Metacognitive Approach. pp. 75-88.

The specifics of organizing and executing mass sports activities at the university in the 1980s

UDC 796

PhD **V.N. Kremneva**[1]
Postgraduate student **E.M. Solodovnik**[1]
[1]Petrozavodsk State University, Petrozavodsk

Corresponding author: Solodovnikem@gmail.com

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Abstract

Objective of the study was to compare the content and quality of sports and recreational activities in the Department of Physical Education at PSU in the 1980s and now.

Methods and structure of the study. The methods and approaches used to structure and manage sports and recreational activities at PetrSU are examined.

Results and conclusions. The research conducted has revealed the highest level of sports and mass activities in the 1980s across all six indicators.

Particularly notable are the number of mass discharges as a percentage of the student population, the performance of the VSO, the number of gold TRP badges awarded, the training of instructors and judges among students, and the currently lost indicator — «Agitation and Propaganda».

Based on the «Spartakiad» indicator alone, an increase in sports participation in modern mass sports activities can be observed.

Looking back at the historical legacy, drawing on the accumulated experience, and conducting a thorough analysis will assist in identifying the most effective practices for organizing mass sports activities that can be employed (with appropriate modern adaptations) in the present day.

Keywords: *PSU, comparative analysis, sports and mass work, students, physical education, review-contest, department of physical education.*

Introduction. In 1956, a sports club was created at Petrozavodsk University (PSU) and active sports, physical education and health work began among students and staff of the university. The organization of the PSU sports club was facilitated by the First Spartakiad of the Peoples of the USSR, which took place in 1956. The number of full-time students at PSU by 1980 was 4243 people, along with this, the staff of teachers in the physical education department was growing (in 1980 – 22 teachers, including two candidates of science, six masters of sports, 13 people work on an hourly basis, 17 sections in sports operate in the sports club). Currently, PetrSU has 6500 full-time students, and the number of departments has been reduced to 19 people and two on an hourly basis; the number of sections is up to 14. These facts served as the basis for turning to statistics from the 80s and conducting a subsequent comparative analysis.

Objective of the study was to compare the content and quality of sports and recreational activities in the Department of Physical Education at PSU in the 1980s and now.

Methods and structure of the study. The analysis of the materials of PSU was conducted: competition protocols, journals of registration of educational work on physical education and the results of team sports and mass events, Regulations and rules of Spartakiads held by the university. In addition, the results of the Review-competition for the best organization of sports and mass work at PSU in 1984 (hereinafter referred to as the Review-competition) were studied.

For analysis and subsequent comparison, the following indicators of sports and mass work of that time were identified:

1. General indicators of mass work (general indicators at that time included indicators of fulfillment

of mass and sports categories, % of participants in voluntary sports societies (hereinafter referred to as VSO).

2. Work on the All-Union GTO complex.

3. Physical education personnel (training of instructors and judges).

4. Health work.

5. Agitation and propaganda.

6. Spartakiad.

Results of the study and discussion. Having examined and analyzed each of the six indicators highlighted above, we present the obtained data in Tables 1-6. For some indicators, an analysis was conducted with modern data.

In the 1980s, PSU had eight faculties: forest engineering (FE), industrial and civil engineering (ICE), physics and mathematics (PM), medicine, biology, agriculture (AgrC), history and philology (HP), and economics.

It should be noted that 80,7% of FE students had a sports category, and in six of the eight faculties this figure is higher than 50%. Comparing with the current figures, it can be stated that the figure of 80,7% of mass sports categories among students is unattainable today and in the near future. It should also be noted that the VSO no longer exists.

Table 2 shows how meticulously the work on the All-Union GTO complex was assessed in the 1980s, calculating as a percentage not only the participants, but also the number of gold badges, students who participated in the winter all-around and underwent retraining. Comparing the indicators only for gold GTO badges (60 people passed in 1984, Table 2), the protocol of 2024 was analyzed: 51 PetrSU students passed the

Table 1. General indicators of sports and mass work

Faculty, number of students	1-5th courses			1-4th years + section			% ratio contingent			% ratio contingent		By number of CMS		Total points	Place
	Mass discharges			Physical education teachers			1st category			VSO					
	Num.	%	P	Num.	%	P	Num.	%	P	%	P	%	P		
FE 737	595	80,7	8	656	89	5	23	3,1	7	100	8	4	8	36	I
ICE515	527	63,4	6	451	87.5	4	20	3,8	8	100	8	1	6	32	II
PM537	322	59,9	4	454	84.5	3	13	2,3	6	100	8	1	6	27	IV
Medicine 1026	250	24,3	1	833	94.1	6	2	0,1	2	-	1	-	1	11	VIII
Biology 232	105	44,3	3	219	94.3	7	2	0,8	3	100	8	-	1	22	VI
AgrC 528	362	68,5	7	300	56.8	1	13	2,4	6	100	8	2	7	29	III
HP 581	221	32,3	2	489	84.1	2	-	-	1	100	8	-	1	19	VII
Economics 212	143	63,8	5	212	100	8	3	1,4	4	100	8	-	1	26	V

Table 2. Work on the All-Union GTO complex

Faculty, number of students	% relative to the 2nd year				By number of preparations			Ranks I-III			Retraining			Total points	Place
	GTO number				Of which gold			Winter all-around			GTO for each 5 points				
	Num.	%	P	P	Num.	P	P	Num.	%	P/P	Num.	P	P/P		
FE 108	120	111	3	6	15	1	8	136	31,0	5/4	123	615	1/8	26	2
ICE 77	104	135	1	8	10	4	5	159	50,4	1/8	55	275	4/5	26	2
PM 89	104	116	2	7	6	5	4	112	35,1	3/6	61	305	3/6	23	4
Medicine 179	98	64.8	8	1	14	3	6	128	20,5	7/2	-	-	-\1	10	7
Biology 42	34	80	7	2	-	-	1	25	17,9	8/1	24	120	6/3	7	8
AgrC 79	74	93	4	5	15	1	8	124	38,5	2/7	73	365	2/7	27	1
HP 114	98	85	6	3	-	-	1	92	25,2	6/3	33	165	5/4	11	6
Economics 44	39	88	5	4	-	-	1	48	32,4	4/5	1	5	7/2	12	5

GTO standards, of which three received bronze badges (in the 1980s there was no bronze badge), 6 – silver, 0 – gold. And this is despite the fact that the requirements of the GTO standards are currently significantly lower than in the 1980s.

Table 3 demonstrates the work done in sports and mass sports, which is practically lost at the present time – training instructors and judges among student youth.

According to 2024 data, only 8172 students and 300 teachers took part in sports and recreational events.

At present, data on agitation and propaganda is not being calculated.

Traditional for PetrSU are Spartakiads of the «First-year student» (in seven sports), All-year-round (in 10 sports), «Cheerfulness and Health», among the employees of PetrSU, is held in five sports.) Only in this

Table 3. Physical education personnel

Faculty, number of students	Instructors - social activists				Public judges					
	Num.	Place	% to cont.	Point	Num.	% to cont.	Place	Point	Total point	Place
FE - 149	158	II	92,6	7	134	89,9	I	8	15	I
ICE - 97	54	V	54,6	4	60	61,8	VI	5	3	VIII
PM - 110	106	I	93,6	8	94	85,0	II	7	15	I
Medicine - 212	185	III	87,2	6	121	57,0	V	5	11	III
Biology - 45	33	IV	73,3	5	38	84.4	III	6	11	III
HP 114	45	VII	39,4	2	45	39,4	VIII	2	4	VI
AgrC 97	38	VIII	36,0	1	47	48,4	VII	3	4	VI
Economics 55	27	VI	42,0	3	27	49,0	VI	4	7	VII

Table 4. Carrying out health-improving work

Faculty	Number of people who took part in the competition			Ski track «Antikainen»			Number of teachers who took part in health events			Total participants	Total point	Place
	Num.	P	P	Num.	P	P	Num.	P	P	Num.		
FE	3536	II	7	12	II	7	316	II	7	3864	21	I
ICE	3126	IV	5	9	III	6	219	III	6	3354	17	III
PM	1971	VII	2	4	VI	3	322	I	8	2328	13	IV
Medicine	5150	I	8	7	V	4	27	VIII	1	5298	13	IV
Biology	3206	III	6	15	I	8	144	IV	5	1762	19	II
HP	2222	VI	3	4	VI	3	49	VI	3	2275	9	VII
AgrC	1806	VII	1	9	III	6	60	V	4	1975	11	VI
Economics	1424	V	4	-	-	1	45	VII	2	1469	7	VII

Table 5. Conducting agitation and propaganda of sports

Faculty	Chef's work	Photo newspaper 5 points for 1 newspaper	Plain newspapers	Stands	Album 20 points	Notes by number of notes	Evening 20-40 points	Total point	Place
FE	20	12*5 = 60	13	20	-	15	40	168	II
ICE	-	11*5 = 55	13	20	5	4	40	137	III
PM	20	5*5 = 25	7	-	20	11	10	99	5
Medicine	-	5*5 = 25	5	10	5	5	40	99	5
Biology	-	9*5 = 45	2	3	-	9	20	79	6
AgrC	100	6*5 = 30	14	3	-	3	20	170	I
HP	-	-	2	-	-	6	-	8	1
Economics	-	1*5 = 5	10	3	-	2	-	20	2

Table 6. Results of the Spartakiad

Faculty	Autumn cross	Cross spring	Skis	Winter GTO	PSU Championship				athletics	Shooting	Sum of points	First-Year Student Award				PSU Cup				Place
					B/B		V/B					B/B		V/B		B/B		V/B		
					m	g	m	g				m	g	m	g	m	g	m	g	
FE	1	2	1	2	1	3	1	6	5	1	23	1	2	2	2	5	1	1	6	I
ICE	2	3	3	1	2	5	2	1	4	3	26	4	7	2	1	2	5	2	1	III
AgrC	4	1	2	4	6	6	3	2	2	2	32	7	1	3	2	6	6	3	2	II
PM	3	4	4	3	3	2	6	4	3	4	36	5	8	6	4	3	2	6	4	IV
Medicine	5	5	5	7	4	7	4	3	1	5	46	2	5	4	3	4	7	4	3	V
HP	7	6	7	8	7	1	7	7	6	7	62	6	6	7	7	7	1	7	7	VII
Biology	6	7	6	5	5	8	5	8	7	6	64	3	2	5	8	5	8	5	8	VIII
Economics	8	8	8	6	8	4	8	5	8	8	71	8	4	8	5	8	4	8	5	VI

indicator, modern sports and mass work at the university is ahead of the work of the 80s, the Spartakiad program also includes competitions in badminton, table tennis, functional all-around.

Conclusions. The conducted research allows us to note the highest level of sports and mass work in the 80s for all six indicators. It is especially necessary to highlight the number of mass categories as a percentage of the total contingent of students, the indicator of the work of the voluntary sports society, the number of received gold badges of the GTO, the training of instructors and judges among student youth, as well as the currently lost indicator of «Agitation and propaganda». Only for the indicator «Spartakiad» can we note an increase in the types of sports included in modern sports and mass work.

An appeal to the historical heritage, accumulated experience, its analysis will help in determining the most effective practices of organizing sports and mass work, which can be used (with appropriate modern adaptation) at the present time.

References

1. Kremneva V.N. Sportivnyy klub Petrozavodskogo gosudarstvennogo universiteta: istoriya i sovremennost. Razvitiye fizicheskoy kultury, sporta i turizma: opyt regionov. Proceedings conference of the Institute of Physical Culture, Sports and Tourism of Petrozavodsk State University, Petrozavodsk, November 26, 2015 – November 24, 2016. Petrozavodsk: Petrozavodskiy gosudarstvennyy universitet, 2016. pp. 32-36.
2. Kremneva V.N. Kafedra fizicheskoy kultury: stanovleniye, razvitiye, sovremennost. Razvitiye fizicheskoy kultury, sporta i turizma: opyt regionov. Proceedings conference of the Institute of Physical Culture, Sports and Tourism of Petrozavodsk State University, Petrozavodsk, November 26, 2015 – November 24, 2016. Petrozavodsk: Petrozavodskiy gosudarstvennyy universitet, 2016. pp. 26-32.
3. Kremneva V.N., Solovyova N.V. Fizicheskaya kultura v vuze: opyt PetrGU. Sovremennaya nauka: aktualnyye problemy i puti ikh resheniya. 2013. No. 1.
4. Kremneva V.N., Kariauli A.S., Solovyeva N.V., Svitich O.N. Kompleks GTO. VI stupen: teoreticheskiye osnovy samostoyatelnoy podgotovki. Study guide for students in all areas of training «Physical Education». In 2 parts. Ministerstvo obrazovaniya i nauki Rossiyskoy Federatsii, Federalnoye gosudarstvennoye byudzhetnoye obrazovatelnoye uchrezhdeniye vysshego obrazovaniya Petrozavodskiy gosudarstvennyy universitet. Petrozavodsk: PetrGU publ., 2017.

Perspective for the development of aerial gymnastics in the Republic of Adygea

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E.S. Redina[1, 2]
A.S. Sukmanyuk[1]
A.A. Shalaya[1]
Associate Professor **D.A. Gura**[1, 3]
[1]Kuban State Technological University, Krasnodar
[2]Adygea regional physical culture and sports public organization «Aerial Gymnastics Federation», Republic of Adygea
[3]Kuban State Agrarian University named after I.T. Trubilin, Krasnodar

Corresponding author: gda-kuban@mail.ru

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Abstract

Objective of the study was to explore the historical and contemporary facets of the evolution of aerial gymnastics in the Republic of Adygea, we conducted a theoretical analysis and surveyed the local population.

Methods and structure of the study. The results of the growth in popularity of aerial gymnastics in the republic since the first section was established in 2018 have been collected and analyzed based on information sources about the competitions held during this time. An assessment has been made of the increase in the number of sections created in the settlements of Adygea and wishing to practice aerial gymnastics based on data from sociological surveys of the republic's residents.

Results and conclusions. The article explores the history of the emergence and growth of a new sport that is gaining traction in the Republic of Adygea. It delves into the origins of the sport and its potential for further development. The article also addresses the challenges of achieving full official recognition at the state level and the establishment of a unified air sports federation. These initiatives would significantly accelerate the sport's development and popularity across the country and regions. Despite initial obstacles, such as the lack of adequate training facilities, the enthusiasm of coaches and the dedication of young athletes have allowed for the first championship of the republic to be held in 2019, with international participation. The number of participants in this new discipline is growing annually. In 2023, the Republic Air Sports Federation was established.. The success of coaches and young athletes has led to an increase in the number of fans and spectators at the ongoing competitions. Based on the results of a sociological survey, a plan for the development of this sport in the communities of the republic is being created, a coaching pool is being trained, and efforts are being made to encourage children and young people to engage in sports, including aerial gymnastics.

Keywords: *aerial gymnastics, pole, ring, aerial silks, acrobatics, special training, aerial belts, slings.*

Introduction. The development of mass sports and physical education in the Republic of Adygea has always received much attention. Along with popular sports that have long been cultivated in the republic, such as various types of martial arts, track and field, and sports games, interest in new types of sports that have relatively recently entered the world sports scene, but have already managed to gain fans in many countries around the world, including Russia, is also growing in Adygea. One of these types is aerial gymnastics [2].

Objective of the study was to explore the historical and contemporary facets of the evolution of aerial gymnastics in the Republic of Adygea, we conducted a theoretical analysis and surveyed the local population.

Methods and structure of the study. While conducting a study on the history of the origin and prospects for the development of aerial gymnastics in the Republic of Adygea, the results of the first years of this sport's existence were analyzed.

As part of the study, a sociological survey of residents of Maikop and Takhtamukaysky District was conducted in February 2024, aimed at identifying the interest and opportunities of children and adolescents to engage in any kind of sport. The survey results are shown in (Figure 2-9). The questions were sent through partner social networks and chats in Telegram channels, WhatsApp groups, advertising groups of Maikop and Takhtamukaysky District. More than 1000 people completed the survey.

Results of the study and discussion. Despite the relatively short period, interesting material has accumulated on the history of the development of a new sports discipline for the republic [5].

The first aerial gymnastics section in Adygea was opened in 2018 in the urban-type settlement of Yablonovsky, only 5 children aged 7 to 12 years were involved, and already in 2019 the first Polygon championship from the International Federation of Aerial Sports (4 versions of the rules) was held with the support of the administration of the municipality «Yablonovsky urban settlement». Participants from many regions of the country came to it, there were also representatives from abroad (Georgia). The championship presented categories according to various versions of the rules, including the international rank title. Performances took place on a pole, aerial silks and a ring. In the future, this championship is held annually.

In 2020, the Wings club began its work, in 2022, the aerial gymnastics section Plastilin opened in Maykop. In 2023, an aerial gymnastics section was opened in the village of Kozet, Takhtamukaysky district, Bailando studio. According to the order of the Committee for Physical Culture and Sports of the Republic issued on 09.08.2023 No. 513 on the accreditation of the regional federation of the RFSOO «Federation of Aerial Gymnastics of the Republic of Adygea», this sport received official status in the republic. Today, aerial gymnastics coaches conduct systematic classes on a regular basis, exchange information on training methods, share experiences and successes of their students. With the help of the created group in social networks, they conduct discussions on the further development of the discipline and its popularization. Archives with information on the results of various competitions are accumulated. Work is underway to form photo reports of training and various tournaments, demonstration performances. Based on the accumulated materials, training methods and requirements for sports elements performed at various competitions were studied. Experiments have been conducted on the use of massage for different muscle groups involved in various exercises [3, 4]. Statistics are kept on section graduates who have linked their future lives with sports and entered higher sports educational institutions; some of them are already interning in aerial gymnastics sections and are preparing to become trainers in this sport.

In June 2023, Order No. 437 of the Ministry of Sports of the Russian Federation was issued on the recognition and inclusion of the discipline «Aerial Gymnastics» in the All-Russian Register of Sports and Sports Disciplines under code number 1930001411Я. This means that the country's sports world has officially acquired a new, beautiful, dynamic and spectacular discipline - aerial gymnastics, and it has become possible to hold tournaments under the auspices of official sports organizations. The issue of creating a single federation of aerial gymnastics remains unresolved. There are several federations, but so far there is no single organization of the new discipline either in Russia or in the world as a whole. The optimal solution would be to create a single, powerful, authoritative federation that includes all existing types of aerial gymnastics and sports equipment [3]. Sports categories, certification of judges and other opportunities of officially recognized sport are received only by those schools and studios that are members of an accredited regional federation that is part of the unified All-Russian Federation (Article 22 of the Federal Law of 04.12.2007 No. 392-FZ «On Physical Culture and Sports in the Russian Federation»1.

Despite the existing problems, aerial gymnastics is conquering more and more regions. The number of people wishing to engage in this sport is growing. In order to popularize this sport, already under the auspices of the ARFSOO «Aerial Gymnastics Federation» in the village of Yablonovsky in the DK «Fakel» on November 19, 2023, aerial gymnastics competitions were held, which brought together athletes and leading coaches of the republic. Young athletes demonstrated their skills on various sports equipment, and coaches had the opportunity to exchange experiences and discuss problems and ways of further development of aerial sports in the republic. The growing popularity of aerial gymnastics is evidenced by the fact that athletes involved in this sport are regularly invited to demonstration performances at various competitions and festive events. Thus, at the opening of the republican championship in sports acrobatics in the village of Takhtamukai, the performance of aerial gymnasts was very warmly received by the audience and caused a storm of delight. In general, any sporting event in the republic is not just a sports competition, but a holiday with an invariable national flavor and performances by folk groups.The federation also actively cooperates with public organizations of the Krasnodar Territory.

[1] Federalnyy zakon №392-FZ O fizicheskoy kulture i sporte v Rossiyskoy Federatsii: [prinyat Gosudarstvennoy Dumoy 16 noyabrya 2007 goda: odobren Sovetom Federatsii 23 noyabrya 2007 goda]-Moskva: Rossiyskaya gazeta ot 8 dekabrya 2007 goda-№276.

At the interregional scientific and practical conference «Modern methods of rehabilitation and interaction of services for helping children with mental and motor disabilities» held on September 20, 2024 in Krasnodar, the head of the ARFSOO «Federation of Aerial Gymnastics» E.S. Redina spoke with a report and presentation on the topic «Adaptive aerial gymnastics, inclusive approach». For the first time in the history of the development of aerial gymnastics in Russia, sports were discussed from this side. Children with such disabilities are already training in the federation's sections and show good results in both physical and mental development. They become more relaxed, open, cheerful, sociable, feeling the support of coaches and other children, they quickly adapt to training and train with enviable diligence. The conducted survey showed that in popularity among those involved in sports after martial arts in the republic, gymnastics/acrobatics occupies the leading place (28,1%). At the same time, respondents noted the problem of increasing the number of free sections. In particular, this was expressed by residents of the village of Yablonovsky 36,5%, the city of Maykop 33,1%, and the most popular was the opening of new sections for gymnastics/acrobatics 18,6%. Interesting answers were received to the question – «Would you like your child to achieve high sports results?» More than 50% of respondents answered affirmatively, which indicates a serious attitude to sports activities and a desire to achieve high achievements.

C**onclusions.** Despite the existing problems with the creation of a single all-Russian and republican federation, the lack of state funding, the shortage of suitable premises, the lack of coaching staff, the popularity of aerial gymnastics in the republic is constantly growing. Today, more than 150 young athletes are already involved in this sport in Adygea. As the results of the conducted sociological survey showed, there are many people willing to engage in various sports, including aerial gymnastics, in remote areas of the republic. In the meantime, work is underway to prepare local qualified coaches, and the material base of the sections is being strengthened. According to the conducted sociological survey, the ARFSOO «Aerial Gymnastics Federation» has developed a work plan to attract children and all those interested to practice this sport. Active work is underway to popularize aerial gymnastics among children and young people in all areas of the republic, which, of course, should affect the development of this wonderful sport in the Republic of Adygea.

References

1. Gribkova I.S., Lesovaya E.D., Kiryunnikova N.M. et al. Geoinformatsionnaya sistema kak aspekt sozdaniya usloviy dlya bezbaryernogo turizma i zanyatiy adaptivnym sportom dlya lyudey s ogranichennymi vozmozhnostyami zdorovya. Adaptivnaya fizicheskaya kultura. 2020. Vol. 84. No. 4. pp. 44-47.
2. Zaytsev A.A., Sayanina V.V. Metodika trenirovki silovykh kachestv v vozdushnoy atletike. Innovatsionnyye preobrazovaniya v sfere fizicheskoy kultury, sporta i turizma. Proceedings of the XX International scientific-practical conference. September 25-30, 2017. Rostov-on-Don: RGEU (RINKH) publ., 2017. pp. 264-268.
3. Korotko S.V., Sukmanyuk A.S., Oleynikova L.A. Primeneniye massazha dlya podgotovki sportsmenov i uluchsheniya obshchego sostoyaniya organizma. Elektronnyy setevoy politematicheskiy zhurnal Nauchnyye trudy KubGTU. 2019. No. 3. pp. 279-291.
4. Prokofyeva L.G., Chuprova E.D. Spetsifika vozdushnoy gimnastiki kak vida sporta. Tendentsii razvitiya nauki i obrazovaniya. 2019. No. 56. Part 14. pp. 23-25.
5. Sirenko I.M. Vozdushnaya gimnastika. Moscow: Iskusstvo publ., 1976. 120 p.

Evolution of fitness trends through a comparative lens

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Dr. Hab., Professor **G.N. Golubeva**[1]
Dr. Hab., Professor **N.I. Dvorkina**[2]
PhD, Associate Professor **E.V. Starkova**[3]
Dr. Hab., Professor **N.V. Peshkova**[4]
[1]Volga Region State University of Physical Culture, Sports and Tourism, Kazan
[2]Kuban State University of Education, Sport and Tourism, Krasnodar
[3]Perm State Humanitarian Pedagogical University, Perm
[4]Surgut State University, Surgut

Corresponding author: golubevagn@mail.ru

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Abstract

Objective of the study was to examine the evolution of fitness trends in Russia and globally over a two-year period.

Methods and structure of the study. Based on the insights of experts, a questionnaire was created using Google Forms. The questionnaire included 50 fitness trends, with one question for each trend. Respondents were asked to select and rank the top 20 trends. The questionnaire was distributed to 963 individuals from Russia aged 18 and above. A total of 350 individuals completed the questionnaire. The survey also collected information about the respondents' city of residence and their occupation.

Results and conclusions. Twenty fitness trends of 2024 have been identified, of which 50% are new: functional training; outdoor training; group training; online training; personal training; yoga; wearable technology; dance training; pilates; fitness in parks; healthy lifestyle at work; fitness travel; regular walking; circuit training; training with massage roll; home gyms; fitness marathons; fitness on the go/ passing workout; cycling, roller skating; crossfit.

It was revealed that the transformation of fitness trends in 2024 affected both content and quantitative indicators, compared with the trends of 2023: the number of coincidences of trends in content in the Russian Federation was 50%, in the world ranking – 65%; the number of new trends in the Russian Federation – 50%, among them: fitness in parks, fitness travel, regular walking, cycling and roller skating, home gyms, fitness travel, dance training, pilates, group training, online training; The number of new trends in the world ranking is 35%, the main ones being data-driven learning technology, youth sports development, mental health exercises, and individual training.

Keywords: *fitness trends, transformation, experts, global trends.*

Introduction. Every year brings new information, other preferences and changing trends in the fitness industry, the analysis of these trends has been carried out by foreign authors since 2017, and by us for the first time last year [1, 3, 4]. We adhere to our definition and understand fitness trends as current trends, methods, approaches and innovations in the field of physical activity, sports and healthy lifestyle, which are determined on the basis of fashion trends, scientific achievements, cultural and social changes, as well as the preferences and needs of people involved in fitness, include various types of training, equipment, clothing, accessories and sports nutrition that help people maintain their health, improve body quality and achieve fitness goals [1, 2]. For the second year, we have been conducting a comparative analysis of fitness trends in Russia and the world, and this time relative to last year [1, 4].

Objective of the study was to examine the evolution of fitness trends in Russia and globally over a two-year period.

Methods and structure of the study. An expert survey, a survey using Google forms, a comparative analysis, and an index method were used. The study was conducted in several stages. At the first stage, all experts (23 master's students of the University of Physical Education, 82,6% of whom work in the field of physical education and sports) proposed fitness trends for 2024, there were 90 options in total. Of these, 50 options were selected and rated according to the experts' opinion. At the second stage, a questionnaire was developed, including three blocks of 50

fitness trends, of which it was necessary to select 20 and rank them from first to 20th, city of residence, type of activity. At the third stage, a survey of respondents aged 18 and older from different regions of Russia was conducted according to a questionnaire in a Google form. The questionnaire was sent to 963 respondents, responses were received from 350 people. Among the respondents who responded, there were representatives of the cities: Perm 22,3%, Krasnodar 20,9%, Surgut 18,9%, Kazan 17,4%, Omsk 8,6% and others (11,9%): Barnaul, Baltasi, Votkinsk, Yoshkar-Ola, Kaliningrad, Korenovsk, Krasnodar Territory, Mamadysh, Moscow, Naberezhnye Chelny, Naro-Fominsk, Nizhnekamsk, Oktyabrskiy, Osa, Pushkino, St. Petersburg, Sovetsk, Sochi, Staroe Drozhzhanoe, Strezhevoy, Tashkent, Togliatti, Tuymazy, Ulan-Ude, Ulyanovsk, Yaroslavl.

Respondents' occupations: students of physical education universities 55,1% (most of them work in the field of physical education and sports in various positions), university teachers, physical education and sports departments 2,9%, students of other universities 36,9%, as well as 5,1% fitness trainers, sports trainers, entrepreneurs, heads of physical education and sports organizations, employees, housewives. At the fourth stage, the survey results were processed, a rating was identified and a comparative analysis of fitness trends in 2023 and 2024 in Russia and the world was conducted.

Results of the study and discussion. The following list of fitness trends was suggested for inclusion in the survey (rank achieved in the survey is given in brackets): 1. Online training (4th place); 2. Real-time virtual training (35th place); 3. Outdoor training (2nd place); 4. Functional training (1st place); 5. Home gyms (16th place); 6. Group training (3rd place); 7. Wearable technology (7th place); 8. Dance training (8th place); 9. Workout trends for health and mental well-being (50th place); 10. Fitness on the go/convenience training (18th place); 11. Meditation practices (33rd place); 12. Free weight training (24th place); 13. Fitness apps on your smartphone (45th place); 14. Weight loss exercises (30th place); 15. Cycling: cycling in the gym (46th place); 16. Aqua aerobics (43rd place); 17. Stretching (34th place); 18. Running training (40th place); 19. Swimming in the pool (25th place); 20. Cycling, rollerblading (19th place); 21. Body Flex (42nd place); 22. VR training using special glasses (47th place); 23. Fitness traveling (12th place); 24. Yoga (6th place); 25. Personal training (5th place); 26. Training on exercise machines and equipment in the yard (26th place); 27. Hardening (36th place); 28. CrossFit (20th place); 29. High-intensity interval training: Tabata (22nd place); 30. Fitness marathons (17th place); 31. Training with a massage roller, ball (15th place); 32. Circuit training (14th place); 33. Pilates (9th place); 34. Active water recreation: SUP boards, catamarans, boats (23rd place); 35. Fitness in parks (10th place); 36. Health retreats (39th place); 37. Nordic walking (27th place); 38. Gravity – body training in gravity (38th place); 39. Workout for seniors (29th place); 40. Obstacle course on rope courses in Sky Parks (37th place); 41. Regular walking (13th place); 42. Breathing practices (28th place); 43. Mass competitions: cross-country running, skiing, half marathon, marathon (31st place); 44. Healthy lifestyle at work (11th place); 45. Bodyweight training: push-ups, pull-ups, squats, planks (21st place); 46. Fitness for pregnant women (44th place); 47. Family fitness (41st place); 48. Fitness quests (48th place); 49. TikTok trends, challenges: video challenges (49th place); 50. Other: your answer (32nd place).

The survey of respondents revealed a rating of 20 fitness trends, which included, according to location: functional training; outdoor training; group training; online training; personal training; yoga; wearable technologies; dance training; Pilates; fitness in parks; healthy lifestyle at work; fitness travel; regular walking; circuit training; foam rolling; home gyms; fitness marathons; fitness on the go/side workout; cycling, rollerblading; crossfit. A comparative analysis of fitness trends is presented in Tables 1 and 2.

When comparing tables 1 and 2, it is clear that in 2023 the number of trends that coincided in content in Russia and the world was 50%, and in terms of ranking place – 5%, then in 2024 for the first indicator – 35%, for the second – 0%. New trends have appeared in Russia (fitness in parks, fitness travel, regular walking, cycling and rollerblading), which are caused by changes in the tourism and recreational and physical education and health spheres, in particular the widespread improvement and construction of recreation areas in cities: parks, forest parks, river embankments. Among the trends that do not require organized activities, popular ones are outdoor workouts (2nd place), wearable technologies (7th place), regular walking (13th place), foam rolling (15th place), home gyms (16th place), fitness on the go/ride-along method (18th place), and cycling and rollerblading (19th place). New trends

Table 1. Changes in the content and rating of fitness trends in 2023 and 2024 in the Russian Federation

Rating place	Fitness trends in the country	
	2023 year Authors of the article [1]	2024 year authors of the article
1	Wearables and fitness programs on a smart-phone	Functional training
2	Outdoor workouts	Outdoor training
3	Bodyweight workouts: push-ups, pull-ups, squats, planks	Group training
4	Personal training	Online training
5	Functional training	Personal training
6	Fitness on the go/training on the go	Yoga
7	General physical training	Wearable technology
8	Challenges (video challenges)	Dance training
9	Tiktok trends	Pilates
10	Weight loss exercises	Fitness in parks
11	Fitness travel.	Healthy lifestyle at work
12	Online fitness marathons	Fitness travel
13	Yoga	Regular walking
14	High-intensity interval training (Tabata)	Circuit training
15	Pool swimming	Foam rolling training
16	Strength training with free weights	Home gyms
17	Circuit training	Fitness marathons
18	Massage foam rollers and balls	Fitness on the go/side workout
19	Body Flex	Cycling, rollerblading
20	Crossfit	Crossfit
Coincidence of trends in the top twenty – 50%, new fitness trends – 50%		

Table 2. Changes in the content and ranking of fitness trends in 2023 and 2024 in the world

Rating place	Fitness trends in the world	
	2023 year (по Thompson, W. R., 2023)	2024 year (по Newsome, A'Naja M., 2024
1	Wearables	Wearable technology
2	Free weights strength training	Workplace health promotion
3	Weight training	Fitness programs for older adults
4	Fitness programs for older adults	Weight loss exercises
5	Functional training	Reimbursement of qualified fitness professionals
6	Outdoor training	Using certified fitness professionals
7	High-Intensity Interval Training-HIIT	Mobile workout apps
8	Weight loss exercises	Mental health exercises
9	Certified fitness professionals	Youth athletic development
10	Personal training	Personal training
11	General fitness	Lifestyle medicine
12	Circuit training	Outdoor fitness
13	Home training	Health/wellness coaching
14	Group training	Functional fitness training
15	Exercise as medicine	Yoga
16	Healthy lifestyle	Exercise is medicine
17	Yoga	Traditional strength training
18	Professional licensing	Data-driven learning technology
19	Health coaching	Online personal training
20	Mobile exercise apps	High intensity interval training (HIIT)
Coincidence of trends in the top twenty -65%, new fitness trends -35%		

have emerged in foreign countries, focusing on youth sports development, mental health exercises, and data-driven learning technology.

Conclusions. It was revealed that the transformation of fitness trends in 2024 affected both the content and quantitative indicators, compared to the trends of 2023: the number of coincidences of trends in content in the Russian Federation was 50%, in the world ranking - 65%; the number of new trends in the Russian Federation is 50%, including: fitness in parks, fitness travel, regular walking, cycling and rollerblading, home gyms, fitness travel, dance training, Pilates, group training, online training; the number of new trends in the world ranking is 35%, the main ones are: data-driven learning technology, youth sports development, mental health exercises, individual training.

References

1. Golubeva G.N., Dvorkina N.I., Kravchuk T.A. Analiz fitnes-trendov v Rossii i mire. Fizicheskoye vospitaniye i sportivnaya trenirovka. 2023. No. 3 (45). pp. 15-19.
2. Golubeva G.N., Golubev A.I. Metod poputnoy trenirovki – «Fitnes na khodu» – kak sovremennaya tekhnologiya samomenedzhmenta. Nauka i sport: sovremennyye tendentsii. 2021. Vol. 9. No. 2. pp. 48-53.
3. Newsome, A'Naja M., Reed, Rachelle, Sansone, Jessica, Batrakoulis, Alexios, McAvoy, Cayla, Parrott, Matthew 2024 ACSM Worldwide Fitness Trends: Future Directions of the Health and Fitness Industry.ACSM's Health & Fitness Journal. No. 28(1). pp. 14-26. 1/2 2024. Available at: https://journals.lww.com/acsm-healthfitness/fulltext/2024/01000/2024_acsm_worldwide_fitness_trends__future.7.aspx
4. Thompson, Walter R. Ph.D., FACSM. Worldwide Survey of Fitness Trends for 2023. ACSM's Health & Fitness Journal. No. 27(1). pp. 9-18. 1/2 2023. Available at:https://www.researchgate.net/publication/366774509_Worldwide_Survey_of_Fitness_Trends_for_2023

The integration of corporate social responsibility into the digital transformation of the sports industry

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PhD **S.N. Skorokhodov**[1]
PhD, Associate Professor **N.A. Abdybekova**[2]
[1]Financial University under the Government of the Russian Federation, Moscow
[2]Kyrgyz State Academy of Physical Culture and Sports named after B.T. Turusbekov, Bishkek

Corresponding author: sportsem@inbox.ru

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Abstract

Objective of the study was to comprehensive examination of the aspects that contribute to the sustainable digital advancement of the sports sector, with a particular focus on social and corporate accountability.

Methods and structure of the study. In the course of our research, we employed a variety of approaches, including system analysis, comparative analysis, classification, and a structural and functional approach.

Results and conclusions. The findings of the research led to a logical and scientifically sound conclusion: the success and effectiveness of the digital transformation in the sports sector is directly linked to the level of integration of corporate and social responsibility into the marketing and management strategies of both commercial and public organizations. The innovative and investment appeal of the sports sector is fostered and enhanced through the systematic development of customer-centric models of engagement with the target audience, which encompass both the elements of digital transformation and the holistic incorporation of corporate and social responsibility.

Keywords: *digital transformation, sports industry, corporate responsibility, marketing, social responsibility.*

Introduction. Formation of a positive, successful image and recognizable brand of a sports organization in the modern world plays a key role in attracting the attention of a new target audience and strengthening the company's position in the sports market. In the context of the digital transformation of the sports industry, when information becomes available through a variety of communication channels, and competition reaches its highest value, it is necessary to take into account new digital approaches to the promotion and development of the company's brand [4]. Positive, multichannel impact on public opinion and the formation of a positive image significantly contribute to an increase in sales of sports goods and services, as well as an increase in the brand value of a sports organization in various commercial segments, as well as positioning and promotion of services in socially significant areas (healthcare, education, etc.) [1]. In this context, «social and corporate responsibility in sports marketing is a fundamental principle and approach within which sports industry entities integrate concern for society and the environment into their business strategy and marketing activities. This aspect of strategic planning of a sports organization involves the creation of a system of positive impact and influence on various social groups and spheres of society. At the same time, it is necessary to emphasize that the pursuit of economic profit remains the most important and defining goal of commercial organizations of various types, but is no longer the only vector of long-term development» [6; 35 p.].

Objective of the study was to comprehensive examination of the aspects that contribute to the sustainable digital advancement of the sports sector, with a particular focus on social and corporate accountability.

Methods and structure of the study. Since social and corporate responsibility have a direct impact on the brand and image of a sports organization, leading companies in the sports industry, in light of digitalization and digital transformation of the industry, strive to make every effort to improve economic and

social well-being. «Positioning oneself in the external environment as a socially responsible company is currently an integral attribute of strategic development» [3; 120 p.].

As part of the strategic promotion and positioning of aspects of corporate and social responsibility, leading sports brands and sports organizations openly and in an accessible format (using various social, mobile and digital platforms) demonstrate their care and attention to environmental issues, as well as a direct interest in the formation of an ethical and transparent business environment and ecosystem.

Technological digital innovations in sports related to the engineering of accessible key marketing communications and strategies update a set of principles and standards of social responsibility presented in (see figure).

Elements of social responsibility

Results of the study and discussion. The international standards that have been formed to date, defining the algorithms and procedure for the formation of corporate and social responsibility, as well as the form and criteria of non-financial reporting, determine the use of certain specific digital tools by key entities in the sports industry (federations, leagues and associations, professional and amateur clubs) [5]. This technological set of methods and tools ensures the systematic automation of processes, as well as effective interaction with all participants in the sports ecosystem.

Integration of the appropriate format of innovative social and corporate standards into practical and operational activities, as well as into the complex of the administrative and management structure of the organization, ensures the achievement, among other things, of commercial goals and objectives of the strategic development of a sports enterprise.

Thus, image and reputation factors become competitive advantages of those entities in the sports industry that are ready to allocate administrative, financial, personnel and other resources to increase the social recognition of their brand in the external environment, positioning and promoting goods and services in the sports market. Social and corporate responsibility of sports industry entities contributes to strengthening GR-ties, that is, forms of interaction and cooperation with government agencies [2]. In the context of the specifics of financing and regulatory and legislative management of sports, this area is becoming very relevant.

GR in sports is, first of all, the ability and art of building mutually beneficial relations between sports business entities and the state, which helps the heads of commercial sports organizations understand the needs and interests of the authorities, as well as promote the interests of their business in government bodies[1].

An example of this type of interaction in the context of the digital transformation of the sports industry may be the cooperation of sports clubs with regional and federal authorities for the purposes of:

- developing sports infrastructure aimed at improving and optimizing conditions for mass and amateur sports, as well as digital modernization of existing and functioning sports facilities for professional sports;
- holding mass sports events with the involvement of a large number of people who regularly engage in physical activity and lead a healthy lifestyle through digital marketing;
- attracting the attention of the media to the issues of accessibility of sports grounds and the popularization of national sports through social networks, streaming platforms, and mobile applications;
- attracting large investments in sports, as well as government funding of social programs and the joint implementation of large-scale and long-term sports projects;
- supporting young and promising athletes, developing youth, school and university sports in the context of an accessible digital sports ecosystem;
- optimizing work with sponsors, advertisers and partners in order to increase the economic and social efficiency and attractiveness of a sports brand in the virtual space.

If we note the importance of globalization process-

1 Strategiya razvitiya fizicheskoy kultury i sporta v Rossiyskoy Federatsii na period do 2030 goda.

es in sports, then in accordance with the principles of sustainable development, corporate and social responsibility in this industry has a positive impact on the financial, economic stability and prospects of sports organizations, providing them with new competitive opportunities for partnership cooperation with large international and socially responsible investors on more favorable terms.

Conclusions. Thus, a specific feature of entrepreneurial activity and commercialization of the sports industry is its pronounced social focus. Businessmen and entrepreneurs in this area not only strive to satisfy their financial needs, obtain high profits, but also to actively interact with society (with individual social strata, communities and groups), contributing to the transmission and dissemination of healthy lifestyle values, popularization of amateur sports events and, in general, the development of the country's sports culture. Such an approach allows not only to achieve commercial success, but also to have a significant impact on social development. In this regard, the public demonstration by sports companies of their commitment to the standards of innovative organizational structure and corporate responsibility, on the one hand, makes the approaches and principles of digital and social marketing particularly relevant in such key areas as retaining regular customers through loyalty programs, as well as attracting a new target audience and, consequently, new strategic partners from related industries. On the other hand, numerous social networks, websites, mobile applications and other digital platforms are becoming a powerful tool for focusing the attention of the attracted target audience on important issues, such as: observance of human rights and freedoms; protection of citizens' health; protection of confidential information; combating racism and discrimination; counteracting crime; combating violence and poverty; supporting sustainable development; inclusion through sports; environmental protection.

Therefore, key stakeholders, investors and sponsors consider sports not only as a platform for making a profit, but also as a space for creating and broadcasting reputational values, a socially oriented approach.

References

1. Abdybekova N.A., Derkembaev U.U. Innovatsionnyye i tsifrovyye tekhnologii v professionalnoy podgotovke magistrov po napravleniyu «Fizicheskaya kultura i sport». Vestnik fizicheskoy kultury i sporta. 2022. No. 1 (29). pp.154-166.
2. Altukhov S.V. Ivent-menedzhment v sporte. Upravleniye sportivnymi meropriyatiyami. Moscow: Sovetskiy sport publ., 2013. 208 p.
3. Lednev V.A. Predprinimatelstvo v industrii sporta v Rossii: sovremennyye trendy razvitiya. Sovremennaya konkurentsiya. 2022. Vol. 16. No. 6. pp. 117-125.
4. Malygin A.V. Sportivnyy marketing. Dlya tekh, kto v igre. Moscow: Planeta publ., 2018. 335 p.
5. Skorokhodov S.N. Podkhody k tsifrovizatsii algoritmov kommertsializatsii deyatelnosti v industrii sporta. Finansovyye rynki i banki. 2024. No. 9. pp. 61-66.
6. Skorokhodov S.N. Aktivatsiya sotsialnogo marketinga v industrii sporta. Teoriya i praktika fizicheskoy kultury. 2020. No. 4. 35 p.

Enhancing the framework for financial assistance in the field of physical education and sports through the collaboration of public and private sectors

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T.I. Altushkin[1]
PhD, Associate Professor **E.S. Naboychenko**[1]
Dr. Sc.Econ., Professor **E.G. Knyazeva**[1]
[1]Ural Federal University named after the First President of Russia B.N. Yeltsin, Yekaterinburg

Corresponding author: keg55@list.ru

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Abstract

Objective of the study was to validate the framework for financial backing of physical fitness and sports through a combination of public and private involvement.

Methods and structure of the study. The analytical models of contemporary economic and social phenomena were examined using a combination of system-based, functional, and comparative analysis techniques.

Results and conclusions. The sustainable advancement of physical culture and sports at the national level necessitates a concentration on the creation and implementation of novel ideas, while also fostering an environment that encourages private initiatives. A balanced approach to funding, combining both public and private sources, is crucial in this area.

The financial and organizational assistance provided by national corporations to children's sports and specialized sports should be endorsed by the public and the government. The expenses for the ongoing maintenance and implementation of investment projects related to sports facilities should be factored into the corporate social responsibility evaluation, financial health, and taxation of companies. The financial and administrative decisions aimed at fostering the growth of physical culture and sports in the regions where national corporations operate should be met with positive feedback.

The strategic approach involves interdepartmental and intersectoral collaboration, the unification of efforts between federal and regional government bodies and local authorities, and the coordination of public and professional organizations in the areas of legislative, economic, and financial support for the advancement of physical culture and sports.

Keywords: *physical education, financing, development strategy, corporate financial support.*

Introduction. According to official sources, the number of citizens of our country leading a healthy lifestyle and doing physical exercise is increasing year after year. In Russia, 57% of the population is involved in sports[1]. Растут меры экономического поддержания стабильности профессионального спорта на государственном уровне[2]. Various events for organizational and financial support should create a basis for the sustainable development of Russian society and the quality of life of citizens.

At the same time, it is necessary to take into account the specifics of the development of physical culture and sports in the regions of Russia, which involves two-way communications and open access to information on physical culture and sports events, in particular, transparency of the volumes and structure of financial flows by sources and areas of expenditure.

Objective of the study was to validate the framework for financial backing of physical fitness and sports through a combination of public and private involvement.

Methods and structure of the study. The analytical models of contemporary economic and social

[1]Sovet po razvitiyu fizicheskoy kultury i sporta. «O roli negosudarstvennykh organizatsiy v razvitii fizicheskoy kultury i sporta». Available at: http://www.kremlin.ru/events/councils/by-council/8/75343 (date of access: 18.10.2024).

[2]Rasporyazheniye Pravitelstva RF ot 24.11.2020 N 3081-r (red. ot 29.04.2023) «Ob utverzhdenii Strategii razvitiya fizicheskoy kultury i sporta v Rossiyskoy Federatsii na period do 2030 goda». Available at: https://www.consultant.ru/document/cons_doc_LAW_369118/?ysclid=m3wfhin0r9649353665 (date of access: 28.10.2024).

phenomena were examined using a combination of system-based, functional, and comparative analysis techniques.

Results of the study and discussion. Currently, the basis of current and future trends is balanced and increasing financial support for the sphere of physical culture and sports. Thus, in the first half of the current decade, funding increased from 255 billion rubles in 2015 to 375 billion rubles in 2019. Consolidated government spending on physical culture and sports in the federal, regional and municipal budgets in 2020 already amounted to 700 billion rubles[1]. According to the Ministry of Sports of the Russian Federation, consolidated expenditure on sports in 2023 amounted to 844 billion rubles[2].

At the same time, the potential for attracting extra-budgetary funds to the sphere of physical culture and sports is expanding. Thus, in 2015-2020, the share of extra-budgetary funds was 8%. In 2021, this share increased to 10% and this trend is expanding in the current time period, which is supported by current strategic and program documents. In 2025, according to the state comprehensive program, «Development of Physical Culture and Sports», the share of financial support from extra-budgetary sources will increase to 12%[3].

The Russian Federation has a whole range of measures to support investment projects in the field of physical culture and sports. As part of the transformation of the state program, rules for the payment of subsidies in 10 areas have been approved. Sports projects based on concession agreements and public-private (or municipal-private) partnerships are eligible for subsidies.

The subsidy form is used to co-finance the expenditure obligations of constituent entities of the Russian Federation during capital investments in state and municipal sports facilities. The format of co-financing expenditure obligations at the subfederal level is used during the acquisition, modernization or creation of sports infrastructure facilities for mass sports.

Support measures are implemented in the form of preferential lending as subsidies to credit institutions and VEB RF. Investors receive credit resources at a preferential rate for the implementation of investment projects in the field of physical culture and sports.

A procedure has been developed for the formation and expenditure of the Russian Sports Fund, which should become an important source of financing for sports. The priority area for spending the funds of the Russian Sports Fund is financial support for children's and youth and mass sports; Olympic and Paralympic Committee of Russia; sports infrastructure in the regions.

Corporate sports events are supported on a strategic scale. A set of measures to stimulate employers to organize and finance employees' sports activities is being developed. The conditions for public-private partnerships in the construction of sports infrastructure facilities are being improved.

A whole set of measures to form a modern sports industry sector has been developed, enshrined at the government level. Updating national standards in the sports industry is envisaged. Labeling of sports goods and expansion of support, including financial, for Russian manufacturers of sports goods are being introduced at the experimental level.

A striking example of large-scale corporate social responsibility is the activity of JSC Russian Copper Company (RCC). For a decade, the company has been supporting the children's sports movement. Every year, financial support is provided to the children's yard football festival «Metroshka». The sports project for schoolchildren of grades 5-6 «The Strongest Schoolboy», which began in the form of a project, was expanded to the organization and financing of competitions for schoolchildren «RCC All-Around». Long-term financial support is provided to sports public movements in specialized sports. For example, the Dynamo bandy club, the Torpedo Miass football club, the Korkino District Boxing Federation. The corporation's investment costs for sports facilities were carried out from the level of equipping with sports equip-

[1]Ofitsialnyy sayt Rossiyskogo soyuza promyshlennikov i predprinimateley. Podderzhka korporativnogo sporta vklyuchena v Strategiyu razvitiya fizkultury i sporta do 2030 goda. Available at: https://rspp.ru/events/news/podderzhka-korporativnogo-sporta-vklyuchena-v-strategiyu-razvitiya-fizkultury-i-sporta-do-2030-goda-5fc73bf55e2a9/ (date of access: 29.10.2024).

[2]Ofitsialnyy sayt Ministerstva sporta Rossiyskoy Federatsii. Available at: https://minsport.gov.ru/press-center/news/ (date of access: 29.10.2024).

[3]Postanovleniye Pravitelstva RF ot 30.09.2021 N 1661 (red. ot 09.08.2024) "Ob utverzhdenii gosudarstvennoy programmy Rossiyskoy Federatsii "Razvitiye fizicheskoy kul'tury i sporta" i o priznanii utrativshimi silu nekotorykh aktov i otdel'nykh polozheniy nekotorykh aktov Pravitel'stva Rossiyskoy Federatsii". Available at: https://www.consultant.ru/document/cons_doc_LAW_397234/?ysclid=m3wfelcrsr754128834 (date of access: 26.10.2024).

ment (physical education and health complex in the village of Varna); construction of small sports facilities (climbing wall of Tominskaya comprehensive school; skate park of Yekaterinburg; hockey rink of Michurino village; creation of workout areas of Sverdlovsk, Chelyabinsk, Orenburg, Novgorod regions) to repair of existing sports facilities (sports complex of Orsk) and construction of new large-scale sports facilities. The corporation's investments in construction of sports and patriotic club «Archangel Michael» (area of 2500 sq. m, adult and children's swimming pools); RCC Martial Arts Academy (modern training complex of 7200 sq. m) (Yekaterinburg) received public recognition.

C**onclusions.** Sustainable development of physical culture and sports on a national scale involves focusing on the development and implementation of innovations; providing competitive conditions for private initiatives. A proportional combination of state and extra-budgetary financing in the field of physical culture and sports is clearly important.

Financial and organizational support for children's sports and specialized sports from national corporations should receive public and state approval. Expenses for the current maintenance and implementation of investment projects for sports facilities should be taken into account in the aspects of assessing corporate social responsibility, financial condition and taxation of companies. Financial and management decisions on promoting the development of physical culture and sports in the regions where national corporations are present should receive a positive response.

The strategic trajectory is interdepartmental and intersectoral interaction, consolidation of actions of federal and regional government bodies and local governments, coordination of public and professional organizations in the field of legislative, economic and financial support for the development of physical culture and sports.

References

1. Gurinovich, A. G., & Petrova, G. V. (2019). Key priorities of legal regulation of budget financing of physical culture and sports in the Russian Federation in the modern period. Teoriya i praktika fizicheskoy kultury. 2019. 4. 99–101.
2. Kazarinova, L. V., Borodin, D. A., Jalilov, P. B., & Feyzullaev, F. M. O. (2022). Scientific, methodological, legal and organizational aspects of improving the system of physical culture. Physical culture: upbringing, education, training. 2022. 6. 40–41.
3. Krivopalova, N. S., Nenashev, A. I., & Kurochkina, N. E. (2021). Financial support and sponsorship of physical culture and sports. Science of the XXI century: current directions of development. 2021. 2-1. 215–218.
4. Larina, O. I. (2018). Public-private partnership in the field of physical culture and sports. Management. 2018. 6(4). 21–28.
5. Romashova, K. A. (2023). The use of corporate social responsibility tools in international sports. Social entrepreneurship and corporate social responsibility. 2023. 4(4). 213–226.

Development of ice hockey in chengdu (China)

Postgraduate Student **Yao Mingfeng**
The Russian University of Sport «GTSOLIFK», Moscow

UDC 796

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Annotation. This article analyzes the development of ice hockey in Chengdu. Chengdu is a strategic hub for the development of the western part of the People's Republic of China and an important gateway connecting China with the Middle East and Europe. The growing popularity of ice hockey in the region is linked to government support for the sport, as well as the development of economic ties with geographical neighbors.

Keywords: *China, Chengdu province, ice hockey, sports reserve training, Chengdu Hockey Club.*

Introduction. As part of the eleventh five-year economic and social development plan of the People's Republic of China, the number of sports arenas and stadiums was increased, which in turn contributed to the emergence of new hockey clubs, the level of competitiveness of players continued to increase, and enthusiasm for mass involvement in ice hockey continues to grow [2].

According to statistics, about 1 million people live in Chengdu every year, who visit various ice and snow sports grounds. The Chengdu Hockey Association represents more than 10 different ice and snow sports organizations, and about 200 ice and snow events of all levels are held annually under the leadership of the government and with the participation of the society [3].

Special achievements in this sport include: the development of the women's hockey team and the creation of the junior national ice hockey team.

Main part. This fact is inextricably linked to deep cultural foundations, strong political guarantees and continuous improvement of the construction of sports infrastructure. At the same time, Chengdu has a long history and culture, rapid economic development, and a relatively deep sports base. One of the most popular sports, before the mass development of ice hockey, was roller skating and inline hockey [4].

It should be noted that the Organizing Committee of the Games of the XXXIV Olympiad in 2028 in Los Angeles is actively working to include hockey on roller skates in the Program of the Games.

There are currently 6-7 land-based hockey clubs in Chengdu with over 300 members, and small clubs are popping up in an endless stream. There are 4-5 cities in Sichuan Province that have consistently launched ground ice hockey, which is developing rapidly. There are many roller skating enthusiasts in Sichuan Province, most of them are youth enthusiasts who have founded ice hockey for adults.

As part of the Peoples Republic China state policy, as well as the development strategy of the western region, Chengdu has become an important transport hub, which in turn has allowed a number of countries around the world, such as the Russian Federation, Finland, Canada, and the United States, to bring their own ice hockey culture [1].

The factors that determine the impact on the development of ice hockey in Chengdu include:

- Political guarantee for the development of ice hockey in the region;
- Development of hockey infrastructure in the region;
- Development of the women's ice hockey team;
- Development of youth ice hockey;

Conclusion. Thanks to the successful organization and holding of the XXIV Olympic Winter Games in 2022, the organization and holding of the upcoming XXXI World Summer University Games, as well as within the framework of the state program "300 million people are engaged in ice and snow sports", the number of ice and snow sports facilities in Chengdu continues to increase, a number of facilities are undergoing a rapid modernization process, which in In turn, it contributes to the dynamic development of ice hockey in the region.

Chengdu is expected to become one of the main ice hockey bases in the People's Republic of China in the near future.

References

1. The Main State Administration for Physical Culture and Sports: [Electronic resource] URL www.sport.gov.cn (accessed 03.12.2024)
2. State Committee for Development and Reform: [Electronic resource] URL www.sdpc.gov.cn (accessed 14.01.2025)
3. Li, Xin Han, Feng Wei Review, review and prospects of the 60-year history of ice hockey development in China. Journal of Harbin Institute of Physical Education. 2013. 31(05). pp. 22-25.
4. Li, Xue, Peng Chenyi The state of development of ice hockey in our country and measures to counter it. Modern sports technologies 2016. 6(19). Pp. 133-134.

Corresponding author: ya.melnikova64@yandex.ru