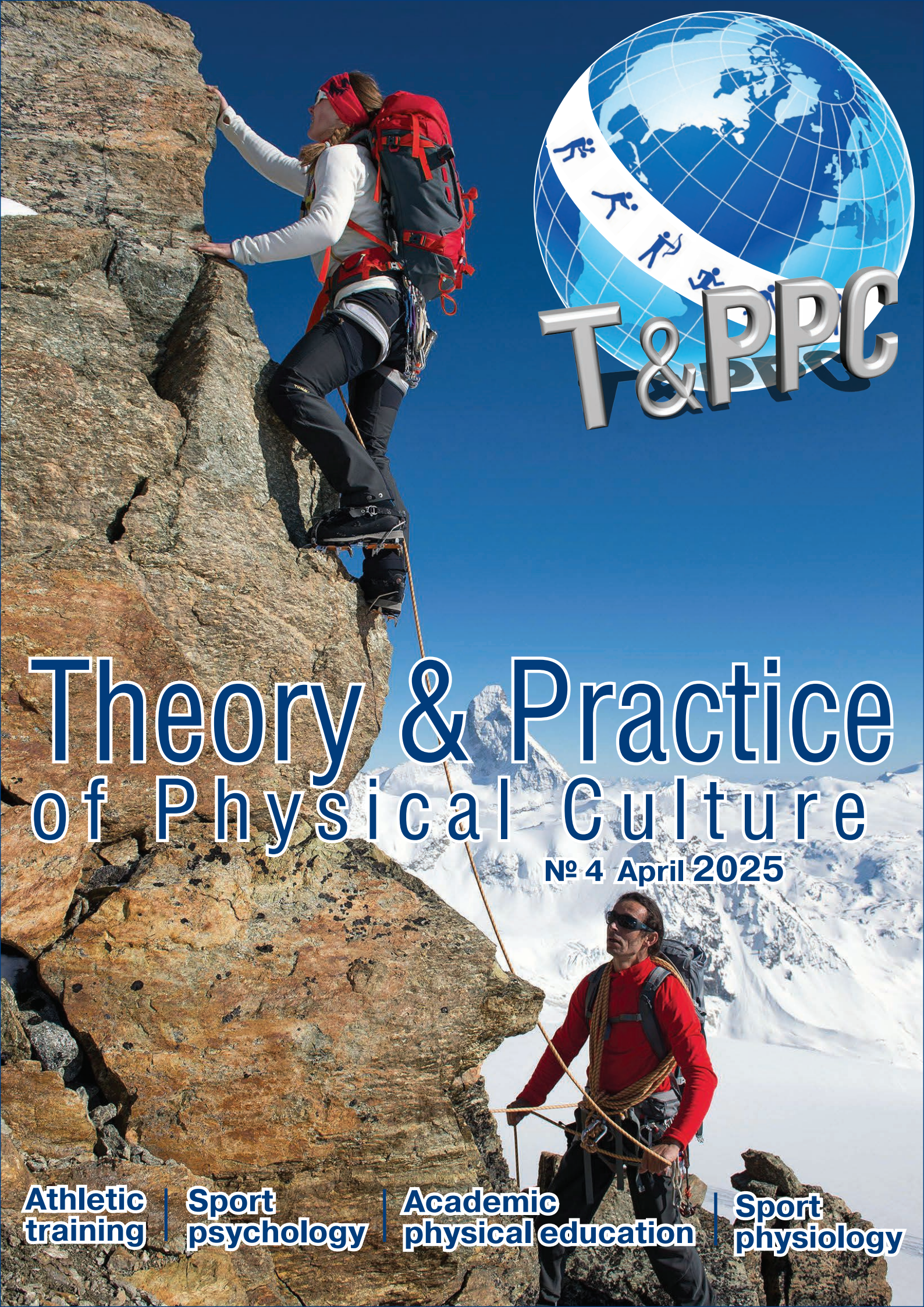


Theory & Practice of Physical Culture

№ 4 April 2025

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

The election manifesto of the President of the International Olympic Committee in assessing the prospects of Russian sports

The current year 2025 is significant for the Olympic movement – on March 20, Costa Navarino, Greece, hosted the election of the President of the International Olympic Committee (IOC), where Kirsty Coventry, a two-time Olympic swimming champion from Zimababwe and a member of the IOC Executive Committee, became the winner. The international community is waiting and making assumptions about the IOC's sports policy.

The new IOC President will have to decide on the admission of Russian athletes to international tournaments, including the 2026 Olympics.

According to Coventry's previously expressed opinion, the work of all participants in the Olympic movement should be subordinated to a common goal – the development of high-performance sports, which implies cooperation between sports organizations in the legal field, despite differences in the political views of the states they represent. In particular, even before the Tokyo 2020 Olympic Games, referring to the 2016 Rio Games, Kirsty Coventry noted that she understands the distrust and difference of opinion, but if everyone works to achieve the same goal, it is possible to achieve it faster. In the Manifesto, she focuses on maintaining the neutrality of the IOC, allowing it to act as a unifying force and not be influenced by the political interests of different states.

In the document, the future President of the IOC stated that the main idea of the sports collaboration is the realization that sport is not just a stage for athletes to perform, it is a platform for the transformation of old positions. Recognizing that athletes are more than just competitors, participants in the sports movement need to prioritize their mental health and physical recovery to help them succeed throughout their sports careers and beyond. To achieve this goal, the IOC plans to focus its activities on implementing existing programs to identify new opportunities for athletes, including continuing and expanding the Olympic Partnership Program (Tops) to further develop athletes' careers.

The Russian plans are consistent with the idea outlined in the Manifesto to increase the effectiveness of external communications, which will open up and expand the media's ability to cover the work of the IOC and other international sports organizations, making these activities transparent, accessible and controlled by the world community.

Thus, the IOC's commitment to maintaining neutrality in the context of a geopolitical state confrontation should be noted as positive factors. The Manifesto emphasizes the importance of the IOC's non-interference in various political confrontations, which can facilitate decision-making based on sporting principles, as opposed to the interests of the political environment.

On the part of the Russian leadership, it is envisaged to strengthen international activities aimed at strengthening contacts with international sports organizations and protecting the interests of Russian athletes in the international arena, which opens up positive prospects for the Russian side's representation in the global sports community. Another positive prerequisite for the participation of Russian athletes in the international Olympic movement is the commitment stated in the IOC Manifesto to support athletes, which can create favorable conditions for the participation of Russian athletes in international competitions.

At the same time, uncertainty factors should be taken into account, which should be taken into account when taking measures to return Russia to the global sports community. The future activities of the IOC will depend on the concrete steps of the new President, cooperation with WADA in the form of maintaining the requirements imposed on Russian athletes, as well as fulfilling the promises presented in the Manifesto. Most likely, in the near future, Russian athletes will continue to participate in international tournaments in a neutral status.

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

Theory and Practice of Physical Culture

4'2025

Monthly Scientific-theoretical Journal, founded in 2013

ISSN 2409-4234

©ANO SPC «Theory and Practice of Physical Culture and Sport»

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

http://www.tpfk.ru

Theory and Practice of Physical Culture

Contents

Features of training programs of highly qualified athletes in cyclic disciplines, where the duration of competitive activity exceeds 6 minutes

UDC 796.015.622.2

PhD **A.S. Kryuchkov**
Dr. Hab. **V.D. Kryazhev**
Federal Scientific Center of Physical Culture and Sports (VNIIFK), Moscow

Corresponding author: kruchkova_an@mail.ru

Received by the editorial office on 11.02.2025 г.

Abstract

Objective of the study – is to establish the characteristics of the training work of the world's leading athletes specializing in sports disciplines where cyclical movements prevail and endurance is required.

Methods and structure of the study. The research methods used were the collection, systematization and analysis of materials from foreign scientific papers extracted from the information and reference resources Google Scholar and PubMed. This article presents the characteristics of the training load of highly qualified athletes practicing cyclical sports. The distribution of training loads by intensity levels is described. The percentage contribution of training conducted in each of the intensity zones to the total annual training cycle for various sports disciplines is reflected. The main training tools used by elite athletes in each of the intensity zones are analyzed.

Results and conclusions. For outstanding athletes competing in cyclical sports lasting more than six minutes, the total training time in the first intensity zone is 75-80% of the total training load during the one-year training cycle. 10-15% of training sessions are conducted in the moderate intensity zone. High-class athletes perform approximately 5-10% of the total annual volume with high intensity.

Keywords: *training work, world athletes, sports disciplines, cyclic movements, endurance, training load, highly qualified athletes, intensity.*

Introduction. The results of numerous scientific studies show that the amount of training loads for elite athletes in cyclic sports, the result of which depends on the level of endurance development, is in the range of 500-1200 hours per year when athletes perform 300-500 training sessions [1-5]. Experts explain the significant difference in the amount of training load by the peculiarities of sports in which the load on the musculoskeletal system is characterized by significant differences due to movement in different environments and on different surfaces, as well as the use of various sports equipment. To understand the general patterns of building training programs in cyclical sports and to better understand the specifics of training in individual sports, it is necessary to summarize data on the training process of elite athletes.

Objective of the study – is to establish the characteristics of the training work of the world's leading athletes specializing in sports disciplines where cyclical movements prevail and endurance is required.

Methods and structure of the study. The materials of foreign studies devoted to the problems of athletes' training in endurance sports, obtained from the reference databases Google Scholar and PubMed, were collected, summarized and studied.

Results and conclusions. Based on a survey of twelve successful Norwegian male coaches who work with athletes in sports with a cyclical nature of athletic movements and who have trained a total of more than a hundred winners and prize-winners of major international competitions, as well as generalizing data from scientific publications [1-6, 8], a group of foreign experts developed a general description of the training load in these sports sports (Table 1).

Table 1. Characteristics of the training load of elite athletes in sports with a cyclical nature of athletic movements and a duration of competitive exercise of more than 6 minutes in the annual training cycle [7]

Sport	Number of hours per year	Training sessions per year	Competitions per year	Intensive training per year	% of specific workouts
Biathlon	800–1000	500–575	30–40	100–120	>60
Ski racing	900–1100	525–575	30–40	100–120	>60
Long-distance running	600–700	550–625	20–35	110–140	>90
Bike trail	1000–1200	300–350	50–80	110–130	>90
Rowing	850–1000	475–525	25–35	100–125	>60
Skates	900–1100	500–575	25–35	120–140	>15
Swimming	1150–1350	650–700	20–30	130–150	>70

Swimmers spend the most time on training in the annual training cycle. The least are long–distance runners. This is because you can exercise more in an aquatic environment. The training time of runners is limited by the heavy load on the musculoskeletal system due to the impact interaction with the support. Road cyclists have the least amount of training per year. This is partly due to the fact that these athletes are almost twice as likely to participate in competitions.

Cross-training, (cross-training) or the use of endurance training tools in a non-specific mode borrowed from other sports makes up a significant part of low-intensity training in several sports. For example, cycling for speed skaters or running for skiers. Treadmill running is considered a specific exercise (i.e., not cross-training) for runners, roller skiing for skiers, roller skating for speed skaters, ergometer rowing for rowers, and indoor cycling for cyclists [7].

A six-zone scale developed by the Norwegian Top Sport Centre is currently used to assess the intensity of endurance training (Table 2).

The distribution of training loads by intensity zones in the annual training cycle, typical for elite athletes specializing in cyclical sports, is shown in Table 3.

In general, the volume of training load in low-intensity zones is approximately 75-80% of the total annual volume. The workouts performed in this area are dominated by exercises performed in a continuous mode. At the same time, low-intensity interval training is also used in road cycling, swimming, rowing and speed skating. The athletes presented in the table. They perform the vast majority of low–intensity workouts in the first zone and, to a lesser extent, in the second. Elite athletes, depending on their sport, usually perform a training load in the first zone over a wide time range – from 40 to 400 minutes. Long–distance runners have the shortest workout, while cyclists have the longest. Athletes in long-distance running, road cycling and swimming use mainly a specific load in the low-intensity zone. Non-specific cross-training is often used in speed skating, rowing, biathlon, and cross-country skiing.

Table 2. Intensity scale for the analysis of training loads of elite athletes in sports with cyclical nature of athletic movements and duration of more than 6 minutes [7]

The scale		ЧСС	VO_2	BLa	RPEBorg
6-zone	3-zone	% from max	% of max	(mmol/L)	6–20
6	HIT	-	-	> 10	18–20
5	HIT	> 93	94–100	6.0–10.0	18–19
4	HIT	88–92	88–93	4.0–6.0	17–18
3	MIT	83–87	81–87	2.5–4.0	15–16
2	LIT	73–82	66–80	1.5–2.5	13–14
1	LIT	60–72	50–65	< 1,5	10–12

Note: BLa – normative ranges of lactate concentration in the blood based on the lysed erythrocyte mass; RPE – rating of perceived load based on the Borg scale 6-20; HIT – high-intensity training; MIT – moderate-intensity training; LIT – low-intensity training.

Table 3. Total training load time in each of the training load intensity zones of elite athletes in cyclic sports with a duration of competitive exercise of more than 6 minutes

Type of sport	Intensity zones					
	1	2	3	4	5	6
Biathlon	60–240	15–45*	30–65	20–40	15–25	5–10
Ski racing	60–240	15–45*	40–65	20–40	15–25	5–12
Long-distance running	30–105	5–30 *	20–40	15–35	10–20	3–6
Road cycling	120–420	20–60	45–60	20–50	10–30	4–8
Rowing	60–240	60–80	45–80	30–50	20–40	7–10
Skates	60–300	50–60	45–75	25–40	20–30	6–12
Swimming	60–150	40–80	45–70	25–40	12–20	4–15

*Note – * training only in the second zone is rarely used, but training conducted over a long distance and performed at a low speed may include the work of the 2nd zone to improve technique or to move over rough terrain.*

The training loads of the third zone of medium intensity account for approximately 10-15% of all the loads of the annual training cycle. These loads are mainly performed in the form of interval training. The total load time in this zone averages 20-90 minutes. The duration of one interval varies from 5 to 20 minutes. The work-to-rest ratio is mostly in the 5 range.:1. In a number of sports, the duration of training in the third zone is 0.7-1 hour. In some sports, especially in road cycling, the competitive load makes up a significant part of the total volume performed in the third zone.

Training loads related to the high intensity zone account for about 5-10% of the total annual volume. Most interval training is performed in this area. Competitions in most disciplines of endurance sports are also held in this zone. The accumulated training load time in the fourth zone in one workout is in the range of 12 and 45 minutes, from 10 to 30 minutes in the fifth and from 3.5 to 12 minutes in the sixth zone. The duration of the training interval in the fourth intensity zone can be 1.5-9 minutes. In the fifth intensity zone, shorter training intervals from 0.5 to 7 minutes are used. In the sixth zone, the shortest intervals from 0.3 to 3 minutes are used. The ratio of training load time to recovery time decreases as the intensity increases and the duration of the load decreases, on average from 3:1 to 0.5:1. These ratios are determined by the characteristics of sports. A significant share of the total workload of elite athletes is competitive activity, as these athletes can start 40-80 times a year.

Conclusions. The main feature of the training load of highly qualified athletes specializing in sports with a cyclical nature of athletic movements and lasting more than six minutes is that the total training load time in the first intensity zone is 75-80% of the total annual volume. On average, cyclical athletes perform from 12 to 14% of their workouts in a medium-intensity zone, and no more than 10% of their training loads are in a high-intensity zone. In most sports, athletes perform large amounts in low intensity zones using cross-training borrowed from other sports. Most high-intensity loads are performed during interval training or competition.

References

1. Casado A, González-Mohíno F, González-Ravé JM, Foster C. Training Periodization, Methods, Intensity Distribution, and Volume in Highly Trained and Elite Distance Runners: A Systematic Review. Int J Sports Physiol Perform. 2022 Jun 1;17(6):820-833. https://doi.org/ 10.1123/ijspp.2021-0435.
2. González-Ravé JM, Hermosilla F, González-Mohíno F, Casado A, Pyne DB. Training Intensity Distribution, Training Volume, and Periodization Models in Elite Swimmers: A Systematic Review. Int J Sports Physiol Perform. 2021 Jul 1;16(7):913-926. https://doi.org/10.1123/ijspp.2020-0906.
3. Guellich A, Seiler S, Emrich E. Training methods and intensity distribution of young world-class rowers. Int J Sports Physiol Perform. 2009 Dec;4(4):448-60. https://doi.org/10.1123/ijspp.4.4.448.
4. Orie J, Hofman N, de Koning JJ, Foster C. Thirty-eight years of training distribution in

Olympic speed skaters. Int J Sports Physiol Perform. 2014 Jan;9(1):93-9. https://doi.org/10.1123/IJSPP.2013-0427.
5. Sandbakk Ø, Holmberg HC. Physiological Capacity and Training Routines of Elite Cross-Country Skiers: Approaching the Upper Limits of Human Endurance. Int J Sports Physiol Perform. 2017 Sep;12(8):1003-1011. https://doi.org/10.1123/ijspp.2016-0749.
6. Tønnessen E, Sylta Ø, Haugen TA, Hem E, Svendsen IS, Seiler S. The road to gold: training and peaking characteristics in the year prior to a gold medal endurance performance. PLoS One. 2014 Jul 14;9(7):e101796. https://doi.org/10.1371/journal.pone.0101796.
7. Tønnessen, Espen & Sandbakk, Oyvind & Sandbakk, Silvana & Seiler, Stephen & Haugen, Thomas. (2024). Training Session Models in Endurance Sports: A Norwegian Perspective on Best Practice Recommendations. Sports Medicine. 54. 2935-2953. https://doi.org/10.1007/s40279-024-02067-4.
8. Van Erp, T., Sanders, D., & de Koning, J. J. (2020). Training Characteristics of Male and Female Professional Road Cyclists: A 4-Year Retrospective Analysis. International Journal of Sports Physiology and Performance, 15(4), 534-540. Retrieved Jan 21, 2025, from https://doi.org/10.1123/ijspp.2019-0320.

The balance of power in gymnastics at the 2024 Olympics: a comparison between continental associations

UDC 796.41

Dr. Hab., Professor **A.A. Somkin**[1]
PhD, Associate Professor **N.N. Smirnova**[2]
PhD, Associate Professor **R.A. Agaev**[3]
A.E. Krotov[3]
[1]St. Petersburg State Institute of Cinema and Television, St. Petersburg
[2]St. Petersburg Mining University of Empress Catherine II, St. Petersburg
[3]St. Petersburg State Maritime Technical University, St. Petersburg

Corresponding author: somkin.alexey.1959@yandex.ru

Received by the editorial office on 02.02.2025 г.

Abstract

Objective of the study – aims to assess the state of gymnastics in the continental federations that are part of the FIG, based on the results shown at the XXXIII Olympic Games.

Methods and structure of the study. As part of the work, the structure of FIG and its five continental unions (CS) were studied. The results of the Olympic gymnastics competitions are analyzed, followed by statistical processing of data on the participation of teams and individual athletes from various CS. The countries and gymnasts who demonstrated the best results at the XXXIII Olympiad have been identified.

Results and conclusions. The distribution of medals in gymnastics at the Olympic Games is characterized by significant geographical diversity. Representatives of 17 states from four CS, excluding Oceania, won awards of various merits, including eight countries that won gold medals. Asian countries (Japan, China) occupy the leading positions in men's gymnastics, while American countries (USA and Brazil) occupy the leading positions in women's gymnastics. Individual gymnasts – winners and prize–winners of the Games – represent countries that were not previously among the leaders of world gymnastics, such as the Philippines, Colombia and Kazakhstan for men, as well as Algeria for women. However, for an objective assessment of the balance of power between the CS, it is necessary to take into account the participation of Russia.

Keywords: *gymnastics, continental unions of FIG – XXXIII Olympic Games, statistical analysis, leading positions, men's gymnastics, women's gymnastics, winners.*

Introduction. The International Gymnastics Federation (FIG) includes five continental unions in its structure: European (EG), Asian (AGU), Pan-American (PAGU), African (UAG), Oceanic (OGU), which includes the Pacific Ocean states [5]. The selection of national teams and individual participants for the Olympics, which was regulated, took place in 2022-2024 at the World championships and Cups, continental championships, and also implied special quotas [1, 3]. The Olympic gymnastics tournament was attended by 12 men's and women's teams, determined based on the results of the 2022 and 2023 World Championships. A total of 190 participants (96 men and 94 women) participated in the tournament, representing all five continental unions, but with different skill levels.

Objective of the study – aims to assess the state of gymnastics in the continental federations that are part of the FIG, based on the results shown at the XXXIII Olympic Games.

Methods and structure of the study. A study of the structure of FIG with its five continental Unions (CS). The study of the results of gymnastics competitions at the Olympics with their subsequent statistical analysis regarding the affiliation of teams and individual participants to certain CS. Identification of countries and gymnasts who occupy leading positions in gymnastics based on the results of the XXXIII Olympic Games (OI 2024).

Results and conclusions. According to the FIG Charter, all five CS have equal rights, but the level of development of gymnastics in different countries is far from uniform. In addition, it can be noted that EG includes 50 national federations, while OGU has only 8, of which only Australia and New Zealand have real

gymnastic disciplines, and their athletes participated in the Olympic Games 2024.

It is quite expected that the men's part of the gymnastics program was dominated by representatives of AGU: Japan, China, the Philippines, which, in total, won seven gold medals out of eight possible. For the first time in the history of the Olympics, Irish athlete Rhys McClenaghan won the equestrian exercises. In the team championship, the national teams were on the podium in the same composition as at the 2023 World Cup: Japan, China, and the United States. You may recall that at the Tokyo Olympics, this podium looked like this: Russia (ROC), Japan, China.

Thus, the two teams representing Asia, without the participation of Russia, are the strongest in the world. This is confirmed by the personal championship, where the representatives of these countries also have the entire podium.: Oka Shinnosuke (Japan), Zhang Boheng and Xiao Zhoteng (both from China). A gymnast from the Philippines, K. Yulo, should be noted. Firstly, he is the only gymnast at the OI 2024 who was able to win twice in individual sports, and secondly, he won gold for his country for the first time in gymnastics. The women's tournament was predictably won by the U.S. national team, which lost only to Russian gymnasts at the previous Olympics.

Gymnasts from PAGU countries only took the podium in the individual all-around: S. Biles (USA), R. Andrade (Brazil), S. Lee (USA). In individual sports, K. Nemour from Algeria can be noted, who won on uneven bars and brought the first "gold" in gymnastics for UAG. However, this does not indicate the rise of a gymnast in Africa, as this gymnast only changed her sports citizenship from French to Algerian in 2023. All statistics on the results of the OI 2024 by membership in the CS are presented in Table 1, and the ranking indicators in the medal standings are shown in Table 2.

Based on the conducted research, we will highlight the main trends in the development of gymnastics in the world. As before, gymnasts from Asian countries of Japan and China occupy the leading positions among men. At the same time, there are individual gymnasts in other AGU countries who can compete with leaders both in Asia and in the world, from the Philippines and Kazakhstan. A. Barajas from Colombia should be mentioned separately. He won the only silver medal from all PAGU countries and the first for his country in gymnastics. The USA gymnasts dominate in women's gymnastics, and in individual competitions they are competing from PAGU countries. Andrade (Brazil). In EG, Italy can be distinguished: "gold" and "bronze" on the balance beam; "silver" in the team [4].

Conclusions. The "geography of medals" in gymnastics at the Olympic Games 2024 is quite diverse.

Table 1. Statistical indicators of results at the Games of the XXXIII Olympiad in accordance with membership in the continental unions

	EG	AGU	PAGU	UAG	OGU	Σ
Men's gymnastics						
Participants	56 (21)*	24 (11)	14 (5)	1 (1)	1 (1)	96 (39)
Commands	8	2	2	no	no	12
Team final	4	2	2	no	no	8
Personal finale	12 (9)	6 (4)	5 (3)	no	1 (1)	24 (17)
Finals on the views	27 (14)	19 (7)	2 (2)	no	no	48 (23)
The results of the final competitions (1. Gold/2. Silver/3. Bronze medals)						
Team championship	no	1. Japan 2. China	3. USA	no	no	---
Personal championship	no	1/1/1 (2)	no	no	no	1/1/1 (2)
Primacy in the types	1/3/3 (6)	5/2/3 (5)	0/1/1 (2)	no	no	6/6/7 ** (13)
Women's Gymnastics						
The participants	44 (17)	21 (8)	20 (6)	3 (3)	6 (2)	94 (36)
Commands	5	3	3	no	1	12
Team final	3	2	3	no	no	8
Personal finale	11 (7)	4 (2)	7 (4)	1 (1)	1 (1)	24 (15)
Finals on the views	12 (6)	7 (3)	13 (3)	1 (1)	no	33 (13)
The results of the final competitions (1. Gold/2. Silver/3. Bronze medals)						
Team championship	2. Italy	no	1. USA 3.Brazil	no	no	---
Personal championship	no	no	1/1/1 (2)	no	no	1/1/1 (2)
Primacy in the types	1/0/2 (2)	0/2/0 (1)	2/2/2 (2)	1/0/0 (1)	no	4/4/4 (5)

*Note: * – number of countries (national federations) in parentheses; ** – Two bronze medals were awarded on the crossbar.*

Table 2. Medal standings of countries at the Games of the XXXIII Olympic Games in gymnastics

A country	KC	Gold	Silver	Bronze	Σ
1. USA	PAGU	3	1	5	9
2. Japan	AGU	3	--	1	4
3. China	AGU	2	5	2	9
4. Philippines	AGU	2	--	--	2
5. Brazil	PAGU	1	2	1	4
6. Italy	EG	1	1	1	3
7. Algeria	UAG	1	--	--	1
7. Ireland	EG	1	--	--	1
9. Armenia	EG	--	1	--	1
9. Colombia	PAGU	--	1	--	1
9. Israel	EG	--	1	--	1
9. Kazakhstan	AGU	--	1	--	1
9. Ukraine	EG	--	1	--	1
14. Great Britain	EG	--	--	2	2
15. Greece	EG	--	--	1	1
15. Romania	EG	--	--	1	1
15. Chinese Taipei	AGU	--	--	1	1

Medals were won by representatives of 17 countries from four CS, with the exception of Oceania, including eight gold countries. Asian gymnastics is dominated by representatives of Japan and China; women's gymnastics is dominated by Pan–American gymnastics (USA and Brazil).

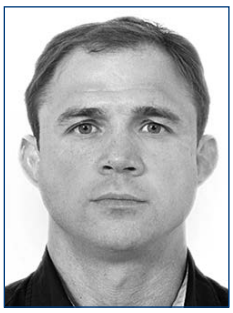
Individual gymnasts who became winners and prize-winners of the Olympic Games 2024 were trained in countries that have not been among the leaders of world gymnastics for a long time. These include the Philippines, Colombia, Kazakhstan for men, and Algeria for women. However, the real balance of power in gymnastics between the CS cannot be accurate and objective without participation in the Olympics, due to sanctions, of the Russian national team [2].

References

1. Andrianov S.N. Kriterii otbora. Principy olimpijskoj selekcii 2022–2024. S.N. Andrianov. Gimnastika. 2024. No.1 (51). P. 62–65.
2. Paholkova N.V., Somkin A.A., Zarodnyuk G.V., Larionova M.N. Sootnoshenie sil v sportivnoj gimnastike v predolimpijskom sezone v svete mezhdunarodnyh sankcij protiv Rossijskih sportsmenov. Teoriya i praktika fizicheskoy kultury. 2024. No. 4. p.18-20.
3. Fédération\ Internationale de Gymnastique. Artistic Gymnastics Qualification System. Games of the XXXIII Olympiad. Paris 2024. Lausanne: FIG, 2022. 12 p. Available at: https://gymnastics.sport (date of access: 15.10.2024).
4. Fédération Internationale de Gymnastique. Artistic Gymnastics. Games of the XXXIII Olympiad Paris 2024. Result Book. First Version. Paris: FIG, 2024. 201 p. Available at: https://gymnastics.sport (date of access: 15.10.2024).
5. Fédération Internationale de Gymnastique. Statutes. Edition 2023. Lausanne: FIG, 2023. 48 p. Available at: https://gymnastics.sport (date of access: 15.10.2024).

The specifics of technical and tactical training of elite level wrestlers

UDC 796.81



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

Corresponding author: slatyshev1975@gmail.com

Received by the editorial office on 22.01.2025 r.

Abstract

Objective of the study – is to identify the specific features of the technical and tactical readiness of elite-level wrestlers. For this purpose, an analysis of the universal principles that guide these athletes during competitive fights was carried out.

Methods and structure of the study. Within the framework of the research, an integrated approach was applied, including the study of specialized literature, pedagogical observation of the training and competitive process, video analysis of duels and systematization of best practices in the field of sports practice.

Results and conclusions. The competitive activity of freestyle wrestlers at the Olympic Games was studied, starting with the 1996 Atlanta Olympics and ending with the 2024 Paris Games. The information from scientific publications, the results of pedagogical observations and the experience of leading experts are summarized. This made it possible to establish general trends in the conduct of a duel and, consequently, to determine the characteristic features of the technical and tactical preparedness of wrestlers of the highest athletic skill.

Keywords: *technical and tactical readiness, elite-level wrestlers, analysis of universal principles, competitive fights, competitive process, Olympic Games, characteristic features of wrestler training.*

Introduction. It is known that in modern sports, only a gifted athlete can achieve high international results, and his giftedness, i.e. natural inclinations, abilities and features must adequately meet the requirements of modern competitive activity in his chosen sport [2, 5, 7].

At the same time, in martial arts, and especially in wrestling, the compensatory factor is essential, when some qualities can be compensated for by others within certain limits, and individual individual shortcomings can be leveled [6, 8]. In accordance with this, an individual style of confrontation and key technical and tactical actions (TTD) are formed. Each high–class wrestler conducts successful fights strictly in his own (individual) style of confrontation, which is the basis of his successful competitive activity in general. [2, 5, 6, 8].

Nevertheless, it is important to identify the general patterns of competitive wrestling that are common to all high-class wrestlers, regardless of weight class and individual characteristics. In order to optimize training activities, the coach needs to clearly understand these general patterns, since the consequences of them determine the features of technical and tactical preparedness of wrestlers. These features, in turn, determine the entire long-term system of athletes' training. These circumstances determine the relevance of this work.

Objective of the study – is to identify the specific features of the technical and tactical readiness of elite-level wrestlers. For this purpose, an analysis of the universal principles that guide these athletes during competitive fights was carried out.

Methods and structure of the study. The following methods were used in the scientific work: analysis of scientific and methodological literature, pedagogical observation, generalization of best practices in sports practice, video analysis of competitive activities.

The study was conducted in two stages. At the first stage, modern scientific and methodological literature was studied, the best practices of coaches specializing in wrestling (the discipline is freestyle wrestling) were summarized, and a video analysis of competitive duels at the Olympics was conducted, starting with Atlanta (1996) and ending with Paris (2024). At the second stage, general patterns of competitive dueling by high-class wrestlers were identified. and the specifics of their technical and tactical preparedness have been determined.

Results and conclusions. We analyzed the competitive activities of wrestlers at the Olympic Games, starting from Atlanta in 1996 and ending in Paris in 2024, summarized the data of scientific and methodological literature, pedagogical observations and best practices of specialists in freestyle wrestling [1, 3, 4, 5, 8]. This made it possible to identify the general patterns of conducting a competitive duel and, as a result, the features of the technical and tactical readiness of a high-class wrestler, which we present below.

1. A highly qualified wrestler conducts fights in an adequate stance. Adequacy means that the stance corresponds to the changing conditions of the confrontation throughout the match with increasing fatigue, which implies a reliable body position for protection and convenient for attacking and counterattacking the wrestler. The adequacy of the wrestling stance is the initial condition for the effectiveness of the confrontation and the duel as a whole. This is achieved by keeping the opponent strictly in front of him, face to face, as well as evenly distributing the weight of the wrestler over the entire foot and the corresponding position of the legs, torso and arms, which is determined by the angle at the knee, hip and elbow joints. Coaches need to pay special attention to the formation of a wrestling stance in the early stages of athletic training.

2. From the very beginning of the bout, a high-class wrestler tries to occupy the center of the mat and constantly "push" the opponent with speed and force actions, false attacks and maneuvering, while maintaining an adequate stance. This pressure is caused by the following. Firstly, when moving backwards, it is almost impossible to perform an effective face-forward attack. Secondly, the judges, as a rule, punish the wrestler for moving backwards. Thirdly, if a wrestler forces an opponent to move backwards, he practically makes it impossible for him to carry out an attack. Finally, active movement and onslaught also set a general psychological attitude towards confidence in the success of the fight and possession of initiative, which is especially important when fighting equal opponents.

3. From the first seconds of the bout, a qualified wrestler strives to perform (impose) a comfortable grip that corresponds to his stance and intentions. The capture can be attacking (as a rule), it can be blocking, but it is almost always his capture. An opponent caught in such a grip is deprived of the opportunity to perform an attack, he first needs to free himself from the grip, and then impose his own, which requires significant additional efforts. Moreover, the time to hold one's grip is proportional to the probability of executing a real attack and maintaining an advantage. For example, if an athlete spends 60% of the time in his grip, and 40% in the opponent's grip, then he has 1.5 times more opportunities to execute an attack and not miss the opponent's attack.

4. A high-class wrestler has at least 2-3 "crown" TTDS in his arsenal with several preparations for each of them for stand-up wrestling. Moreover, these TTDS are selected so that it is possible to attack the enemy both from the right and from the left. At the same time, the attack to the right is not a mirror copy of the attack to the left, which is a consequence of the asymmetry of the wrestler's physical fitness and stance. These conditions are mandatory when selecting attacking TTDS for subsequent improvement by young athletes.

In the stalls, the athlete has at least one crown technique, preferably two or three, which are combined into bundles. However, well-known high-class athletes (Olympic champions) who practically do not perform TTD on the ground floor, but this circumstance is rather an exception to the rule. A high-class wrestler should be able to use his signature techniques in a fight with any opponent of his weight category at least 1-2 times per duel.

5. A characteristic feature of high-class wrestlers is the psychophysiological ability to fight to the "end" (before evaluation). And as the SD analysis and accumulated experience show, even in almost losing positions, high-class wrestlers, as a rule, do not give points, and sometimes even win. This is explained by the fact that in the struggle for evaluation, athletes are in a state of maximum physical and psycho-emotional stress, they spend their strength very quickly, so the opponent in these conditions may simply not have enough strength to effectively complete the TTD, or he may make a mistake due to fatigue. In the stalls, the reliability of the protection of high-class wrestlers is ensured by almost 100%. The loss of score in the

stalls for these athletes is most often associated with random factors.

6. The next distinguishing feature of a high-class wrestler is a carefully crafted attack in response (counterattack) to an opponent's attack. This is achieved by reducing the reaction time to an opponent's attack and switching from defense to attacking actions. The proportion of such TTDS in some wrestlers (depending on the style of the confrontation and individual characteristics) may exceed 50% of the total number of evaluated actions.

7. The effectiveness of wrestling in "standard positions" is another feature of the technical and tactical skills of a high-class wrestler. In each bout, wrestlers fall into certain well-defined positions and, as a rule, several times – these typical positions are commonly referred to as "standard". Of all the standard positions, we will single out two that are most common, these are the capture of the opponent's leg or legs and the capture of the head and shoulder. In these positions, a highly qualified athlete fights quite effectively both as an attacker and as an attacker.

8. The skill of pausing (fused) transition to performing TTD in the stalls after performing the action in a stand is another feature of highly qualified wrestlers. The need to form this skill is due to the fact that it is much easier to perform a technique in the stalls if it is started even when the opponent is transferred to the stalls (without a pause), when he is not ready to defend.

Conclusions. Based on the analysis of competitive activity and generalization of data from scientific and methodological literature and best practices in sports practice in wrestling, the general patterns of conducting a competitive duel and, as a result, the features of technical and tactical preparedness of a high-class wrestler have been identified. In the future, these data should form the basis of practical recommendations for coaches working with both the sports reserve and qualified athletes.

References

1. Latyshev N.V., Latyshev S.V., Gavrilin V.A. Analiz sorevnovatelnoj deyatelnosti finalistov igr HHIH Olimpiady v Pekine po volnoj borbe. Teoriya i metodika fizichnogo vihovannya. Doneck. 2008. No. 1. P. 173–180.
2. Latyshev S.V. Nauchno-metodicheskie osnovy individualizacii podgotovki borcov: dis. ... dokt. nauk po fizicheskomu vospitaniyu i sportu po specialnosti 24.00.01 – «Olimpijskij i professionalnyj sport». Kiev, 2014. 459 s.
3. Latyshev S.V. Dinamika pokazatelej zrelishchnosti sorevnovatelnoj deyatelnosti finalistov olimpiad po volnoj borbe. Teoriya i praktika fizicheskoy kultury. 2025. No. 2. P. 101–104.
4. Latyshev S.V., Gromakov A.Yu., Chocharaj Z.Yu. Sravnitelnyj analiz harakteristik sorevnovatelnoj deyatelnosti borcov volnogo stilya na Olimpijskih igrah v Atlante i Sidnee. Pedagogika, psihologiya ta metodiko-biologichni problemi fizichnogo vihovannya i sportu. Harkiv. 2001. No. 2. P. 45–52.
5. Novikov A.A. Osnovy sportivnogo masterstva: monografiya. M.: Sovetskij sport, 2012. 256 p.
6. Piloyan R.M. Uzlovye voprosy mnogoletnej podgotovki borcov: metodicheskoe posobie. M.: MOGIFK, 1988. 28 p.
7. Platonov V.N. Sistema podgotovki sportsmenov v olimpijskom sporte. Obshchaya teoriya i ee prakticheskie polozheniya. Kiev: Olimpijskaya literatura, 2004. 808 p.
8. Shahmuradov Yu.A. Volnaya borba. Nauchno-metodicheskie osnovy mnogoletnej podgotovki borcov. Mahachkala: ID «Epoha», 2011. 368 p.

The effectiveness of competitive activity of highly qualified basketball players is influenced by the indicators characterizing speed and strength qualities during jumps

UDC 796.323.2

Dr. Hab., Professor B**.E. Losin**
D.V. Grigorieva
PhD, Associate Professor **L.N. Minina**
PhD **M.A. Sergazinova**
Lesgaft National State University of Physical Education, Sports and Health, Saint-Petersburg

Corresponding author: borislosin@gmail.com

Received by the editorial office on 31.01.2025 г.

Abstract

Objective of the study. Within the framework of this study, the task was to establish the relationship between the speed of performing jumping movements and the success of competitive activity of professional basketball players.

Methods and structure of the study. 17 qualified basketball players took part in the scientific work. The components of the players' jump speed (reaction speed when performing a jump, the time of the motor phase of the jump, the speed of jumping, etc.) were determined based on the use of a dynamoplatform with an automated TABS system (Simulator Analyzer of Speed and Strength). The game indicators were calculated according to the statistical protocols of the games.

Results and conclusions. The effectiveness of competitive activities in modern basketball is influenced by various indicators of players' fitness. The most important of them is the speed of the jump. The study revealed a statistically significant effect of the speed of the jump on such game parameters of basketball players as the points scored in the game, the number of rebounds of the ball under the ring and the utility coefficient of the player. The survey revealed the opinion of the coaches about the importance of controlling the level of jump speed in the process of training basketball players. At the same time, almost half of the respondents noted that they experience serious difficulties in assessing this indicator. In this situation, it is necessary to search for simple tests and their scientific justification to assess the speed of basketball players' jumps.

Keywords: *the speed of jumping movements, the success of competitive activity, professional basketball players, reaction time, duration of the motor phase, speed of repulsion, game performance, game efficiency.*

Introduction. Modern basketball, in addition to the high speeds and athleticism of the players, is characterized by a large number of actions performed by basketball players in an unsupported position. Individual qualified basketball players, depending on their playing role, perform an average of more than 100 jumps per game. It is no coincidence, as our scientific analysis of the specialized literature has shown, that the study of jumping ability, to one degree or another, was carried out in more than four dozen dissertation studies on basketball, conducted in Russian. Most authors recommend estimating the maximum jump height of basketball players when monitoring their jumping ability, and only a small number of researchers mention the importance of jumping speed. In the program documents of basketball training (the SS and SSHOR programs, in the Federal Standard of Sports Training for the sport of basketball), only the control of the maximum jump height is provided. To assess jumping ability, the jump up test is used with a wave of the hands (Abalakov test), although in the educational and methodological literature on basketball, jumping over a long period is considered as the ability to perform high and fast jumps, which is very important for a successful game [5, 6].

Objective of the study. Within the framework of this study, the task was to establish the relationship

between the speed of performing jumping movements and the success of competitive activity of professional basketball players.

Methods and structure of the study. 17 qualified basketball players, players of the national team of P.F. Lesgaft National University took part in the scientific work. The average height of the players was 191.6±2.1 cm with an average weight of 84.7±1.9 kg. On a dynamoplatform, using an automated TABS system (a simulator Analyzer of Speed and Strength), basketball players studied the indicators of jump speed (reaction speed when performing a jump, the time of the motor phase of the jump, the speed of jumping, etc.) [2]. The speed of the motor reaction to a simple signal was determined by the time from the signal to the moment of separation from the support.

The complex motor reaction was determined by the time from the resolving signal to the moment of separation from the support. The total time of repulsion was determined by the sum of the times of the preparatory and motor phases of repulsion. The motor phase of repulsion was determined by the time from the beginning of leg extension to the moment of their separation from the support. Based on the data obtained, the jumping speed (the ratio of the jump height to the time of the motor phase of repulsion) and the jumping index (the ratio of the time of the unsupported phase of the jump to the total time of repulsion) were calculated. The "central delay" was determined by the difference between the time of a complex reaction and the time of a simple reaction for the same player [1, 4].

The game indicators were calculated according to the statistical protocols of the P.F. Lesgaft NSU games in the framework of the All-Russian basketball competitions among student teams (Student Basketball Association Championship) St. Petersburg division and the St. Petersburg Championship among men's basketball teams. Based on the analysis of the data from the technical protocols of 30 games, the integral KPI (player's utility coefficient) was determined according to the formula used by the Russian Basketball Federation (RFB), as well as important game indicators (points scored by the player, balls picked up under his own or someone else's shield, the total number of ball rebounds) calculated per 1 minute of the basketball player's playing time. A survey of qualified coaches (n=81) with extensive practical experience was conducted to identify the opinions of experts on the importance of evaluating jump speed and individual game indicators in the process of comprehensive monitoring of basketball players.

Results and conclusions. An analysis of the results of a survey of experts showed that a fairly large percentage (more than 40%) of basketball coaches consider it important to evaluate the speed of players' jumps in the process of comprehensive control.

In the course of the study, five components were evaluated in performing a vertical upward jump among qualified basketball players with the goal of performing the fastest jump possible (Table 1). The time of simple and complex motor reactions recorded by us during the jump turned out to be significantly longer compared to similar indicators obtained during testing on the Psychotest device.", where it was necessary to respond to a certain signal with a hand or foot by pressing a special button in a sitting position. It is likely that some increase in the basketball player's reaction time is spent on differentiating the signal to make a decision about starting a jump [3]. This increase in the time of the visual-motor reaction is explained by the complexity

Tables 1. Values of the jump speed indicators in the process of the fastest upward jump of qualified basketball players (n=17)

Indicators	The average value (M±m)
The time of a simple motor reaction to a light signal when performing an upward jump, with	0,598±0,067
The time of the complex motor reaction of the choice to the light signal when performing an upward jump, with	0,708±0,074
"Central delay" when performing a jump, with	0,110±0,031
The time of the motor phase of repulsion, with	0,187±0,042
Total time of repulsion, s	0,401±0,045
Jumping index, units.	1,349±0,185
Jumping speed, m/s	1,952±0,117

of the performed motor action and the rather large weight of the player (on average more than 84 kg), which must be moved vertically.

In order to determine the degree of influence of jump speed indicators on the effectiveness of competitive activity, we conducted a correlation analysis. The choice of analyzed game indicators was made based on the analysis of a survey of coaches, during which the priority of indicators for evaluating the effectiveness of competitive basketball players was identified. From the list obtained, the most important indicators of the basketball players' game were selected, which could be most influenced by the speed of the jump.

Analysis of the relationship between the time of motor reaction to a light signal when performing an upward jump and the values of game indicators (Table. 2), which we examined, allowed us to identify the presence of an average and weak relationship between them with three game indicators (points scored, rebounding on his shield and KPI).

It was found that the time of a complex motor reaction to a signal with a choice when performing an upward jump has a stronger relationship with game indicators (for all types of ball picking under the shield and on the KPI) than with the time of a motor reaction to a simple light signal. An average correlation was also revealed between the indicator of the total time of repulsion and such important game indicators for basketball as the selection on one's shield and KPI (the correlation coefficients turned out to be statistically significant). The influence of the jump speed indicators (the jumping index and the jumping speed) on the game indicators we analyzed was also found (Table 2).

Conclusions. The effectiveness of competitive activities in modern basketball is influenced by many indicators of players' fitness. One of the most important indicators is the speed of the jump.

The conducted research revealed a statistically significant influence of the speed of the jump on such important game indicators of basketball players as the points scored in the game, the number of rebounds of the ball under the shield and the utility coefficient of the player. A survey of coaches revealed the importance, in their opinion, of monitoring the level of jump speed during the training of basketball players, while almost half of the coaches surveyed have serious difficulties assessing the speed of the jump.

Apparently, it is necessary to search for simple tests that evaluate the speed of basketball players' jumps, as well as the scientific justification of the tests in order to widely introduce new developments into the practice of basketball players' training.

References

1. Latyshev N.V., Latyshev S.V., Gavrilin V.A. Analiz sorevnovatelnoj deyatelnosti finalistov igr HHIH Olimpiady v Pekine po volnoj borbe. Teoriya i metodika fizichnogo vihovannya. Doneck. 2008. No. 1. P. 173–180.
2. Latyshev S.V. Nauchno-metodicheskie osnovy individualizacii podgotovki borcov: dis. ... dokt. nauk po fizicheskomu vospitaniyu i sportu po specialnosti 24.00.01 – «Olimpijskij i professionalnyj sport». Kiev, 2014. 459 p.
3. Latyshev S.V. Dinamika pokazatelej zrelishchnosti sorevnovatelnoj deyatelnosti finalistov olimpiad po volnoj borbe. Teoriya i praktika fizicheskoy kultury. 2025. No. 2. P. 101–104.
4. Latyshev S.V., Gromakov A.Yu., Chocharaj Z.Yu. Sravnitelnyj analiz harakteristik sorevnovatelnoj deyatelnosti borcov volnogo stilya na Olimpijskih igrah v Atlante i Sidnee. Pedagogika, psihologiya ta metodiko-biologichni problemi fizichnogo vihovannya i sportu. Harkiv. 2001. No. 2. P. 45–52.
5. Novikov A.A. Osnovy sportivnogo masterstva: monografiya. M.: Sovetskij sport, 2012. 256 p.
6. Piloyan R.M. Uzlovye voprosy mnogoletnej podgotovki borcov: metodicheskoe posobie. M.: MOGIFK, 1988. 28 p.
7. Platonov V.N. Sistema podgotovki sportsmenov v olimpijskom sporte. Obshchaya teoriya i ee prakticheskie polozheniya. Kiev: Olimpijskaya literatura, 2004. 808 p.
8. Shahmuradov Yu.A. Volnaya borba. Nauchno-metodicheskie osnovy mnogoletnej podgotovki borcov. Mahachkala: ID «Epoha», 2011. 368 p.

The relationship between the level of development of qualitative and quantitative indicators of physical fitness of students specializing in swimming

UDC 797.2

PhD, Associate Professor **D.A. Rayevsky**
State University of Management (GUU), Moscow

Corresponding author: da-ray@mail.ru

Received by the editorial office on 20.02.2025 г.

Abstract

Objective of the study. This study is aimed at establishing the degree of motor skills development among students specializing in swimming, both in the aquatic environment and on land.

Methods and structure of the study. The study was organized and conducted using a pedagogical experiment at the Department of Physical Education of the State University of Management located in Moscow. The analysis of the data obtained during the testing of students, including compliance with standards in water and on land, allowed us to identify key factors affecting the functional state of the body and improving the athletic performance of swimmers.

Results and conclusions. The results of the study demonstrate that the manifestation of the motor abilities of student swimmers during the performance of test tasks in water and on land can be assessed as the relationship of various indicators of strength, speed and other physical parameters. Observations showed that coordination skills, a sense of rhythm and distance were manifested in the process of performing swimming and running exercises, along with strength indicators. These observations were carried out by pedagogical methods during swimming and running classes.

Keywords: *motor skills, swimming, aquatic environment, functional state, motor abilities, physical parameters, coordination skills, sense of rhythm, swimming exercises.*

Introduction. In most cases, it is advisable to start the educational and training process in a swimming pool with the goal of overcoming the competitive distance more quickly from an early age. At the same time, a characteristic feature of every swimmer is the possession of a "sense of water" that makes it possible to stay on the surface of the water and move along it with the help of water–bearing movements at all stages of training [1].

This sensation occurs due to analyzers of the palm surface of the hand and other parts of the body, which contributes to the formation of swimming skills in childhood, as well as further training and improvement in adulthood.

At the same time, the skills necessary for swimming are formed not only directly in the aquatic environment, but also on land. Being in the water, a person remains at the mercy of motor automatisms, inherent since childhood for movement in terrestrial conditions. The pool is affected by the phenomena of "skill transfer" and antigravity reflexes. However, the reflex function still remains somewhat similar despite moving in a horizontal position as opposed to a vertical position.

In the case of switching from the pool to the stadium for classes, as in the water, reflexes such as rhythmic, alternating movements (walking), automatic hand/foot coordination are manifested on land [3]. J. Councilman noted a single principle of creating a base of endurance before switching to speed work, typical for training swimmers and athletes.

In particular, it has been found that highly developed muscle feeling and the plasticity of cortical pro-

cesses characteristic of swimmers, runners, and athletes in other sports are of the greatest importance [1, 2]. All movements take place in space, in time, with a certain speed and acceleration.

The use of exercises such as arm rotations with an increase in the speed of movements on the side of the pool during a warm-up, arm extension in a tilt with a rubber shock absorber - a positive transfer of the speed and accuracy of muscle effort is carried out during overcoming the competitive distance in the aquatic environment.

Nevertheless, the presence of makings in the above-mentioned cyclic forms is due to a good orientation in space, coordination of movements with hands and feet, and the presence of a "sense of time". The presence of predisposition in this aspect is structured by spatiotemporal and dynamic (force) perceptions and sensations [3, 5]. Presumably, the systematization of power characteristics will reflect the reproduction of muscle effort when performing cyclic exercises.

Objective of the study is to determine the level of manifestation of the motor abilities of student swimmers in water and on land.

Methods and structure of the study. In this study, motor abilities are defined as a set of qualitative and quantitative characteristics of speed, strength, and endurance. At the same time, the strength with which the necessary speed is gained and maintained to overcome the distance in running and swimming is an indicator of the submaximal or maximum power of the applied effort.

The strength indicators were calculated as the product of the athlete's mass and speed, taking into account the weight and speed coefficients. The units of measurement of force were set in Newtons (N), power in watts (W). The results of physical activity in dynamics were recorded and processed based on the calculation of energy supply for muscle work, kgf *m (kilogram-force-meter). The speed indicator is the speed of swimming a distance for a certain time in the water and running test exercises on land (m/s).

The endurance index was determined by the method of timing, taking into account the speed of overcoming the distance (km/ h). The subsequent interpretation of the criteria for the intensity of muscle activity allows us to identify the relationship of the data obtained.

The indicators of motor and swimming fitness were interpreted in numerical terms along with the calculation of the strength parameters required in order to gain the necessary speed and then maintain the pace on the treadmill and swimming track.

The ratio of speed to strength and endurance is characterized by the power indicator (W). The first two indicators were characterized by the body's ability to withstand hypoxia, which is an indirect measure of anaerobic capacity during endurance work [3].

Spirometry was used to determine the VEL, using a SP-1 spirometer.

The results of the pedagogical experiment were processed using an online platform, dnevnik-samokontrolya.ru, where the possibility of automatic calculation of the received data was provided [4]. Methods of mathematical statistics were used to assess the significance of the Fisher criterion (F). Using the F-test, the variance was calculated within the group. The pedagogical experiment was conducted on the basis of the Department of Physical Culture of the Moscow State University of Management. The examination of students on a number of tests, followed by passing the standards in water and on land, allowed us to identify the most influential of them on the functional system of the body and the increase in the result of athletes-swimmers.

Results and conclusions. Analyzing the classes with students at the stadium, when running 1 km, the power figures were 222.70 watts, with an average result of running the distance in four minutes. The regression equation y=14.424+0.064x1-0.0000452x3 means that with an increase in power by 1 Watt, endurance increases by 0.064 km/h, and

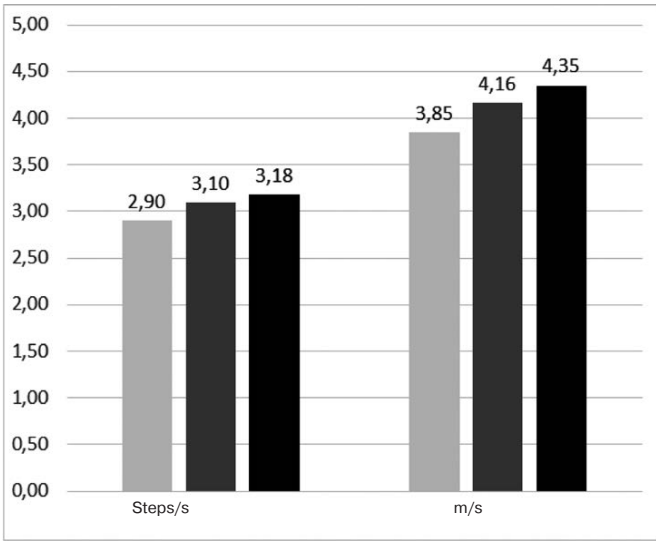


Fig. 1 The dynamics of the increase from minimum to maximum and the average pace of races per 1 km

with an increase in 1 kcal, endurance decreases by 1.084 km/h. At the same time, the equation takes the form: y=228.517 +0.327x1-75.446x3, the significance is confirmed by the fact that with an increase of 1 step, the result increases by 0.32 s, with an increase in tempo by 1 step per second, it improves the result by 75.45 s.

To overcome a distance of 400 m in a single style, the average power was 252.32 watts, which corresponds to a well-developed functional system and the level of development of general and special endurance. The equation y=2.781+0.00081x1 indicates that endurance increases by 0.81 km/h with an increase of 1 liter. The athletes with the best results had significantly the best performance indicators. Obviously, this had an impact on the pace and rhythm of swimming the distance.

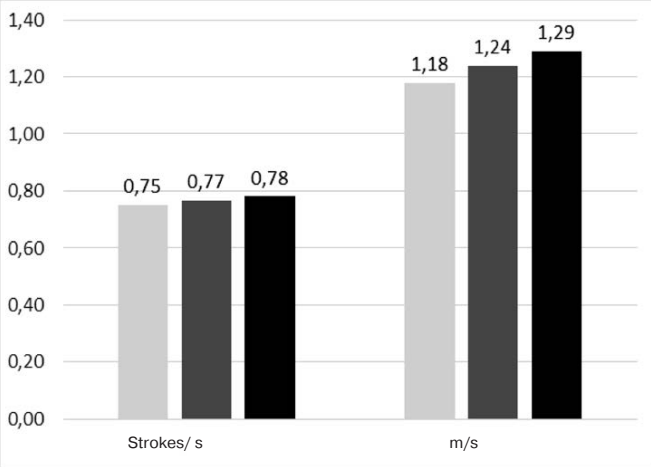


Fig. 2 The dynamics of the increase from minimum to maximum and the average speed of swimming the 400 m distance in a style

In the aquatic environment, the "sense of support" for effective forward movement is largely due to properties such as buoyancy, streamlining, and differentiation of muscular efforts. The ability to enhance rowing during training helps to swim the distance faster, which is confirmed by the power indicators, which averaged 730.73 Watts when overcoming a 50-meter distance. The correlation relationship according to the Fisher criterion of 0.029441271 turned out to be significant, F<0.05. The equation 15.181-3.681 x 1+0.421 x 2 means that if you decrease by 1 stroke per second by lengthening it, the distance of 50 m swims 3.68 seconds faster. With an increase of 1 stroke, the result increases by 0.42 s.

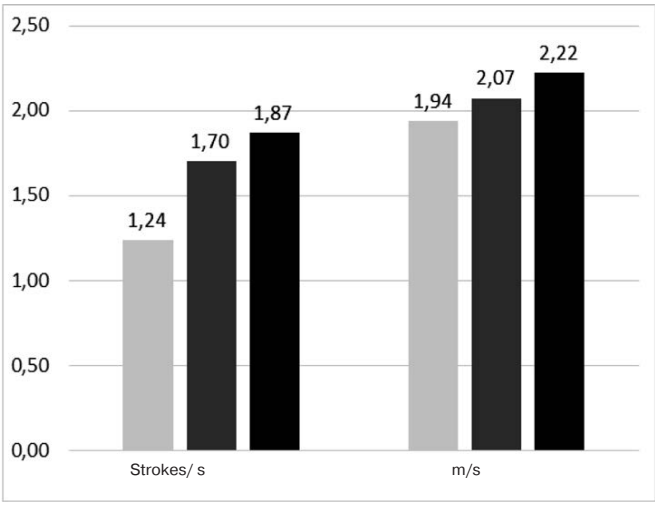


Fig. 3 The dynamics of the increase from minimum to maximum and the average speed of swimming the distance of 50 m in style

Performing rotations of straight arms with acceleration from a standing position and in a tilt on land, traction in an inclined position of the trunk clearly had a positive effect on further improving the quality of speed and differentiation of muscular efforts in the water. The use of interval and variable training methods has had a great impact on the development of speed and strength endurance. At the same time, the ratio of speed, strength qualities, and endurance should be considered as separate parameters that make up the motor ability as a whole.

Conclusions. In the process of performing swimming and running exercises, combined with strength characteristics, coordination abilities, a "sense of rhythm", and a "sense of distance" were shown through pedagogical observations in swimming and running. These sensations were provided by the functioning of the proprioceptive analyzer system, interconnected with the sensory system of the swimmer's body, muscle receptors in running.

The comparison of the interaction of "muscle feeling" and coordination on land was considered as a direct complement to each other, followed by exercises in the water. At the same time, the sensory perception of the aquatic environment was complemented by the differentiation of muscular efforts due to power, which is based on speed and strength characteristics.

At the same time, the ability to quickly gain maximum speed while maintaining the required pace at a distance is visually complemented by the level of strength development in most of the upper body in

the pool, and the muscles of the lower body in the stadium. On average, a satisfactory display of motor abilities in running depends on functional indicators, which, without special training, usually do not give a high score, $p>0.05$.

In the aquatic environment, buoyancy and streamlining are interrelated with the position of the body, while freestyle swimming is associated with the power of alternating strokes with the hands, which means with what force the swimmer gains a set speed. Therefore, in order to gain the necessary speed at an average distance, a force of 9.843 kgf/cm^2 was applied.

The power for the fastest movement in the aquatic environment was 888.89 Watts with a force of 16.30 kgf/cm^2. The speed indicators in the speed and power characteristics averaged 2.07 m/s, integrating with a special endurance of 7.47 km / h, in interaction with which it is necessary to maintain a set speed to the finish line. The regression equation is significant and reliable at a 95% probability level, $p<0.05$.

References

1. Aleksandrov A.Yu. Formirovanie umeniya plavat u muzhchin 19-30 let na osnove «perenosa» dvigatelnyh navykov i adaptacii k vodnoj srede: avtoreferat dis. ... kand. ped. nauk: 13.00.04. Malahovka, 2001. 24 s.
2. Zhilkin A.I., Kuzmin V.S., Sidorchuk E.V. Legkaya atletika: ucheb. posobie dlya stud. vyssh. ucheb. zavedenij. 6-e izd., ster. M.: Akademiya, 2009. 464 s.
3. Malygin L.S. Obuchenie plavaniyu sportivnym i samobytnym sposobami na osnove dvigatelnoj gotovnosti: uchebno-metodicheskoe posobie dlya studentov vuzov fizicheskoj kultury. MGAFK. Malahovka, 2014. 124 s.
4. Raevskij D.A. Svidetelstvo o gosudarstvennoj registracii programmy dlya EVM. Dnevnik samokontrolya (mobilnoe pril.). D.A. Raevskij (Rossijskaya federaciya). № 2024665389 data gos. registracii v Reestre programm dlya EVM 01.07.2024. 1 s.
5. Solomatin V.R. Kriterii individualizacii i postroenie mnogoletnej trenirovki v sportivnom plavanii: avtoreferat dis. ... dokt. ped. nauk: 13.00.04. V.R. Solomatin. Vseros. nauch.-issled. in-t fiz. kultury. Moskva, 2010. 49 s.

Comparison of the results of the 15-meter sprint swimming (TT-15) with the results of the hundred-meter race for professional swimmers: potential and limits of applicability of the assessment at short distance

UDC 797.21

V.S. Zaitsev[1]
I. Molina[2]
[1]State Budgetary Educational Institution of the City of Moscow "Center of Sports and Education 'Sambo-70' of the Moscow Sports Department", Moscow, Russia
[2]"DCS Swimming", Douglasville, GA, USA

Corresponding author: ztsvlad@gmail.com

Received by the editorial office on 12.03.2025

Abstract

Objective of the study. The present study focuses on analyzing the correlation between the results of the TT-15 test (the speed of overcoming 15 meters after pushing off the wall) and the time shown by high-class swimmers when swimming 100 meters crawl in a short 25-meter pool. TT-15 is a method of measuring the time it takes for an athlete to cover a 15-meter distance after completing a turn. The initial hypothesis was that the use of TT-15 in the training process could become an effective way to assess the physical fitness of swimmers, predict their results at a distance of 100 meters and make the necessary adjustments to training plans.

Methods and structure of the study. The study involved 30 qualified swimmers whose results in the 100-meter freestyle in a 25-meter pool corresponded to 800 or more points according to the World Aquatics Point Scoring 2024 rating system.

Results and conclusions. The results of the analysis revealed a statistically significant positive relationship ($r = 0.65$, $p < 0.001$) between the time spent on the 15-meter segment after the turn and the total time of the 100-meter swim. This allows us to consider TT-15 as an easily applicable tool for tracking swimmers' fitness levels, predicting competitive results, and optimizing the training process. TT-15 can be especially useful during the competitive period, when operational monitoring of physical condition and timely adaptation of the training program are crucial. However, the limitations of the study, such as the small sample size, lower relevance for long-distance swimmers, and the lack of research in the 50-meter pool, indicate the need for further research in this area.

Keywords: *correlation, TT-15 test, high-class swimmers, time measurement method, physical fitness, prediction of results.*

Introduction. In swimming, especially in the 100-meter freestyle, athletes do not have time to recover from ineffective turns, making high-quality turns and the subsequent 15 meters of the distance crucial [4, 8]. This is confirmed by research indicating that an effective turn can compensate for the natural decrease in speed during surface swimming. Swimmers who can maintain high speed after a turn demonstrate better results at international competitions [3]. However, athlete training does not always include accessible and objective methods for assessing and monitoring athlete readiness.

This study aims to identify the opportunities and limitations of using the 15-meter Turn Test (TT-15) to predict results and improve the quality of swimmer training. The data obtained have the potential for practical application in the sports training system and may be useful for further research in the field of sports physiology and swimming methodology.

Methods and Organization of the Study

Participant Selection. The study involved 30 highly qualified swimmers specializing in the 100-meter freestyle. The selection criterion was achieving a result of 800 points or more according to the World Aquatics Point Scoring 2024 classification in the 100-meter freestyle in a 25-meter pool. Furthermore, the swimmer had to have achieved or exceeded a time equal to 800 points in this distance at least four times

in the last two years. For each participant, only results from official competitions using an electronic timing system were considered (from official competition protocols).

Experimental Procedure. The swimmer approached the turn freestyle at competitive speed and performed a tumble turn. Timekeeping began the moment their feet touched the wall. The swimmer then performed a push-off and a standard underwater breakout for a distance of no more than 15 meters (according to World Aquatics competition rules). If the breakout was shorter than 15 meters, the swimmer continued swimming freestyle at maximum speed to the 15-meter mark. Time was stopped as soon as the swimmer crossed the 15-meter mark. This constitutes the essence of the 15-meter Turn Test (TT-15).

Each participant performed 3 attempts with a 20-minute interval of active rest (low-intensity swimming) to minimize the influence of fatigue. The average time across 3 attempts was used for analysis.

After completing the TT-15, the results were processed and then compared with existing data on the time spent on the 100-meter freestyle distance.

Condition Control. Participants in the experiment were familiarized with the essence and rules of the test (in oral and written forms). All tests were conducted under identical conditions in a 25-meter pool: the water temperature was maintained at 27°C, and before the start of the test, each participant performed a standard warm-up on land and in the water for 20 minutes each. Time was monitored by 3 researchers with identical Seiko S141 electronic stopwatches for accurate recording of the 15-meter split time. All data were recorded on tablets with subsequent electronic processing, which eliminated the possibility of human error during recording.

For the accuracy of measurements at the 15-meter mark, markers were installed at the bottom of the pool and along the pool wall. The markers were brightly colored and visible to both the swimmer and the researcher, which contributed to the accurate tracking of progress in the underwater phase.

Data Analysis Methods. To assess the relationship between the TT-15 time and the 100-meter distance results, the following were used: average time in the 15-meter segment after the turn, standard error, Pearson correlation coefficient, significance test, regression analysis, graphical analysis, and residual analysis.

Research Results. Data analysis showed a statistically significant positive correlation between the 15-meter Turn Test (TT-15) time and the final time over the 100-meter distance ($r=0.65$, $p<0.001$). It was also revealed that athletes who demonstrated the best time in the 15-meter segment also showed higher results over the 100-meter distance. This confirms the hypothesis that a short distance test can serve as an indicator of the current physical shape and readiness of athletes for competitions.

Data on 100-meter Distance Results and the TT-15. Results for the 100-meter distance ranged from 45.97 to 48.30 seconds, with an average time of 47.64 seconds (*Fig. 1*). Results for the TT-15 ranged from 6.78 to 7.46 seconds, with an average time of 7.24 seconds (*Fig. 1*). The standard error was 0.10 seconds.

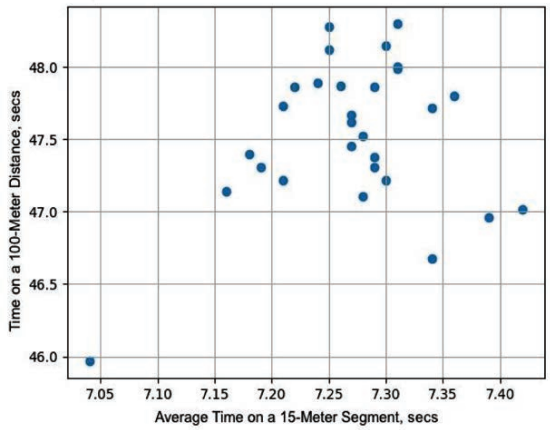


Fig. 1. Average Time on a 15-Meter Segment and Time on a 100-Meter Distance

Pearson Correlation Coefficient. The coefficient between the average time in the 15-meter segment and the 100-meter distance time was $r=0.65$. This indicates a moderate positive correlation between these indicators.

Significance Test. The test results showed a p-value < 0.001. This allows us to conclude that the observed relationship is statistically significant and not random.

Regression Analysis. Multiple linear regression showed that the time in the 15-meter segment after the turn has a significant impact on the final result over the 100-meter distance. The linear regression model confirmed that an improvement in the 15-meter segment time correlates with an improvement in the overall 100-meter distance time (*Fig. 2*).

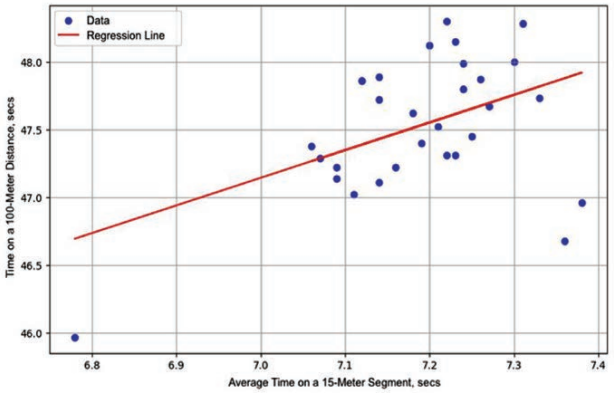


Fig. 2 Linear Regression

Graphical Analysis. Scatter plots clearly demonstrate the trend of positive correlation between the average time in the 15-meter segment and the 100-meter distance time. This is a visual confirmation of the numerical analysis.

Residual Analysis. Residual analysis of the regression model showed that the model adequately describes the data without systematic deviations, which confirms the reliability and accuracy of the results obtained.

Discussion. The results obtained emphasize the importance of the 15-meter Turn Test (TT-15) as a tool for monitoring swimmers' readiness. The statistically significant positive correlation between the TT-15 time and the 100-meter distance result indicates that this test allows for predicting competitive results and adjusting the training process.

A simple and accessible test was chosen to evaluate the effectiveness of the turn, which allows for assessing the quality of the turn without the use of complex equipment. The test also allows for comparison of all participants without considering differences in approaches to the turn, which is especially important since athletes can perform the approach to the turn, tumble turn, and push-off at various speeds and at different distances from the wall, depending on their anthropometric data.

The effectiveness of the turn is assessed through the speed of covering 15 meters after the turn. The higher the quality of the turn, the higher the speed over the entire segment after the turn. In this study, the approach speed to the turn, the distance at which the swimmer performs the tumble turn, and the speed of the tumble turn itself played a less significant role, as the main focus was on the speed of covering the 15-meter segment after the turn.

However, the study has several limitations. Firstly, a short distance test may be less informative for distance swimmers, where endurance and distance pacing tactics may become key factors. Secondly, the study sample consisted of 30 swimmers (due to the rigor of selecting highly qualified participants), which may limit the generalization of the results to a broader sample. Thirdly, the informativeness of the test for distances in a 50-meter pool has not been investigated.

Despite these limitations, the results of the study confirm the feasibility of including the TT-15 in the swimmer training system, which can significantly improve their competitive effectiveness and the quality of the training process.

Conclusions

1. The study confirmed a statistically significant positive correlation between the time in the 15-meter segment and the 100-meter distance time ($r=0.65$, $p<0.001$). This allows the TT-15 to be used as a tool for monitoring swimmers' readiness.
2. The TT-15 can serve as an effective indicator of physical shape and the quality of turn execution and the underwater phase.
3. Incorporating the TT-15 into the training process will enable coaches to promptly identify changes in athletes' condition and adjust training plans [6, 8].
4. The limitations of the study (small sample size, lower informativeness for distance swimmers, lack of investigation in a 50-meter pool) necessitate further research.
5. The results emphasize the importance of developing methods for monitoring swimmer readiness using short distance tests to improve their competitive effectiveness [2, 7].

References

1. Barbosa A.C., Valadão P.F., Wilke C.F., de Martins F., Silva D.C.P., Volkers S.A., et al. The road to 21 seconds: a case report of a 2016 Olympic swimming sprinter. Int. J. Sport Sci. Coach. 2019. No.14(3). C. 393–405.
2. Marinho D.A., Barbosa T.M., Neiva H.P., Silva A.J., Morais J.E. Comparison of the start, turn and finish performance of elite swimmers in 100 m and 200 m races. J. Sport Sci. Med. 2020. No.19(2). C. 397–407.
3. Morais J.E., Barbosa T.M., Arellano R., Marinho D.A. Start and turn performances of elite sprinters at the 2016 European Championships in

swimming. Sport Biomech. 2019. No.18(1). C. 100–114.
4. Morais J.E., Barbosa T.M., Forte P., Bragada J.A., Flávio A., Castro D.S., et al. Stability analysis and prediction of pacing in elite 1500 m freestyle male swimmers. Sport Biomech. 2020. DOI: 10.1080/14763141.2020.1810749.
5. Morais J.E., Barbosa T.M., Neiva H.P., Marinho D.A. Stability of pace and turn parameters of elite long-distance swimmers. Hum. Mov. Sci. 2019. No. 63. C. 108–119.
6. Muniz-Pardos B., Gomez-Bruton A., Matute-Llorente A., et al. Swim-specific resistance training: a systematic review. J. Strength Cond. Res. 2019. №33(10). C. 2875–2881. PubMed ID: 31343554. DOI: 10.1519/JSC.0000000000003256.
7. Nicol E., Ball K., Tor E. The biomechanics of freestyle and butterfly turn technique in elite swimmers. Sport Biomech. 2019. DOI: 10.1080/14763141.2018.1561930.
8. Schumann M., Notbohm H., Bäcker S., Klocke J., Fuhrmann S., Clephas C. Strength-training periodization: no effect on swimming performance in well-trained adolescent swimmers. Int. J. Sports Physiol. Perform. 2020. No.15(9). C. 1272–1280.
9. World Aquatics. Competition Regulations February 2025 [Electronic resource]. URL: https://resources.fina.org/fina/document/2025/02/20/1ca1fb93-2f58-4b21-a790-9374c51bfdca/Competition-Regulations_February-2025_Clean-Updated-on-20.02.2025-.pdf (date of request: 14.03.2025).
10. World Aquatics Point Scoring Classification 2024 [Electronic resource]. URL: https://www.worldaquatics.com/swimming/points (accessed: 14.03.2025).

Improvement and implementation of the physical development plan for young volleyball players

UDC 796.325

PhD student **Yin Yingying**
Moscow State University of Sport and Tourism, Moscow, Russia

Corresponding author: 1660577601@qq.com

Received by the editorial office on 07.04. 2025

Abstract

Objective of the study. The subject of the analysis in this paper is the study of the prospects for improving the physical fitness of young volleyball players, taking into account the specifics of their training process.

Methods and structure of the study. Methods used in the research: study and generalization of theoretical data; application of a methodological approach to analysis. Theoretical materials, as well as current training programs for young volleyball players used in specialized sports schools, were considered as an empirical base. Based on the results obtained, it can be concluded that the purposeful development of physical qualities in young volleyball players is essential.

Results and conclusions. The introduction of such approaches can have a positive impact both on the individual achievements of athletes and on the overall level of development of volleyball in the country, region and in the international arena.

Keywords: *physical fitness improvement, young players, volleyball, training process, training programs, physical qualities, individual achievements, international arena.*

Introduction. In the process of development of competitive activity it is necessary to be constantly engaged in optimization of physical training of athletes. Young volleyball players are in the period of active formation of physical qualities. At this age, a person has a special degree of plasticity, so can more likely form the physical qualities necessary for playing volleyball, provided proper physical training. For this reason, the development of physical qualities of young volleyball players represents a high degree of relevance and deserves detailed consideration in the context of the study.

Objective of the study. To analyze the opportunities for the development of physical fitness of young volleyball players in the context of their training strategy.

Methods and structure of the study. Research methods: analysis of theoretical sources; methodological analysis. Theoretical sources as well as specific training programs for young volleyball players in sports schools were used as the research material.

Results and conclusions. Physical training of an athlete is an organic part of the athlete's training with a predominant focus on strengthening his organs and systems, increasing their functional capabilities, on the development of motor qualities (strength, speed, endurance, flexibility, agility), on improving the ability to coordinate movements and display volitional qualities. The result of physical training is called "physical fitness".

Volleyball is a strenuous sport that requires athletes to develop complex physical qualities. In a volleyball game, players need to perform such actions as defense, ball handling and jumping; in addition, athletes must also have endurance, because the game of volleyball requires athletes to maintain their own physical competence for a long time: on average, one volleyball match lasts from one and a half to two hours. Only on the basis of constant exercise, it is possible to promote a balanced development of athletes' physical fitness. In addition, a properly developed strategy is important, on the basis of which

it is possible to perform specific actions on volleyball training of representatives of the younger generation [6, p. 134].

The article deals with the methods of practical improvement of physical training strategy for young volleyball players. It is important to note that, according to the existing definition, a young athlete (in any sport, including volleyball) is a person under 18 years of age who is systematically engaged in sports and performs in sports competitions. There are different age categories of young athletes, whose representatives are characterized by specific qualities and characteristics. Nevertheless, in this article these categories are not differentiated; the author of the study is limited to describing general problems and presenting recommendations for their solution.

Optimizing the strategy of physical training of young volleyball players will not only help in developing all these qualities at a high level, but will also contribute to increasing the overall sports literacy of young volleyball players. In addition, the correct strategy will greatly reduce the risk of injury during training and performances, as well as reduce the severity of injuries and help reduce recovery time [4, p. 31].

Table 1 presents the characteristic of the main types of physical training and physical fitness of young volleyball players. These are speed, muscular strength, endurance and flexibility.

As can be seen from Table 1, there are many types of athletic abilities, the development of which is important to consider when optimizing the physical training strategy of young volleyball players. Nevertheless, there are still some difficulties in this process nowadays. The list of the main ones is given below in the context of this article.

First, it is important to note the lack of attention to preparatory activities, such as warm-up before training, etc. Many coaches subjectively believe that young volleyball players have excellent physical fitness. In addition, not all coaches want to spend a lot of time, while avoiding or shortening the warm-up gives them the illusion of saving time during the session. Nevertheless, it is worth noting the importance of warming up, because otherwise excessive loads are likely to have a negative impact on the effect of sports training and even reduce the physical fitness of a young athlete [5, p. 170].

Secondly, it is important to note that a scientifically sound and reasonable exercise plan is an important component for young volleyball players to achieve good performance. Only purposeful, long-term goal-oriented, and systematic physical exercises can ensure the improvement of young volleyball players' physical fitness. However, some coaches do not pay proper attention to making plans, as well as their subsequent implementation. Their plans are made chaotically and inconsistently; moreover, when conducting training activities, the plans are often not implemented or partially implemented [2, p. 74].

Finally, some methods chosen for training young volleyball players are not effective or adequate to the specific situation. Many methods used in volleyball training of children and youth are relatively simple and have limited applicability and low adaptability in the context of specific situations.

Nevertheless, the situation is not hopeless. This means that the existing problems can be solved relatively easily and effectively. The following are practical recommendations that aim to achieve positive results in this process.

Table 1: Characteristics of the main types of physical training and physical fitness of young volleyball players

Physical ability	Characterization of physical ability in the context of volleyball training
Speed	Volleyball has high demands on the athlete's speed, so speed training is a necessary element of training young volleyball players. The speed of movement of an athlete depends on the speed of his reaction, so it is necessary to deal not only with the improvement of motor speed, but also with the development of reaction speed of a young athlete.
Muscular strength	Muscular strength is the ability of the neuromuscular system to resist resistance during training. Volleyball players should definitely pay enough attention to training their muscle strength.
Endurance	Stamina is the main quality of a volleyball player. A volleyball player's endurance should be enough for the whole game. There are three aspects of endurance training: training the cardiovascular system, training current endurance, and laying the foundation for improving endurance in the long term.
Flexibility	Body flexibility directly affects the physical attributes of volleyball players such as passing, hitting and blocking. Flexibility training is a gradual process, so it is important to approach it step-by-step with a long-term perspective rather than quick results.

First of all, basic strength training is designed to improve the foundation of volleyball players' physical fitness. Every young volleyball player undergoes thorough training and has certain requirements for tactical performance in hitting. In terms of speed, volleyball is a team competition and different players perform different tasks. Nevertheless, each player must constantly monitor the dynamics of changes on the sports court, and react in accordance with them. To accomplish this, attention should be paid to developing the athletes' reaction speed to unexpected external impulses.

Volleyball players should also possess tactical competencies in order to have a better chance of winning a volleyball game. All this means that there is a direct relationship between the intellectual skills of the athlete and their physical fitness [3, p. 132].

In addition, volleyball competitions make high demands on the reaction speed of young athletes, speed of movement, speed of arm swing and speed of transferring the center of gravity. Therefore, it is of great importance to increase the level of speed training of young athletes. Usually coaches offer young volleyball players jogging or long-distance running, which cannot improve the training motivation of athletes. To significantly increase the training enthusiasm of young volleyball players, methods such as hill running and obstacle running are recommended. In addition, the effectiveness of training can also be significantly improved by conducting real-life drills and speed confrontation competitions. All this will increase the involvement of young volleyball players, as a result of which their interest and motivation will grow, and, consequently, the results they demonstrate [1, p. 133].

Finally, improving endurance training methods has a critical impact in volleyball, as volleyball players must be able to maintain physical performance throughout a match, which typically lasts an hour and a half or two hours. Coaches should gradually build up the endurance of trainees throughout their childhood and adolescence by increasing the amount of intense practice time. However, breaks should still remain for the sake of preserving the physical qualities of young volleyball players.

Muscle fatigue occurs in athletes when the load range is exceeded. Human muscles have a certain degree of endurance and the ability to self-repair after training, which allows athletes to maintain good form for a long time if regularly organized rest. As the level of physical fitness increases, especially in the context of endurance, the time that an athlete can train intensively will increase, however, the organization of quality rest is still necessary.

As part of the study, an experiment was conducted in School No. 9 of Ningbo City, Zhejiang Province. The participants were 40 young volleyball players (12 - 16 years old). They were divided into 2 groups of 20 people each. The experimental group practiced according to the practice guidelines presented in the article, and the control group did not change anything. The training sessions lasted for 3 months; participants in both groups practiced at the same time and with the same regularity and duration of sessions so that unimportant variables had minimal effect on the process and results of the experiment. Table 2 summarizes the results obtained.

Based on the results of the work, it can be concluded that it is important to develop quality physical training of young volleyball players. The implementation of such strategies will greatly affect not only the results of specific trainees, but also the overall level of volleyball on a national, regional and international scale.

Conclusion. The practical value of the study lies in the fact that its results can be successfully used in the process of developing a methodology for the physical training of young basketball players, as well as in the implementation of the developed methodology in practice. The materials of the article will be of interest to basketball coaches, managers and methodologists of sports schools, as well as young volleyball players

Table 2. Indicators of physical training of young volleyball players. Control and experimental groups, enhancement %

Physical ability	Control group	Experimental group
Speed	5%	12%
Muscular strength	3%	10%
Endurance	4%	15%
Flexibility	2%	8%

and their parents. The work is also of interest to a wide range of people interested in volleyball and the technology of improving the physical training of novice volleyball players.

References

1. Ermokhin A. V., Kuznetsova Zh. V. Physical training of young volleyball players on the basis of game tasks. Bulletin of N. F. Katanov Khakass State University. Abakan, 2020. No. 1 (31). P. 131-134.
2. Li Ning, Luo Jun, Li Limin. Study on the evaluation of physical fitness characteristics of outstanding young volleyball players of the Peoples Republic of China. Journal of the Guangzhou Institute of Physical Education. Guangzhou, 2020. No. 40 (6). P. 73-77.
3. Potapov A. A., Zakharova E. A., Naumova Y. V., Pavlov S. V. Improvement of physical and physical education of young athletes. V. Improvement of physical and technical-tactical training of young volleyball players. Problems of theory and practice of development of physical culture and sport at the present stage. Makhachkala, 2022. P. 130-133.
4. Xue Duanping. Optimization of methods of physical training of young volleyball players // Stationery, sporting goods and technologies. Wenzhou, 2020. No. 24. P. 31-32.
5. Cao Baoke. Theoretical research and methodological practice in the optimization of physical training methods for young volleyball players. Stationery, sporting goods and technology. Wenzhou, 2023. No. 1. P. 169-171.
6. Chernikova A. D. Justification of the technology of individual physical training of young volleyball players. Science for the benefit of mankind. 2024. Moscow, 2024. P. 132-136.

Argumentation of the choice of the method of standardization of weekly physical activity for students with special health needs

UDC 796.01

Dr. Hab., Professor **S.P. Evseev**
PhD, Associate Professor **A.A. Shelekhov**
PhD, Associate Professor **I.G. Nenakhov**
Dr. Hab., Associate Professor **A.A. Grachikov**
Lesgaft National State University of Physical Education, Sports and Health, Saint-Petersburg

Corresponding author: a.shelehov@lesgaft.spb.ru

Received by the editorial office on 28.02.2025 г.

Abstract

Objective of the study. The purpose of this study is to establish a methodology for developing weekly physical activity standards for school students with sensory and intellectual disabilities.

Methods and structure of the study. In the course of the work, a detailed analysis of the available analytical materials and reports was carried out, existing recommendations and instructions regarding the volume of physical activity of schoolchildren were investigated. With the help of questionnaires of children, their parents and specialists, the peculiarities of their behavior were revealed. Based on a comparison of the data obtained, an experiment was conducted to collect empirical information about the actual weekly motor activity of school-age children. Based on the analysis of the results obtained, an approach to the formation of weekly physical activity standards for schoolchildren of various age and nosological groups was proposed.

Results and conclusions. Summarizing the preliminary results on the substantiation of the standards of weekly motor activity of children aimed at ensuring the health and developmental effect of physical culture and sports, in order to adjust the existing standards, we formulate the requirements for the content of the new standards. The key requirement is the mandatory integration of effective (priority), procedural and substantive parameters, which should be reflected in the standards. The approach proposed by the developers to setting standards for children's motor activity, based on monitoring individual dynamics of physical fitness indicators, not only ensures the registration of qualitative changes, but also avoids large-scale biomedical research, which indicates its scientific validity and economic benefits.

Keywords: *standards, weekly physical activity, school students, sensory features, intellectual features, analysis, analytical materials, motor activity, nosological groups, wellness effect, developmental effect.*

Introduction. The relevance of the problem of this study has been highlighted in detail by the authors in previous publications [1, 2]. The need to solve this problem is confirmed, among other things, by the importance of achieving the targets of the Strategy for the Development of Physical Culture and Sports in the Russian Federation for the period up to 2030, in particular: - the proportion of people with disabilities and people with disabilities who systematically engage in physical activity culture and sports, in the total number of the specified category of the population, who have no contraindications for physical culture and sports, percent; - the level of satisfaction of citizens with the created conditions for physical education and sports, percent.

Objective of the study – is to determine an approach for developing weekly motor activity standards for school children with sensory and intellectual disabilities.

Methods and structure of the study. In 2024, the staff of the Institute of Adaptive Physical Culture of the P.F. Lesgaft National State University, St. Petersburg, began to carry out research work "Development of scientifically based standards of weekly motor activity in children, including those with disabilities, and children with disabilities, creating conditions for a

health and developmental effect from physical education and sports."

Having conducted an in-depth analysis of available analytical materials and reports, having studied various recommendations, prescriptions and instructions related in one way or another to the volume of motor activity of schoolchildren and, using questionnaires from children, parents and specialists, having determined the behavioral characteristics of modern schoolchildren, having compared the results obtained, the research team organized an experiment to collect empirical data on the actual volume of work performed by school-age children. physical activity per week. Based on the findings, the team proposed a campaign to develop weekly motor activity standards for various age and nosological categories of schoolchildren.

Results and conclusions. Determining the proportion of citizens who are systematically engaged in physical education and sports is based on taking into account the time indicators of their physical activity, while the time weekly standard confirms this (for children aged 6-15 years – 90 minutes, and for 16-18 years and up to and including 29 years – 125 minutes), is the lowest of all those we have studied.

This weekly standard for school-age children is covered by two physical education lessons. Indicators of normalization of children's motor activity, expressed in units of time, dominate in all the documents we analyzed. In other words, while receiving documentary evidence that 70% of the total population of the country is systematically engaged in physical education and sports by 2030, there will actually be no way to assess the impact of this indicator on qualitative changes for the population due to the lack of resulting indicators.

At the time of writing this article, this is well demonstrated by the steady growth trend of two indicators in our country – the proportion of the population systematically engaged in physical education and sports on the one hand, and an increase in people with disabilities and disabilities on the other.

The indicator of citizens' satisfaction with the created conditions for physical education and sports makes it possible to characterize the quality of services provided in this area, but it also does not provide information about the results achieved by those involved, and does not take into account the initially low motivation for these activities among certain categories of citizens, in particular schoolchildren with sensory and intellectual disabilities.

Summing up the preliminary results on the justification of the norms of weekly motor activity of children, which create conditions for the health and developmental effect of physical education and sports, in order to correct the current norms, we will put forward requirements for the content of new standards. The main requirement is the mandatory integration of effective (priority), procedural and substantive indicators, which must be presented in the standards.

The performance indicators of the norms, as the main targets, should include norms reflecting the harmonious development of six physical qualities: speed capabilities, endurance, strength, flexibility, speed and strength capabilities, and coordination abilities (as amended by Decree of the Government of the Russian Federation No. 540 dated 11.06.2014, which approved the Regulations on the All–Russian Physical Culture and Sports Complex "Ready for labor and defense" GTO) [1].

It is important that we are talking about an increase in individual test results, and not about meeting the absolute requirements for obtaining bronze, silver and gold marks. Thus, the individual dynamics of test results (obvious to each student) is the main criterion for the effectiveness of systematic physical education and sports.

In favor of using test standards (tests) The following facts speak as effective indicators of the norms of motor activity in children: These indicators represent all six physical qualities that demonstrate the harmonious development of a person (child); The standards of testing (tests) of the WFSK TRP were obtained on the basis of statistical processing of a large-scale survey of the level of physical development and physical fitness of the population of our country aged 6 to 70 years and older; The VFSK TRP complex is of great importance in the education of children and youth, the formation of their patriotic personality traits.

The content components of the norms of children's motor activity should include a new structure of the program document, which should contain a basic part focused on the study and improvement of basic movements: walking, running, crawling, climbing, climbing, throwing, jumping and other physical exercises with the control of their development through the implementation of test standards (tests) VFSK TRP, and the

[1] On approval of the Regulations on the All-Russian Physical culture and Sports complex "Ready for labor and defense" / [Electronic resource] // http://government.ru /: [website]. — URL: http://government.ru/docs/13046 / (date of access: 02/03/2025).

variable part – where the content of classes should be determined taking into account the interests of children.

The time limits for weekly motor activity of children without disabilities, as proposed by us, are in the range of 4.5-6.0 hours, excluding the time spent on physical education classes in secondary schools, which corresponds to the first year of the initial training stage in almost all Federal standards of sports training. Translating these indicators into minutes with the addition of 2 compulsory physical education lessons, we get the recommended amount of organized physical activity equal to 450 minutes per week. Whether this volume is relevant for the category of children we studied at the second stage remains to be seen.

The results of the pilot experiment, which was completed in November 2024, confirmed the viability and expediency of the proposed approach. In the list of instructions of the President of the Russian Federation following the meeting of the Council under the President of the Russian Federation for the Development of Physical Culture and Sports on October 17, 2024, approved on 11/29/2024, No. Pr-2500, the Government of the Russian Federation, together with the executive bodies of the constituent entities of the Russian Federation, is prescribed: - "to provide in strategic and program documents in the field of physical culture and sports, adopted at the federal and regional levels, an indicator characterizing the level of physical development of citizens and determining, among other things, taking into account the number of citizens who have undergone medical examinations and completed regulatory tests The All-Russian physical culture and sports complex "Ready for work and defense"[1].

In the future, if resources are available for the use of big data technologies (BIGDATA), it is quite feasible to analyze the volume of motor activity of a large number of users of a specially designed application, based on an algorithm for calculating heart rate and comparing them with the results of meeting the TRP standards. Large-scale digitalization of accounting and comparison of the described data would allow not only to determine the model characteristics of the volume of motor activity of various categories of the population, but also to make operational adjustments to these recommendations based on the analysis of their permanent dynamic changes.

Conclusions. The approach proposed by the developers to determining the norms of children's motor activity, based on monitoring individual dynamics of physical fitness indicators, will not only ensure the fixation of qualitative changes, but also avoid extensive biomedical research, which indicates its scientific feasibility and economic effectiveness.

Modern social conditions, characterized by high variability in the daily routine of schoolchildren with disabilities and the actual lack of the possibility of continuous, objective recording of the amount of motor activity they realize, determine the modern vector of development of personalized control of human biological characteristics. Increasing the availability of devices that enable the implementation of human health monitoring and management technologies suggests that one of the most promising ways to solve this problem is to use individual wearable devices that can record heart rate – smart watches and fitness bracelets, which was convincingly demonstrated during the pilot experiment.

References

1. Evseev S.P., Nenahov I.G., Shelekhov A.A., Aksenov A.V. Otnoshenie mladshih shkolnikov i ih roditelej k rekomenduemomu ob"emu nedelnoj dvigatelnoj aktivnosti. Teoriya i praktika fizicheskoy kultury. 2024. No.9. P. 70-72.
2. Shelekhov A.A., Evseev S.P., Evseeva O.E. Rezultaty monitoringa ob»ema nedelnyj dvigatelnoj aktivnosti vospitannikov centrov sodejstviya semejnomu vospitaniyu. Adaptivnaya fizicheskaya kultura. 2024. No.4 (100). P. 3-6.

[1] The list of instructions following the meeting of the Presidential Council for the Development of Physical Culture and Sports on October 17, 2024. / [Electronic resource] // http://www.kremlin.ru : [website]. — URL: http://www.kremlin.ru/acts/assignments/orders/75738 (date of request: 02/03/2025).

Adaptive physical activity as an incentive for maintaining interest in a healthy lifestyle in the elderly (60-64 years old) and the key to longevity

UDC 613.71

Dr. Hab., Professor **O.E. Evseeva**
PhD, Associate Professor **E.B. Ladygina**
Dr. Hab., Professor, Corresponding Member of the Russian Academy of Sciences **S.P. Evseev**
PhD, Associate Professor **A.V. Aksenov**
Lesgaft National State University of Physical Education, Sports and Health, Saint-Petersburg

Corresponding author: o.evseeva@lesgaft.spb.ru

Received by the editorial office on 01.03.2025 г.

Abstract

Objective of the study is the theoretical substantiation of recommendations on the use of adaptive physical culture (AFC) to stimulate the desire for an active life in the elderly (60-64 years) in people with sensory, motor and cognitive disabilities.

Methods and structure of the study. As part of the implementation of the state task for 2024 on research work devoted to the development of scientifically sound recommendations for increasing motivation for active longevity by means of ROS among older citizens (taking into account sensory, motor and mental disorders), an analysis of existing scientific publications on this topic was carried out, as well as monitoring of the level of motivation to active longevity in people aged 60 years and older.

Results and conclusions. The results of the analysis and monitoring made it possible to identify key strategies that contribute to creating favorable conditions for the formation of motivation for active longevity through ROS. The first strategy is to study and take into account the individual values and life goals of each person. The second is to ensure positive emotions from physical activity and to use the principles of successful aging. The third is to take into account the peculiarities of diseases and contraindications in the organization of physical activity for the elderly. It is proposed to apply the developed approaches to motivation formation within the framework of complex interaction of specialists working with the elderly in the fields of healthcare, physical education, social protection and others.

Keywords: *adaptive physical culture, active life, old age (60-64 years), motivation for active longevity, motivation formation strategies, favorable conditions.*

Introduction. The relevance of this study is quite high, since the issue of active longevity in the Russian Federation is becoming very important, which is reflected in a number of regulatory documents. The number of older people in our country's population is increasing. At the same time, the pension reform requires people aged 60-64 to be in good physical shape to continue their work, which is impossible without regular physical education. And this, in turn, presupposes the motivation of elderly people to engage in regular physical activity, which is fully consistent with the Concept of active longevity policy, the main objective of which is to help create conditions for the formation of motivation among people of various demographic groups of our country to live in the third age in an active form [3].

Objective of the study is to provide scientific substantiation of proposals for the use of adaptive physical culture tools to form motivation for active longevity among citizens aged 60-64 years, taking into account sensory, motor and mental disorders.

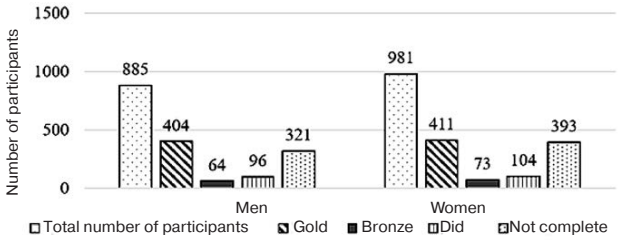
Methods and structure of the study. To fulfill the technical task of the research, an analysis of documentary materials, legislative and regulatory acts was used, and a survey (questionnaire) of people aged 60 and older was conducted to identify the formation of their motivation for active longevity. The analysis of statistical data of the Federal operator of the VFSK TRP

in the Russian Federation for the period 2019-2023 on the participation in the All-Russian Physical Culture and Sports Complex "Ready for Labor and Defense" (TRP) of persons 60 years and older with sensory, motor and mental disabilities was carried out.

Results and conclusions. In the process of analyzing the literature and best practices of working with citizens aged 60-64, it was revealed that when forming motivation for active longevity in this category of people, it is necessary to focus on age and type of health disorders (nosological group). To achieve the greatest effect in the formation of motivation for active longevity in the elderly, it is necessary to take into account their interests and needs when selecting means of adaptive physical culture [1].

The results of a survey of older people to identify the level of their motivation for active longevity, which was attended by representatives of 32 subjects of the Russian Federation (213 people aged 60 to 64) showed that the main reason why both men and women of the older generation do not engage in physical education are: 1 – not being able to force; 2 – lack of time. This is probably due to the fact that the majority of the survey participants, both men and women, are employed (67% and 64%, respectively). With regard to increasing the interest of the contingent in physical education, it was revealed that the convenient location of a sports facility and modern equipment, as well as information about the benefits of classes, can increase interest in men's activities. For women, the presence of an age group, the convenient location of the sports facility, and the personality of the teacher.

An analysis of statistical data from the Federal Operator of the VFSK TRP in the Russian Federation for the period 2019-2023 on participation in the All-Russian Physical Culture and Sports Complex "Ready for Labor and Defense" (TRP) for people 60 years and older with sensory, motor and mental disabilities revealed the need to involve older people in participating in the sports complex, since for the period from 2019 to 2023 (for all gender, age and nosological groups), 45,744 people were involved, of which only 1,866 were older people (60 years and older), which is only 4.1% of the total number who took part in the All-Russian Physical Culture and Sports Complex "Ready for Labor and Defense" (TRP). Moreover, more emphasis should be placed on working with men. Because women show an increased interest in participating in the TRP complex (see figure). There was also a significant percentage of the elderly (714 people out of 1,866 participants: 321 men (36.3%) and 393 women (40.1%) who failed to meet the test standards for any of the insignia [2].



The number of people with disabilities and persons with disabilities aged 60 years and older who have fulfilled the standards of testing (tests) of the WFSK TRP for insignia for the period from 2019 to 2023

Based on the results of the monitoring, the main approaches have been identified that allow creating conditions for the formation of motivation for active longevity using ROS: the first approach is based on studying and taking into account the value concept of a particular person's life; the second approach is based on enjoying motor activity and the theory of successful aging; the third approach is based on taking into account the specifics of diseases and contraindications in the organization of motor activity. activity of elderly people. The developed approaches to motivation formation are proposed to be used in the multidisciplinary interaction of specialists working with the elderly in the fields of healthcare, physical education, social protection, and others.

As a result of the conducted research, technologies for using ROS funds have been developed to increase motivation for active longevity among the older generation. Technology No. 1 allows us to implement an interdisciplinary approach to the formation of motivation for the elderly to active longevity. This technology consists of five levels, which assume: 1 – preservation or stabilization of the mental and physical health of an elderly person; 2 – increasing the level of competence of an elderly person in the field of unsocial physical education and the formation of health-saving behavior in him; 3 – stimulating the motivation of the older generation to social activity; 4 – stimulating the motivation of the elderly to work; 5 – stimulating the motivation of the elderly to active longevity.

Technology No. 2 optimally combines the means and methods of AFC based on the consideration of the level of physical fitness of those involved and the char-

acteristics of a specific nosological group of people aged 60-64 years, aimed at attracting people of this category to participate in the WFSK TRP. This technology consists of three parts: Part 1 is aimed at satisfying the physiological need for movement; part 2 is aimed at satisfying the cognitive need; part 3 is aimed at satisfying the need for self–actualization. Each part contains two sections: theoretical material aimed at improving competence in health-saving behavior; practical material aimed at maintaining and stabilizing the level of mental and physical health.

Developed on the basis of 40 years of experience in physical education and wellness work with older people, technology No. 3 "Practice 100 PLUS how to stay awake and active with age?" is aimed at stimulating older people to social activity using AFC and was among the winners of the IV All-Russian selection of the best practices of active longevity in the nomination "healthy lifestyle". Technology No. 3 includes five areas of work: 1 – organization and conduct of recreational activities in the health group, the formation of knowledge and skills in the organization of independent exercise, self–control during exercise and psychosomatic self-regulation; 2 - preparation of the elderly to participate in demonstrations at sports events (festivals, sports events, forums, regional and city holidays, and others); 3 – encouraging those involved for the results achieved (with commendations, diplomas, certificates, T–shirts with the symbols of the group and other attributes); 4 – popularization in the media of the possibilities of the AFC for the active longevity of citizens of our country; 5 - conducting scientific and practical seminars and master classes for specialists working with older people and interested parties. Technology No. 3 has been put into practice in St. Petersburg GBU of the Kalininsky District Sports Center in St. Petersburg.

In addition, technologies have been developed for using ROS funds to improve the process of forming motivation for active longevity among citizens aged 60-64 for people with sensory impairments (hearing and visual impairments); with motor impairments; and mental impairments.

The materials of the research work are presented at the citywide events dedicated to the International Day of the Elderly, held in St. Petersburg in October 2024, at a scientific and practical seminar and a master class on the topic "Technologies for using adaptive physical education to improve the process of forming motivation for active longevity among citizens aged 60-64 taking into account sensory, motor and mental disorders." The events aroused great interest among specialists working with older people. 457 people from seven Federal districts of the Russian Federation and 22 regions have registered for the scientific and practical seminar and master class.

The developed technologies were presented at the XVII International Forum "The Older Generation. The Silver Age" at the Expoforum in St. Petersburg. Two master classes were held on the prevention of mental disorders in older age groups, using creative (artistic and musical) body-oriented practices of adaptive physical culture.

The theoretical material is introduced into the lecture course of the discipline "Adaptive physical culture in gerontology" in the section "Means of adaptive physical culture for the elderly and older people", implemented in the educational process in the field of training 04/49/02 – Physical culture for people with disabilities (adaptive physical culture) master's degree level.

In accordance with the terms of reference, methodological recommendations have been developed and put into practice for specialists working in the interests of older citizens in the field of physical culture, adaptive physical culture and social protection of the population "The use of means and methods of adaptive physical culture in the process of working with citizens of 60-64 years of age of various nosological groups in order to form their motivation for active longevity".

Conclusions. The research materials presented at the seminar and master classes and the methodological recommendations implemented in practice made it possible to increase the level of competence among specialists working with the elderly in the formation of motivation for active longevity among citizens aged 60-64 by means of adaptive physical culture, taking into account sensory, motor and mental disorders.

The introduction of research materials into the educational process has made it possible to increase the level of competence in this field among students studying the field of study 04/49/02 - Physical education for people with disabilities (adaptive physical education).

In general, the study showed that when working with people aged 60-64 years, first of all, it is necessary to focus on the formation of health-preserving behavior among the contingent, secondly, on social activity and further on the continuation of work, since

in this age period a person can be quite capable. But for this, regular physical activity is necessary, without which it is impossible to prolong the active period of a person's life. The developed technologies and proposals presented in the methodological recommendations are aimed at solving precisely these tasks.

References

1. Evseeva O.E., Urakova E.A., Ladygina E.B., Byhanova S.S. Sovremennoe sostoyanie problemy formirovaniya motivacii u grazhdan 60-64 let k aktivnomu dolgoletiyu. Adaptivnaya fizicheskaya kultura. 2024. No. 3 (99). P. 4-5.
2. Evseeva O.E., Ladygina E.B., Kryukov I.G., Shevcov A.V. Rezultaty uchastiya v vypolnenii normativov ispytanij (testov) VFSK GTO lic pozhilogo vozrasta (ot 60 let i starshe) za 5 let (s 2019 po 2023 gg.). Materialy VII Vserossijskoj nauchno-prakticheskoj konferencii «Vserossijskij fizkulturno-sportivnyj kompleks «Gotov k trudu i oborone» (GTO) dlya invalidov: teoriya i praktika» (07 iyunya 2024 goda). Nacionalnyj gosudarstvennyj Universitet fizicheskoj kultury, sporta i zdorovya im. P.F. Lesgafta, Sankt-Peterburg. Sankt-Peterburg, 2024. P. 76-80.
3. Ovcharova, L. N., Morozova, M. A., & Sinyavskaya, O. V. (Eds.) Koncepciya politiki aktivnogo dolgoletiya: nauchno-metodologicheskiĭ dokl. k XXI Apr. mezhdunar. nauch. konf. po problemam razvitiya ekonomiki i obshchestva, Moskva, 2020 g. Nac. issled. un-t «Vysshaya shkola», 2020, 40 p.

Peculiarities of physical abilities development in hearing-impaired students with different types of temperament who started adaptive soccer lessons

UDC 796.332

G.S. Bobkov[1]
PhD, Associate Professor **E.S. Kachenkova**[1]
Dr. Med., Professor **I.N. Medvedev**[2]
PhD, Associate Professor **M.V. Zvereva**[1]
[1]Moscow City University, Moscow
[2]Kursk State University, Kursk

Corresponding author: ilmedv1@yandex.ru

Received by the editorial office on 13.01.2025 r.

Abstract

Objective of the study. This work is aimed at determining the specifics of the dynamics of physical fitness in students with hearing impairment, differing in temperament type, after starting classes in the adaptive football section.

Methods and structure of the study. The present study involved 78 young men with hearing impairments who are second- and third-year university students and have started classes in the adaptive football section. In the course of the work, such methods as questionnaires, testing and mathematical analysis were used, including the calculation of the Student's t-test.

Results and conclusions. Initially, the physical fitness of students with hearing impairments and different types of temperament was significantly different. These differences remained noticeable even after the start of regular football practice. Phlegmatic students showed the best indicators of general and strength endurance, surpassing students with other temperaments. At the same time, choleric patients had the most developed ability to maintain dynamic balance, outperforming others in this parameter. It is advisable to use these data in universities to optimize the physical fitness of hearing-impaired students in physical education classes. Adapting football training to suit each student's temperament can help improve their athletic performance through an individualized approach. This approach will make it possible to more effectively develop the necessary physical qualities, taking into account the characteristics of each type of temperament.

Keywords: *dynamics of physical fitness, students with hearing impairment, type of temperament, adaptive football, physical fitness, strength endurance.*

Introduction. Today, there is still a need to improve the training process in adaptive football based on taking into account not only the general somatic characteristics, but also the peculiarities of the central nervous system of the trainees [3]. One of the significant indicators of the nervous system is temperament, which largely determines a person's inclinations to various types of activities and success in them, including in sports. It is necessary to clarify the influence of temperament on the effectiveness of sports activities of hearing-impaired students in team sports, in particular in football.

Objective of the study to determine the changes in physical abilities in hearing impaired students with different temperament who started attending the adaptive soccer section.

Methods and structure of the study. A group of 78 hearing-impaired young men, students of the 2nd and 3rd courses of the university, who started training twice a week in the football section at least during the academic year, were monitored. The temperament of all hearing-impaired young men was determined by questioning them using the G. Eysenck questionnaire [1]. As a result, it was revealed that among the observers there were 20 choleric people, 22 sanguine people, 17 melancholic people and 19 phlegmatic people. After determining the type of temperament, all students with hearing loss were tested for the development of dynamic balance, speed, general endurance, strength endurance, flexibility. The Student's criterion has been calculated.

Results and conclusions. The values of physical fitness parameters obtained during testing in hearing-

The results of the assessment of the physical fitness of young football players

Temperament-based student groups		Test results, M±m				
		A speed test with running with a high hip lift, once	Standard general endurance test, beats/min	Dynamic balance test with performing turns on a gymnastic bench, with	A test of strength endurance of the abdominal press and leg muscles, with	Hip joint mobility and spinal flexibility test, cm
Choleric n=20	Exodus	33,8±2,83	136,5±3,51++	7,14±0,74	74,9±2,97	48,3±2,01
	The end	34,9±3,07	116,0±4,45++	6,18±0,34*	106,5±3,28**	60,8±3,38**
Sanguine people, n=22	Exodus	36,2±2,38	129,7±5,17++	8,29±0,85+	75,8±3,67	45,4±1,57
	The end	38,5±3,22	112,0±4,36**	7,33±0,62*+	101,2±4,14**	59,9±2,01**
Melancholics, n=17	Exodus	35,8±2,37	141,5±1,35++	8,52±1,28+	82,3±4,26	44,2±2,75
	The end	36,0±2,98	114,1±2,21**	7,34±0,93*+	96,3±3,97*	58,8±3,82**
Phlegmatic, n=19	Exodus	34,9±2,27	107,3±5,02+	8,46±1,02+	70,5±2,58	52,6±2,32
	The end	35,3±1,70	97,4±4,36*	6,91±1,18**+	109,0±3,83**	63,4±2,23**

*Note: the reliability of the dynamics of the indicators taken into account is *– p<0.05; ** – p<0.01; the reliability of the differences with the best result in the test, separately at the end and at the end is + – p<0.05, ++ – p<0.01.*

impaired students of all temperament types at the end and at the end of the observation are shown in the table.

In the course of the conducted research, it was possible to establish the initial differences in the test results of representatives of different temperaments. When assessing the outcome of overall endurance using the Cairsh step test, the highest results were shown by the observed phlegmatics: 107.3±5.02 beats per minute, which exceeded melancholics by 31.8% who had the worst result in this test.

In testing the state of dynamic equilibrium, its best development was demonstrated by choleric patients (7.14±0.74 s). According to the results of this test, they compared favorably with sanguine people (by 16.1%), phlegmatic people (by 18.5%), and melancholic people (by 19.3%). In the course of determining the development of speed, strength endurance and joint mobility in hearing-impaired students with different types of temperament, initially significant differences could not be found. At the same time, at the level of the trend in the development of the quality of speed, sanguine people had the best result (36.2±2.38 times in 10 seconds). The tendency to have the greatest strength endurance was shown by hearing-impaired melancholic students (85.3±4.26 s). According to the development of hip joint mobility in hearing-impaired students, the most preferred results were shown by phlegmatics (52.6±2.32 cm).

After 10 months of regular football training, positive dynamics of the physical characteristics taken into account in the work was noted in all groups. There were differences in indicators between all the observation groups related to their existing temperament and those found earlier.

The greatest development of speed was observed in sanguine people with small differences with the rest of the observation groups. During the Cache step test, the best result was observed among phlegmatic students, who significantly exceeded the same indicator among hearing-impaired students with a different temperament who regularly trained.

By the end of the observation, the choleric group had the best result in the control exercise for assessing dynamic balance – 6.18±0.34 seconds, which favorably distinguished them from the rest of the observed groups with different temperaments.

As a result of testing strength endurance, it was not possible to identify differences between groups with different types of temperament, with a tendency to show the best result in phlegmatic people.

At the end of the follow-up, when testing hip joint mobility, the phlegmatic patients turned out to be the leaders in terms of results with an unreliable margin from the rest of the groups, who showed a result of 63.4±2.23 cm.

Conclusions. Temperament is an innate feature of a person and very significantly determines the features of his behavior. The study found differences in the indicators of physical fitness of hard-of-hearing young students with different types of temperament who took up adaptive football. In this regard, it becomes clear that taking into account temperament during regular football training for the hard of hearing can help increase their effectiveness and enable a coach to achieve greater physical development in his students during an individualized approach.

References

1. Boldin A.S., Fayzullina I.I., Nikolaev I.V. Fiziologicheskaya reakciya serdechno-sosudistoj siste-

my na vestibulyarnuyu aktivaciyu u predstavitelej igrovyh vidov sporta. Teoriya i praktika fizicheskoy kultury. 2023. No. 6. pp.47.
2. Vorobyeva N.V., Zavalishina S.Yu., Kichigina E.V., Ukolova G.B. Vliyanie regulyarnyh zanyatij v sekcii obshchej fizicheskoj podgotovki na funkcionalnye vozmozhnosti dyhatelnoj sistemy studentov-pervokursnikov. Teoriya i praktika fizicheskoy kultury. 2022. No. 11. pp.42.
3. Zhuravleva E.V., Makhov A.S., Zavalishina S.Yu. Psihologicheskie osobennosti yunoshej, poseshchayushchih sekcii volejbola i gimnastiki. Teoriya i praktika fizicheskoy kultury. 2024. No. 3. pp. 52.
4. Zavalishina S.Yu., Makhov A.S. Funkcionalnaya optimizaciya molodogo organizma sredstvami fizicheskogo vospitaniya. Teoriya i praktika fizicheskoy kultury. 2022. No. 1. pp.58.
5. Zavalishina S.Yu., Makhov A.S. Fiziologicheski opravdannyj variant formirovaniya zdorovogo obraza zhizni molodezhi sredstvami fizicheskogo vospitaniya. Teoriya i praktika fizicheskoy kultury. 2020. No. 7. C. 15.
6. Zavalishina S.Yu., Makhov A.S. Funkcionalnyj status futbolistov s oligofreniej v usloviyah sportivnyh sorevnovanij. Teoriya i Praktika Fizicheskoy Kultury. 2020. No 8. pp. 49.
7. Kalinina I.N., Tarasenko A.A., Kobets A.V., Belova V.A. Fizicheskaya i tekhnicheskaya podgotovlennost, psihofiziologicheskie osobennosti gluhih i slaboslyshashchih futbolistov. Contemporary issues in biomedicine. 2021. Vol. 5, No. 4 (17).
8. Makhov A.S., Zavalishina S.Yu. Funkcionalnye vozmozhnosti serdca yunoshej, nachavshih regulyarnye zanyatiya futbolom. Teoriya i Praktika Fizicheskoy Kultury. 2022. No. 4. pp.8.
9. Mikhailov A.A., Mishanina N.V., Perevozchikova E.V., Luzmina E.V. Vliyanie adaptivnogo futbola na dvigatelnye sposobnosti studentov s vrozhdennoj tugouhostyu. Adaptive physical education. 2023. No2(94). pp.41-43.
10. Prutsakov V.V. Futbol kak vid adaptivnogo sporta. Naukosphere. 2023. No. 6-1. pp. 59-62.
11. Tkacheva E.S., Mal G.S., Zavalishina S.Yu., Makurina O.N. Funkcionalnye osobennosti kardiorespiratornoj sistemy u yunyh futbolistov. Teoriya i Praktika Fizicheskoy Kultury. 2022. No 11.pp. 42.
12. Yankevich I. Sportivnaya podgotovka slaboslyshashchih futbolistov: soderzhanie, vidy, specifika. Internet journal Naukovedenie. 2013. No. 6 (19). pp. 209.

The effect of football practice duration on improving the balancing skills of football players with hearing impairments

UDC 796.332

Dr. Hab., Professor **F.I. Sobyanin**[1]
Dr. Biol., Professor **S.Yu. Zavalishina**[2]
PhD, Associate Professor **E.S. Kachenkova**[3]
PhD, Associate Professor **S.N. Bobkova**[3]
[1]Belgorod State National Research University, Belgorod
[2]Russian State Social University, Moscow
[3]Moscow City University, Moscow

Corresponding author: svetlanazsyu@mail.ru

Received by the editorial office on 12.01.2025

Abstract

Objective of the study. The present study is aimed at determining the possibilities of maintaining balance in people with hearing impairments who practice in the specialized football section.

Methods and structure of the study. As part of the study, a group of 36 hard-of-hearing second-year university students who regularly attend adaptive soccer training sessions were monitored. Distribution by length of service: 12 people – one year, 10 people – two years and 14 people – three years. The control group consisted of 12 somatically healthy, hard-of-hearing second-year students who did not exercise. The ability to maintain balance was assessed using the Stabilan 01-2 device before and after physical exertion. Statistical data processing was carried out using the Student's t-test.

Results and conclusions. The results showed that hearing-impaired young men playing football had a reduced ability to maintain balance as fatigue set in. The level of development of this indicator in hearing-impaired athletes increased with an increase in their training experience. The best results were recorded in football players with three years of experience, which is explained by the higher level of fitness of their muscular and vestibular systems.

Keywords: *hearing disorders, specialized football, hard of hearing students, adaptive football, ability to maintain balance, training experience.*

Introduction. Regular sports activity activates all life phenomena in the trainees [1]. Systematic physical activity increases the level of biosynthetic and regulatory processes in the body of athletes, primarily in the cardiorespiratory system and in striated muscles [2]. Sports training develops the vestibular apparatus especially strongly [3]. As a result, the trainees experience somatic strengthening and increase stability in space [4].

A sufficiently long physical strengthening of any kind increases the body's oxygen needs and creates a certain oxygen debt in its tissues with the development of certain metabolic changes [5]. Under these conditions, even experienced athletes experience a short-term decrease in statokinetic stability in conditions of fatigue during exercise [6]. However, the relationship of leg muscle fatigue to balance in hearing-impaired adaptive soccer players cannot be considered studied.

Objective of the study. The present study is aimed at determining the possibilities of maintaining balance in people with hearing impairments who practice in the specialized football section.

Methods and structure of the study. The results of observation of 36 hearing–impaired young men (19.7±0.65 years old) who were enrolled in full–time studies in the second year of university with experience in adaptive football were taken into account: 12 people – at least one year, 10 people - at least two years and 14 people - at least three years. In the study, the control group consisted of a sample of 12 hearing-impaired young men with an average age of 19.2±0.82 years, who had never been involved in sports and were enrolled in full-time studies in their second year of university.

The development of the ability to maintain balance was monitored using a stabilographic device "Stabi-

lan 01-2" (manufactured by the Russian company "Rhythm"). It was used to remove the indicators initially and at the end of the test load. The subjects participated for 52 seconds in performing the Romberg test with their eyes open. Later, they performed 50 full squats from a standing position. Before and after physical exertion, the subjects' stabilographic parameters were monitored.

The effect of an episode of muscle activity on the ability to maintain balance was assessed by a number of indicators: the average rate of change of the center of pressure (VCR, mm/s); the rate of dynamics of the surface of the statokinesiogram (VS, mm^2/s); the maximum distance of indicators on the frontal plane (QX, mm); the maximum distance of indicators on the sagittal plane (QY, mm); the quality of the equilibrium function (CFR, %); the surface of the confidence ellipse on the statokinesiogram (SELLS, mm2). The mathematical processing of the data consisted in calculating the Student's t- test.

Results and conclusions. The control indicators differed from those of football players due to their poor development of the ability to maintain balance (see the table). The muscular load activates the internal organs and increases blood flow in the working organs. This alters a person's ability to maintain balance. With the development of muscle fatigue in hearing-impaired football players, the stabilographic characteristics changed.

The more athletic experience the hearing-impaired had, the better their stabilogram scores were. Against the background of physical fatigue, all categories of football players showed varying degrees of severity in the dynamics of the recorded indicators. Their improvement occurred as their athletic experience and experience in performing athletic movements increased. Thus, those who had been training for at least three years had the greatest harmony in the development of the muscular system and the greatest development of the vegetative support of the body.

Stabilographic parameters under conditions of performing the Romberg test in hearing-impaired football players (M±m)

Stabilographic characteristics	Without power load				Under power load			
	Control, n=12	Three years of experience, n=14	Two years of experience, n=10	Experience is one year, n=21	Control, n=12	Three years of experience, n=24	Two years of experience, n=18	Experience is one year, n=22
S_{ELLS}, $мм^2$	94,8±6,52	71,0±4,22**++	79,6±3,95**+	85,0±4,72*	114,2±7,53	56,8±2,33	72,4±8,15**++	93,4±3,85**
КФР, %	82,6±3,94	92,5±1,12	89,4±0,93*+	86,9±0,98	-7,23±1,47	-3,10±0,91**++	-4,25±0,76**++	-5,42±0,85**
Q_X, мм	2,39±0,56	2,02±0,38*+	2,14±0,44*+	2,26±0,29	1,32±0,36	0,91±0,47*+	1,00±0,51*+	1,22±0,58
Q_Y, мм	3,43±0,71	2,95±0,25*+	3,06±0,38*+	3,25±0,19	1,91±0,68	1,40±0,51**+	1,52±0,49**+	1,66±0,54*
V_{CP}, мм/с	7,56±1,32	5,42±0,72**++	6,15±0,89**++	6,85±0,96*	7,68±1,25	3,21±0,86**++	4,16±0,94**++	5,63±1,10**
V_S, $мм^2/с$	9,42±1,75	7,29±0,93**+	7,98±1,01**+	8,91±1,26*	7,42±1,44	4,36±0,87**++	5,49±0,95**++	6,62±1,16**

*Note: differences in the control parameters and the level of performance of athletes with different experience before and after the load * $p<0.05$, ** $p<0.01$; the significance of differences in the parameters of football players with one year of experience with football players with two and three years of experience before and after the load + – $p<0.05$, ++–$p<0.01$.*

In this regard, hard-of-hearing football players with one year of experience may develop the greatest fatigue of the muscles and the autonomic system out of all the athletes observed. This situation leads to a marked increase in the fluctuation of the center of pressure with a weakening of the ability to maintain body balance.

In the control group, the growth of stablographic parameters after muscle exertion and against the background of muscle fatigue turned out to be even more pronounced than in those engaged in sports for one year. This indicated that the control group experienced more severe fatigue in the structures of their autonomic nervous system and a more pronounced increase in their musculoskeletal system and lactate in their blood. Against this background, the physically inactive experienced a more pronounced deterioration in the stability of their bodies in space.

Regular physical activity contributes to the development of the function of maintaining balance. Against the background of the onset of physical fatigue, including during exercise. This function is starting to weaken. The work traces the development of the ability to maintain body balance in hearing-impaired football players with different training periods. As it increased, they showed an increase in their stability under conditions of test physical activity. It is clear that football loads associated with great physical activity improve the ability of the hearing-impaired to maintain body balance.

References

1. Varfolomeev D.L., Mahov A.S., Medvedev I.N. Temperament yunoshej, regulyarno zanimayushchihsya futbolom i sportivnoj hodboj. Teoriya i praktika fizicheskoy kultury. 2024. No. 3. P. 74.
2. Mahov A.S., Medvedev I.N. Funkcionalnye izmeneniya v organizme yunoshej s sensonevralnoj tugouhostyu v rezultate regulyarnyh futbolnyh trenirovok. Teoriya i praktika fizicheskoy kultury. 2022. No. 5. P. 48.
3. Mahov A.S., Medvedev I.N. A.S. Rol trenera v podbore uprazhnenij dlya sportsmenov-invalidov s uchetom ih fiziologicheskih osobennostej. Teoriya i praktika fizicheskoy kultury. 2019. No. 8. P. 62.
4. Mahov A.S., Medvedev I.N. Fiziologicheskie osobennosti yunyh futbolistov, polgoda nazad prekrativshih trenirovki. Teoriya i praktika fizicheskoy kultury. 2019. No. 1. P. 25.
5. Nazarenko A.S., Chinkin A.S. Vliyanie vestibulyarnogo razdrazheniya na statokineticheskuyu ustojchivost sportsmenov razlichnyh specializacij. Nauka i sport: sovremennye tendencii. 2015. T.7. No. 2(7). P. 78-85.
6. Medvedev I.N., Gusev A.V., Malyshev A.V., Mikhailova O.D., Garina E.V., Petina E.Sh., Tagirova N.Dz. Influence of the Experience of Health-Improving Jogging on the Level of Functional Activity of Platelets in Men of the Second Mature Age. Systematic Reviews in Pharmacy. 2020. No. 11(8). pp. 432-438.

The effect of rehabilitation procedures used during training on the state of the autonomic nervous system in professional basketball players

UDC 796.323.2

PhD student **D.S. Andreev**[1]
Dr. Hab., Professor **I.E. Konovalov**[1]
PhD, Associate Professor **L.A. Parfenova**[1]
PhD, Associate Professor **V.V. Andreev**[2]
[1]Volga Region State University of Physical Culture, Sports and Tourism, Kazan
[2]N.F. Katanov Khakass State University, Abakan

Corresponding author: igko2006@mail.ru

Received by the editorial office on 22.01.2025

Abstract

Objective of the study. This study is aimed at analyzing the dynamics of the vegetative state in professional basketball players, depending on the use of various recovery methods in the training process.

Methods and structure of the study. The study was conducted on the basis of the Volga State University of Physical Culture, Sports and Tourism with the participation of 30 qualified basketball players. The vegetative status was assessed by analyzing the coefficient of vegetative tone, reflecting the balance of the sympathetic and parasympathetic nervous systems.

Results and conclusions. The results showed that at the beginning of the study, athletes in both groups showed signs of compensated fatigue, which may negatively affect the effectiveness of training at the beginning of the season. By the end of the study, in the experimental group where restorative measures were used, an improvement in the indicators of vegetative status to the level of optimal working capacity was noted, indicating that the load was adequate to the capabilities of athletes. In the control group, where no recovery measures were carried out, the indicators remained at the same level, which can lead to a cumulative effect of fatigue and a decrease in the effectiveness of the game by the end of the season. The data obtained indicate that the improvement of the vegetative coefficient is possible only with the systematic use of restorative measures in the training process.

Keywords: *vegetative state, professional basketball players, recovery methods, training process, vegetative status, coefficient of vegetative tone, compensated fatigue, training effectiveness, rehabilitation measures, optimal performance.*

Introduction. Currently, certain changes are taking place in college basketball, which radically change the attitude of coaches and players to the training process as a whole, and especially to the systematic implementation of rehabilitation measures. There are certain trends in modern student basketball that affect all aspects of player training: firstly, the competition of players in teams participating in official tournaments of the Student Basketball Association has significantly increased; secondly, competitions are held in the format of short-term rounds, where the number of games increases, the frequency of their holding increases, and the preparation periods for them decreasing; Thirdly, the players achievement of optimal athletic fitness and its preservation throughout the entire playing season presupposes the use of accelerated training in the training process; fourthly, an increase in the time allocated for training sessions, an increase in the variability of the means used and an increase in the intensity of the load presupposes the mandatory implementation of rehabilitation measures [1, 2, 4].

Taking into account the above-mentioned trends in the development of student basketball, it becomes mandatory to systematically monitor the physical and mental state of players. One of the effective tools that can be used to evaluate and monitor these indicators is to determine the vegetative status of players. Vegetative status is a state of functions of the autonomic nervous system that controls important processes in the body, such as cardiac activity, respiration, etc. [5].

In the context of our research, the study of the vegetative status of student basketball players is an urgent problem that determines the quality and effectiveness of the construction and content of their training process, where rehabilitation measures are an obligatory part of it.

Objective of the study. This study is aimed at analyzing the dynamics of the vegetative state in professional basketball players, depending on the use of various recovery methods in the training process.

Methods and structure of the study. The study of the vegetative status is necessary to assess the effectiveness of the body's adaptation to stress and, accordingly, to determine their physical performance [3, 6].

The study of the vegetative status was carried out through the assessment of the coefficient of vegetatics, which is characterized by the presence of a certain vegetative tone. Using the method of M. Lusher, the subject was offered cards of different colors, which he had to arrange in order, depending on his preference for a particular color. A numerical indicator was assigned to the result of card manipulation, which was proposed by the Candidate of Medical Sciences. Shiposh, the final result, determined the vegetative tone with the predominance of the influences of the sympathetic (ergotropic tone) or parasympathetic (trophotropic tone) autonomic nervous system [7].

The study was conducted at the beginning and at the end of the pedagogical experiment. The study involved 30 basketball students, 15 athletes each in the experimental and control groups. The results of the study and their discussion. At the beginning of the study, the vegetative coefficient in the experimental group was 0.54±0.12 units, and in the control group it was 55±0.11 units, the results between the groups had no statistically significant differences ($p>0.05$). As can be seen from the results obtained, basketball players in both groups have a compensable state of fatigue (range from 0.51 to 0.91 units), such a state at the beginning of the season may affect their readiness for a productive training process. In this case, the restoration of working capacity can be carried out through a periodic controlled decrease in physical activity, players need to optimize their working rhythm and training regime, and pay special attention to quality rest.

Subsequently, during the entire sports season, the players in the control group independently applied the means of recovery available to them, but under the supervision of a coach. Recovery technology was specially developed and implemented for the basketball players of the experimental group, where the selection of various means used in the complex corresponded to the tasks being solved for a specific period and stage of the training process.

Repeated testing conducted at the end of the pedagogical experiment allowed us to establish statistically significant differences in this indicator between the groups ($p<0.05$). So, in the experimental group, the result of the coefficient of vegetatics was 0.93±0.15 cu, and in the control group it was 0.70±0.24 cu.

From the results obtained, it can be seen that the basketball players of the control groups still have a compensable state of fatigue (range from 0.51 to 0.91 units), and by the end of the season this can cumulatively affect the effectiveness and efficiency of their playing activities. Performance indicators, in the absence of systematic use of recovery tools, they can compensate only by reducing their physical activity.

In the experimental group, there is a positive change in the result of the coefficient of vegetatics to optimal working capacity (range from 0.91 to 1.9 units), in this case, the load performed corresponds to the capabilities of those involved, their general condition is cheerful, they show healthy activity and readiness for energy consumption.

Thus, the results we have obtained confirm the need for systemic rehabilitation measures in student basketball teams, and the technology we have developed for the integrated use of rehabilitation tools as a variant of such measures has confirmed its effectiveness and expediency.

Conclusions. The study of the vegetative status in our study was carried out through the assessment of the coefficient of vegetatics, which is characterized by the presence of a certain vegetative tone. So, if at the beginning of the study the coefficient of vegetatics in both groups was in the range from 0.51 to 0.91 units, i.e. compensated state of fatigue, then by the end of the study in the experimental group the result corresponded to the parameters of another range – from 0.92 to 1.9 units, i.e. optimal working capacity, the control group at the same time it remained in the initial range.

Currently, student basketball has all the characteristics of a high-performance sport (the volume and intensity of training and competitive loads), therefore, when organizing and conducting the training process in student basketball teams, it is necessary to systematically carry out rehabilitation measures, correlating

them with the tasks of a specific period and stage of preparation.

References

1. Andreev V.V., Konovalov I.E., Andreev D.S. i dr. Rabotosposobnosti basketbolistov na osnove sredstv stimulirovaniya i vosstanovleniya. Pedagogiko-psixologicheskie i mediko-biologicheskie problemy fizicheskoj kultury i sporta. 2021. Vol. 16. No. 1. pp. 5-11.
2. Andreev V.V., Mutaeva I.SH., Konovalov I.E., D.S. Andreev. Issledovanie deyatelnosti kardiorespiratornoj sistemy kvalificirovannykh basketbolistov i volejbolistov, sportivnykh komand universitetov. Chelovek. Sport. Medicina. 2024. Vol. 24. No. S2. pp. 21-25.
3. Baevsky R.M., Berseneva A.P. Ocenka adaptacionnykh vozmozhnostej organizma i riska razvitiya zabolevanij. M.: Medicina, 1997. 234 p.
4. Busygin I.V. Izuchenie struktury sorevnovatelnoj deyatelnosti kvalificirovannykh basketbolistov kak faktor sovershenstvovaniya uchebno-trenirovochnogo processa. Vestnik Penzenskogo gosudarstvennogo universiteta. 2015. No.4 (12). P. 80-84.
5. Guvakova I.V., Kuznetsova L.A. Narushenie vegetativnogo statusa u sportsmenov aciklicheskih vidov sporta i ih korrekciya sredstvami tekhnologii igrovogo bioupravleniya i transkranialnoj stimulyacii. Byulleten sibirskoj mediciny. 2010. No. 2. pp. 68-72.
6. Prikhodko V.I., Shupikova E.N. Pokazateli vegetativnoj regulyacii kak sredstvo v upravlenii trenirovochnym processom. V.I. Prikhodko, Sovremennyj olimpijskij sport i sport dlya vsekh: materialy VII Mezhdunarodnogo nauchnogo kongressa, 2003, vol. 2, pp. 143-144.
7. Shiposh K. Znachenie autogennoj trenirovki i bioupravleniya s obratnoj svyazyu elektricheskoj aktivnosti mozga v terapii nevrozov: avtoref. dis… kand. med. Nauk K.: IEM Akademii medicinskih nauk SSSR, 1980. 23 p.

The relationship between the functional status of regulatory mechanisms and the effectiveness of technical and tactical operations in boxers

UDC 796.83

Dr. Biol., Associate Professor **Yu.A. Shchedrina**
PhD, Associate Professor **D.S. Melnikov**
PhD, Associate Professor **V.V. Seliverstova**
N.V. Aimbetova
Lesgaft National State University of Physical Education, Sport and Health, St. Petersburg

Corresponding author: valense@mail.ru

Received by the editorial office on 27.02.2025

Abstract

Objective of the study – is to analyze the interrelationships between psychophysiological parameters and characteristics of heart rate variability, which affect the effectiveness of technical and tactical actions of boxers during competitions.

Methods and structure of the study. The study involved boxers aged 18 to 20 years, among whom there were 15 men and 10 women. To assess the functional state, the Varikard 2.52 hardware and software package was used, which was used to record statistical and spectral indicators of heart rate variability. The assessment of the functional state of the central nervous system was carried out using the UPFT-1/30 "Psychophysiologist" psychophysiological testing device.

Results and conclusions. The results of the study showed that the percentage of effective punches in female boxers is inversely proportional to the stability of the reaction in a simple visual-motor reaction, tremometry indicators and the stress index of heart rate variability. In male boxers, the effectiveness of punches is associated with indicators of simple visual-motor reaction, reaction stability, and VLF-wave values reflecting the level of stress on the athlete's body.

Keywords: *heart rate variability, efficiency, technical and tactical actions, boxers, central nervous system, effective strokes, reaction stability.*

Introduction. Heart rate variability (HRV) is an important indicator of the regulation of the autonomic nervous system and is associated with the level of stress and adaptation of the body. In athletes, high HRV may indicate a better ability to recover and mental stability, which, in turn, affects their sensorimotor reactions and overall success in striking martial arts. In order to identify the main factors contributing to the success of technical and tactical actions, which were evaluated in relation to all completed strikes to those counted, a factor analysis of HRV indicators and psychophysiological parameters reflecting the state of regulatory systems was carried out.

Objective of the study – is to analyze the interrelationships between psychophysiological parameters and characteristics of heart rate variability, which affect the effectiveness of technical and tactical actions of boxers during competitions.

Methods and structure of the study. The study involved boxers aged 18-20: 15 men and 10 women. The functional state of the regulation systems was studied according to the statistical and spectral characteristics of HRV [1] using the Varikard 2.52 hardware and software complex. Cardio intervals were recorded for 5 minutes in a sitting position. The functional state of the central nervous system was determined using the UPFT-1/30 “Psychophysiologist” psychophysiological testing device. The indicators of the time of simple visual-motor reaction (PMR) were studied: 30 values were taken into account, the number of errors (the number of missed stimuli or anticipatory reactions). The reaction time (PMR, ms) and the stability of the response (SKO-PMR) were evaluated. Complex visual-motor reaction (SPMR, ms) was studied based on the analysis of reaction time and stability (SKO-SPMR, ms). The subject was presented with a random

green and red color. The number of errors out of the 35 stimuli presented was taken into account: "no" to the green light, "yes" to the red light. Tremometry (co–ordination) is a method for determining the accuracy of movement reproduction. Measuring tremor is of diagnostic importance for assessing the level of emotional excitability and coordination of movements. The tremor value was estimated during the movement of a special probe in the maze in the form of a winding slot. The width of the slot is 6 mm, the length of its trajectory is 20 cm. Tremometry parameters were evaluated taking into account the time and quality of the task.

The results of the study and their discussion. Each factor combines features that strongly correlate with each other. The suitability of factor analysis according to the Bartlett test is significant ($p<0.05$). The Varimax initial rotation method was applied, which made it possible to trace a clear factor structure and identify variables marked by correlation coefficients of more than 0.50 with one factor or another. The correlation was considered strong if the coefficient was more than 0.70. The results of calculations of these boxers are presented in Tables 1, 2. Factor loads, the value of which is less than 0.50, are not indicated.

Factor 1 is a general factor, with a variance of 52.7%, which determines the proportion of the influence of these parameters on the functional state of regulatory systems and the psychophysiological status that affect the success of the fight of women specializing in boxing. This factor includes tremometry values (an increase in task completion time has a close inverse relationship with combat success); stability of a simple visual-motor reaction (feedback); and stress index (feedback).

Factor 2 with a variance of 17.4% signals the role of overexertion and stress in percussive martial arts. The IC – HRV centralization index reflects the ratio of activity of the central and autonomous circuits of heart rate regulation. IC is the ratio of the sum of high frequency waves to low frequency waves. This indicator reflects the degree of predominance of activity of the central regulatory circuit over the autonomous one. An increase in the index may indicate a strain on regulatory systems. Consistently high IC can be a marker of chronic stress or overexertion. With an increase in IC, the time of complex reaction to a visual stimulus increases, which negatively affects the implementation of technical and tactical actions in percussive martial arts.

Factor 3, with a variance of 11.4%, reflects the lability and mobility of nervous processes and includes the values of simple and choice reactions. The analysis revealed some differences in the factors, their distribution and content in men and women. Factor 1 is a general factor with a variance of 58.0%. The success factor of the battle is related to the indicators of simple reaction and reaction stability (feedback) and HRV – VLF values. In sports, VLF analysis helps to assess the long-term adaptive processes that occur in an athlete's body in response to physical activity. This indicator is used to assess the state of the autonomic nervous system and the overall stress load on the body associated with vasomotor activity and thermoregulation.

A decrease in VLF may indicate a lack of recovery after intense exertion or chronic fatigue. An increase in VLF at rest may indicate excessive activation of humoral mechanisms, for example, under stress. Trained athletes usually have an optimal level of VLF at rest. Too low or too high VLF may indicate that the training process needs to be adjusted. During intense physical exertion, VLF may decrease, which is associated with a switch in regulation to the sympathetic nervous system. After the end of training and the body's transition to a resting state, a gradual recovery of the VLF component of the general heart rate spectrum is observed [2]. VLF values are determined by the level of physical fitness, the formation of sport-specific adaptations

Table 1. Results of factor analysis of female boxers (n=10)

Indicators	Factor 1 – technical and tactical activities	Factor 2 – overexertion and stress	Factor 3 – lability and mobility of nervous processes
Tremometry test time, ms	0.910		
Successful strikes, %	-0.894		
SKO-PZMR, ms	0.620		
SI	0.610		
IC		0.907	
SPMR, ms		0.545	0.538
PMR, ms			0.571
The variance is 81.5%	52,7	17,4	11,4

Table 1. Results of factor analysis of female boxers (n=10)

Indicators	Factor 1 – technical and tactical activities	Factor 2 – lability and mobility of nervous processes	Factor 3 – recovery and long-term adaptation to stress
Successful strikes, %	-0,822		
PMR, ms	0.740		
VLF, мс^2	0.715		0.570
SKO-PZMR, ms	0.686		0.564
SKO-PZMR, ms		0.974	
SPMR, ms		0.756	
SI			0.873
HF, мс^2			-0.629
The variance is 80.9%	58,0%	12,9%	10,1%

for this sport [2] and the current state of the athlete. Professional athletes may have lower VLF scores than untrained people, which is associated with higher autonomic regulation.

Factor 2-12.9% – lability and mobility of nervous processes (SPMR ms, SKO-SPMR, ms) – time and stability of a complex reaction.

Factor 3-10.1% – recovery and long-term adaptation to stress – includes HRV indicators (VLF mc2, SI, HF MC2) associated with humoral regulation mechanisms and activation of parasympathetic influences, stress index. HF waves are a key indicator of parasympathetic regulation, which is responsible for recovery processes and a decrease in the activity of the sympathetic nervous system. When VLF and HF are activated, the stress index (SI) decreases and the stability of the simple reaction improves (SKO-PMR, ms). The values of VLF and SKO-PMR also determine the success of a boxer's fight, as they are included in the general factor 1.

Conclusions. A simple sensorimotor reaction is the basic value of CNS readiness, reflecting the lability of nervous processes [3] and determines the success of combat in boxing. The percentage of successful strokes in men and women has a close relationship with time and the stability of a simple visual-motor reaction. The success rate of strokes in women is determined by resistance to stress and the level of emotional excitability. In men, the success of combat is related to the processes of long-term adaptation and the level of VLF influences.

References

1. Metody i pribory kosmicheskoj kardiologii na bortu Mezhdunarodnoj kosmicheskoj stancii. Monografiya. Pod red. R.M. Baevskogo, O.I. Orlova. Institut mediko-biologicheskih problem RAN. M.: Tekhnosfera, 2016. 368 **p**.
2. Kozlov A.A., Povareshchenkova Yu.A. Kriterii prognoza realizacii funkcionalnyh vozmozhnostej v professionalnom bokse. Teoriya i praktika fizicheskoy kultury. 2016. No. 6. P. 66-67.
3. Solodkov A.S., Seliverstova V.V. Fiziologicheskie problemy adaptacii k fizicheskim nagruzkam: uchebnoe posobie. Nacionalnyj gos. un-t fizkultury kultury, sporta i zdorovya im. P.F. Lesgafta, Sankt-Peterburg. SPb., 2014. 110 p.

Foresight in the game as a determinant of the effectiveness of technical and tactical operations among experienced handball players

UDC 796.015

Dr. Hab., Associate Professor **N.V. Lutkova**[1]
Dr. Hab., Professor **Yu.M. Makarov**[1]
PhD, Associate Professor **N.V. Pakholkova**[2]
PhD, Associate Professor **N.A. Zinoviev**[3]
[1]Lesgaft National State University of Physical Education, Sports and Health, Saint-Petersburg
[2]St. Petersburg Mining University of Empress Catherine II, St. Petersburg
[3]Baltic State Technical University "VOENMEH" named after D.F. Ustinov, St. Petersburg

Corresponding author: nataliya_lutkova@mail.ru

Received by the editorial office on 06.02.2025

Abstract

Objective of the study. The main objective of the work was to increase the effectiveness of the competitive activity of experienced handball players through the use of exercises aimed at developing the ability to anticipate game situations.

Methods and structure of the study. To assess the effectiveness of technical and tactical techniques, the matches of the Russian Handball Championship among youth teams were studied. An analysis of 40 games of the strongest teams was carried out. In order to study the methods used by coaches in the training process, 25 handball coaches with at least 10 years of experience were interviewed. The level of handball players' readiness for competitions was assessed during pedagogical diagnostics using testing. The psychological test "A-5 – Five types of anticipation in athletes" made it possible to identify and evaluate five different types of anticipatory abilities in handball players. The experiment included specialized sets of exercises aimed at developing five types of anticipation: spatial, spatial-situational, situational, temporal-situational and temporal. The study involved 30 handball players aged 18-20 years, representing the Zenit-2 and SKIF-2 teams.

Results and conclusions. The results of the study showed the expediency of using five separate blocks of exercises to form a game anticipation aimed at developing its various types. It was found that improving the formation of spatial, spatial-situational and situational anticipation has a positive effect on the effectiveness of game actions, both for the goalkeeper and the field players of the team. The field players of the experimental group showed an improvement in the quality of technical and tactical actions in four key indicators: the accuracy of shots, the number of assists, the number of blocks and interceptions.

Keywords: *game anticipation, means, efficiency, skilled handball players.*

Introduction. Performing technical and tactical actions in handball, regardless of the role of the players, is aimed at achieving superiority over the opponent in conditions of high-tempo play [5]. Alternating attacking and defensive actions are performed at high speed [2]. The ability to anticipate events and prevent them in activity is defined by the concept of anticipation. Anticipation allows a handball player to anticipate an event during the competition and be prepared for this event [3]. Anticipation is necessary in extreme situations of sports activity [4]. It allows to increase the result of activities and is a resource in the preparation of athletes [6]. The narrowly focused task blocks identified in the course of the study ensure an increase in the effectiveness of technical and tactical actions of qualified handball players. The results can serve as the goals of the training process.

Objective of the study. The main objective of the work was to increase the effectiveness of the competitive activity of experienced handball players through the use of exercises aimed at developing the ability to anticipate game situations.

Methods and structure of the study. The performance indicators of technical and tactical actions were determined during the Russian Handball Championship among duplicate teams. 40 games of the leading teams were analyzed. The survey of 25 handball coaches was used to study the tools used by specialists in the training process. The players' readiness for competitive activity was revealed during pedagogical diagnostics during testing. The psychodiagnostic technique included the questionnaire "A-5 – Five types of anticipation in athletes", which makes it possible to identify and evaluate each of the five types of anticipatory abilities of ath-

letes. The object of the study was 30 handball players aged 18-20 (Zenit-2 and SKIF-2 team players). Athletes performed tasks from five blocks aimed at developing various types of anticipation (spatial, spatial-situational, situational, temporal-situational and temporal). The Microsoft Office Excel 2021 and STATGRAPHICS 18 computer software package was used for statistical processing of the results obtained from the sample.

Results and conclusions. The collection of data and analysis of the effectiveness indicators of technical and tactical actions of qualified handball players indicates a high level that meets the requirements for duplicate Super League handball teams. Performance indicators, taking into account the play of the goalkeeper and field players when making shots and saves, do not have significant differences. The number of assists, blocks and steals in the SKIF-2 team significantly differs from the Zenit-2 team (Table 1).

During the testing, it was determined that the groups of handball players are homogeneous in terms of physical, technical fitness and five types of anticipation. The total average expectation in the Zenit-2 and SKIF-2 teams is 12.03 and 12.01 points, respectively. The indicators exceed the threshold value on the evaluation scale for athletes playing games (10.8 points).

A survey of coaches shows that 100% of respondents consider it important to form a game anticipation among handball players, while 80% of them note that they rarely use targeted means to develop it, devoting no more than 20% of the time to it in an annual cycle. Next, we compiled tasks for the formation of the Zenit-2 handball team's game anticipation. The tasks were arranged in five blocks. Each of the task blocks is aimed at developing one of the five types of anticipation among athletes:

Block 1. Tasks aimed at developing the ability to act spatially ahead in the course of a competitive confrontation. Task example: An attack by two players from the front line, after 2-4 passes.

Block 2. Tasks aimed at developing the ability to act ahead of time in specific game interactions of players. Task example: An attack by three players from the front line, after two or four passes with a change of places.

Block 3. Tasks aimed at developing the ability to act with spatial anticipation in specific game interactions of players. Task example: An attack by two players from the front line against an organized defense.

Block 4. Tasks aimed at developing the ability to act ahead of time during specific game interactions. Task example: An attack by three players from the front line, with a change of places, against an organized defense.

Block 5. Tasks aimed at developing the ability to act ahead of schedule, taking into account the dynamics of player interactions on the court. Task example: Attacking players from the 9-meter line, at the signal of the coach. In the main part of the lesson, one task from each block was completed for six months, and the completion time for all tasks was 25-30 minutes.

The indicators of the ability to predict the actions of handball players after the experiment are presented in Table 2.

The combined average expectation in the Zenit-2 and SKIF-2 teams is 13.32 and 12.10 points. The results demonstrate the dynamics of the indicators in the experimental group. The indicator in this group significantly exceeds the value of the second group of athletes.

A comparison of the performance indicators of the game actions of qualified handball players (goalkeeper and field players) of an experienced group during competitive activities is presented in Table 3.

Table 1. Indicators of the effectiveness of handball players' game actions before the experiment

Indicator	Command (X±Sx)	
	SKIF-2	Zenit-2
The effectiveness of "rescues" by the goalkeeper (%)	35,0 ± 1,5	36,0 ± 2,3
Conclusion about the difference	p> 0,05	
The effectiveness of throws (%)	63,95±3,56	63,88±3,99
Conclusion about the difference	p> 0,05	
Number of assists	18,83±8,77	14,5±5,27
Conclusion about the difference	p≤ 0,05	
Number of blocks	4,91±2,96	2,91±2,14
Conclusion about the difference	p≤ 0,05	
Number of interceptions	8,58±1,96	9,58±2,27
Conclusion about the difference	p≤ 0,05	

Таблица 2. Показатели сформированности игровой антиципации у квалифицированных гандболистов18-20 лет после проведения педагогического эксперимента

The anticipation indicator	Results (X±Sx) (score)		Student's t-test	Conclusion about the difference
	EG (Zenit-2)	RU (SKIF-2)		
Spatial	13,12±0,26	12,17±0,37	2,05388	P< 0,05
Spatial and situational	12,82±0,09	11,52±0,30	4,05428	P< 0,05
Situational	13,68±0,18	12,39±0,37	3,05078	P< 0,05
Temporal-situational	13,42±0,09	12,52±0,22	3,66479	P< 0,05
Temporal	13,58±0,15	12,17±034	3,74767	P< 0,05

Table 3. The effectiveness of game actions in the experimental group (EG) before and after the experiment

Indicator	Command (X±Sx)	
	EG (Zenit-2) to	EG (Zenit-2) after
The effectiveness of "rescues" by the goalkeeper (%)	36,0±2,3	41,0±1,4
Conclusion about the difference	p≤ 0,05	
The effectiveness of throws (%)	63,88±3,99	65,93±4,12
Conclusion about the difference	p≤ 0,05	
Number of assists	14,5±5,27	19,08±5,88
Conclusion about the difference	p≤ 0,05	
Number of blocks	2,91±2,14	5,08±2,64
Conclusion about the difference	p≤ 0,05	
Number of interceptions	9,58±2,27	10,41±2,38
Conclusion about the difference	p≤ 0,05	

An analysis of the statistical registration of the effectiveness of game actions in a team of qualified handball players, whose participants performed specialized tasks to form a game expectation, allowed us to state a significant increase in all the studied indicators.

Conclusions. It has been established that the teams of qualified handball players meet the regulatory requirements for technical and tactical preparedness for duplicate Super League handball teams. The expediency of allocating five blocks of tasks for the formation of game anticipation (tasks for the development of spatial, spatial-situational, situational, temporal-situational and temporal anticipation) is determined. It is revealed that the growth of spatial, spatial-situational and situational anticipation formation indicators is accompanied by the dynamics of performance indicators of game actions, both by the goalkeeper and the field players of the team. The field players of the experimental group showed an improvement in the quality of technical and tactical actions in four indicators (the effectiveness of shots, the number of assists, blocks, and interceptions).

References

1. Voronov I.A., Panteleeva G.V. Sozdanie i aprobaciya psihodiagnosticheskogo testa «A-5 – pyat vidov anticipacii u sportsmenov». Uchenye zapiski universiteta im. P.F. Lesgafta. 2019. No. 7 (173). P 231–236.
2. Ignateva V.Ya. Teoriya i metodika gandbola: uchebnik. V.Ya. Ignateva. Moskva: Sport, 2016. 328 p.
3. Kara O.V., Starchenko M.G., Bojcova Yu.A., Panteleeva G.V., Voronov I.A. Analiz vzaimosvyazi urovnya trevozhnosti s funkciej anticipacii, sub"ektivnoj ocenkoj sobstvennogo psihologicheskogo i fizicheskogo sostoyaniya i balansom vegetativnoj nervnoj sistemy u sportsmenov. Uchenye zapiski universiteta im. P.F. Lesgafta. 2020. No. 1 (179). P. 406-411.
4. Lutkova N.V., Makarov Yu.M. Formirovanie ustojchivosti k sbivayushchim faktoram pri vypolnenii broskov u kvalificirovannyh gandbolistov. Sportivnye igry v fizicheskom vospitanii, rekreacii i sporte: materialy XV Mezhdunarodnoj nauchno-prakticheskoj konferencii. Red. A.V. Rodin. Smolensk, 2021. P. 150-153.
5. Makarov Yu.M., Lutkova N.V., Bobrov I.V., Larionova M.N. Operativnyj kontrol sostoyaniya agressivnosti kvalificirovannyh gandbolistov v hode matcha. Teoriya i praktika fizicheskoy kultury. 2022. No. 4. P. 63-66.
6. Thorev V.I., Kashkarov E.K., Arshinnik S.P. Parametry, obuslavlivayushchie sportivnyj rezultat v sorevnovaniyah v muzhskom gandbole. Fizicheskaya kultura i sport. Olimpijskoe obrazovanie: Materialy mezhdunarodnoj nauchno-prakticheskoj konferencii. Krasnodar, 2021. P. 76-78.

The place of trust in the system of value preferences of students involved in sports

UDC 159.9.072

PhD **L.G. Tatyanina**[1, 2]
PhD **Y.A. Yakovleva**[1]
N.D. Alekseeva[3]
A.S. Rogalev[3]
[1]Saint-Petersburg Mining University of Empress Catherine II, St. Petersburg
[2]The Russian Presidential Academy of National Economy and Public Administration, North-Western Institute of Management, St. Petersburg
[3]Baltic State Technical University "VOENMEH" named after D.F. Ustinov, St. Petersburg

Corresponding author: gena391@mail.ru

Received by the editorial office on 29.01.2025 r.

Abstract

Objective of the study is to study the role of trust in the value system of students who actively engage in sports.

Methods and structure of the study. The empirical study involved 128 students (aged 18-22) enrolled in 2-4 courses at various universities in St. Petersburg.: LSU named after A.S. Pushkin, NSU named after P.F. Lesgaft, St. Petersburg Mining University of Empress Catherine II and BSTU "VOENMEH" named after D.F. Ustinov. All participants are active athletes with sports qualifications from the first category to the Master of sports. To achieve the purpose of the study, a set of psychodiagnostic tools was used: the questionnaire "Trust" (developed by L.G. Pochebut and co-authors), the methodology of Sh. Schwartz's test for the study of values, as well as the test of D.A. Leontiev "Meaningful life orientations" (SSO). The article presents the results of a study conducted to analyze the relationship between trust and value orientations among students who are professionally involved in sports.

Results and conclusion. The analysis of the value structure of student-athletes revealed the predominance of values related to the needs of the group, such as safety, observance of norms and traditions, regardless of the level of trust. Students with a high level of trust demonstrate a greater propensity for mutual understanding, positive interaction, and tolerance. Personal achievements, hedonism, and the pursuit of prestige are less important to them. Students with a low level of trust, on the contrary, are more focused on individualistic values, personal needs and show less willingness to cooperate and trust in a team.

Keywords: *trust, value system, students, sports competitions, psychodiagnostic techniques, value orientations, value structure.*

Introduction. The relevance of studying trust in the system of athletes' value orientations is determined by many factors [3]. Firstly, the specifics of sports activities require stable and cohesive interpersonal relationships in a team. Secondly, the psychological stability of an athlete directly depends on the sense of security and support in the team. Trust in others creates a favorable environment for the development of self-confidence, reduces anxiety and other negative emotional states, which is especially relevant in conditions of stress or pressure. Thirdly, trust plays a key role in the process of training and self-improvement of an athlete [2].

Openness to criticism and willingness to share your problems with your coach or other team members are possible only if you have a high level of trust. Fourthly, in the context of sports ethics, trust serves as the basis for observing the rules of fair play [1].

An athlete who trusts his team and training system is less likely to seek illegal ways to achieve athletic success. Fifth, trust contributes not only to team cohesion, but also develops athletes' self-confidence. It allows you to be open in your expectations and feelings, as well as honest about your achievements and mistakes [4].

Trust in their own capabilities allows athletes to expand their boundaries and overcome new challenges. It strengthens the stress tolerance necessary for competition and helps to maintain concentration at key moments of the game or performance [5].

Trust stimulates cooperation, increases motivation and increases the resilience of the team to diffi-

culties, allowing it to overcome obstacles and achieve its goals. Ultimately, the cultivation of trust leads to an increase in the competitiveness of the team and contributes to the comprehensive development of the athlete's personality.

Russian psychologists consider trust to be a key element of morality, a fundamental factor in the worldview and value system, as well as a fundamental life orientation of the individual. G.M. Andreeva (2002) focuses on the system of value orientations of the individual and highlights global values (freedom, goodness, aesthetics, etc.), values related to everyday life (kinship, offspring, well-being, etc.). With their stability, new data are selected in such a way as to confirm the existing system of value categories [3].

The research works of P.A. Bychkov (2010) revealed that people with a high level of trust in others are oriented towards the values of spiritual development, adherence to customs and traditions; sociability, modesty, openness, benevolence, orientation towards self-control, self-discipline, and observance of social norms prevail among their key personality traits [6].

Objective of the study is to study the role of trust in the value system of students who actively engage in sports.

Methods and structure of the study. The empirical study involved 128 students aged 18 to 22 (55 girls and 73 boys) enrolled in 2-4 courses in various specialties at universities in St. Petersburg (Pushkin Leningrad State University, P.F. Lesgaft National State University, St. Petersburg Mining University of Empress Catherine II, Baltic D.F. Ustinov VOENMEH State Technical University), and actively participating in sports competitions in boxing, judo, taekwondo, swimming, sports aerobics, rhythmic gymnastics in the qualification of the first category – master of sports. To determine the level of the integral indicator of personal trust, the questionnaire "Trust" was used (T. Yamagishi, adaptation by L.G. Pochebut, etc.).

The integral trust indicator combines the types of trust: personal and social. Personal trust is an individual's individual attitude of trust in other people. It reflects personal beliefs, experiences, and emotional reactions that influence an individual's willingness to open up and rely on others. Social trust reflects an individual's implicit understanding of trust in general, of the existing atmosphere of trust in society as a whole, and of how much people trust each other [6].

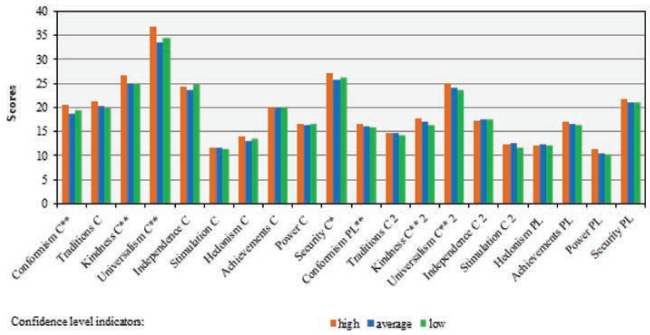
The Sh method. Schwartz's adaptation by V.N. Karandashev made it possible to identify two levels of personality values: normative ideals and individual priorities. Normative ideals, or cultural values, are characterized by greater stability and reflect generally accepted ideas about what is important in society. While individual priorities, or personality values, are more influenced by the environment and group norms, they are directly related to the behavior and actions of individuals [6].

Sh. Schwartz identifies ten blocks of values that integrate into a complex structure.: 1) orientation towards power, 2) orientation towards achievement, 3) striving for hedonism (the search for sensual pleasures), 4) striving for stimulation (i.e., the search for new experiences, excitement), 5) orientation towards independence, 6) striving for universalism (i.e., orientation towards the well-being of others, understanding people, protection of nature), 7) the value of kindness, 8) orientation towards respect and observance of traditions, 9) orientation towards conformity (i.e. striving to meet social expectations and norms), 10) orientation towards security (i.e. the importance of stability and security of society, personal relationships).

The test of "Meaningful life orientations" (J. Crambo, L. Maholik, adapted by D.A. Leontiev) allowed us to obtain data on the degree of students' experience of the meaningfulness of their lives, their clear goals, satisfaction with the process of their lives, its effectiveness, and the locus of control.

Results and conclusion. Based on the results of the "Trust" methodology, an integral indicator of trust was calculated (the maximum value is 50 points), the arithmetic averages of which for students, regardless of the direction of study and sports specialization, did not differ significantly from each other. Therefore, the entire sample of the study on the integral indicator of trust was divided into three groups: 1) students with a high level of trust – 42 students who scored 36-50 points on the scale of integral trust; 2) students with an average level of trust – 50 people (26-35 points of integral trust); 3) students with a low level of trust – 36 people (10-25 points of integral trust).

The study of students' value orientations (according to the questionnaire of Sh. Schwartz) showed some similarity in the structure of values among students with different levels of trust, with more pronounced quantitative indicators among students with a high level of trust (see figure).



Note: **– statistically significant differences at p<0.01; *– statistically significant differences at p< 0.05; C – cultural values; PL – personality profile Students' value structure and trust levels

The results of the study show that at the level of normative ideals, regardless of the level of trust, the values of "universalism", "kindness", "security" prevail among students, while the less significant values of "stimulation", "hedonism" and "power" prevail. At the level of individual priorities, the values of "universalism" and "security" are significant.

A more detailed comparison of the data using a one-factor analysis of variance showed statistically significant differences at a high level of significance in the selected groups of athletes, depending on the level of trust in values.: "kindness", "universalism", "conformity" (at the levels of normative ideals and individual priorities), "safety" (in the sphere of normative ideals).

Thus, the results of the study allow us to conclude that athletes who show a high level of trust are focused on mutual understanding and positive interactions, on the safety of the group and the people around them. Individual values such as new experiences, pleasure, prestige, and authority are not a priority for them.

The study of the interrelationships of trust and meaningful orientations of athletes was conducted using Spearman's correlation analysis. Students with a high level of trust have more pronounced orientations towards "purpose in life" (R=0.46, with p<0.01) and "life effectiveness" (R=0.38, with p<0.01), which indicates that students in this group understand their goals in life, focus on goal setting and results in activities. In the group of athletes with an average level of trust, statistically significant correlations of trust with such life–meaning orientations as "the process of life" (R=0.42, at p<0.01), "the effectiveness of life" (R=0.37, at p<0.05), "locus of control - I" (R=0.46, at p<0.01), "the locus of control is life" (R=0.38, at p<0.01). The obtained correlations indicate the importance for students of this group of satisfaction with the life process, results, self-control, as well as control over events in their lives. Athletes with a low level of trust are dominated by life-meaning orientations aimed at the "process of life" (R=0.42, at p< 0.05) and "effectiveness of life" (R=0.32, at p< 0.05), which reflects the emotional sensitivity of their lives, an orientation towards understanding the process of life and its productivity.

Conclusions. The leading values in the system of value orientations among athletes with a high level of trust are group values, following traditions and generally accepted norms of behavior. Athletes with a low level of trust tend to focus on individualistic values (the need for new experiences, vivid emotions) and less significant group values. For students, regardless of the level of trust, meaningful life orientations related to performance and productivity of life are important, students with a high level of trust are more focused on achieving goals.

The formation and maintenance of trust as a value among athletes requires further study and is a prerequisite for their successful sports career and personal development.

References

1. Dubrovskaya Yu.A., Rudenko G.V., Kostromin O.V. Specializirovannaya fizicheskaya podgotovka budushchih gornyh inzhenerov-spasatelej. Teoriya i praktika fizicheskoy kultury. 2023. No. 6. P. 58-61.
2. Dubrovskaya Yu.A., Rudenko G.V., Pihkonen L.V. Formirovanie professionalnyh kompetencij budushchih gornospasatelej sredstvami fizicheskoj podgotovki. Teoriya i praktika fizicheskoy kultury. 2021. No. 4. P. 41-43.
3. Kuprejchenko A.B. Psihologiya doveriya i nedoveriya. M.: Institut psihologii RAN, 2008. 564 p.
4. Levickij A.G., Rudenko G.V., Tkachuk M.G., Kostromin O.V. Individualno-tipologicheskie osobennosti dzyudoistov razlichnyh vesovyh kategorij. Teoriya i praktika fizicheskoy kultury. 2024. No. 3. P. 92-94.
5. Tatyanina L.G., Vahnin N.A., Sazonova N.N., Sorokin S.I. Koping-strategii studentov-sportsmenov s raznym urovnem emocionalnogo vygoraniya. Teoriya i praktika fizicheskoy kultury. 2023. No. 3. P. 30-33.
6. Tatianina, L.G., Vakhnina, E.G. (2020). Personal Determinants of Trust in Arctic Ships Crews. IOP Conference Series: Earth and Environmental Science. Vol. 554(1), DOI: 10.1088/1755-1315/554/1/012007

The study of the psychological aspects of the phenomenon of «Faith» in the context of sports activities of representatives of various sports fields

UDC 796:159.947

Dr. Hab., Professor **S.M. Ashkinazi**[1, 2]
PhD **G.V. Sytnik**[1, 2]
PhD **Vit.V. Andreev**[1]
PhD **V.Vit. Andreev**[1]
[1]Lesgaft National State University of Physical Education, Sport and Health, St. Petersburg
[2]Saint-Petersburg State Academy of Veterinary Medicine, St. Petersburg

Corresponding author: sergei_ashkinazi@mail.ru

Received by the editorial office on 29.01.2025

Abstract

Objective of the study – analysis of the psychological roots of the phenomenon of faith, the definition of its role and the demonstration of ways to implement it in the daily lives of students involved in sports.

Methods and structure of the study. In order to identify the peculiarities of the perception of the phenomenon of "Faith" among student-athletes, their views on faith as such, their need for it, their belief in the existence of God, the depth of religious beliefs, predisposition to superstition, participation in religious rituals and attitudes towards paranormal phenomena were analyzed. The study involved 78 fifth-year students of various specializations from the P.F. Lesgaft National University in St. Petersburg. All participants were athletes.

Results and conclusions. Faith as a phenomenon reflects the diversity of aspects of mental reality. It has been established that the need for faith is activated under the influence of specific life events, especially often it occurs during periods of crisis. During the study of the phenomenon of faith, four main categories were identified for analysis: "spirituality" (34.29%), "transpersonal aspect" (10.48%), "sphere of extra-psychic phenomena" (7.62%) and "area of psychic phenomena" (47.62%). The presented classification gives grounds to assert that faith is primarily a mental construct. The key concept used to describe faith is "spirituality."

Faith has an effect on an individual, manifesting itself in support, inspiring optimism, accompanying them through life, and having an overall beneficial effect. It is important to perceive faith as an integral part of a psychological portrait that unites various aspects of the psyche into a single whole. Such integration contributes to a fuller understanding of the importance of faith in human life and its impact on the psychological aspects of existence. Considering faith from this point of view allows us to see it as a powerful factor shaping personality and determining behavior. The positive influence of faith can manifest itself in a wide variety of areas of life, from interpersonal relationships to professional activities. Faith is able to give meaning to life, help to cope with difficulties and find a way out of difficult situations.

Keywords: *psychological roots, the phenomenon of faith, the role of faith, introduction into everyday life, student-athletes, perception of faith, the need for faith, religious beliefs, superstitions and religious rituals, crisis periods, mental reality.*

Introduction. The main purpose of this study is to analyze the psychological nature of the phenomenon of faith, identify its functions and reveal the mechanisms of its manifestation in real-life situations of student-athletes of P.F. Lesgaft NSU, St. Petersburg. At the present stage of the development of psychology, the concept of "Faith" has not acquired sufficient categorical significance. The phenomenon of "Faith" was excluded from psychological analysis due to ideological considerations and the contradiction between the categories of faith and knowledge, since its essence cannot be adequately captured using the methods of natural sciences. The formation of faith among student-athletes largely depends on their individual characteristics, the specifics of sports activities and personal experience of participating in competitions [1].

Objective of the study – analysis of the psychological roots of the phenomenon of faith, the definition of its role and the demonstration of ways to implement it in the daily lives of students involved in sports.

Methods and structure of the study. As part of an experimental study on this topic, various survey methods were used, including questionnaires. To study the students' attitude to the phenomenon of "Faith", an author's questionnaire was developed: "The phenomenon of "Faith" in the structure of self-awareness." The attitude of student-athletes to the phenomenon of "Faith" was determined by the following criteria: attitude to faith, need for faith, faith in God, degree of faith, attitude to omens, attitude to rituals, attitude to supernatural phenomena. Such techniques and tests as the questionnaire of protection mechanisms were used. Plutchik-Kellerman-Conti, the questionnaire "Self-actualization of personality", a methodology for determining the ratio of "Value" and "Accessibility" in various spheres of life, as well as the test "Meaningful life orientations" [1].

The study involved 78 fifth-year student athletes from P.F. Lesgaft NSU, St. Petersburg, with 12 different specializations. There are 45 women and 33 men among them. The average experience of playing sports among the subjects was 12 years.

Results and conclusions. The survey revealed the general attitude of students towards religion. Students have a positive attitude towards religion. About 10% of the subjects adhere to a deep faith in God; 2.4% are atheists. About 33% of students have faith in God. 42% of the respondents believe that the main reason for the emergence of faith lies in the search for an ideal, in filling a spiritual void. 22% of the subjects think that the strengthening of faith in Russia is connected with the restoration of traditions, 15% associate the need for faith with the need for repentance, and, finally, 11% see the reason for returning to the true faith. The prevailing view among women is that the strengthening of faith is associated with the search for an ideal and is conditioned by a return to the true faith. Men explain this fact by repentance and restoration of traditions. There is a slight negative attitude towards religion among men.

As follows from the data obtained, 62% of students consider themselves believers, 32% have not yet decided whether they are believers or not, and only 6% of the entire sample of subjects consider themselves non–believers. Girls consider themselves more religious than boys: 69% of girls consider themselves believers, compared with 55% among young people. In addition, young men are more likely to experience uncertainty about their faith, unable to identify themselves as believers or non believers – 36%, in contrast to 27% of girls.

It turned out that girls are more likely to turn to God with prayer – 27%, among girls 40% noted that they pray "sometimes", while for boys this figure is 27%. In the group of boys, 36% answered that they rarely pray, while among girls this value is 27%. Finally, 21% of boys indicated that they never pray, compared to only 7% of girls. Thus, there are clear gender differences in the practice of prayer among young people.

For the majority of young people, faith is perceived as a form of spiritual protection, the highest spiritual force, a significant spiritual phenomenon and the highest spiritual motive [1]. There is also a difference in attitudes towards faith depending on gender. Girls express higher rates of faith as a spiritual defense (0.69 versus 0.52 for boys) and faith as a higher spiritual force (0.51 versus 0.32 for boys).

A comparative analysis showed that both men and women have the greatest trust and faith in their parents (women – 4.80 points; men – 4.67 points), in themselves (women – 4.62 points; men – 4.64 points), in reason (women – 4.29 points; men – 4.30 points) and in friends (women – 4.16 points; men – 4.03 points). Men show more confidence in science (women – 3.93 points; men – 4.30 points) and the state (women – 2.76 points; men – 3.15 points), while women have more faith in a mentor (women – 3.96 points; men – 3.52 points), in money (women – 3.73 points; men – 3.36 points) and parents (women – 4.80 points; men – 4.67 points).

A comparative analysis of students' personality indicators based on the criterion of "faith in God" revealed that the features of faith depend on the level of psychological protection of students. The overall level of defense mechanisms is slightly higher among those who believe in God (44.73% versus 43.20% for non-believers). Among believers, such protective mechanisms as regression (47.88%, compared with 37.64%) and compensation (64.09% vs. 42.00%) stand out prominently. At the same time, the mechanisms of "projection" prevail among non-believers (52.05% among believers and 60.19% among non-believers) and "rationalization" (50.55% among believers and 63.27% among non-believers).

Believers in God have a higher level of performance according to four criteria of self-actualization. The use of such strategies as "entering into social contact" (23.42% among believers compared to 21.67% among non-believers), "seeking support" (26.19% among believers and 19.67% among non-believers), "manipulative actions" (20.45% among believers ver-

sus 16.67% among non-believers) and "antisocial actions" (19.39% among believers compared to 14.00% among non-believers), significantly more among believers in God.

Psychological differences in value orientations showed that "non-believers" are characterized by the predominance of such values as "health" (6.92 points for believers and 8.20 points for non-believers), "love" (8.08 points for believers and 8.80 points for non-believers), "friends" (6.96 points for believers and 8.60 points for non-believers non-believers), as well as "cognition" (4.21 points for believers and 6.00 points for non-believers). In turn, "believers in God" have higher rates of the following values: "active active life" (3.29 points for believers and 2.80 points for non-believers), "interesting work" (5.21 points for believers and 4.20 points for non-believers), "family" (9.33 points for believers versus 7.60 points for non-believers) and "freedom" (4.88 points for believers versus 3.00 points for non-believers points for non-believers).

"Believers" have high rates of self-actualization on the following scales: "time orientation" (46.40% for believers and 38.50% for non-believers), "support" (51.12% for believers and 47.50% for non-believers), "flexibility of behavior" (50.07% for believers and 40.75% for non-believers) and "sensitivity" (54.61% among believers and 48.00% among non-believers). At the same time, among "non-believers" there is a predominance of indicators on such scales as "value orientations" (59.72% among believers and 63.75% among non-believers), "creativity" (46.01% among believers and 48.00% among non-believers) and "cognitive need" (44.95% among believers and 57.00% for non-believers).

In our sample, the most important is "self-confidence and self-reliance" (32.62%). The second place is taken by "faith in God" (23.08%). The study showed that a significant percentage of respondents also expressed "faith in parents and relatives" (15.38%). "Faith in friends" is also important for young people (11.11%). "Faith in the "good" (5.97%) turned out to be relatively significant among other types of faith. The remaining 14 categories of faith according to the classification in the sample of students of sports specializations are rather poorly represented.

Conclusions. As a result of the analysis of the concept of faith, detailed material was collected that made it possible to determine the essential meaning of the phenomenon of faith from the point of view of student-athletes. First of all, the connection was revealed between the need to actualize faith and certain life circumstances: most often, the need for faith arises in crisis situations. Difficult, complex, dangerous, dead-end and extreme conditions are the main determinants of the emergence of faith.

In the course of the study, four enlarged blocks were identified for the analysis of the phenomenon of faith: the "spirituality block" (34.29%), the "transpersonal block" (10.48%), the "block of extrasychic phenomena" (7.62%) and the "block of psychic phenomena" (47.62%). This systematization allows us to state that the phenomenon of faith is a purely mental education.

The central concept describing faith is "spirituality," which underscores the need for a deeper study of this concept, which currently has a high degree of uncertainty. When describing faith, the subjects often use transpersonal terminology (10.48%), which indicates a wide range of concepts of faith and its transcending traditional concepts of reality.

An analysis of the influence of faith on a person showed that the main positive function of faith is to help (31.48%). The second most important place is occupied by "hope" (18.52%), and the third is "escort" (9.26%). Thus, the impact of faith on a person manifests itself in the form of help, hope, guidance, and overall positive influence. Respondents perceive the influence of faith on their lives exclusively in a positive way (18 points).

In general, the phenomenon of faith reflects various aspects of mental reality. In order to avoid "dissolving" into this diversity, it is necessary to consider faith as an integral psychological characteristic that unites various manifestations of mental reality into a single whole. This integration can help in a deeper understanding of the role of faith in human life and its impact on the psychological aspects of being.

The results of the study can serve as a basis for the development of psychological support programs and trainings for the development of spirituality and personal faith, especially among young people and students. This can help in improving their psychological state, building self-confidence and self-reliance, as well as creating a healthy and constructive atmosphere in a sports and educational environment.

References

1. Andreev V.V. Sportivnyj ritual v strukture psihologicheskoj podgotovki sportsmena Vestnik Pskovskogo gosudarstvennogo universiteta. Seriya: Psihologo-pedagogicheskie nauki, 2020, No. 11, pp. 36-47.

Increased anxiety in high-class young athletes in complex sports disciplines

UDC 796.015.4

V.V. Milashechkina[1, 2]
M.A. Sazonova[1]
PhD of Medical Sciences, Associate Professor **I.N. Gernet**[3]
PhD, Associate Professor **N.N. Trotsenko**[4]
[1]Russian Peoples' Friendship University named after Patrice Lumumba, Moscow
[2]School No. 1788, Moscow
[3]University "Synergy", Moscow
[4]North Caucasus Federal University, Stavropol

Corresponding author: ea.milash@yandex.ru

Received by the editorial office on 01.02.2025

Abstract

Objective of the study – is aimed at determining the specific characteristics of anxiety symptoms in highly qualified athletes specializing in complex coordination disciplines.

Methods and structure of the study. As part of the study, girls aged 12-14 years old, engaged in rhythmic gymnastics (n=42) and diving (n=22) at least I sports category, living in the central part of Russia, were examined. The control group consisted of 48 schoolgirls who did not play sports. The A. Kondash test adapted by E.I. Rogov (2010), which includes scales of self-assessment and interpersonal anxiety, was used to assess the level of anxiety. The data obtained were subjected to statistical analysis.

Results and conclusions. The results showed that the most pronounced level of anxiety is observed in 13-year-old female athletes engaged in highly skilled complex sports. In all age groups, the level of anxiety among athletes significantly exceeds that of girls from the control group. Maintaining an optimal level of anxiety is important for achieving high results. Trainers need to take into account the level of anxiety when planning the training process. Parents of young athletes should pay attention to the psychoemotional state of the child in order to prevent the development of serious mental and physiological disorders caused by intense physical exertion.

Keywords: *anxiety symptoms, highly qualified athletes, complex coordination disciplines, self-assessment scales, interpersonal anxiety.*

Introduction. Modern high-performance sports place extremely high demands not only on technical and tactical training, but also on the psycho-emotional stability of athletes [1].

It is especially difficult for athletes whose main activity is associated with the manifestation of not only physical abilities, but also coordination, as this mobilizes the entire spectrum of functioning of the central nervous system. Athletes need to combine their specific physical abilities with the manifestation of coordination abilities in a given period of time, in certain conditions (diving) associated with an unusual position of the human body in space; with the observance of tempo and rhythm (to music) and with various projectiles, for example, in rhythmic gymnastics. Competitive activity causes strong emotional arousal, which is expressed in a variety of feelings, including states associated with increased anxiety. Neurophysiological personality traits of highly qualified young athletes play a certain role in the practice of sports reserve training [3].

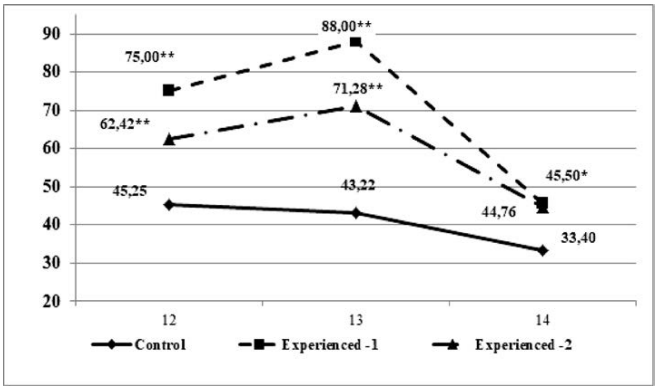
Various states of anxiety can both have a positive effect on overcoming difficulties in achieving the intended goal, and hinder it [5]. The level of anxiety reflects vegetative reactions to various life situations, neurosis-like and psychosomatic disorders [4, 7]. The problem of anxiety is particularly acute for coaches who work with adolescent athletes but already have high athletic qualifications [2, 6].

Objective of the study – is aimed at determining the specific characteristics of anxiety symptoms

in highly qualified athletes specializing in complex coordination disciplines.

Methods and structure of the study. The study of the manifestation of anxiety states in athletes and representatives of complex sports was conducted in natural conditions remotely using interactive technologies. We examined girls engaged in rhythmic gymnastics in sports schools living in the middle zone of Russia, aged 12-14 years (experimental group – 1, n=42) and female divers of the same age (experimental group – 2, n=22) with sports qualifications: at least 1-th sports category. The control group consisted of secondary school students who were not involved in sports (n=48). To diagnose the level of anxiety, the method of A. Kondash was used, adapted by E.I. Rogov (2010), which includes self-assessment and interpersonal anxiety scales. The results of the study were subjected to variation-statistical processing.

Results and conclusions. An analysis of the study results revealed clear age differences in athletes anxiety levels (see Figure). The maximum levels of anxiety among gymnasts and water jumpers were recorded at the age of 13, and this indicator is twice as high as among girls in the control group



*Note: * p<0.01, **<0.001 – the significance of differences with the control group.*

The anxiety level of girls involved in complex sports with high athletic qualifications

(p<0.01-<0.001), indicating a higher emotional background associated with prolonged exposure to stressful situations during puberty. Increased susceptibility to stress at this age is associated with both a high level of stress in many areas of adolescent life (educational and training processes) and the onset of puberty, which is accompanied by an inevitable restructuring of the hormonal and emotional-psychological background.

A decrease in the level of self-esteem and interpersonal anxiety in both experimental groups of female athletes was detected at the age of 14 (see the table). In the control group, 12-year-old girls showed the maximum level of anxiety on the studied scales, while it is at the upper limit of the norm, but significantly lower than in athletes. This allows us to draw a conclusion about the effect of high-intensity physical exertion on the state of the child's body and psyche.

Comparing the performance of female athletes engaged in gymnastics and diving, it was determined that gymnasts with high athletic qualifications at the age of 12 and 13 have a 20% higher exponent than female divers. We assume that such a difference in the level of anxiety may be due to the difference in the nature of the training process and competitions in the sports under consideration. Rhythmic gymnastics requires not only high precision in performing exercises, but also a certain artistry, which is evaluated separately at competitions. This can be an additional stress factor for young athletes, while diving is also a high-precision sport, but the emphasis is still more on technical skills.

Conclusions. As a result of the conducted research, it was determined that girls who engage in complex sports and have high athletic qualifications have the highest level of anxiety at the age of 13. Moreover, in all age groups, female athletes have significantly higher anxiety than girls in the control group.

Self-assessment (CT) and interpersonal (M) anxiety in highly skilled adolescent athletes engaged in complex sports

Age	Experienced – 1		Experienced – 2		Control	
	ST	MT	ST	MT	ST	MT
12 years	25,20±3,05*	23,60±3,92*	18,12±3,25*	13,18±1,43	15,23±0,85	14,75±1,72
13 years old	25,33±1,99*	20,00±1,62*	17,46±2,51	14,17±2,24	14,17±0,97	14,44±0,84
14 years	13,00±0,39	16,00±0,48*	16,68±2,12*	15,37±1,28*	10,17±0,65	12,39±0,91

Note: * the reliability of the differences in the average values between the control and experimental groups is p<0.01.

Such high levels of anxiety can indicate a real disadvantage for female athletes in the most important areas of activity and communication. Such anxiety is often experienced by quite successful teenagers, both in educational and sports activities, however, this apparent well-being is given to them at an unreasonably high price, and indicates a decrease in the functionality of the central nervous system of athletes experiencing high-intensity physical activity, and this, in turn, can further exacerbate emotional distress at a critical moment. the period of ontogenesis.

In our opinion, this should be taken into account by coaches when planning the training process in order to maintain an optimal state of anxiety and the most successful performance in competitions. It is important for parents of adolescent athletes to pay attention to the psychoemotional state of the child in order to prevent the development of serious psychological, mental and physiological disorders against the background of high-intensity physical exertion.

References

1. Babushkin G.D., Shumilin A.P., Chikurov A.I., Sokolov A.N. Vliyanie psihologicheskoj gotovnosti na predstartovoe sostoyanie i rezultativnost sorevnovatelnoj deyatelnosti dzyudoistov razlichnoj kvalifikacii. Uchenye zapiski universiteta im. P.F. Lesgafta. 2008. No. 3 (37). P. 13-17.
2. Gabelkova O.E. Proyavlenie faktorov stressa v raznyh vidah sporta. Педагогіка, психологія та медико-біологічні проблеми фізичного виховання і спорту. 2009. No. 1. P. 38-42.
3. Kulchickaya Yu.K. Lichnostnye predposylki psihologicheskoj ustalosti u gimnastok na etape sportivnogo sovershenstvovaniya. Teoriya i praktika fizicheskoy kultury. 2010. No. 10. P. 31-34.
4. Milashechkina E.A., Bicheva G.V. Osobennosti proyavleniya urovnya trevozhnosti u studentok specialnoj medicinskoj gruppy, imeyushchih dopolnitelnyj ob"em dvigatelnoj aktivnosti. Uchenye zapiski universiteta imyu P.F. Lesgafta. 2019. № 3 (169). S. 433-437.Hanin Y.L., Straub W.F. (ed.) A study of anxiety in sports. Sport psychology: An analysis of athlete behavior. Ithaca, N. Y: Movement Publications, 1980.
5. Milashechkina E.A., Gernet I.N., Timofeeva O.V. [et al.]. Ontogenetic Characteristics of Anxiety of Gymnasts of High Sports Qualification. International Journal of Applied Exercise Physiology. 2019. Vol. 8, No. 2. P. 581.
6. Morgan W.P., Eckert H.M., Clarce D.H. (eds.) Selected psychological factors limiting performance. A mental health model. The limits of human performance. Champaign, 11: Human Kinetics, 1985.

The teacher's influence on the athletes' value system in the context of the formation of a socially acceptable course of action

UDC 796.011

PhD, Associate Professor **N.S. Skok**[1]
Dr. Hab., Associate Professor **A.A. Baryaev**[1]
PhD, Associate Professor **V.S. Kulikov**[1]
PhD **T.I. Ulitskaya**[1]
[1]Lesgaft National State University of Physical Education, Sports and Health, Saint-Petersburg

Corresponding author: n.skok@lesgaft.spb.ru

Received by the editorial office on 04.02.2025

Abstract

Objective of the study. This study is aimed at studying the potential of pedagogical influence on the formation of a value system among athletes of the sports reserve (hereinafter referred to as athletes) in the context of their training in socially acceptable behavior.

Methods and structure of the study. The methodology and organization of the study included an analysis of existing works on value orientations and socially appropriate behavior in sports. A survey of athletes was also used, a pedagogical experiment was conducted, a correlation analysis was performed, and the data obtained were interpreted and systematized (n=14; sports: orienteering, handball, volleyball, sailing, and rowing; age group: 14-17 years).

The study examines the possibilities of pedagogical influence on the formation of value orientations in order to prevent and correct deviant behavior in athletes and the formation of socially acceptable behavioral models in them. The task of analyzing the development of the athletes' value system has been clarified. Positive changes in terminal values have been recorded, reflecting the desire for professional (interesting work/study) and personal self-realization (happy family life, love and spiritual intimacy). There are also positive trends in the development of instrumental values, both individualistic (independence, willpower) and conformist (self-control).

Results and conclusions. It has been established that the prevention and correction of deviant behavior have a positive effect on the formation of athletes' value orientations. The relationship between the formation and manifestation of socially adequate behaviors in athletes and their age, level of athletic training, as well as the type of sport was found. The possibility of correcting deviant behavior and developing socially acceptable behavior through pedagogical tools and methods has been confirmed.

Keywords: *pedagogical impact, value system, athletes, socially acceptable behavior, value orientations, sports reserve, deviant behavior, behavioral models.*

Introduction. Value orientations as the fundamental characteristics of existing norms ensure the integrity of the social system in specific social conditions. With the help of social norms, society controls, regulates and evaluates the social adequacy of individuals' behavior. Value orientations and socially adequate behavior of an individual are not identical, but they are one of the factors of their formation. Overcoming negative trends in the formation and reproduction of value-cultural dominants in difficult socio-political conditions is becoming one of the urgent problems of the theory and practice of pedagogical influence in the sports environment.

The study of the pedagogical influence on the formation of athletes' value orientations is conditioned by the implementation of strategic documents defining the spiritual and moral education of athletes and the strengthening of traditional Russian values.

Objective of the study is to analyze the possibilities of pedagogical influence on the formation of value orientations in the context of studying socially adequate behavior of athletes. is to analyze the possibilities of pedagogical influence on the formation of value orientations in the context of studying socially adequate behavior of athletes.

Methods and structure of the study. Generalization of research on value orientations and socially adequate behavior in a sports environment. Survey of athletes, pedagogical experiment, correlation analysis, interpretation and systematization of research results (n=14, sports: orienteering, handball, volleyball, rowing and sailing, age 14-17 years).

Results and conclusions. In the course of previous research conducted by the authors, the problems of the formation of value orientations in the context of the prevention and correction of deviant behavior of athletes, the development of socially adequate behavior were studied [1-4]. In this paper, the task of analyzing the dynamics of the formation of value orientations within the framework of pedagogical influence on athletes is specified.

During the pedagogical experiment, in order to correct deviant behavior and form value orientations, "athletes of the experimental group used: trainings on the development of social experience of interaction outside the sports environment, conversations aimed at the formation of communicative competence, trainings on improving skills, ways to resolve problematic situations, the formation of socially adequate behavior taking into account changes in the socio-political situation" [3], quizzes, classes with watching of art and documentaries, aimed at the formation of spiritual and moral values.

According to the results of research on value orientations (M. Rokich's method), positive dynamics was recorded in 2023-2024 according to the studied indicators (Table 1).

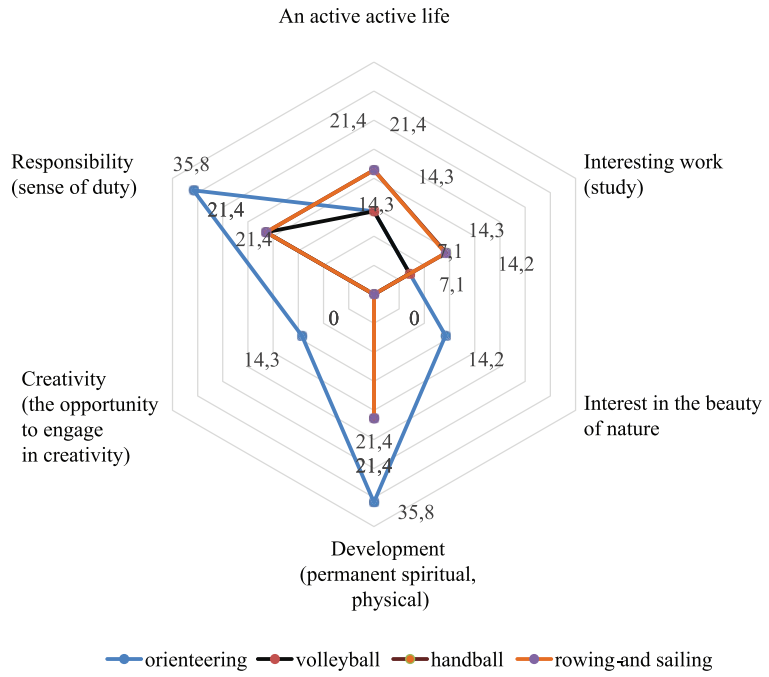
The obtained indicators are structured from the standpoint of professional and personal self-realization (terminal values); individualistic, conformist and altruistic (instrumental values). A positive trend has been revealed (see Table 1) in the formation of value orientations of athletes from among the sports reserve in terms of indicators characterizing: 1) values-goals of professional self-realization (interesting studies (work)) and self-realization in personal life (happy family life, love (spiritual and physical intimacy with a

Table 1. Dynamics of athletes' value orientations, according to the results of the survey (n=14, %)

Indicators	Significant, %	
	2023	2024
Terminal values Interesting studies (work)	42,9	50,0
Love (spiritual and physical intimacy with a loved one)	7,1	42,9
Happy family life	0	50,0
The well-being of others	14,3	35,7
Creativity (the opportunity to engage in creativity)	0	35,7
Self-confidence (freedom from internal contradictions)	0	21,4
Instrumental values		
Performance (discipline)	42,9	50,0
Independence (the ability to act independently)	7,1	50,0
Self-control (restraint, self-discipline)	21,4	42,9
Strong will (the ability not to give up in the face of difficulties)	35,7	42,9
Efficiency in business	21,4	28,6

Table 2. The results of the correlation analysis of value orientations with the sport (n=14)

Indicators Terminal values	Correlation coefficient (rs)
Maturity of judgment and the pursuit of common sense	0,585 (p≤0,05)
Health (physical and mental)	0,581 (p≤0,05)
Productive life (full use of your strengths and abilities)	-0,546 (p≤0,05)
Instrumental values	
Breadth of views (the ability to understand someone else's point of view, respect other customs)	-0,618 (p≤0,05)
Good manners (the ability to behave in accordance with the norms of a culture of behavior)	0,613 (p≤0,05)
High demands (high demands on life)	0,597 (p≤0,05)



Interrelation of sports and value orientations (n=14), %

loved one)); 2) values are individualistic means (independence (the ability to act independently), firm will (the ability not to retreat from difficulties)), conformist ("self-control (restraint, self-discipline)).

A correlation analysis of the subjects' value orientations with sports was carried out (Table 2).

It has been revealed that the formation and translation of socially adequate behaviors of athletes correlates with their age, athletic qualifications, and type of sport (see Figure).

According to the obtained indicators (see figure), an active active life and interesting work (study) are the most significant for athletes, handball and rowing and sailing, interest in the beauty of nature and creativity are significant for athletes, orienteering; development and responsibility are significant for all sports.

Conclusions. The studied indicators of value orientations are defined as significant, since they are important for studying socially adequate behavior in unstable social conditions. In the context of this approach, value orientations, interpreted as patterns of socially adequate behavior, become the main integrating element of social behavior. The positive dynamics of the formation of athletes' value orientations during the prevention and correction of deviant behavior by pedagogical means and methods is noted. It was revealed that the translation of socially adequate behaviors of athletes correlates with their age and athletic qualifications. It has been established that increasing the level of athletic qualifications of athletes has a positive effect on the maturity of their judgments, health, and good manners. According to the studied indicators, the positive influence of systematic and planned pedagogical influence in the educational and training process has been established.

References

1. Bakulev S.E., Ashkinazi S.M., Tajmazov V.A. Formirovanie cennostnyh orientacij i profilaktika deviantnogo povedeniya kak strategicheskie napravleniya sovershenstvovaniya sportivnogo rezerva. Sbornik nauchnyh statej i dokladov Vserossijskoj nauchno-prakticheskoj konferencii s mezhdunarodnym uchastiem, 2 aprelya 2021 g. Sankt-Peterburg, 2021. P. 42-46.
2. Baryaev A.A. Opyt realizacii reabilitacionno-socializiruyushchego potenciala sportivnoj deyatelnosti lic s narusheniem zreniya. Adaptivnaya fizicheskaya kultura. 2020. No. 2 (82). P. 32-34.
3. Skok N.S., Makarov Yu.M., Kulikov V.S., Ulickaya T.I., Chernaya A.I. Dinamika deviantnogo povedeniya sportsmenov 14-17 let v uchebno-trenirovochnom processe. Teoriya i praktika fizicheskoy kultury. 2024. No. 9. P. 37-39.
4. Skok N.S., Makarov Yu.M., Kulikov V.S., Chernaya A.I.Vzaimosvyaz deviantnogo povedeniya i cennostnyh orientacij sportsmenov iz chisla sportivnogo rezerva. Teoriya i praktika fizicheskoy kultury. 2024. No. 5. P. 60-62.

The combined impact of student sports, physical education, and outdoor activities, based on the digital Triple Helix model, creates a synergistic effect

UDC 796.01

Dr. Hab., Professor **V.I. Grigoriev**[1]
PhD, Associate Professor **I.A. Panchenko**[2]
D.A. Vasiliev[2]
Ya.I. Novitsky[2]
[1]St. Petersburg State University of Economics, St. Petersburg
[2]St. Petersburg Mining University named after Empress Catherine II, St. Petersburg

Corresponding author: panfilio@yandex.ru

Received by the editorial office on 23.02.2025

Abstract

Objective of the study. This research is aimed at expanding the possibilities of the "triple helix" integration model, combining student sports, physical education and active recreation, through the use of digital tools.

Methods and structure of the study. As part of the research, using the methods of the FactoMineR package, a digital triple helix platform was developed for managing physical education in the student environment. The project involved students of both sexes aged 18-19 years, representing 286 academic groups. The effectiveness of the proposed model was evaluated on the basis of a number of confirmed indicators recorded in such disciplines as 100-meter running, 100-meter swimming, pull-ups, push-ups, as well as when passing the TRP standards.

Results and conclusions. The results of the work confirmed the scientific validity of the approach to integrating the key elements of the discipline "Physical Culture and Sport" – student sports, physical education and active leisure – based on the Triple Helix platform. The introduction of digital technologies into various aspects of physical education contributes to the expansion of the management capabilities of the Triple Helix in the context of the interaction of student sports, physical education and active leisure. It has been confirmed that digital regulation makes it possible to achieve a synergetic effect in the development of the scientific and technical potential of students' physical education. The effectiveness of the use of digital technologies to optimize the use of state and public resources in order to promote health, develop physical activity and improve athletic skills of students has been proven.

Keywords: *triple helix, integration, student sports, physical education, active leisure, digital technologies, digital platform, physical education management, managerial functionality.*

Introduction. At the XII International Forum "Russia – a sporting power", President of the Russian Federation Vladimir Putin revealed the main directions of the reform of domestic sports[1]. Digitalization of management is one of the key areas for improving the effectiveness of physical education and sports. The solution to this problem involves the use of artificial Intelligence, machine Learning, and deep Learning technologies [1]. Digital services provide additional opportunities for monitoring, processing and verifying a large amount of data used in assessing the dynamics of student sports, physical education and leisure activities [3, 6].

Excessive politicization of student sports at the university can block the development of physical education, where more than half of the students who are classified as preparatory, special departments and groups of HIA are engaged. Digital Triple Helix model services have a high potential in overcoming this problem [2]. The focus is on achieving coherence in the processes that increase the effectiveness of educational tracks in sports, basic/preparatory and special departments. To optimize the development of physical culture and sports in 1056 universities of the Russian Federation, the solution of this problem is relevant.

It was assumed that the digitalization of the "Triple Helix" management algorithms provides additional incentives for the comprehensive development of stu-

[1] Vladimir Putin's speech "Sport – a comprehensive look into the future" at the XII International Forum "Russia – a Sporting power" [Electronic resource] // https:// URL: ura.news/articles/1036289987 (accessed: 10/18/2024).

dent sports, physical education and active leisure, improving the effectiveness of training practice, the quality of academic/elective and independent forms of classes.

Objective of the study – is to actualize the possibilities of the "triple helix" integration of student sport, physical education and active leisure using digital technologies.

Methods and structure of the study. The key tasks are defined according to the stages of the study. Among them: – determination of the capabilities of the digital regulator of the "triple helix" in the organization of student sports, physical education and active leisure; – development of a management algorithm that increases the effectiveness of physical education in improving physical culture and developing students' physical condition. The object-subject area of research consists of the attributive and subject boundaries of the discipline "Physical Culture and Sport", which define the specifics of student training in the framework of problem-based, developmental and project-based learning.

The theoretical and methodological basis of the research consists of interdisciplinary theories, methods and approaches (theory of systems, synergetics, self-organization) related to the development of subjectivity of physical culture (A.I. Zagrevskaya, L.I. Lubysheva, I.V. Manzheley, N.V. Peshkova). The pedagogical observations conducted at the first stage of the study involved students of 286 study groups, men and women aged 18-19 years of 1st, 2nd and 3rd years of full-time education. Based on FactoMineR, a digital construct of student sports, elective physical education and active leisure has been synthesized.

At the second stage, using the resources of the Content Management System (CMS), the effectiveness of sports, professionally applied, adaptive, recreational and rehabilitation training of students was assessed. To assess the effectiveness of the digital platform of the "Triple Helix" control, verified results were selected in running 100 m, swimming 100 m, pulling up from the temple, bending the arms while lying down, and passing the TRP standards. Screening of PWC_{170} operational parameters, heart rate, general metabolism (GBI), visual-motor reactions of WATERS, RDO, and T-tmax was performed in groups of athletes. According to Spearman's criterion (R-statistics), a correlation analysis was performed.

Results and conclusions. The digital infrastructure of the first link of the spiral (student sports) includes a set of indicators and their thresholds reflecting the compliance of the training results with the set goals. The differences between the software packages and the resource support for the training of national (national teams) and student teams are revealed, showing the shortage of all types of resources in the work of university sports clubs. It takes from 900 to 1000 hours to train elite athletes, and from 240 to 360 hours at the university. At the same time, the number of athletes who are ready to combine university education and training is 2.3% of the total number of students [1].

Digitization of the links between the results of work (trained masters of sports, champions and prize-winners of All-Russian competitions) and resource support polynomials (R=0.670) will make it possible to format training within the boundaries of achieving peak results (R=0.501), education of citizenship and patriotism (R=0.401). Coding of training polynomials, training and training schedules, functional status, coach competencies, financing, and access to information resources increases the possibilities of work analysis and planning.

Digitalization of dynamic parameters of speed, power of work, amplitude, tempo, rhythm of motor actions allows you to adjust the links between physical, technical, tactical and competitive training. The analysis of the resonances of the training effects allows us to assess the depth of the training effect within the limits of the metabolic potential. The digital training standard is expressed in a linear code: customization of the training mode achieving peak results in competitions. It reflects the speed of adaptation to intensive training within the boundaries of functional, morphological, organic and energetic transformations. The use of e-sports simulators in the educational process gives new meanings to motor practices. The technology is included in the editing of the "weakened bonds" of gaming, which stimulate the dynamism and emotional intensity of interactive workouts. The effectiveness of training gamification is demonstrated by the participation of students in the Dota 2 tournament of the Games of the Future platform.

The analysis of the digital infrastructure of the second link of the spiral (physical education) shows dependence on the resource base of student sports. The strategic vector of development is aimed at "Sportization" of student training [4]. This relationship is expressed in the generation of goals, training stimuli,

and biotic load parameters implemented in different academic departments. The digitization of the theoretical (72 hours) and elective modules (328 hours) of the study program of the main department, where 52% of students study, focuses on mastering basic knowledge, the formation of motor culture and the development of physical qualities. It is obvious that digitalization makes it possible to synchronize learning processes, diversify physical education resources, and expand access to digital assets.

Digital tuning of kinesiological reserves leads to a synergy of functional adaptation and muscle hyperplasia. Digitization of physical activities performed in the PO2 mode of 70-75% MPC, heart rate 170-180 beats per minute is included in the adjustment of work power, correction of muscle and fat components of body weight in the range of 7.0-10.0% ($p<0.05$). Monitoring of physiologically appropriate connections allows you to regulate the dynamics of the development of students' motor functionality – endurance, strength, speed, coordination qualities. The productivity of digitizing training is expressed in an increase in test results: bending the arms in the prone position, deadlift, pull–ups from hanging on the crossbar, in the 100 m run, long jump from a place in the range of 9.0-16.0% ($p<0.05$). The introduction of user bots and personal assistants into the work of the preparatory department, where 17% of students study, makes it possible to manage the sliding effects of adaptation to stress. The special department, where 26% of students study, is dominated by physical therapy/rehabilitation technologies. The functional level is provided by standards of a healthy lifestyle, tolerance to ethnic practices, and national identity [6]. Digitization of the load parameters will allow you to adjust the energy intensity of the workout online.

A 16% increase in attendance ($p<0.05$) and a 20% decrease in the number of school absences due to illness ($p<0.05$) proves the effectiveness of the regulator. The increase in students' fitness is indicated by the strengthening of intra–system connections between the polynomials of physiological functions, hemodynamics, energy metabolism and performance of PWC_{170} in the range of 8.0-14.0%.

It should be noted that the imperatives of "sportization" have become the basis of patriotic education and adherence to traditional values. The adequacy of the model is indicative of the participation of St. Petersburg State University students in 23 large-scale projects, in particular, in the Russian Walking Walking Championship, the TRP festival (1.5 thousand students fulfilled the standards), a table tennis tournament, and Russian bast shoes competitions.

Digitization of physical activity thresholds used in the special medical group (26%) is associated with the clinical stratification of students. It allows you to differentiate the learning process by signs of damage to the musculoskeletal system (NODE), heart, central nervous system, respiratory organs, hearing and vision.

Digitalization of polynomials in an accessible/barrier-free environment is focused on synchronizing the incentives for adaptive training of students with disabilities (AFC). Optimization of barrier-free space leads to regulation of their social atomization, generation of motor addictions, and improvement of the quality of life. Load correction within the boundaries of the pathological/regenerative process, students with disabilities have improved their activity parameters, functional reserves, mental sphere, and motor functions. The depth of the impact is expressed in the settings of cognitive functions, bioenergetic reserves, and a decrease in phobic syndrome.

The correction of motives and value orientations inherent in students with disabilities is associated with cognitive domains included in the structure of adaptive reserves, compensatory capabilities and psychophysical balance. Within the boundaries of clinical symptoms, a reassessment of the prospects for remission of motor skills is achieved, an increase in the parameters of "life satisfaction" in the range of 9.0–12.0 points ($p<0.05$). The effectiveness of the digital transformation of classes has been proven by the participation of the St. Petersburg State University team in an inclusive sports festival in six sports. The digital structure of the third link (active leisure) includes operational models that increase the effectiveness of physical education through digital, physical and biological measurement of physical activity, academic productivity and quality of life of students [5]. The structural codes of the third link are expressed in projects of personality harmonization and physical fitness maintenance. The model has great potential in minimizing dissipative processes, which ensure the cross-cutting focus of active leisure programs, promoting the health and well-being of students.

As a result of the diffusion of sports and physical

education, cascading effects are achieved related to the personal routing of motor practices. Digitization of the active leisure polynomials will allow monitoring the value sphere of students. This practice stimulates the growth of weekly activity up to 12 hours, increases the involvement of students in physical education and sports activities. The information that captures the dynamics of the transformation of the content of independent studies in the structure of active leisure is of interest. The boundary parameters of the motor-energy functional correlate with an increase in background activity to 8-9 thousand locomotives (2.0–2.5 hours), 3450-3600 kcal.

Conclusions. Digitalization of physical education polynomials increases the managerial functionality of the “triple helix” in the interaction of student sports, physical education and active leisure. The diffusion of components takes place in an objective cultural and historical field, associated with the updating of priorities, the development of targeted programs. The coordinates of the structural and technological renewal of the discipline are generated on the Triple Helix platform. The effectiveness of the digital regulator is confirmed by the achievement of a synergetic effect in the development of the scientific and technical potential of students’ physical education.

References

1. Grigorev V.I. Strategiya razvitiya fizicheskoj kultury, fitnesa i studencheskogo sporta: monografiya. SPb.: SPbGEU, 2024. 160 p.
2. Ickovic G. Trojnaya spiral: universitety – predpriyatiya – gosudarstvo: innovacii v dejstvii. Tomsk: Tomskij gosudarstvennyj universitet sistem upravleniya i radioelektroniki, 2010. 237 p.
3. Kostyuchenko V.F., Rudenko G.V., Dubrovskaya Yu.A. Formirovanie fizicheskoj kultury grazhdan v kontekste strategii razvitiya fizicheskoj kultury i sporta v RF. Teoriya i praktika fizicheskoy kultury. 2019. No. 3. P. 35-38.
4. Lubysheva L.I.., Zagrevskaya A.I., Peredelskij A.A. Sportizaciya v sisteme fizicheskogo vospitaniya: ot nauchnoj idei k innovacionnoj praktike. M.: NIC «Teoriya i praktika fizicheskoy kultury i sporta», 2017. 200 p.
5. Peshkova N.V., Lubysheva L.I. Polisub”ektnoe upravlenie v studencheskom sporte: monografiya. M.: NIC «Teoriya i praktika fizicheskoy kultury», 2022. 192 p.
6. Selyukin D.B., Zajcev A.V. Vovlechennost studentov tekhnicheskogo vuza v sistematicheskie zanyatiya fizicheskoj kulturoj i sportom. Teoriya i praktika fizicheskoy kultury. 2023. No. 3. P. 58- 60.

The use of digital materials in physical education lessons for students assigned to a special medical group

UDC 77.03.15

PhD, Associate Professor **S.A. Grigan**[1]
T.V. Butenko[2]
V.N. Nagornykh[2]
G.N. Tokarev[2]
[1]Russian Presidential Academy of National Economy and Public Administration, Northwestern Institute of Management, St. Petersburg
[2]Don State Technical University, Rostov-on-Don

Corresponding author: svetlana-grigan@mail.ru

Received by the editorial office on 09.01.2025

Abstract

Objective of the study is aimed at studying the potential and methods of using IT in the process of organizing physical education lessons for students assigned to a special medical group.

Methods and structure of the study. Methodology and organization of the research. Initially, a review of scientific publications and pedagogical practices related to the formats and types of educational activities of SMG students, as well as information technology tools that can be effectively integrated into physical education classes, was carried out. Then a sociological survey was conducted among 235 students of the St. Petersburg branch of the RANEPA aged from 18 to 24 years.

Results and conclusions. Results and conclusion. It has been established that the introduction of information technologies into the educational process of SMG students makes it possible to combine and combine various types of activities, such as information and educational, recreational and the creation of digital material. During the classes, knowledge, skills and abilities from the field of IT and physical education and sports are integrated, where, in addition to mastering theoretical knowledge, students gain skills in creating digital content, developing training plans and performing sets of exercises aimed at developing physical fitness and maintaining a healthy lifestyle.

Keywords: *information technology, physical education classes, students of a special medical group, educational activities, sociological survey, knowledge integration, information and cognitive activities, recreational activities, digital content creation.*

Introduction. Today, the use of information technologies in the educational and training process is an important aspect of life in the modern world and it is necessary to learn how to understand the specifics of their application right now. Currently, the problem of using innovative information technologies to involve and increase motivation of students of a special medical group for physical education classes is becoming relevant in educational practice [1].

Objective of the study is to evaluate the possibilities and ways of using information technology in organizing physical education classes for students of a special medical group.

Methods and structure of the study. At the first stage of the work, the analysis of scientific content, pedagogical experience devoted to the forms and types of educational activities of students of a special medical group, and information technology tools that could be successfully implemented in physical education classes was carried out. At the second stage, a sociological survey was conducted among 235 students of RANHiGS St. Petersburg aged 18 to 24 years.

Results and conclusions. The analysis of information sources allowed us to identify the types of educational activities that can be carried out by students of a special medical group and taken into account when drawing up a lesson program for them:

• Information and cognitive activities, in which students gain knowledge about the benefits of physical education, the specifics of organizing classes,

and ways to interact with equipment. The results of knowledge acquisition are presented in the form of reports, abstracts and scientific articles. Along with this, students themselves can become compilers of physical activity programs that are designed for both regular health groups and other students with disabilities [2].

• Health-improving physical education, which provides for an optimal motor regime and individualization of physical activity of students, taking into account gender, health status, etc. This type of activity provides for the creation of a common system of health-improving exercises, the use of dance techniques and techniques of psychological immersion.

• Development and use of digital content in the following areas: - creation of videos, presentations, mobile applications with a set of exercises and speech accompaniment. - designing online courses with information about a healthy lifestyle. - gamification of classes can be implemented in the form of a combination of computer and real forms of gaming activities aimed at increasing the interactivity of learning, as well as developing the physical qualities of students.

The survey results showed that 38% of the total number of respondents are students who attend a special medical group, 3% of students are completely exempt from physical education classes. According to the responses received, students of the special medi-

Table 1. Survey on students' interest in using virtual reality technologies in education

In which group do you practice physical education?	In the main one – 62%	In special medical – 35%	Completely exempt from physical education for health reasons - 3%
Which physical education classes are the most interesting for you?	Exercises and workouts – 24%	Digital content Development – 40%	Writing essays, exercise programs – 36%
Do you know what (virtual reality) VR technologies are?	Yes – 72%	No – 28%	
Would physical education classes be more interesting for you if VR technologies were used in their process?	Yes – 43%	I find it difficult to answer – 24%	No – 33%

Table 2. Advantages and disadvantages of using information technologies in organizing physical education classes with students of a special medical group

Information technology-related activities	Goal	Dignities	Disadvantages
Video tutorials posted on online platforms for students to familiarize themselves with	The opportunity to introduce safety and exercise techniques	1. Greater visibility 2. The interactive form allows students to memorize information better	1. The theory of the information received 2. The inability to check the technique of performing exercises in the process if the video tutorial involves repeating exercises
The use of information technology for conducting tests and informing students	Increasing knowledge about the role of physical education and sports and proper techniques	The opportunity to objectively and easily assess students' knowledge	The opportunity to objectively and easily assess students' knowledge
Using VR and AR technologies to gamify the training process	Increasing students' motivation	1. Increase motivation 2. An interactive form that allows you to engage in basic exercises	1. The high cost of these technologies
Measurement of students' biometric indicators using information technology	Monitoring of students' results and physical condition	The opportunity to make classes as effective and safe as possible when it comes to students with disabilities	The high cost and unavailability of the technologies we are interested in
Using information technology to create information lessons and presentations	Increasing motivation by considering the effect of sports on the body	Increasing motivation to play sports	The theoretical nature of the tasks performed, which makes it impossible to show the correct technique of the exercises being studied

cal group prefer classes in which they develop digital content with sets of exercises or courses on physical culture and sports (40% of respondents).

At the same time, students are interested in VR and AR technologies and their capabilities, which they provide to increase physical activity (Table. 1).

Based on the results of the theoretical analysis and survey, the advantages and disadvantages of using information technologies in organizing physical education classes in a special medical group were identified (Table 2).

Conclusions. The use of information technology in classes with students of a special medical group provides an opportunity, along with gaining theoretical knowledge in the field of physical education and sports, to acquire skills in developing and applying digital content, designing and performing sets of exercises aimed at developing physical qualities and maintaining a healthy lifestyle. An effective form of physical education classes for students who have certain health limitations is a hybrid format, when classes are held remotely or in the gym, under the supervision of a coach.

References

1. Grigan S.A., Belmach V.A. Vliyanie primeneniya informacionnyh tekhnologij na fizicheskuyu aktivnost studentov tekhnicheskogo vuza. Uchenye zapiski universiteta im. P.F. Lesgafta. 2024. No. 2 (228). P. 46-49.
2. Grigan S.A., Lyashko G.I. Vliyanie sredstv massovoj informacii na razvitie fizicheskoj kultury sredi studentov. Uchenye zapiski universiteta im. P.F. Lesgafta. 2024. No. 1 (227). P. 37-40.

The use of stochastic approaches in computational modeling of professional tasks in the training of future personnel in the field of physical education and sports

UDC 372.851

PhD **K.G. Lykova**
PhD, Associate Professor **T.A. Shchuchka**
N.A. Gnezdilova
Bunin Yelets State University, Yelets

Corresponding author: ksli1024@mail.ru

Received by the editorial office on 22.01.2025

Abstract

Objective of the study is aimed at developing a methodological justification for solving problems in probability theory using the Python programming language in the process of professional training of students specializing in physical education and sports.

Methods and structure of the study. As an approach to solving probabilistic problems involving independent repeated trials (in particular, Bernoulli and Poisson formulas), the use of specialized Python libraries such as NumPy, SciPy, Matplotlib, Seaborn, Pandas, SymPy and Scikit-learn is proposed. The practical implementation and testing of this approach was carried out within the framework of the academic discipline "Methods of mathematical information processing" by students studying in the direction of 44.03.05 Pedagogical education (profile "Physical culture, Life safety").

Results and conclusions. As a result of the research, a method was developed for solving probabilistic problems related to independent repeated tests (Bernoulli and Poisson formulas) through the use of Python libraries in the context of professional training of specialists in the field of physical education and sports. The integration of the research results into the methodological support of the educational process will expand the available resources for the digital transformation of higher education and contribute to the formation of students' competencies: universal (the ability to solve standard professional tasks based on digital technologies) and professional (the ability to apply mathematical methods in combination with computer tools for creating and analyzing models of varying degrees of abstraction).

Keywords: *professional training of a student in the field of physical culture and sports, solving probabilistic problems, Python programming language, methodological support, competence.*

Introduction. It is known that modern digital tools in the field of PCIs are used to predict the future results of athletes' competitive activities, improve the biomechanics of movement, increase the level of physical fitness and the functional state of those involved in sports and physical activity. Digital technologies are based on methods of probability theory and mathematical statistics (E.A. Burovsky, Y.B. Grishunina [1]; Davidson-Paylon Cameron [2]; S.Ya. Krivolapov [3]; N.I. Popov, E.S. Bolotin [4]).

The universal multimodal system for developing these methods today is the Python environment. The widespread demand for these technologies in the field of data analysis actualizes the problem of training future specialists in probabilistic and statistical methods, which allows them to acquire knowledge and understanding of the basics of digital technologies and transfer them to the field of their professional tasks.

Objective of the study is aimed at developing a methodological justification for solving problems in probability theory using the Python programming language in the process of professional training of students specializing in physical education and sports.

Methods and structure of the study. The method of solving probabilistic problems in the study of independent repeated trials (Bernoulli and Poisson formu-

la) is based on the use of Python programming language libraries: NumPy; SciPy; Matplotlib; Seaborn; Pandas; SymPy; Scikit-learn. The development of the Python language and the expansion of the functionality of its libraries provide opportunities for creating conditions for the effective solution of probabilistic problems using modeling methods (random walk, various types of random variable distributions, sample characteristics, etc.), statistical data analysis (estimation of sample parameters, verification of statistical hypotheses, construction of confidence intervals, etc.), visualization of experimental results, simulation probabilistic models.

The research was carried out as part of the study of the discipline "Methods of mathematical information processing" by students of the training area 44.03.05 Pedagogical education (with two training profiles), orientation (profile) Physical education, Life safety.

Results and conclusions. As part of the study, the RP was updated in accordance with the needs for students to acquire knowledge in the field of probability theory. The structure of the academic course of this discipline includes the following modules:

Module 1: Introduction to probability theory. (Basic concepts of probability theory. Combinatorics. Formulas of combinatorics. Types of probabilities. Events and their properties. Conditional probability and independence of events. Independent repeated tests).

Module 2: Fundamentals of Statistics. (Descriptive statistics. Numerical characteristics of the sample. Testing statistical hypotheses).

Module 3: Python programming for solving probabilistic problems. (Introduction to Python. Basics of Python syntax. Working with NumPy and SciPy libraries for mathematical calculations, Matplotlib and Seaborn for data visualization. Solving probabilistic problems in Python).

Module 4: Application of probabilistic methods in FKiS. (Simulation of sports events. Probabilistic models for analyzing competition results. Data analysis in sports. The use of statistical methods to evaluate the effectiveness of training. Application of probabilistic methods in biology and ecology).

The considered problems in probability theory and mathematical statistics (independent repeated tests (Bernoulli and Poisson formula), implemented in the professional training of students in the field of sports statistics, analyze sports data and involve the use of Python programming language libraries in their solution: NumPy; SciPy; Matplotlib.

To calculate the probabilities of random events using the Bernoulli formula, you need to import the libraries: Numpy and Comb from Scipy.special. We use them to calculate the binomial coefficient. The probability function allows you to calculate the desired probabilities. Here are some examples of professionally oriented tasks.

Example 1. The probability of bankruptcy of the Greencity fitness club in three years is 0.2. Find the probability that more than two out of eight similar fitness clubs will remain in three years. We set the input parameters: n is the total number of fitness clubs, k is the number of clubs that have not gone bankrupt, p is the probability of bankruptcy, and q is the probability of preservation.

To calculate the probability that more than two clubs will remain, we subtract the sum of the probabilities for k=0,1,2 (the number of remaining fitness clubs) from 1, and then output the resulting probability (Fig. 1).

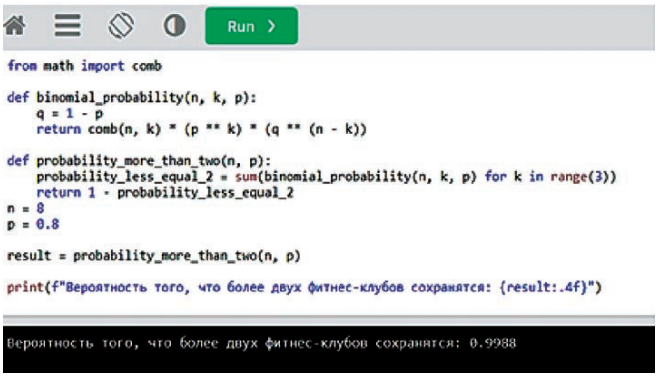


Fig. 1. Probabilities of maintaining more than two fitness clubs

To calculate the probabilities using the Poisson formula, we import the Math library for mathematical operations and Poisson from Scipy.stats to work with the Poisson distribution.

Example 2. 400 participants are registered for the sports event. The probability that each participant will contact the organizers of the event within an hour (for example, to get information or clarify details) is 0.01. Find the probability that: a) within an hour, at least three participants will contact the organizers; b) within an hour, five participants will seek help from the organizers; c) within an hour, no more than four participants will need the organizers of the event. The Poisson formula will be applied in this solution, as the number of requests from participants is a rare event.

We enter the parameters: n is the total number of participants, p is the probability of contacting, and – is the average number of requests to the organizers. To calculate the probabilities in each case, we will use the "poisson" function (Fig. 2).

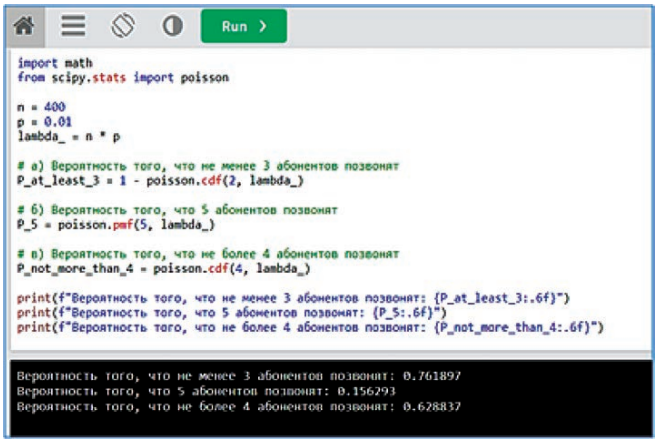


Fig. 2. The desired probabilities according to the Poisson formula

The proposed method of solving probabilistic problems in the study of independent repeated tests (Bernoulli and Poisson formula) based on Python programming language libraries confirms a significant degree of abstraction without emphasis on the technical side of execution, which develops the learner's ability to create algorithms and models of new quality.

Conclusions. The result of the study was a method for solving probabilistic problems in the study of independent repeated tests (Bernoulli and Poisson formulas) using Python programming language libraries in the professional training of students in the field of PCIs. The inclusion of this research in the methodological support of the student's professional training in the field of physical culture and sports will contribute to the expansion of the resource base in the implementation of the digital transformation of higher education.

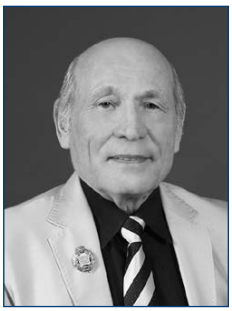
The proposed method of solving probabilistic problems in the study of independent repeated tests (Bernoulli and Poisson formula) using Python programming language libraries: NumPy; SciPy; Matplotlib; Seaborn; Pandas; SymPy; Scikit-learn contributes to the formation of competencies in students at the FKiS: universal (to solve standard tasks of professional activity based on the use of digital technologies); professional (to use mathematical tools in integration with computer environments to create and study models of various levels of abstraction).

References

1. Burovskij E.A., Grishunina Yu.B. Zadachi matematicheskoj statistiki i ih reshenie s ispolzovaniem yazyka programmirovaniya Python: ucheb. posobie. Nac. issled. un-t «Vysshaya shkola ekonomiki», Mos. in-t elektroniki i matematiki im. A.N. Tihonova. Moskva: Izd. dom Vysshej shkoly ekonomiki, 2022. 64 p. 150 ekz. ISBN 978-5-7598-2682-8 (v obl.). ISBN 978-5-7598-2483-1 (e-book).
2. Devidson-Pajlon, Kemeron. Veroyatnostnoe programmirovanie na Python: bajesovskij vyvod i algoritmy. SPb.: Piter, 2019. 256 s.: il. (Seriya «Biblioteka programmista»). ISBN 978-5-4461-1058-2.
3. Krivolapov S.Ya. Ispolzovanie yazyka Python v teorii veroyatnostej: uchebnik: [16+]. Finansovyj universitet pri Pravitelstve Rossijskoj Federacii. M.: Prometej, 2021. 492 p.
4. Popov N.I., E.S. Bolotin. Ispolzovanie integrirovannoj sredy dlya razrabotki i obucheniya Python IDLE pri izuchenii studentami teorii veroyatnostej. Vestnik MGPU. Seriya «Informatika i informatizaciya obrazovaniya». 2023. No. 1 (63), P. 79-85. DOI: 10.25688/2072-9014.2023.63.1.07.5. Ceng, Giap Yo. Implementation of Face Mask Detection Using Phyton Programming Language. Yo. Ceng Giap, Erviana, bit-Tech. 2023. Vol. 6, No. 1. P. 51-58. DOI 10.32877/bt.v6i1.893. EDN ISWYKO.
5. Raducan, E., Arhip M. Quality Issue Classification by Using Dedicated Data Analysis Software Created in Phyton Language. The Eurasia Proceedings of Science Technology Engineering and Mathematics. 2023. Vol. 24. P. 10-20. DOI 10.55549/epstem.1406198. EDN GWLQPU.

Development of a digital educational platform in the process of training future professionals in the field of physical culture and sports

UDC 796.01:002(045)



Dr. Hab., Professor, Academician of the Russian Academy of Natural Sciences **P.K. Petrov**
PhD, Associate Professor **O.B. Dmitriev**
PhD, Associate Professor **E.R. Akhmedzyanov**
Udmurt State University, Izhevsk

Corresponding author: pkpetrov46@gmail.com

Received by the editorial office on 26.09.2024

Abstract

Objective of the study – is to systematize the practical experience of creating a digital educational platform for training specialists in the field of physical culture and sports in the context of digitalization of education. The experience of the Udmurt State University is considered as an example.

Methods and structure of the study. To write this article, approaches such as the study and systematization of scientific literature devoted to the digitalization of education in a broad sense and physical culture in particular were applied. In addition, a retrospective review of the development and formation of a digital educational platform in the process of training specialists in the field of physical culture and sports was conducted, based on the personal experience of the authors.

Results and conclusions. The article examines the key aspects of the formation of the digital educational environment (DSP) in the context of the digital transformation of physical education. Questions are raised regarding the challenges that arise during the transition to digital technologies in physical education and the creation of a DSP, taking into account changes in the higher education system, the emergence of innovative sports disciplines and the specifics of the field of "Physical culture", focused on practical training. The importance of developing digital competencies among both students and teaching staff for effective training of specialists in demand in the digital economy is emphasized.

The analysis of the data obtained will make it possible to more effectively modernize the DSP in the system of training specialists in the field of physical culture and sports in various areas: organization of the educational process, scientific research, educational work, administrative management and improvement of the material and technical base of the university, taking into account the progress of modern digital technologies.

Keywords: *systematization of experience, digital educational platform, training of specialists, digitalization of education, digital educational environment, digital transformation, challenges of digital technologies.*

Introduction. At the present stage, initiatives for the digital transformation of key sectors, including the economy, industry, social sphere, education, healthcare, as well as physical culture and sports, are being actively implemented in our country. The key points in this process were the approval of the national program "Digital Economy" and the adoption of the document "Strategy for the development of the Information Society in the Russian Federation for the period 2017-2030." In the context of the implementation of the latter, the National Project "Education" was formed, an integral part of which was the federal project "Digital Educational Environment" (DSP). This initiative is focused on creating an innovative and secure digital educational ecosystem that guarantees accessibility and a high level of educational services of all types and levels. The realization of this vision implies the creation of an appropriate technological foundation both within the framework of the national educational system and in relation to specific areas of professional training.

Objective of the study – is to systematize the practical experience of creating a digital educational platform for training specialists in the field of physical culture and sports in the context of digitalization of education. The experience of the Udmurt State University is considered as an example.

Methods and structure of the study. In preparing this work, the following research approaches were applied: a comprehensive review and synthesis of scientific and methodological sources covering the issues of digital transformation of the educational sphere in general and physical education in particu-

lar. In addition, a detailed retrospective analysis of the processes of the emergence and evolution of the digital educational ecosystem in the context of training professionals in the field of physical education and sports was conducted, based on the long-term practical experience of the authors of the study.

Results and conclusions. As the analysis of scientific and methodological literature has shown, many researchers have applied to the study of the concepts of "Digital transformation of education" and "Digital educational environment" [6, 10, 13].

In our opinion, the digital transformation of education, including in the field of physical education, involves a fundamental rethinking of the educational process. This process includes the development and implementation of digital educational resources, new–generation didactic materials that operate within the digital educational environment. Such an environment covers a wide range of components: 1) technological infrastructure (computers, tablets, mobile devices, Internet connections, video equipment, multimedia projectors, etc.); 2) specialized digital educational resources that take into account the specifics of physical education; 3) integrated management systems that ensure the digitalization of key aspects of university activities, including: distribution of teaching load, accounting for scientific publications; financial management; electronic document management; organization of the educational process; coordination of research; methodological support; automation of the student recruitment process, etc.E. The digital educational environment should cover all areas of the educational institution's activities: the educational process, administrative and managerial, research and educational work. Naturally, the formation of such an environment to a certain extent depends on the development of scientific and technological progress, the level of development of information and communication technologies, including such advanced technologies as artificial intelligence, neural networks, virtual and augmented reality technologies, distributed registry systems, quantum computing, advanced manufacturing technologies (PPT), elements of robotics and sensor systems, as well as wireless communication technologies, which are called "End-to-end technologies" [6].

It should be noted here that the digital transformation of education and the formation of the digital educational environment of each university has occurred and is currently taking place on the basis of the transition from the beginning of computerization, to the use of information technology and already at the present stage to digital transformation. Of course, access to the global Internet is of great importance for the formation of a digital educational environment. It is significant that already in 1999, more than a hundred Russian universities began to actively use the Internet in their educational, scientific and methodological activities. Udmurt State University was among these advanced educational institutions, where the introduction of the Internet made it possible to significantly accelerate the development of its capabilities to optimize the educational process and research work of university students, including students of the Institute of Physical Culture [13].

Multimedia digital educational resources developed by teachers are of great importance for students of the "Physical Culture" field of study: teaching and control programs, distance learning courses, mobile applications and other materials that act as new learning tools and ways of organizing classes, as pedagogical tools that allow them to achieve their goals [1, 8, 9, 11].

The preparation of educational and methodological materials related to both the creation and use of modern digital educational resources is important in the formation of digital literacy among future professionals in the field of physical education and teachers, who, in the context of the digital transformation of sports and pedagogical education, need to possess skills in both the development and application of such resources in their professional practice. In this aspect, the creation of the first textbook "Information Technologies in physical Education and sports", which has undergone a number of reprints, played an essential role in shaping the digital educational landscape in the field of physical culture and sports [4, 7].

Moreover, the accumulated knowledge in the field of development and implementation of digital educational tools in the training of specialists in the field of physical culture and sports was embodied in pioneering dissertation research (O.B. Dmitriev, PhD thesis, 2003, P.K. Petrov, doctoral thesis, 2004). The key conclusions obtained in the course of the research were summarized in the scientific monograph [12].

The introduction of advanced information technologies in the field of physical education and sports has served as a catalyst for the development of research activity in this field. An important stage in the methodological support of such research was the release of the textbook "Fundamentals of scientific and methodological activities in physical culture and sports" [2], which systematized approaches to conducting scientific work using digital tools.

Udmurt State University regularly acts as a venue for national and international scientific and practical conferences dedicated to the application of information technology in the field of physical culture and sports.

The results of research carried out under the auspices of the scientific direction "Digital technologies in the field of physical culture and sports" are a valuable source for the scientific and pedagogical staff of the university within the framework of the digital modernization of physical education. These results, available electronically, are available on the university's website at: http://itsport.school.udsu.ru /.

In recent years, artificial intelligence and neural networks have become widely used in solving various professional tasks, which will also solve many of the tasks facing students and teachers, and here, as with many digital information technology tools, it is necessary, first of all, to consider them not as a substitute for a teacher, teacher, coach, but as assistants, allowing to solve professional tasks more effectively [13].

The analysis of the directions of digital transformation of education and the means of its implementation at Udmurt State University has revealed the main means representing the structure of the digital information environment, which can be divided into four blocks: the organization of the educational process, the organization of research activities, administrative and managerial activities and educational work. All work on the creation and functioning of the digital educational environment, which is an "Integrated Information and Analytical System" (IIAS), is carried out on the basis of technological support: hardware and software. The main source of information in the digital educational environment is the university's website (https://udsu.ru /).

For example, sections such as the personal account of the student and the teacher are associated with the organization of the educational process, where, depending on whose office, you can use different information. Students have access to curricula, work programs of disciplines, class schedules, test and exam results, portfolios, etc. Teachers can access information about group lists, electronic lists, work programs and assessment funds, teaching workload, publications, etc. In the "Training" section, distance learning courses are available for students and teachers, which teachers develop and use in their disciplines. An important task in the organization of the educational process is the availability of electronic library systems (EBS) such as EBS "Urite", EBS "UdNOEB", EBS "Znanium", EBS "IPR SMART". Educational and scientific laboratories, computer classes, multimedia classrooms with Internet access are also connected with the organization of educational work.

Of great importance in the university's activities is the "Admission" section, which contains all the basic documents and admission technologies for applicants. Sections of the Nauka website are available for organizing scientific activities, where you can get acquainted with news, organization and holding of scientific and practical conferences and exhibitions, grants and competitions, get acquainted with scientific schools of teachers and scientific publications of the university, youth science, postgraduate and doctoral studies, etc. To check for the originality of the articles, the Anti-Plagiarism University system is available for students.

It should be emphasized here that the role of the scientific unit, first of all, is to involve students in research activities. The administrative and management unit is responsible for the activities of institutes and faculties, departments, is engaged in the formation of the teaching load of teachers, the activities of educational and methodological management, planning and budget management, the state and development of logistics, etc. Educational work, first of all, is carried out in the process of performing educational, scientific, sports and cultural work, in addition, such pages of the website as "Sports Club", "Council of Veterans", etc. have a certain educational aspect.

As can be seen from the analysis, it should be noted that the digital educational space comprehensively contributes to the formation of professionals for an innovative economy, and is constantly being improved depending on the goals, content, means and methods of teaching and upbringing, and organizational forms of their implementation.

However, new problems are also emerging today, both related to the specifics of the "Physical Education" training area and the transition to a new higher education system [5].

Firstly, the field of Physical education is practice-oriented, i.e. in the process of preparing students, especially in sports and pedagogical disciplines, there is a combination of various types of training: theoretical, physical, technical, methodological, research, which requires the formation of both universal (soft skills) and professional skills (hard skills), which also requires the development of appropriate criteria for assessing the formation of these competencies.

Secondly, more and more new sports are emerging, including computer sports and "Digital", which requires their consideration and diversification of physical education [3].

Conclusions. The digital educational environment, which includes a wide range of innovative author's digital educational materials, creates optimal conditions for the training of highly qualified personnel in the field of physical culture and sports at all levels of education (bachelor's, master's, postgraduate). This contributes to the effective development of digital skills among future specialists and teachers, which are critically important in the context of the formation of the information society.

On the eve of the transition to a new model of higher education in Russia, scheduled for 2025-2026, it is extremely important to integrate the accumulated experience of digital modernization of physical education and further improvement of the digital educational infrastructure, taking into account the emergence of new digital sports such as computer sports and Digital sports based on a modern methodological training system for the digital economy.

References

1. Dmitriev O.B. Fasetnaya klassifikaciya i esse kak sposob povysheniya effektivnosti i kachestva elektronnogo testirovaniya. Teoriya i praktika fizicheskoy kultury. 2021. No. 12. pp. 92-95.
2. Zheleznyak Yu.D., Petrov P.K. Osnovy nauchno-metodicheskoj deyatelnosti v fizicheskoj kulture i sporte: uchebnik dlya stud. uchrezhdenij vyssh. prof. obrazovaniya 7th ed., ster. M.: Izdatelskij centr «Akademiya», 2014. 288 p.
3. Lubysheva L.I. Metodologiya professionalnoj podgotovki kadrov v usloviyah diversifikacii fizkulturnogo obrazovaniya. L.I. Lubysheva. Sport, Chelovek, Zdorove: Materialy X Mezhdunarodnogo Kongressa, posvyashchennogo 125-letiyu so dnya sozdaniya NGU im. P.F. Lesgafta, Sankt-Peterburg, 08-10 dekabrya 2021 goda. Sankt-Peterburg: Federalnoe gosudarstvennoe avtonomnoe obrazovatelnoe uchrezhdenie vysshego obrazovaniya «Sankt-Peterburgskij politekhnicheskij universitet Petra Velikogo», 2021. P. 404-406.
4. Petrov P.K. Informacionnye tekhnologii v fizicheskoj kulture i sporte: uchebnoe posobie. 2-e izd. Saratov: Vuzovskoe obrazovanie, 2024 – 377 p. Cifrovoj obrazovatelnyj resurs IPR SMART [website]. – URL: https://www.iprbookshop.ru/142077.html (data obrashcheniya: 09/27/2024). – Rezhim dostupa: dlya avtorizir. polzovatelej.
5. Petrov P.K. Problemy podgotovki fizkulturnyh kadrov v usloviyah globalnyh vyzovov. P.K. Petrov. Nauka i obrazovanie v usloviyah globalnyh vyzovov: Sbornik statej v 2 tomah po itogam Pyatogo professorskogo foruma 2022, Moskva, 22–24 noyabrya 2022 goda. Moskva: Obshcherossijskaya obshchestvennaya organizaciya «Rossijskoe professorskoe sobranie», 2023. pp. 182-187.
6. Petrov P.K. Vozmozhnosti i problemy cifrovoj transformacii fizkulturnogo obrazovaniya i sfery fizicheskoj kultury i sporta. Vestnik Udmurtskogo universiteta. Ser. Filosofiya. Psihologiya. Pedagogika. 2023. T. 33, vyp. 2. P. 162-173.
7. Petrov P.K. Informacionnye tekhnologii v fizicheskoj kulture i sporte: uchebnik dlya stud. uchrezhdenij vyssh. obrazovaniya. 4-e izd., ster. M.: Akademiya, 2014. – 288 p.
8. Petrov P.K. Multimedijnye kontroliruyushchie programmy v sisteme ocenki znanij i umenij studentov bakalavriata po napravleniyu «Fizicheskaya kultura». P.K. Petrov, E.R. Ahmedzyanov. Olimpijskij sport i sport dlya vsekh: XX Mezhdunarodnyj nauchnyj kongress, Sankt-Peterburg, 16-18 dekabrya 2016 goda. 2016. Part 1. pp. 391-395.
9. Petrov P.K. Osobennosti sozdaniya i ispolzovaniya distancionnyh kursov po sportivno-pedagogicheskim disciplinam v sisteme elektronnogo obucheniya. Teoriya i praktika fizicheskoy kultury. 2018. No. 12. P. 12-14.
10. Petrov P.K. Ot idej programmirovannogo obucheniya k sozdaniyu i realizacii cifrovyh obrazovatelnyh resursov v fizicheskoj kulture i sporte. Teoriya i praktika informatizacii obrazovaniya: vnedrenie rezultatov i perspektivy razvitiya. 2020. P. 420-431.
11. Petrov P.K., Tatarskih I.A. Podgotovka sudej po sportivnoj aerobike s pomoshchyu multimedijnoj obuchayushchej programmy. Teoriya i praktika fizicheskoy kultury. 2016. No. 4. P. 103-104.
12. Petrov P.K. Teoreticheskie i metodicheskie osnovy podgotovki specialistov fizicheskoj kultury i sporta s ispolzovaniem sovremennyh informacionnyh i kommunikacionnyh tekhnologij. Moskva; Izhevsk, 2003. 447 p.
13. Psihologo-pedagogicheskaya fasilitaciya v usloviyah cifrovoj transformacii obrazovaniya: Kollektivnaya monografiya. V.Yu. Hotinec, A.A. Baranov, P.K. Petrov i dr. Pod red. V.Yu. Hotinec. Izhevsk: Udmurtskij gosudarstvennyj universitet, 2023. 156 p.

Team gymnastics and its impact on the cognitive and motor sphere of students

UDC 796.2

E.D. Butakova
PhD, Associate Professor **L.V. Morozova**
T.I. Melnikova
O.P. Vinogradova
Russian Academy of National Economy and Public Administration, Saint-Petersburg

Corresponding author: butakova-ed@ranepa.ru

Received by the editorial office on 18.12.2024

Abstract

Objective of the study. The purpose of this work is to establish how the inclusion of team–building gymnastics elements in the daily routine affects the cognitive and motor functions of students.

Methods and structure of the study. In the course of the work, the relationship between the characteristics of team gymnastic exercises and fluctuations in biometric indicators of cognitive-motor activity of 54 students (average age 18.5±1.6 years) assigned to the main medical group for physical education was studied. The participants were divided into experimental (n = 23) and control (n = 21) groups.

Results and conclusion. The results of the study confirm the potential benefits of using team-building gymnastics in students' daily lives. The introduction of emotionally intense aerobic exercises performed in a team into the educational process helps restore mental and physical productivity, improves overall well-being and adjusts the optimal mode of psychophysiological activity of students.

Keywords: *team gymnastics exercises, school day, cognitive activity, motor activity, cognitive-motor activity, recovery of working capacity.*

Introduction. Team gymnastics, as a sport, includes acrobatic elements, free group exercises and gymnastic jumps on a mini trampoline. In group exercises, as a rule, rhythmic gymnastics objects are used – balls, rings, clubs, ribbons [5]. Each exercise is performed for 1.5 minutes with musical accompaniment. The number of gymnasts performing is from 6 to 12 people.

The means of team gymnastics can be used for the purpose of physical development, increasing motor activity and maintaining mental and physical performance of students of higher educational institutions [2, 3]. Team gymnastics programs are based on certain principles of physical education: - the principle of wellness orientation, which determines the strengthening of health and compliance of exercises with age, adaptive capabilities and individual characteristics of students; - the principle of gradually increasing the load and difficulty of exercises at an accessible difficulty level; - the principle of systematic training, which determines the formation of needs and habits in collective forms of physical activity; - the principle of comprehensive harmonious physical development; - the principle of a positive psycho-emotional state in the process of performing team gymnastics exercises, achieved by the involvement of students in active musical and rhythmic activities; - the principle of coupled formation of group interaction skills.

The complexes of team gymnastics exercises belong to small forms of physical education in higher education institutions, which have significant restorative potential and are a means of psychoemotional relief [1]. Due to the high emotionality and compactness of the event, team gymnastics complexes fit seamlessly into the student's school day schedule [6]. At the same time, they have not found sufficient application in the structure of the weekly schedule of student life [4].

An a priori study of the features of the educational process in universities allowed us to formulate the assumption that the use of team gymnastics exercises in the school day schedule increases psycho-emotional stability, physical and mental performance, and improves interpersonal relationships in the educational team.

Objective of the study. The purpose of this work is to establish how the inclusion of team–building gymnastics elements in the daily routine affects the cognitive and motor functions of students.

Methods and structure of the study. In the course of the work, the relationship between the characteristics of team gymnastic exercises and fluctuations in biometric indicators of cognitive-motor activity of 54 students (average age 18.5±1.6 years) assigned to the main medical group for physical education was studied. The participants were divided into experimental (n = 23) and control (n = 21) groups.

The set of exercises performed as part of the team included: - floor exercises, jumping on two and one legs, bends, turns, symmetrical and multidirectional movements with two hands, simultaneous claps with jumps, balance on toes, on one leg, "swallow", etc.; - ball exercises: throwing, catching and tossing the ball from hand to hand, turns with the ball; - exercises with a gymnastic stick: turns, bends with holding the stick with one or two hands alternately; - jumping on a mini trampoline. Team gymnastics exercises were conducted for 10 minutes with musical accompaniment and daily intervals of classes for 3 months of training.

The control and measuring methods included: a study of the state of health (according to medical records, during a conversation with a medical professional); diagnostics of the reaction to physical activity (PWC_{170} test, measurement of heart rate, blood pressure); the level of psychoemotional stability (SAN technique, reaction to a moving object, tapping test, correction tests for attention stability, test differentiation and reproduction of muscular efforts); testing of physical qualities (flexibility and mobility in joints; static balance test).

The data obtained was processed using statistical analysis methods in the STATISTICA 6.0 program.

Results and conclusion. Initially, the regressive dynamics of the indicators of the central, motor and vegetative functions of students, specific for educational activity, was revealed. The use of small forms of classes in the form of team gymnastics during the school day leads to a systemic upsurge in the transformation of the compensatory functionality of preventive physical education in the segments of health saving and adaptive stimulation (see the table).

The choice of team gymnastics exercises is due to the lack of physical activity during the school day and forms positive processes for improving students' mental performance. The positive dynamics of psychomotor functions is associated with a rational approach to the students' daily routine, a harmonious alternation of educational workload and periods of active rest as part of the gymnastics team. The use of aerobic emotional exercises determines the rhythmic functioning of the body's systems in an optimal mode.

The structure of team gymnastics complexes contains tools aimed at reducing mental fatigue under the influence of training load. The content of team gymnastics focuses on the diverse use of physical culture tools, methods, and organizational forms as the most effective tool for maintaining students' mental and physical performance during the school day.

The resources used by the team of funds expand the possibilities of restoring mental functions and improving the current physical condition. Due to the amplitude-frequency alternation of mental and physical activity, a tendency is achieved to improve the perception of muscle effort (decrease in error by 21.6±3.8%; $p<0.05$), the index of nervous system efficiency according to the tapping test (up to 54.6±2.3, by 12.6%; $p<0.05$).

Indicators of cognitive and motor activity of students

Indicator	Average competence assessment score		p
	EG	CG	
Differentiation and reproduction of muscle effort, % error	34,6±2,3	53,7±4,2	<0,05
NS Efficiency Index (tapping test)	54,6±2,3	53,7±4,2	<0,05
Attention stability, score	34,8±3,7	33,7±4,1	<0,05
SAN, score	6,4±0,7	4,8±0,5	<0,05

High efficiency of selective recovery of reduced intellectual functions is achieved by regulating the processes of fatigue and urgent recovery in the ratio of mental loads and aerobic movements. The validity of team gymnastics during the school day is confirmed by an improvement in attention stability to 34.8±3.7 and overall SAN tone to 6.4±0.7 points.

The sequence of application of team gymnastics exercises shows the possibilities of self-organization of the system, which expands the resources of students' physiological resistance to academic stress.

Conclusions. The results obtained prove the prospects of using team gymnastics in the students' school day mode. The integration of emotional aerobic exercises performed as part of a team into the schedule of educational activities stimulates the restoration of mental and physical performance, increases the overall tonic state and sets the optimal rhythm of the students' psychophysiological functions.

References

1. Zyukin A.V., Ponimasov O.E., Gabov M.V., Ryzhkin N.V. Neytralizatsiya neblagopriyatnykh urbanisticheskikh faktorov sredstvami ekologo-didakticheskoy sredy vuza. Teoriya i praktika fizicheskoy kultury. 2021. No. 10. pp. 108-109.
2. Kiryanova L.A., Ponimasov O.E., Kolesnikov N.V., Vinogradova O.P. Po- lifunktsionalnaya fitnes-tekhnologiya fizicheskogo vospitaniya studentov upravlencheskikh spetsialnostey. Teoriya i praktika fizicheskoy kultury. 2023. No. 7. pp. 74-76.
3. Lubysheva L.I. Fenomen samostoyatelnosti v fizicheskoy trenirovke studencheskoy molodezhi. Teoriya i praktika fizicheskoy kultury. 2024. No. 1. pp. 105.
4. Mironov A.O., Ponimasov O.E., Morozova L.V., Melnikova T.I. Antikrizisnaya strategiya realizatsii fizicheskogo vospitaniya studentov v usloviyakh ogranicheniya zhiznedeyatelnosti. Teoriya i praktika fizicheskoy kultury. 2023. No. 3. pp. 60-62.
5. Morozova L.V., Bystrova I.V., Ponimasov O.E. Ekzogennyye faktory razvitiya khudozhestvennoy gimnastiki v sovremennykh usloviyakh. Teoriya i praktika fizicheskoy kultury. 2023. No. 7. pp. 13-15.
6. Spiridonov E.A., Mironov A.O., Ponimasov O.E., Sayganova E.G. Sportivnaya deyatelnost kak sredstvo formirovaniya antistressovoy ustoychivosti studentov v obrazovatelnoy srede. Teoriya i praktika fizicheskoy kultury. 2024. No. 7. pp. 70-72.

Pilates as a method of improving physical fitness and strengthening the health of students assigned to a special medical group

UDC 378.172

PhD, Associate Professor **N.I. Kadochnikova**[1]
PhD, Associate Professor **M.S. Avdeeva**[1]
Dr. Hab., Associate Professor **T.K. Kim**[2, 3]
G.A. Alexandrova[3]
[1]Vyatka State University, Kirov
[2]Moscow State Pedagogical University, Moscow
[3]Moscow Polytechnic University, Moscow

Corresponding author: usr11568@vyatsu.ru

Received by the editorial office on 20.02.2025

Abstract

Objective of the study is aimed at determining the impact of Pilates training on the level of physical development and physical fitness of students assigned to a special medical group.

Methods and structure of the study. The study involved 48 students aged 18 to 20 years. The work included measurements and evaluation of anthropometric and functional characteristics, as well as an analysis of motivational factors.

Results and conclusions. The results of the work carried out demonstrate that the inclusion of a set of Pilates exercises in the main part of the workout led to stabilization of body fat and water mass, increased muscle mass, improved flexibility of the spine and optimized the work of the cardiovascular and respiratory systems. In addition, students reported an improvement in their general condition and increased resistance to physical exertion, which had a positive effect on motivation to engage in physical education, attendance, and completing independent assignments in the subject of Physical Education.

Keywords: *pilates, physical development, physical fitness, special medical group, motivational factors, resistance to physical exertion, motivation.*

Introduction. In the last decade, the number of school graduates with health problems has been growing rapidly [5]. According to a number of authors [6], this is due to the fact that the educational process is characterized by high intensity and informative saturation, and an irrational lifestyle and insufficient physical activity only reinforce this trend, which has led to an increase in the number of students classified as a special medical group for health reasons. The organization of the physical education educational process with this contingent is fraught with certain difficulties, since students are characterized by low body functions, insufficient physical fitness, and lack of interest and motivation in classes. [1, 2, 3, 4].

All this, as well as individual characteristics and the presence of diseases, must be taken into account when developing meaningful support for classes, the use of such methods, techniques and tools that allow not only to take into account the characteristics of the student body, but also to increase students' motivation to increase physical activity. [1, 2, 3, 4], including due to the inclusion of hours provided for independent physical exercises in work programs as a possible resource for optimizing the motor regime of students and their initiation into a physically active lifestyle.

Objective of the study is aimed at determining the impact of Pilates training on the level of physical development and physical fitness of students assigned to a special medical group.

Methods and structure of the study. The scientific work was carried out on the basis of Vyatka State University with the participation of 28 students aged 18-20 years, Moscow Polytechnic University (20 people) assigned to a special medical group for health

reasons (a total of 22 boys and 26 girls). Conventional anthropometric techniques were used to measure standing body length, body weight, chest circumference (OGC) at rest, with maximum inhalation and maximum exhalation, chest excursion, waist and hip circumference.

The assessment of body composition was carried out using the bioimpedance analysis technique of the Scientific Research Center "Medass", program AVC01–0362. Measuring and current electrodes were applied according to a standard tetrapolar scheme. The following parameters were determined: phase angle, proportion of body fat mass (BMI), proportion of active cell mass (ACM), proportion of musculoskeletal mass (SMM), proportion of mineral mass in fat-free body weight (MMT), total body water (TVA), basal metabolism and specific metabolism. The body composition values were calculated relative to a reference all-Russian sample of patients examined in Russian Health Centers in 2010-2012 by S.G. Rudnev et al. (2014) [7].

The mobility of the spinal column was determined by the test "Leaning forward from a standing position on a gymnastic bench" and was evaluated using the standards of the All-Russian Physical Culture and Sports Complex "TRP". Methods such as heart rate monitoring and spirometry were used to assess the state of the cardiorespiratory system. The heart rate (HR), vital lung capacity (VL), adequate vital capacity (JL), percentage of VL to JL, vital index (GI) were determined. The following tests were used to characterize the motivational component: to identify the level of motivation, the test "Motivation for learning and emotional attitude to learning"; to determine the subjective level of stress during physical exercise, the Borg Scale test; and classroom attendance and independent work assignments in the discipline "Physical Education" were also taken into account.

The results of the study were processed using the Biostat 7.3, Microsoft Excel for Windows and AVC01–0362 application packages. In the case when the data were presented as a percentage, Pearson's chi-square was used to identify statistically significant differences, in all cases the differences were considered significant at $p<0.05$. In the case of comparing the average values of the indicators, the Student's t-test was used (these data have a normal distribution), in

Morphofunctional indicators of students of the special medical group before the start of the pedagogical experiment, October 2024

Indicator	Young men n=12	Girls n=16
	M±m	M±m
Standing body length, cm	176,17±2,89	165,00±2,88
Body weight, cm	77,83±4,21	72,13±4,18
Waist circumference, cm	86,67±3,26	80,25±2,84
Hip circumference, cm	103,17±3,25	103,13±3,27
OGK at rest, see	91,83±3,02	85,50±2,77
OGK in a state of maximum inhalation, see	96,83±3,24	90,00±2,68
OGK in a state of maximum exhalation, see	89,67±3,02	84,00±2,89
Chest excursion, cm	7,17±0,55	6,00±0,90
Vital lung capacity, ml	3600,00±131,23	2787,50±87,39
The percentage ratio of vital lung capacity to the proper vital lung capacity, ml	74,65±1,48	65,23±2,65
Vital index, standard units	47,26±3,06	39,72±2,43
Heart rate, beats/min	73,50±5,82	79,88±5,89
Mobility of the spinal column, cm	4,33±2,56	1,50±1,05
Phase angle, degree	6,56±0,29	6,90±0,28
The proportion of GI, %	24,08±3,31	35,91±3,09
AKM share, %	62,80±2,36	57,76±1,14
SMM's share, %	53,48±0,91	47,50±0,93
Total body water, kg	42,73±1,23	33,26±1,33
MMT share, %	5,34±0,12	5,90±0,05
Basic metabolism, kcal	1773,67±49,97	1449,25±46,77
Specific exchange rate, kcal/sq.m	921,17±46,21	822,88±27,66

all cases the differences were considered significant at $p<0.05$.

Results and conclusions. The morphofunctional indicators of the students of the special medical group at the time of the beginning of the pedagogical experiment are presented in the table.

A comparative analysis of the indicators with age norms indicates that the majority of morphofunctional indicators of students corresponded to age norms. The exceptions were respiratory system parameters and spinal column mobility, which were below the age norm, as well as body weight and body fat fraction above the age norm.

The assessment of the subjective level of exercise load corresponded to the level of "difficult" (11.33±0.88 points for boys and 11.00±0.35 points for girls), and the motivation for learning was fixed at an average level, i.e. equal severity of positive and negative motivation for learning, ambivalent attitude to learning (3.54± 0.13 points for boys and 3.15± 0.10 points for girls). Class attendance was 60%, and independent work was 35.71%.

During the academic year (from October to May) physical education classes with a three–hour structure were conducted with students twice a week (once in a training session and once on their own) using a set of Pilates exercises in the main part of the lesson. The exercises were performed at a slow pace, smoothly, without sudden movements, to calm music.

In order to familiarize oneself with the methodological features of performing exercises, teaching proper breathing, strengthening the muscles of the abdomen, back, legs, buttocks, increasing joint mobility, and focusing on muscle sensations, a set of "basic" levels was used when performing exercises, which included seven well-known exercises that are most accessible to those involved in the technique of performing exercises: "hundred" (from 20-30 up to 100 breathing movements at a fast pace); "twisting-unwinding" (8-10 times at a slow pace); "circular leg movements" (8-10 times with each leg at a slow pace); "rolling on the back" (6-8 times at a slow pace); "stretching the leg muscles" (6-8 times with each leg at a slow pace); "simultaneous stretching of the leg muscles" (8-10 times at a slow pace); "stretching the spine" (6-8 times at a slow pace).

As students mastered the technique of performing exercises, they moved on to the next "initial" level, the main task of which was to gradually increase the speed of performing exercises. The entry-level program consisted of 12 exercises and, in addition to the basic ones, included the following: "seal" four to six rolls at an average pace; "a series of side swings" in three modifications with a gradual increase in the amplitude of movements 10-12 times with each leg; "small circles" 10-12 times with each leg.

A comparative analysis of the indicators at the time of completion of the pedagogical experiment revealed that the use of Pilates exercises in the practice of working with students of a special medical group contributes to a decrease in body weight (by 22.14% in boys and by 27.60% in girls; $p<0.05$), waist circumference (by 15.77% and 18.59%, respectively; $p<0.05$), hip circumference (by 10.83% and 12.62%, respectively; $p<0.05$).

This decrease is due to a decrease in the proportion of body fat (by 9.82% in boys and 10.33% in girls; $p<0.05$) and the total body water content (by 15.84% and 14.97%, respectively; $p<0.05$).

There was also an increase in the muscular component (by 10.99% in boys ($p<0.05$) and by 0.68% in girls ($p>0.05$), the phase angle (by 1.37% in boys ($p>0.05$) and 4.24% in girls ($p<0.05$), an increase in spinal column mobility (by 32.34% and 67.95%, respectively; $p<0.05$) and the life index (by 25.10% and 26.76%, respectively; $p<0.05$).

The results obtained indicate an increase in the level of physical development and physical condition of students of the special medical group.

At the same time, the assessment of the subjective level of exercise load corresponded to the "easy" level (8.83±0.28 points for boys and 9.13±0.21 points for girls), and the motivation for learning was fixed at the productive level (2.13±0.11 points for boys and 2.06±0.10 points for girls). We also note the 100% attendance of classes and the performance of independent work – 96.43%.

Conclusions. The results obtained indicate that the use of Pilates exercises with students of a special medical group contributes to:

– normalization of the fat and water components of the body composition, growth of the muscle component and, in general, an increase in the level of physical condition;

– increase the mobility of the spinal column and improve the functions of the respiratory system;

– improve well-being and exercise tolerance. In conclusion, we note that the use of Pilates exercises allowed not only to optimize the motor mode of students of the special medical group, improve their level

of physical development, but also contributed to the formation of interest and increased motivation to exercise, ensured high attendance and responsible attitude of students to independent work in the discipline "Physical culture".

References

1. Litvinova O.Yu., Hrushch O.I. Problema organizacii samostoyatelnyh zanyatij fizicheskoj kulturoj. Vestnik nauchnogo obshchestva studentov, aspirantov i molodyh uchenyh. 2022. No. 2. P. 44–51.
2. Lubysheva L.I., Pashchenko L.G. razvitie vneuchebnoj fizkulturno-sportivnoj deyatelnosti v vuze s uchetom sovremennyh vyzovov. Teoriya i praktika fizicheskoy kultury. 2023. No. 7. P. 102–104.
3. Polin R.V., Tokarev G.N., Churakov A.P., Korobov I.A. Ozdorovitelnaya i adaptivnaya fizicheskaya kultura studentov. Sciences of Europe. 2019. No. 35-4 (35). P. 44–45.
4. Popova A.A. Teoretiko-metodologicheskie osnovy organizacii i provedeniya zanyatij fizicheskoj kulturoj so studentami, otnesennymi k specialnoj medicinskoj gruppe. Chelovek. Nauka. Socium. 2023. No. 4(16). P. 207–229.
5. Popova E.S., Ivanova N.A. Problema nedostatochnoj fizicheskoj aktivnosti sovremennyh shkolnikov. Problemy pedagogiki. 2020. No. 6 (51). P. 110–114.
6. Rudnev S.G., Soboleva N.P., Sterlikov S.A., Nikolaev D.V. i dr. Bioimpedansnoe issledovanie sostava tela naseleniya Rossii. M.: RIO CNIIOIZ, 2014. 493 p.
7. Kim T.K., Tamarskaya N.V., Kuzmenko G.A., Zherebkin N.N. Aktivizaciya professionalnogo samosoznaniya studentov v usloviyah aktualizacii socialnoj znachimosti gosudarstvennyh proektov i nauchnyh issledovanij v sfere fizicheskoj kultury i sporta. Teoriya i praktika fizicheskoy kultury. 2024. No. 6. P. 9–11.

Criteria relevant for a comparative assessment of the physical condition of students belonging to the basic and special medical groups

UDC 796.01

PhD, Associate Professor **N.V. Minnikaeva**
PhD, Associate Professor **L.V. Morozova**
O.P. Vinogradova
T.I. Melnikova
North-Western Institute of Management of the Russian Presidential Academy of National Economy and Public Administration, St. Petersburg

Corresponding author: minnikaeva@yandex.ru

Received by the editorial office on 12.02.2025

Abstract

Objective of the study is to determine the key parameters for assessing the physical condition of students assigned to the basic and special medical groups by conducting a comparative analysis.

Methods and structure of the study. Pedagogical testing was conducted for students enrolled in 1-3 courses and belonging to the main (258 people) and special (126 people) medical groups. The assessment of the functional state, physical development, level of fitness and motor activity (in the number of steps) was carried out on the basis of generally recognized and metrologically sound tests. In addition, a survey was conducted to determine the interest of students in both groups in obtaining information about their physical health.

Results and conclusions. An analysis of data on the state of the cardiovascular and respiratory systems, indicators of physical development, fitness and motor activity showed that students of the special medical group are generally inferior to students of the main group, with the exception of the indicator "physical activity", where they show better results. The survey revealed the interest of students in both groups in the test results and the desire to improve the lagging indicators. The educational environment can help meet this need through the introduction of mobile applications, both in physical education classes (heart rate monitoring) and in self-training (training plans). Keeping a "Health diary" allows you to quickly and regularly monitor physical health indicators. Such involvement of students of both groups contributes to the formation of a conscious attitude towards their health, as well as the formation of value attitudes and positive motivation for physical education.

Keywords: *assessment of physical condition, students, basic medical group, special medical group, pedagogical testing, functional state, physical development, fitness level, physical activity, physical health, cardiovascular system, respiratory system.*

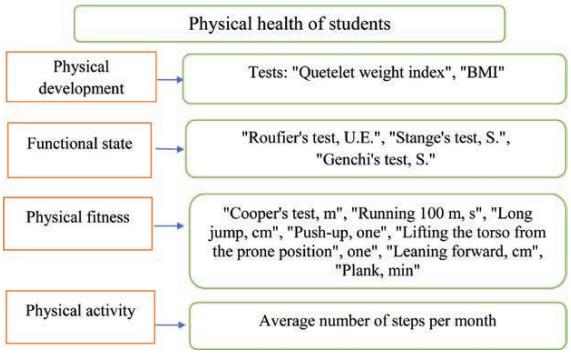
Introduction. The current geopolitical and socio-economic situation in the world remains the main factor in reducing the health of the population, especially students, who are the "golden fund for the prosperity of the nation." According to the author, currently students with disabilities and enrolled in a special medical group (SMG) for physical education range from 14-17%, and this picture tends to worsen from year to year [2, 4]. Aggravating factors that reduce health are also "relative freedom", sleep-wake disorders, poor nutrition, and stress associated with learning (exam session). Physical education at the university is designed to solve the problems of education, upbringing and health improvement of students, so students of the basic and preparatory health groups study together, while students of the SMG study in a separate program. How justified is this? Are there differences in physical health indicators that determine the ability to study in different programs? How important is it for students to know their indicators and whether they know how to adjust them? The authors of this study asked these and other questions.

Objective of the study is to determine the key parameters for assessing the physical condition of students assigned to the basic and special medical

groups by conducting a comparative analysis.

Methods and structure of the study. Pedagogical testing was conducted for students of the basic and special medical groups (258 and 126 students, respectively, of the 1st-3rd year). The methods used are standard and metrologically sound. The study used: to assess physical development, the test "Quetelet weight index", "BMI", for physical fitness: "Cooper test", "100 m run", "Long jump", "Push-up", "Lifting the torso from the prone position", "Forward tilt", "Plank", functional state of the cardiorespiratory system: "Roufier's test", "Stange's Test", "Gencha's Test". Students of the basic and preparatory groups took tests during the semester in three sessions with an interval of one lesson, students of the special medical group took one or two tests per class in accordance with their well-being and psychophysical abilities. In addition, a survey was conducted to identify the interest of students in both groups in obtaining information about their physical health.

Results and conclusions. According to modern ideas about physical education of students, the means and methods of improving health indicators vary significantly. Thus, for students of the main health group, methods based on the theoretical and methodological foundations of physical culture and sports training are used. Recreational physical education and its conceptual provisions determine the process of physical education of students of the special medical group (SMG) [4]. The main ideological message of the first is the improvement of physical potential, the second is the improvement and/or maintenance of an optimal level of physical health indicators. Assessment of physical health indicators for students of the basic and preparatory groups



Relevant criteria for comparative assessment of physical health of students of the basic and special medical groups

traditionally takes place at the beginning and end of each semester, whereas for students of the SMG during the semester. It is important for physical education teachers and students to know the dynamics of physical health indicators in order to carry out their timely correction, if necessary [4, 5].

The indicators of physical health among the students of the studied groups were assessed based on the results of testing of functional status, physical development, fitness and activity (see Figure).

As part of the study, a survey was conducted to identify interest in obtaining information about their physical health. Conducted among 1st-3rd year students of both health groups, it showed that 90% of respondents would like to know about their performance. It was also found during the survey that knowledge about the current state of physical health could have a beneficial effect on the formation of motivation for FC classes. According to students (78% of respondents), a good incentive is the desire to improve results in indicators "below the standards," and some respondents (21%) said they were interested in improving their results by improving physical fitness to the "maximum possible limits." It should be noted that almost all respondents in the survey replied that they use mobile applications in one way or another, including for the purpose of correcting physical fitness (making training plans) and activity (increasing the daily number of steps more often).

The main "engine" of the formation of stable motivation for FC classes, as it turned out, is the teacher's informing about the revealed results of physical health, this circumstance has a positive effect on the formation of motivational and value orientations, the formation of which leads to the development of the cultural potential of FC. Scientific views in the field of physical culture of V.K. Balsevich and L.I. Lubysheva, V.I. Stolyarova confirms the need for appropriation, interiorization of intellectual values – knowledge about methods, means and methods of organizing physical activity [1, 3]. Intentional – skills for maintaining and correcting physical health. Mobilization–practical skills of self-improvement in the field of physical education. Motor – knowledge, skills and practical skills for the formation of a healthy lifestyle based on the improvement of physical health indicators by means of sports (for basic) and wellness (for students of SMG) training. This once again underlines the importance of conducting a study of

The reliability of differences in physical health indicators among students of the three health groups (according to the Student's t-test)

Tests	D (main)	D (SMG)	Yu (main)	Yu (SMG)
Physical development				
Quetelet weight and weight index, g/cm	369,1±41,2	315,3±36,3	380±48,9	347,3±37,2
Body mass index, kg/m	18,2±1,2	17,8±0,9	23,1±3,2	20,1±2,8
Functional state of the cardiorespiratory system				
Roufier index, units	4,9±2,1	9,8±1,2*	3,9±2,3	10,1±3,7*
Barbell test, with	50±5,2	38,4±5,4*	54±6,8	49,3±4,6*
The Gencha sample, with	44,2±9,2	30,4±6,9*	48±7,8	40±5,7*
Physical fitness				
Cooper's test, m	2650±220,6	1293±340,8*	2780±330,6	1775±410,2*
Running 100 m, s	17,1±1,2	22,4±2,3*	14,9±2,1	19,4±2,2*
Long jump, cm	171,6±6,2	165,6±9,3*	219±13,1	170±8,3*
Push-up, once	25,5±6,3	10±5,4*	38,1±7,3	20±7,6*
Press, times	42,2±3,2	22,7±4,8*	49,7±4,5	30±3,2*
Flexibility, cm	12,3±3,4	9,8±4,2	10,7±2,3	9±2,8
Bar, min	3,3±1,2	1,49±0,9*	4,20±1,8	2,08±1,5*
Physical activity				
Average number of steps per month	8033,2±809,2	9630,3±400,7*	8050,6±670,9	9367,9±330,5*

*Note: * – $p<0.05$.*

physical health indicators in order to obtain not only a theoretical, but also an experimental justification for the orientation of physical education of the studied health groups.

During the assessment of physical health indicators (FZ), significant differences in the results were revealed among students of the three health groups (Table). To a greater extent, the results of physical health are reduced among SMG students in comparison with students of the main and groups on tests characterizing the state of the cardiorespiratory system and physical fitness tests, with the exception of flexibility.

The physical fitness of the students of the main group is at a high level, corresponding to the fulfillment of the standards of the All-Russian Federation GTO for "bronze", "silver" and even for the "100 m" test for a gold badge. We also note that the revealed results are commensurate with 5 points (the maximum value) according to the standards from the discipline program and make it possible to get a credit. However, with regard to SMG students, it can be said that the data obtained are consistent with what is known that the physical health of SMG students is a matter of concern for the scientific community [4].

As can be seen from the table, SMG students have significantly low results in almost all indicators. Special attention is drawn to the unsatisfactory condition of the cardiorespiratory system, which provides vitality, efficiency and aerobic endurance of a person. The performance of the Cooper, M. test by SMG students is 30-40% lower than in the main group. Hypoxic tests are also 15-25% lower than those of students in the main groups, which negatively affects the performance of physical fitness tests. So, the tests for speed were identified as the most lagging behind, followed by the results for speed and strength qualities and strength endurance. The flexibility test, which determines joint mobility, partially does not require psychophysical efforts and is therefore performed at approximately the same level as the students of the main group.

At the same time, physical activity varies significantly, the results of SMG students are 18-20% higher than the results of the students of the main group. It turned out that SMG students are interested in improving their physical health and use the most affordable methods for this, in particular, walking evenly and over rough terrain, long walks on weekends, which affects the number of steps per day. The motivation for positive changes in the lagging indicators of SMG students is determined on the one hand by the desire to move to the main group (with an obvious and available opportunity), and on the other hand by the psychological characteristics of age: "youthful maximalism" and the desire to compete, win, and including oneself.

Conclusion. A survey of students from three groups revealed that physical health issues are relevant and of interest. It turned out that the purpose of testing the indicators of the Federal Law for students of all groups is to inform about the current state and the possibility of making adjustments to the process of physical education at the university and independent physical activity, if necessary. Based on the results obtained, it can be concluded that in almost all indicators, students of the main health group coped with the tests at a high level, while students of the SMG lag behind based on the results obtained, with the exception of indicators of "physical development" and "physical activity". During the survey, it became known that students actively use mobile applications related to the Federal Law in one way or another, almost all (90%) track physical activity in steps. An interesting fact was the understanding that knowledge of the indicators of the Federal Law, in the opinion of students, contributes to motivation for FC classes, forming value orientations: intellectual, intentional, mobilization and motor.

References

1. Balsevich V.K., Lubysheva L.I. Fizicheskaya kultura: molodezh i sovremennost. Teoriya i praktika fizicheskoy kultury. 1995. No. 5. P. 2-7.
2. Zyukin A.V., Ponimasov O.E., Gabov M.V., Ryzhkin N.V. Nejtralizaciya neblagopriyatnyh urbanisticheskih faktorov sredstvami ekologo-didakticheskoj sredy vuza. Teoriya i praktika fizicheskoy kultury. 2021. No. 10. P. 108-109.
3. Kiryanova L.A., Ponimasov O.E., Kolesnikov N.V., Vinogradova O.P. Polifunkcionalnaya fitnes-tekhnologiya fizicheskogo vospitaniya studentov upravlencheskih specialnostej. Teoriya i praktika fizicheskoy kultury. 2023. No. 7. P. 74-76.
4. Minnikaeva N.V. Issledovanie struktury zabolevaemosti po nozologii u studentov 1-3 kursov, otnesennyh k specialnoj medicinskoj gruppe. Sb. mat-lov XI Mezhdunarodnogo Kongressa «Sport, Chelovek, Zdorove» 26–28 aprelya 2023 g., Sankt-Peterburg. Pod red. S.I. Petrova. SPb.: Politekh-Press, 2023: P. 408–410.
5. Stolyarov V.I. Filosofiya fizkulturno-sportivnoj deyatelnosti i telesnosti cheloveka (istoriya, sovremennoe sostoyanie, avtorskaya koncepciya): monografiya. Moskva: Rusajns, 2017. 264 p.

The formation of civic identity among Russian students is inseparable from a commitment to a healthy lifestyle

UDC 37.062

Dr. Phil., Professor **N.M. Mamedova**[1]
PhD, Associate Professor **M.I. Ivleva**[1]
PhD, Associate Professor **S.M. Vityaev**[1, 2]
A.O. Akimova[1]
[1]Plekhanov Russian University of Economics, Moscow
[2]Moscow State Linguistic University, Moscow

Corresponding author: akimova.ao@rea.ru

Received by the editorial office on 20.12.2024

Abstract

Objective of the study – aims to confirm the importance of a healthy lifestyle as an integral part of civic self-identification and civic ideal in the minds of Russian students.

Methods and structure of the study. The study involved students of higher educational institutions in Russia, representing eight federal districts. The sample was formed using a non-random method, namely the "snowball" method (N=945). The confidence interval (margin of error) was ±4.64%. The survey was conducted through a developed questionnaire implemented using Google Forms. The main results of the survey were systematized into four thematic blocks. According to gender and age, the respondents were distributed as follows: 58.9% of the respondents were girls, 41.1% were boys.

Results and conclusions. The results of the study provided information about the role of the values of a healthy lifestyle and sports in the worldview of Russian students. It was concluded that the values associated with a healthy lifestyle, health care, physical education and sports occupy an important place in the ideas of Russian students about the ideal citizen. At the same time, a tendency has been identified for young people to postpone the practice of a healthy lifestyle to a later period, after achieving career goals. The authors emphasize the need to actively promote a healthy lifestyle among young people, presenting it as an integral part of civic identity and a component of an ideal citizen, as well as focusing on shaping the image of a citizen as a harmoniously developed and successful personality.

Keywords: *healthy lifestyle, civic self-identification, civic ideal, gender characteristics, age characteristics, values, sports, worldview, Russian students.*

Introduction. National civic identification is a kind of countermeasure against globalization and the erosion of national identity and culture. There is a need for a cultural synthesis that unites universal and national components in the self-awareness of Russian society. Russian identity is a form of social organization and a resource for political and social mobilization. It serves as the basis for the consolidation of society and the formation of a mature personality. Naturally, an important component of civic identity is the image of a national healthy body, the cultural idea of physicality [4]. The idea of national health is already embedded in the very idea of the nation as a long-term political unity of citizens of one state [3, pp. 108-116].

In this context, it is especially important to form an image of health among young people, not only in terms of public health goals, but also for national civic awareness. In this regard, the problem of attracting young people to a healthy lifestyle, health-saving and wellness practices is becoming urgent for society, the state and the education system. For young people, especially university students, due to both the peculiarities of age psychology [2] and the presence of a significant reserve of health, healthy lifestyle norms are often only a good wish, while the main priorities and concerns for them are peer recognition and building a successful career. Another challenge is the change in the lifestyle of young people caused by technological

progress, the emergence of new entertainment and consumption technologies, to which public morals do not have time to adapt. Another significant problem of the youth's lifestyle is a time deficit. The modern world offers so many opportunities and alternatives that young people often get lost in the information ocean, and it is difficult for them to set long-term goals for self-development [1]. Therefore, young people always do not have time for systematic physical education and health care.

It is pointless to deal with these challenges as such, since they are associated with global historical transformations. Therefore, an effective educational strategy should be to: 1) to instill in young people a civic ideal, one of the components of which will be health; 2) to show that systematic physical education is not only not an obstacle, but is a prerequisite for a successful career and personal life; 3) disseminate information about the risks that the new technological environment brings with it (for example, gambling, electronic cigarettes, Internet scrolling, and so on); 4) disseminate information about the long-term positive effects of a healthy lifestyle; 5) cultivate qualities such as determination and the desire for self-improvement.

All this, one way or another, is connected with the value of life in the minds of young people. It can be assumed that the ability to find a balance between different aspects of life in the real and virtual world will become an important skill of the future. The formation of this ability can be considered as an integral result of educational work at the university, as a significant sign of personal development. When introducing students to the values of a healthy lifestyle, it is also necessary to take into account the increased level of individualism and social atomization among young people.

While generally recognizing the value of a healthy lifestyle, half of the respondents (50.5%) are inclined to believe that they will follow it only after they have completed their career, and almost another third (28.68%) rather agree with this statement. 14.07% are indifferent, but only disagree – 4.23% in total, and 2.96% completely. Such a "deferred" attitude to the value of a healthy lifestyle as such may be explained by the age of the respondents, most of whom are objectively at a high level of health, for whom the choice of their own life trajectory, the potential achievement of recognized success, and thinking about life prospects are much more important.

The respondents showed a fairly high level of awareness, disagreeing with the statement that, despite the harm of smoking, electronic cigarettes will not do much harm. This means that, despite the rather aggressive advertising of products that "replace" smoking, young people show a high level of criticality when checking information about a product that could potentially harm their health – more than half of the respondents.

However, the percentage of respondents who are uncritical about information about a potentially harmful product and accept advertising information on faith is also quite high – more than 20%. Overall, almost half of the respondents (49.21%) completely disagree with this statement, while 11.85% "rather disagree". 14.50% are indifferent, 11.01% "rather agree", 13.44% agree.

Nevertheless, the majority of respondents are inclined to an active lifestyle, with the statement that "Physical education and sports are not for me", only 11.43% fully agree, 11.01% agree in general, 16.83% are neutral, 13.97% disagree in general, almost half disagree – 46.77%.

Almost half of the respondents do not attend sections, but prefer physical mobility: 28.47% fully agree with this, 24.87% agree in general, 19.47% are neutral, 9.74% disagree in general, 17.46% disagree. More than a third of the respondents are purposefully engaged in physical training: 36.30% fully agree with the statement "I play sports, attend sections", 14.50% agree in general, 16.51% are indifferent, 9.42% disagree in general, 23.28% disagree (Fig. 1).

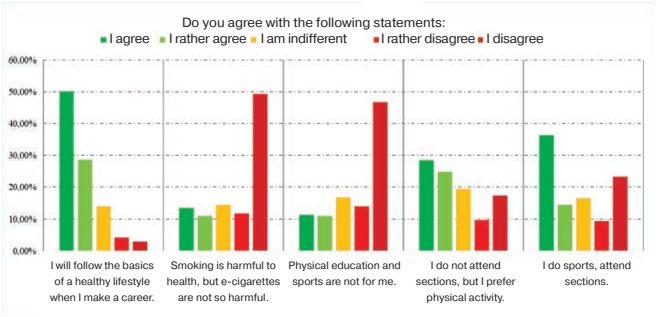


Fig. 1. Respondents' answers to the question about the value of life

The majority of respondents (43.8%) chose personal communication with friends as their preferred type of leisure (Fig. 2).

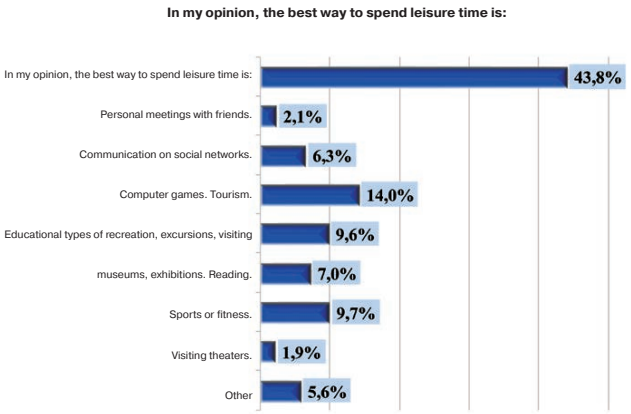


Fig. 2. Preferred leisure activities

Leisure activities that involve personal communication to some extent also include cognitive activities, excursions, visits to exhibitions and museums (9.6%), tourism (14%), sports or fitness (9.7%), as well as options formulated personally by respondents (5.6%) The attitude to physical education and sports occupies a rather important place in the students' value orientations (Fig. 3).

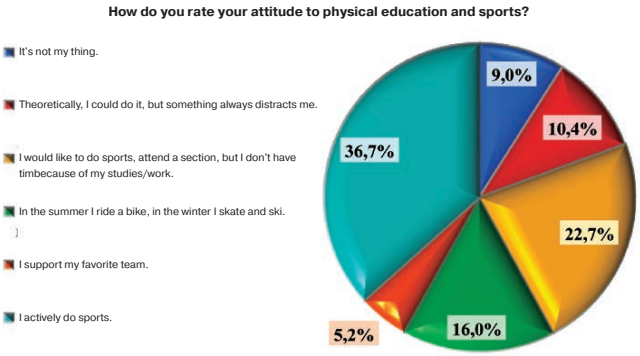


Fig. 3. Physical education and sports

The majority of respondents (36.7%) are actively involved in sports, however, as follows from the answers to the previous question, only 9.7% consider sports to be the best form of leisure. For others, this is not the value of rest, but of working on yourself, your health, and your currently popular image. At the same time, 22.7% would like to play sports, but do not have the time for this. 16% do not engage in sports purposefully, but they are physically active, cycling, skiing, and skating. For 9%, sport is not a personal value, and another 5.2% have a passive attitude towards sports, rooting for their favorite team.

Conclusions. The content of the spiritual and moral value of life is very multifaceted and inherently based on the principles of a biocentric approach, in which the highest value is wildlife as a whole, including humans as part of this whole. The answers of the respondents reveal an interesting trend: while about a third of the respondents are engaged in socially active activities for the practical realization of the value of life, the individual orientation of young people towards respect and caring for their surrounding nature, as well as maintaining their own personal health, is very high: for example, about 90% of respondents take care of nature, more than 60% have reliable information about what can be harmful to health, only 22% are not going to engage in physical education and sports, At the same time, the vast majority either play sports or, without doing so purposefully, lead a physically active lifestyle.

Thus, it is necessary to promote a healthy lifestyle for young people precisely as a part of civic identity and a component of the ideal of a citizen, as well as to form the image of a citizen as a comprehensively developed and successful personality.

The work was carried out with the financial support of the Ministry of Education and Science of the Russian Federation (research work no. FSSW-2023-0053).

References

1. Konstantinov A. Speshashchee pokolenie: kak «vremennoj golod» stal novoj formoj socialnogo neravenstva. Elektronnyj resurs: https://www.forbes.ru/forbeslife/482430-spesasee-pokolenie-kak-vremennoj-golod-stal-novoj-formoj-social-nogo-neravenstva
2. Kurysheva O.V. Psihologicheskaya harakteristika molodezhi kak vozrastnoj gruppy. Vestnik Volgogradskogo gosudarstvennogo universiteta. Seriya 7: Filosofiya. Sociologiya i socialnye tekhnologii. 2014. No. 1(21). P. 67-75.
3. Pain E.A. Mezhdu imperiej i naciej: modernistskij proekt i ego tradicionalistskaya alternativa v nacionalnoj politike Rossii. M.: Novoe izdatelstvo, Fond Liberalnaya missiya, 2003. 248 p.
4. Pryadko E.A. Formirovanie ideala fizicheskogo zdorovya kak vazhnejshej sostavlyayushchej obraza zhizni i prestizha strany. Vestnik nauki. 2024. T. 3. No. 5(74). P. 1561-1567.

The interdependence between regulatory functions and health attitudes in preschool children, characterized by varying degrees of involvement in organized motor activity

UDC 159.91+ 371.72+ 797.2

Senior lecturer **E.V. Dobrina**
Dr. Hab., Professor **E.N. Gerasimova**
Bunin Yelets State University

Corresponding author: dobrina_katya85@mail.ru

Received by the editorial office on 11.11.2024

Abstract

Objective of the study aims to establish a correlation between the development of executive functions and the perception of health by children aged 5-6 years engaged in organized and unorganized motor activity.

Methods and structure of the study. In the course of the work, 100 children aged 5 to 6 years were examined. Of these, 45 attended kindergarten and various sports clubs, forming a group with organized physical activity. The remaining 55 children did not attend kindergarten or sports clubs, representing a group with disorganized motor activity. To assess the attitude to health, an adapted questionnaire was used by R.A. Berezovskaya Street, where certain formulations were adjusted to take into account age, for example, "Happy family life" was transformed into "Good relations with parents", and "Interesting work, career" – into "Successful studies at school". The study of executive functions included an assessment of sensorimotor integration using the ReBOS technique, which makes it possible to evaluate the characteristics of simple and complex sensorimotor reactions.

Results and conclusions. The analysis of the results revealed a five-factor structure. The first factor, which explains 29.8% of the variance of the trait, is most closely related to the parameters of motor activity, attitude to health and executive functions. Regression analysis demonstrated the relationship between executive functions, in particular, the parameters of simple and complex sensorimotor reactions, and various aspects of the attitude to health in older preschool children. Thus, regular motor activity is associated with the peculiarities of health perception and physiological manifestations of selective behavior in older preschoolers.

Keywords: *perception of health, organized motor activity, unorganized motor activity, assessment of attitude to health, sensorimotor integration.*

Introduction. One of the priorities of the modern education system is to preserve and strengthen children's health. At the same time, the greatest emphasis is placed on preschoolers, since it is at this age that the intensive formation of both the child's body itself and the mechanisms of neurohumoral regulation that ensure the preservation of health takes place [9]. It is known that one of the key roles in the process of both physical and mental development of a child is played by physical activity [12], since its optimal level allows maintaining the body's adaptive reserves in a state in which the body remains highly resistant to various adverse factors, which determines the child's level of health [1].

To date, there is evidence that sufficient physical activity has an impact on the child's health, namely, the more active the child is, the better the condition of the cardiovascular and musculoskeletal systems. It is known that the more active a child is in childhood, the better his condition in adulthood, in particular childhood obesity, one of the causes of which is physical inactivity, is a predisposing factor for many diseases of adulthood. Finally, behaviors in which motor activity plays a key role may persist into adulthood, making active children more likely to become more active (healthy) adults [8].

In turn, one of the markers of the functional state is executive functions (behavioral change functions) and, in particular, sensorimotor integration, the characteristics of which, manifested in sensorimotor reactions, are associated with the features of the functional state of the central nervous system [7] and with the level of motor activity [4].

At the same time, speaking about the promotion of

children's health, it should be noted that today one of the key components of health-saving behavior is the attitude to health [2], which begins to form at the earliest stages of ontogenesis [10], primarily under the influence of the characteristics of motor activity [11].

Objective of the study aims to establish a correlation between the development of executive functions and the perception of health by children aged 5-6 years engaged in organized and unorganized motor activity.

Methods and structure of the study. 100 children aged 5-6 years were examined, of which: 45 children attend kindergarten, as well as various sports sections – a group of children with organized motor activity; 55 do not attend kindergarten and any sports sections – a group of children with disorganized motor activity.

The peculiarities of attitudes to health were studied using an adapted version of the questionnaire "Attitudes to health" (R.A. Berezovskaya) in which some statements were specified, for example: "Happy family life" was replaced by "Good relations with parents"; "Interesting job, career" by "Successful studies at school" and so on [3, 6].

The study of executive functions included the study of sensorimotor integration using the ReBOS technique, which makes it possible to evaluate the features of simple and complex sensorimotor reactions [5].

Results and conclusions. The first stage was a factor analysis of the studied parameters, which showed that five factors can be distinguished, among which the first factor with the highest weight includes the following parameters: organized motor activity (0.724), the level of the behavioral component of the OcD (-0.308) and the components of executive functions (average time of the 1st (0.840) and 2nd (0.833) parts of a simple sensorimotor reaction, the average time of the 1st (0.733) and 2nd (0.711) parts of a complex sensorimotor reaction, the accuracy of a simple sensorimotor reaction (-0.837)).

This factor explains 29.8% of the variance of the trait, therefore, the connection of organized motor activity with the physiological manifestations of selective behavior is one of the foundations for the formation of a child's health-preserving behavior.

The second factor indicates the relationship between the level of attitude to health and the quality of a simple sensorimotor reaction (explains 16.1% of the variance), the third factor shows the relationship between the level of the cognitive component of OcD and the accuracy of a complex sensorimotor reaction (explains 11.1% of the variance). The fourth factor includes the parameters of the sensorimotor reaction (explains 7.5% of the variance), and the fifth factor includes the components of the attitude to health in children (explains 7.3% of the variance).

Having discovered the relationship between the studied parameters, we conducted a regression analysis in order to establish the features of this relationship, separately in a group of children engaged in organized motor activity and not. It was revealed that in the group of engaged children, the independent variable "accuracy of a simple sensorimotor reaction" affects the dependent variable "level of the emotional component" (R=-0.560, R2=0.314, at p=0.019).

It is shown that 31.4% of the level of the emotional component is explained by the peculiarities of the accuracy of a simple sensorimotor reaction. At the same time, the correlation coefficient shows the inverse relationship of these parameters – the higher the accuracy, the lower the level of the emotional component of the attitude to health in children.

In turn, in the group of children who do not engage in organized motor activity, 23.6% of the emotional component of the attitude to health is explained by the accuracy of a complex sensorimotor reaction. We have established the influence of the independent variable "accuracy of complex sensorimotor reaction" on the dependent variable "level of the emotional component of the attitude to health, (R=0.485, R2=0.236, at p=0.012) in this group of children. However, the correlation of the studied parameters is positive. This suggests that the more precise the complex sensorimotor response, the higher the emotional component of the attitude to health in children.

The data we obtained showed that engaging in organized motor activity is associated with the peculiarities of executive functions, namely, simple and complex sensorimotor reactions. It can be concluded that specially organized motor activity associated with complex spatial orientation contributes to the fact that children acquire the ability to perceive the surrounding reality more effectively during classes in various sports sections related to motor activity, which manifests itself in a more effective sensorimotor response. At the same time, the negative correlation coefficient of the parameters of the attitude to health according to the results of factor analysis, where the behavioral component was included in the same factor as those engaged in organized motor activity, indicates that children who have an active lifestyle think less about maintaining and strengthening their health, since they are less ill and thus do not feel the need for formation of behavior aimed at overcoming the disease [8].

In turn, the negative relationship between the parameters of sensorimotor response and the compo-

nents of the attitude to health and, in particular, with the emotional component, identified in a group of children engaged in motor activity, indicates that executive functions that control changes in health-promoting behavior in this group of children suppress the need to actualize behavior to preserve and strengthen. The data obtained are consistent with studies that show that the active lifestyle of preschoolers who regularly engage in organized physical activity increases the body's resistance to various diseases, as a result of which they are less likely to get sick and, consequently, less likely to experience emotional reactions associated with health problems [1, 9, 12].

At the same time, in the group of children who do not engage in organized motor activity, a direct relationship between sensorimotor response and the level of the emotional component of the attitude to health was found. In our opinion, this is due to the fact that in this group of preschoolers, children are more likely to get sick, and it is the negative experience of illness that actualizes emotional reactions associated with loss of health. This leads to the need for a more accurate perception of the surrounding reality by the child, in order to actualize mechanisms aimed at preventing disease in the future, and as a result, maintaining and strengthening health.

Conclusions. A five-factor model of the relationship between the studied parameters is revealed. At the same time, the first factor, which explains the largest percentage of the variance of the studied features – 29.8%, included the parameters of motor activity, the behavioral component of OcD and the parameters of executive functions with a high weight. The peculiarities of the attitude to health are related to the physiological manifestations of selective behavior, namely, executive functions both in the group of children with organized motor activity and in the group of children without it. The study was carried out with the financial support of the I.A. Bunin YSU.

References

1. Ablyaeva A.V. Vliyanie fizicheskoj aktivnosti na funkcionalnoe sostoyanie organizma podrostkov. Mezhdunarodnyj nauchno-issledovatelskij zhurnal. 2022. No. 11 (125). URL: https://research-journal.org/archive/11-125-2022-november/10.23670/IRJ.2022.125.4 (data obrashcheniya: 26.11.2024). DOI: 10.23670/IRJ.2022.125.4
2. Arina G.A., Iosifyan M.A., Nikolaeva V.V. Kulturno-istoricheskij podhod k vnutrennej kartine zdorovya: fenomeny, struktura, ontogenez. Rukovodstvo po psihologii zdorovya. M.: Izd-vo Moskovskogo universiteta, 2019. P. 56–102.
3. Berezovskaya R.A. Issledovaniya otnosheniya k zdorovyu: sovremennoe sostoyanie problemy v otechestvennoj psihologii. Vestnik Sankt-Peterburgskogo universiteta. Seriya 12. Psihologiya. Sociologiya. Pedagogika. 2011. No. 1. P. 221–226.
4. Nekhoroshkova A.N., Gribanov A.V., Deputat I.S. Sensomotornye reakcii v psihofiziologicheskih issledovaniyah (obzor). Zhurnal mediko-biologicheskih issledovanij. 2015. No. 1. P. 38-48.
5. Nikolaeva E.I., Vergunov E.G. Prognoz psihofiziologicheskoj «stoimosti» effektivnosti processa obucheniya u starshih shkolnikov. Psihologiya obrazovaniya v polikulturnom prostranstve. 2013. T. 1. No. 21. P. 47–52.
6. Ruslyakova E.E. Otnoshenie k zdorovyu i vnutrennyaya kartina zdorovya shkolnikov. Mir nauki. Pedagogika i psihologiya. 2015. No. 3. P. 43.
7. Shutova S.V., Muraveva I.V. Sensomotornye reakcii kak harakteristika funkcionalnogo sostoyaniya CNS. Vestnik rossijskih universitetov. Matematika. 2013. № 5-3. S. 2831- 2840. Boreham C., Riddoch C. The physical activity, fitness and health of children. Journal of Sports Sciences. 2001. No. 19 (12). P. 915–929. https://doi.org/10.1080/026404101317108426
8. Kolesnyk A., Barna C., Kashuba L., Biriukova T., Rudenko T., Khrabra S. The Neurovegetative Status of Children 5-7 Years Old. BRAIN. Broad Research in Artificial Intelligence and Neuroscience. 2022. No. 13. pp. 421-435. 10.18662/brain/13.4/396
9. Marks D., Murray M., Estacio E. Health Psychology. Theory, re¬search, practice. Fifth edition. 2018. 832 p.
10. Ruedl G., Cocca A., Wirnitzer K.C., Tanous D., Drenowatz C., Niedermeier M. Primary school childrens health and its association with physical fitness development and health-related factors[J] // AIMS Public Health. 2024. No. 11(1). pp.1-18. https://doi.org/10.3934/publichealth.2024001
11. Sando O.J., Mehus I. Supportive indoor environments for functional play in ECEC institutions: a strategy for promoting well-being and physical activity? Early Child Development and Care. 2019. No. 191(6). pp.921–932. https://doi.org/10.1080/03004430.2019.1651305.

Physical culture as the most important factor in the formation of a comprehensively developed personality

UDC 77.03.13

PhD, Associate Professor **L.A. Kiryanova**[1]
D.A. Markov[2]
[1]Russian Presidential Academy of National Economy and Public Administration, North-West Institute of Management, St. Petersburg
[2]Lesgaft National State University of Physical Education, Sports and Health, Saint-Petersburg

Corresponding author: ludasport@mail.ru

Received by the editorial office on 11.05.2025

Abstract

Objective of the study. Exercise and regular sports activities are critically important for the health and well-being of people of all ages. This question is especially important for schoolchildren and university students whose studies involve intense mental and emotional work. However, statistics show that a significant proportion of school and university students do not devote enough time to physical activity, preferring other activities in their free time. It is important that physical education promotes the development of students' teamwork and communication skills. The purpose of this study is to examine the importance of physical culture in shaping the personality and healthy lifestyle of students.

Methods and structure of the study. The experiment involved students of the 5th "B" class of secondary school No. 6 in St. Petersburg. The study revealed that many students consider regular physical education and sports activities only as part of the curriculum. In this case, some students perceive physical activity as a process where the main thing is the result, namely the mark, rather than maintaining their health and developing self–discipline.

Results and conclusions. After the experiment, students became more willing to attend physical education classes and take the initiative in organizing sports games; many girls and boys showed interest in team sports, which led to an increase in the number of students attending sports sections both at school and outside; children began to feel more confident, became more open and it's easier to establish contacts with peers; many have realized and understood the importance of a healthy diet.

Keywords: *physical exercises, regular sports, health, well-being, students, intensive mental work, emotional work, physical activity, teamwork, communication, physical education, personality formation, healthy lifestyle.*

Introduction. The significance of physical education and sports has been crucial throughout civilization's history. Notable theorists and practitioners in sports medicine, such as R. E. Motulyanskaya, I. M. Bykhovskaya, A. V. Chogovadze, and A. G. Shchedrina, argue that health - promoting physical education leads in disease prevention. They believe that physical education and sports should play a key role in maintaining and strengthening health, preventing diseases, forming a healthy lifestyle, and cultivating stable motivation and a positive attitude towards physical exercise. Regular participation develops qualities like perseverance, concentration, self - control, restraint, and activity, as well as the ability to overcome oneself. The body can be viewed as a tool for understanding the world and expressing oneself in it. Thus, a well - tuned body and engagement in physical education contribute to the normal development of cognitive, self - cognitive and self - actualization processes. The functions of physical education and sports include:

1. Leisure;
2. Communicative;
3. Recreational and gaming;

4. Fitness maintenance; and

5. Creative - activity facilitation.

The leisure function refers to using physical activities to fill free time, escape daily routines, and engage in enjoyable pursuits.

The communicative function involves the various interactions and communications facilitated by these activities. Besides the recreational function, which provides emotions and pleasant experiences, the gaming function stands out as something more special, though similar to recreation. Fitness maintenance ensures that at any age, physical education and sports can maintain bodily fitness for an active and pleasant life. Regular training promotes justice, honesty, and respect for other competitors. Sports also help develop discipline and self - discipline, crucial for academic and professional success. Active student participation in sports teaches respect for rules, tolerance, and recognition of diversity. Furthermore, sports build moral resilience, responsibility, leadership, and teamwork skills. They also teach decision - making and honesty towards oneself and others.

Physical activity and regular exercise are of great importance for maintaining health and well-being of a person at any age. This topic is especially relevant for students in educational institutions, whose educational activities are associated with great intellectual and emotional stress. However, according to statistics, many students do not devote enough time to physical activity, preferring other activities in their free time. It is very important that physical education helps students develop teamwork skills, and with it communication skills [1,2].

Objective of the study. To explore physical education's role in personality development and promoting a healthy lifestyle.

Research methodology and organization. The experiment involved 5th-grade students from class «B» of a St. Petersburg secondary school. Student assessment focused on: Physiological health (urine and blood test results, heart rate, pulse); Muscle development adequacy for body type and age; Current mental health and emotional state; Personality maturity and associated challenges.

Research findings. Testing occurred both before and after implementing compulsory extra physical education classes, which featured diverse formats:

1. Active games ("Crossovers," "Pioneer Ball, "jump rope, "Fishing", "Knockout") that engage children in physical development through play, suitable for their age.

2. Sports games as a more serious form of active games (football, basketball).

3. Masterclasses and discussions with professional athletes on physical development and nutrition.

These additional classes aimed to spark students 'interest in varied physical activities, encouraging them to attend physical education classes not just for grades but due to recognizing its importance.

Before the experiment: Students reluctantly attended scheduled physical education classes, often skipping or performing exercises poorly; They felt awkward performing exercises in front of the class, lacking confidence; They consumed "junk food" and rejected school cafeteria meals; After the experiment: Students willingly attended physical education classes and showed initiative in sports activities; Many boys and girls developed an interest in sports, increasing enrollment in school and external sports clubs; They became less self-conscious, more outgoing, and more sociable with peers; Many recognized the importance of healthy eating.

To evaluate the experiment's effectiveness in implementing compulsory extracurricular physical education and sports activities, a comparative "before" and "after" analysis was conducted. Data was presented in tables, and physical/mental health status and personality maturity were rated from 1 to 3(1=poor, 2=average, 3=good).

Thus, most children had poor or average physical and mental health, scoring 1 or 2. Only a few scored 3 Personality maturity was assessed by self-defense ability, teamwork, and independent living skills. After our experiment, the indicators improved significantly.

Conclusion. The research indicates that physical education and sports are crucial for developing moral qualities.Regular training fosters justice,honesty,and respect for others.Sports also develop discipline and self-discipline,which are important for academic and professional success. Participation in sports teaches students to respect rules,be tolerant,and value diversity.It also strengthens moral resilience,responsibility,leadership,and teamwork.Physical education and sports have a comprehensive impact on students'moral development,promoting personal growth and social skills.

Table 1. Indicators Before and After the Experiment

Student Name	Physical Health		Mental Health		Personality Maturity	
	Before	After	Before	After	Before	After
Andrey K.	1	2	1	3	1	2
Lisa N.	1	2	2	2	2	2
Sveta G.	2	3	2	2	1	2
Natasha A.	2	3	2	3	2	3
Alexey M.	1	3	1	2	2	3
Anna M.	2	2	1	2	1	2
Karina A	2	2	1	3	1	3
Sergey M.	2	2	1	2	2	3
Nikita C.	3	3	3	3	3	3
Sofia S.	3	3	3	3	2	2
Artem Ya.	1	2	2	2	3	3
Stepan T.	1	1	1	2	1	2
Mark E.	2	2	2	2	1	2
Evgeniya K.	1	2	2	2	1	2
Olga V	1	2	3	3	2	2
Evgeniy F.	2	3	1	1	2	2
Egor L.	3	3	2	2	2	2
Lisa P.	3	3	3	3	3	3
Peter M.	1	3	1	3	1	3
Pavel I.	1	2	2	3	2	2

In order to increase the motivation of students to systematically engage in physical education and sports, it is necessary to use a comprehensive approach, including: improving the regulatory framework for physical education; optimizing curricula and programs for the discipline "Physical Education"; developing an understanding of the difference between systematic physical education and sports and a discipline that simply must be attended; cultivating discipline in order to instill an understanding of the need for regular physical activity; teaching how to plan one's own daily routine, distribute workloads, so that there is an opportunity to include physical education and sports in the lives of students on a systematic level; developing a system of incentives for students who systematically engage in physical education and sports.

References

1. Belmach V., Grigan S., Vishina A. Planirovanie uchebno-trenirovochnogo processa s uchetom uskorennogo psihofiziologicheskogo vosstanovleniya sportsmenov s ispolzovaniem cifrovyh tekhnologij. E3S Veb-konferenciya. 14-ya Mezhdunarodnaya nauchno-prakticheskaya konferenciya "Sostoyanie i perspektivy razvitiya agrobiznesa", INTERAGROMASh 2021. Rostov-na-Donu, 2021. Nomer 09032.

2. Grigan S.A., Neshcheret N.N., Gvozdikova A.A. Vliyanie zanyatij fizicheskoj kulturoj i sportom na formirovanie moralno-eticheskih kachestv studentov. Pleskacheva. Teoriya i praktika fizicheskogo vospitaniya. 2025. No. 1. P. 75-77.

3. Grigan S.A. Rol obrazovaniya v oblasti fizicheskogo vospitaniya v formirovanii lichnosti studentov. S.A. Grigan, V.A. Belmah, S.A. Shengelaya. Teoriya i praktika fizicheskogo vospitaniya. 2022. No. 10. P. 8.

4. Grigan S.A. , Bogdasheva D.V. Vliyanie fizicheskoj kultury i sporta na formirovanie vsestoronne razvitoj lichnosti. Fizicheskaya kultura i zdorove molodezhi. Sankt-Peterburg, 2022. P. 81-83.

5. Grigan S.A. . Aktualnost fizicheskoj kultury i sporta v sovremennom obshchestve. Sbornik materialov V Vserossijskoj nauchno-prakticheskoj konferencii s mezhdunarodnym uchastiem. V 2-h tomah. Kazan, 2023. P. 50-53.

6. Grigan S.A., Belmah V.A. Vliyanie ispolzovaniya informacionnyh tekhnologij na fizicheskuyu aktivnost studentov tekhnicheskogo vuza. Uchenye zapiski universiteta imeni P.F. Lesgafta. 2024. No. 2 (228). P. 46-49.

7. Grigan S.A., Romanchenko S.A. Vliyanie fizicheskoj aktivnosti na emocionalnye i nravstvennye kachestva studentov. Teoriya i praktika fizicheskoy kultury. 2025. No. 1. P. 72-75.

8. Motylyanskaya R.E., Stogova L.I., Iordanskaya F. A. Fizicheskoe vospitanie i vozrast. M.: Fizkultura i sport, 1967. 280 p.

9. Chogovadze A.V., Polyaev B. A. Lechebnaya fizkultura i sportivnaya medicina kak neot"emlemaya chast profilaktiki, lecheniya i reabilitacii v sisteme ohrany zdorovya naseleniya. Fizioterapiya, kurortologiya i reabilitaciya. 2002. Nomer: 1. P. 7-10.

The inclusion of Russian sports paraphernalia in the educational process of the subject "Russian as a foreign language" for students

UDC 796.011.3

PhD, Associate Professor **E.V. Lavrushina**
PhD, Associate Professor **O.V. Kharitonova**
L.I. Uspenskaya
L.V. Panova
Plekhanov Russian University of Economics, Moscow

Corresponding author: irkutsk4@yandex.ru

Received by the editorial office on 12.12.2024

Abstract

Objective of the study. This research is aimed at expanding the use of lexical and grammatical tools related to sports discourse and affecting state symbols in the process of teaching foreign students in Russian higher educational institutions.

Methods and structure of the study. The study was conducted on the basis of the Plekhanov Russian University of Economics in Moscow. When analyzing and describing various types of work with texts highlighting examples of the use or non-use of the flag, coat of arms and anthem by athletes and delegations at international sporting events, general scientific and specialized methods were used, including comparative, structural, descriptive and contextual analysis.

Results and conclusions. The results of the study show that studying the state symbols of the country whose language is being studied, as part of the Russian as a foreign language (RKI) course, helps improve the skills of professional and intercultural communication of foreign students, based on the principles of respect and tolerance for the history and culture of another country. The assimilation of thematic vocabulary and the corresponding grammatical apparatus based on authentic materials enables students to improve their proficiency in the Russian language in line with a communicative and activity-based approach, as well as to form and develop intercultural competence through critical analysis of new regional information.

Keywords: *lexical and grammatical means, sports discourse, state symbols, education, foreign students, Russian higher education institutions, international sports events, intercultural communication, respect.*

Introduction. The process of learning a foreign language is closely related to the comprehension and memorization by a foreign listener of linguistic and cultural information relevant to the country in which he studies. Russian Russian Coat of Arms, Flag and Anthem Day (December 25) and Russian National Flag Day (August 22) attest to the high importance of state symbols in Russian consciousness and Russian culture. Thus, the materials presented in the educational complexes on Russian as a foreign language (RCT) about the flag, coat of arms and anthem of the Russian Federation (RF), about the history of their creation and their role in shaping the international image of Russia in the international arena, for example, at various international sports competitions, provide foreigners with ample opportunities to learn not only about history. Russia, about its achievements in all spheres of life, including sports, but also about the main features of the Russian national character: patriotism, citizenship and a sense of pride in their country [1]. The characterization of national state symbols as a way of representing ones country in the context of international sports competitions in terms of learning Russian in a foreign audience develops students' linguistic, communicative and cross-cultural competencies based on valuable cultural and linguistic material in accordance with the basic principles of the teaching methodology of the Russian Language.

Objective of the study – is to actualize the use of lexical and grammatical means of sports discourse,

thematically related to the concepts of the state symbols of the country, in teaching foreign students at a Russian university.

Methods and structure of the study. In accordance with the purpose of the study, the definitions of "State symbols of Russia" and "Olympic Games" were updated. General scientific and special methods, methods of comparative, structural, descriptive and contextual analysis were used to identify and describe various types of work with texts on the facts of the use/ non-use of the flag, coat of arms and anthem by athletes and sports delegations at various international sports competitions. The research was based on the Plekhanov Russian University of Economics (Moscow)[1].

Results and conclusions. In accordance with the programmatic requirements of the study of RCT, addressing linguistic and foreign studies topics through the actualization of such key concepts of the semantic fields "Patriotism" and "Sport" as the national symbols of the country, flag, anthem, coat of arms, love of the motherland, sports character, personal responsibility, citizenship, etc., develops language and speech competencies. Foreigners are trained on the appropriate lexical and grammatical material, and the integration of authentic texts and video materials into the educational process contributes to the formation of socio-cultural competence. The fact that clip-based thinking or the ability to "consider" information is one of the features of the thinking of the modern generation of students confirms the expediency of audio and video files in computer science classes. For example, watching and discussing the archive video of the famous "tears of happiness" by I. Rodnina during the awarding ceremony at the XIII Winter Olympic Games (USA, Lake Placid, 1980) helps to create a positive emotional background in the classroom, which means that the probability of memorizing words such as: anthem, flag, coat of arms, homeland, country, awarding, champion (champion), etc. – increases several times.

The topic of state symbols and prohibitions on the use of the flag, coat of arms and anthem by Russian athletes at international sports competitions, in particular, at the 2024 Summer Olympics (OI-2024), which took place from July 24 to August 11 in Paris, allows updating lexico-semantic groups (LSG) with meanings:

1) "State symbols of Russia": flag, coat of arms, anthem;

2) "State symbols of Russia and their images": eagle, shield, crown, scepter, orb, horseman, flag, banner, etc.;

3) "State symbols of Russia and their meaning": peace, purity, perfection, faith, constancy, energy, etc. (flag of the Russian Federation);

4) power, protection (coat of arms of the Russian Federation); solemnity (music), poetry (text) (anthem of the Russian Federation);

5) "Status": authority, image, prestige, etc.;

6) "Sanction": boycott, disqualification, doping, ban, refusal, suspension, removal, etc.;

7) "International sports organizations": the International Olympic Committee (IOC), the Court of Arbitration for Sport (CAS), the World Anti-Doping Agency (WADA), etc.;

8) "Personalities": Anne Hidalgo, Martin Fourcade, Sebastian Coe, Thomas Bach, Paul Gasol, Irina Wiener, Elena Vyalbe, and others.;

9) "Sports": water polo, volleyball, freestyle wrestling, Greco-Roman wrestling, judo, rhythmic gymnastics, taekwondo, etc.

The processes of politicization that occur in sports and in sports reflect the development of linguistic and contextual synonymy and antonymy in sports discourse, for example: to allow – to prohibit participation; to give the right – to deprive the right; to speak in an official status – in a neutral status, with an anthem – without an anthem, under the national flag – under a neutral flag; State Anthem of Russia – The first concert by P.I. Tchaikovsky; opening – closing ceremony, etc.; suspend – neutralize Russia; allow participation – allow participation; to be under pressure is to experience pressure, discrimination is restriction, Olympic flag is a white flag is a neutral flag, etc.; paronyms: to provide (opportunity) is to represent (country), Russian is Russian, friendly is friendly, enemy is hostile, etc.

The functional description of the lexico-semantic group "State Symbols of Russia" made it possible to identify its main structural units: flag, coat of arms, anthem, and possible combinatorial combinations of lexemes: singing the anthem – singing the anthem, performing (with) under the flag–performing (with) under the flag, depicting the anthem - the image of the coat of arms, singing the anthem - anthem performance, etc.

The IOC ban on Russian athletes from participating in the OI-2024 in Paris has updated the prefix anti-

[1]State educational standards for Russian as a foreign language. Common ownership. Moscow: St. Petersburg: Zlatoust, 1999-2006.

: anti-doping measures, anti-doping scandal, anti-Russian policy, etc., and the contradictory attitude in Russian society towards the participation of athletes in the OI-2024 without a national flag, coat of arms and anthem, up to the denial of the athlete's achievements and condemnation ("Traitor!") allows you to determine the development of the negative connotative meaning of the adjective "neutral". Obviously, new words with negative meanings are on the periphery of sports discourse, and it takes time to include them in the core of discourse [3, 4].

The refusal of Russian athletes to participate in the OI-2024 in a neutral status is an expression of respect for their own state symbols, the history of their country, a kind of boycott of new sports in a postmodern society. So, it is no coincidence that jokes such as "neutral face", "neutral surname", "neutral gender", "neutral form" appeared in the Republic of Korea, which became the subject of Internet memes depicting creatures without a face, name and gender. In a foreign audience, during the basic courses of study, in order to develop the language and speech skills of listeners, a lesson can be held dedicated to the Day of the Coat of Arms, Flag and Anthem of Russia (December 25) on the topic "State symbols and sports: pros and cons" [2].

Foreign students who are proficient in English at A1+ – A2 levels up to B1 level can be asked to answer the questionnaire questions, for example:

1) Is the performance of an athlete in a neutral status a punishment for the athlete or a punishment for his country?

2) Is the victory of a neutral athlete his personal victory or the victory of his country?

3) Is the defeat of a neutral athlete his personal defeat or the defeat of his country?

4) A Russian athlete is competing for another country at the Olympic Games. His victory is his personal victory; the victory of the new homeland or the victory of the historical homeland?

5) An athlete of one country participates in a team competition of another country.

Is a team's victory a personal victory for an athlete; a victory for a new homeland, a victory for a historical homeland?

Conclusions. Understanding the state symbols of the country of the language being studied in the RCT course helps improve the skills of foreign students in professional and intercultural communication based on the principles of respect and tolerance for the history and culture of another country. Mastering thematically related vocabulary and the corresponding set of grammatical units based on authentic materials allows students to improve their proficiency in the Russian language in the format of a communicative and activity approach, form and develop their own intercultural competence through a critical understanding of new regional information.

References

1. Asonova G.A., Gvozdeva E.V., Loshakova E.L., Zozulya E.A. Formirovanie kommunikativnoj kompetencii mongolskih uchashchihsya s ispolzovaniem sportivnoj leksiki i terminologii zhenskogo futbola. Teoriya i praktika fizicheskoy kultury. 2023. No. 2. P. 113-114.
2. Ikkonen P.B., Semeshina P.V. Ob opyte ispolzovaniya videomaterialov na urokah RKI. V sbornike: Sovremennye tendencii v prepodavanii i izuchenii russkogo yazyka kak inostrannogo. Materialy mezhdunarodnoj nauchno-prakticheskoj konferencii. Moskva, 2022. P. 163-170.
3. Lonskaya A.Yu., Burskaya E.A., Karpuhina N.M., Panova L.V. Leksicheskie sredstva sozdaniya obraza Olimpijskih igr 2022 v Pekine v rossijskih novyh media. Teoriya i praktika fizicheskoy kultury. 2023. No. 2. P. 84-86.
4. Martynova M.A., Prokopova I.I., Gutorova D.G., Kapshukova T.V. Processy sportivnoj leksiki na rubezhe HH–HHI vv. (na primere russkogo yazyka). Russkij yazyk za rubezhom. 2022. No. 3 (292). P. 43-51.

The importance of sports and physical education in the development of collective skills in a multicultural student community

UDC 796

PhD, Associate Professor **O.V. Mironova**
PhD, Associate Professor **L.V. Yarchikovskaya**
PhD, Associate Professor **A.V. Sharonova**
PhD, Associate Professor **O.V. Vashchuk**
St. Petersburg State University, St. Petersburg

Corresponding author: mironova.olga2014@gmail.com

Received by the editorial office on 20.04.2025

Abstract

Objective of the study. This study aims to prove the importance of physical activity in the development of collectivist qualities in a multicultural student environment.

Methods and structure of the study. 256 students of St. Petersburg State University (St. Petersburg State University) participated in the experiment, of which 48 were involved in a pedagogical experiment. The participants were conditionally divided into two groups based on the specifics of their relationships and the level of development of collectivism: the control (CG, n=23) and the experimental (EG, n=25) groups. The research methodology included pedagogical observations and experimental work, questionnaires, and analysis of independent assessments.

Results and conclusions. The article presents the experience of developing a sense of collectivism in a multinational student environment. It has been experimentally shown that the use of team-building games and tasks in physical education and sports classes has a positive effect on the establishment of interpersonal relationships in the student body and the formation of collective values among students. Therefore, the analysis of the research results confirms the hypothesis about the influence of physical culture on the formation of a team in a multinational student environment.

Keywords: *physical activity, team-building games, interpersonal relationships, collective values, multicultural environment.*

Introduction. According to various concepts of education, a personality is actively formed, including in conditions of active life in a team, whether it is a family or a society. A rather complex and multifaceted moral quality is a sense of collectivism that is cultivated only in a team and through a team. Collective relationships reflect the level of moral education of each individual in the group, and their success is directly proportional to the manifestation of mutual assistance and cooperation, mutual responsibility and demands, as well as the unity of personal and public interests [1-4].

A study group (a collective of students) is characterized by a high selectivity of relationships that arise on the basis of joint activities and interests [2; 4]. According to our survey, the personality of a classmate is assessed according to a number of parameters: the results of educational activities, including involvement in additional scientific and educational projects of the university, integration into the group, conformity of communication and extracurricular activity.

Despite the fact that educational activities are leading among students, their share in the formation of relationships within the team is lower than in extracurricular activities, in particular sports.

Objective of the study – is to substantiate the importance of the role of physical culture in the formation of a sense of teamwork in a multinational student environment.

Methods and structure of the study. The study was conducted in the academic year 2023/2024.

256 students from St. Petersburg State University (St. Petersburg State University) participated in the study.

The first-year study groups with the same percentage of international students (20%) were selected for the control group (CG, n=23) and the experimental group (EG, n=25). Based on the preliminary study, the students were conditionally divided into two groups, depending on the nature of their relationships and the formation of a sense of teamwork. The first group (CG) included students with unstable collectivistic behavior, and the second (EG) – with a predominance of egoistic inclinations. This made it possible to further determine the differentiated nature of pedagogical influences.

The research methods used were pedagogical observations and experiment, survey, generalization of independent characteristics.

Results of the study and discussion. According to a number of studies, sports and outdoor games are one of the most common and effective methods of team building [1-4]. It is necessary to focus on the fact that the team becomes the subject of education of its members.

As part of the study, team-building games and tasks were included in physical education classes with EG students, allowing them to establish high-quality relationships within the study group and form the need for collective interaction among its participants. EG students were also invited to study the national games of foreign students of this group during the academic year. The CG was engaged in the work program of the discipline, mainly aimed at shaping the personal results of students. To illustrate the study, at the beginning and end of the experiment, students were given the task of covering a distance of 3 km without taking into account time, while initially it was stipulated that this would not affect their academic performance (Table).

Questionnaires and surveys of students revealed a change in relationships in the team during its formation.

The team as a specially organized association is not formed immediately, but goes through a long step-by-step process. Students with unstable collectivistic behavior at the first stage of team formation, being under the influence of pedagogically created relationships, correct negative personality traits and consolidate the experience gained. Some students with a predominating tendency to selfish relationships reacted painfully and inconsistently to the projected relationships, but the experience of interaction aimed at achieving a sporting team result over time allowed them to adapt and adapt to work in a team.

Conclusions. Analyzing the results of the study, we have formulated the following conclusions:

1. Physical education and sports have an ambiguous effect on the formation of a student's personality: under some conditions it contributes to the improvement of positive qualities, while under others it creates the ground for the manifestation of negative personality traits. This is explained by the fact that students are educated not by physical education and sports themselves, but by the relationships that develop in the team.

2. The organization of collectivistic relations in the educational environment, in particular during physical education and sports, can be carried out: using collective forms of interaction during physical education and sports and with direct direct pedagogical involvement (organization of relations that later turn into personal ones), contributing to the organization of the student collective.

The results of overcoming the distance of 3 km

Estimated results	EG	CG
Time to cover the distance of 3 km at the beginning of the study, minutes, seconds	19,3±6,88	18,70±6,02
Arriving at the finish line in groups at the beginning of the study	3 groups of 2-3 people, mostly international students	2 groups of 2 people and 1 group of 4 foreign students
Time to cover the distance of 3 km at the end of the study, minutes, seconds	16,76±4,90	15,91±1,73
Arriving at the finish line in groups at the end of the study	In groups of 2-4 people	We moved in a group, several people accelerated 200-500 m before the finish line

3. One of the primary tasks of a physical education teacher should be to create a strong student team with a developed system of relationships in the spirit of the principles of teamwork, healthy lifestyle and extracurricular activities.

References

1. Devishvili V.M., Mdivani M.O., Elgina D.S. Gruppovaya splochennost v sportivnyh komandah raznogo professionalnogo urovnya. Nacionalnyj psihologicheskij zhurnal. 2017. No. 4 (28). Pp. 121-128.
2. Dementyev K.N., Yarchikovskaya L.V., Bailiff O.V., Koval T.E. Razvitie navykov tolerantnosti studentov raznyh etnicheskih grupp v vuze sredstvami fizicheskoj kultury. Teoriya i praktika fizicheskoy kultury. 2015. No. 9. pp. 14-16.
3. Koval T.E., Yarchikovskaya L.V., Ustinova O.N., Mironova O.V., Tokareva A.V. Fizicheskaya kultura kak sredstvo profilaktiki negativnyh proyavlenij v molodyozhnoj srede (na primere socialnogo partnyorstva SPbGU i podrostkovo-molodyozhnogo centra «Kalininskij»). Uchenye zapiski universiteta im. P.F. Lesgafta. 2018. No. 12 (166). Pp. 122-125.
4. Tokareva A.V. Analiz lichnostnyh kachestv vypusknika vuza, neobhodimyh dlya osushchestvleniya effektivnoj professionalnoj deyatelnosti po zashchite v chrezvychajnyh situaciyah. Aktualnye problemy fiziologii, fizicheskoj kultury i sporta. Sbornik materialov mezhdunarodnoj nauchno-prakticheskoj konferencii. Otvetstvennyj redactor Nazarenko L.D. 2013. pp. 166-168.

The specifics of building a sports management system in the Russian Federation and other countries

UDC 354

PhD **K.A. Viter**
E.A. Samokhina
PhD **L.S. Marion**
PhD **O.I. Yesina**
Plekhanov Russian University of Economics, Moscow

Corresponding author: Viter.KA@rea.ru

Received by the editorial office on 22.01.2025

Abstract

Objective of the study – is to determine the specifics of the management structure in the sports industry both in Russia and in other countries.

Methods and structure of the study. As part of the research methodology, a comparative analysis of sports management systems in Russia and abroad was performed, based on a review of relevant scientific publications.

Results and conclusions. The results of the work demonstrate significant differences in approaches to sports management between foreign countries and the Russian Federation. These differences primarily relate to the level of government involvement in the management and supervision of programs aimed at the development of mass sports and physical education, as well as differences in the ways of financing sports events.

Keywords: *management structure, sports industry, Russia, comparative analysis, sports management systems, management approaches, government participation, leadership, programs, mass sports.*

Introduction. Sport and physical culture, which have existed for thousands of years, play an important role in human life, society and in the modern world. These concepts include regular sports activities for a large number of people, the direction of leisure activities, improving health and maintaining good physical fitness. The main goal of organizing mass sports in Russia and abroad is to create a publicly accessible set of physical education and sports activities to improve health, provide active leisure, and improve living standards. The priority is not so much obtaining the highest sports results and material benefits, but rather solving social issues and developing a personality according to its interests. However, despite the common purpose of sports and physical education, in Russia and abroad there are certain differences in approaches to the organization of sports activities in different countries. Let's look at these approaches in more detail.

Objective of the study – is to determine the specifics of the management structure in the sports industry both in Russia and in other countries.

Methods and structure of the study. Based on the study of scientific publications on the research topic, a comparative analysis of sports management methods in Russia and abroad was carried out.

Results and conclusions. The sports sphere abroad includes Olympic, mass and professional sports. The main role in improving this area is assigned to the state and its sports organizations [1, 7]. Local authorities and public sports organizations perform this role. Professional sports are implemented mainly through commercial organizations, but the state provides little assistance through local authorities. Olympic sports are developed through government funding, the amount of which is determined by the goals and objectives of the state and society as a whole. In turn, the development of mass sports is carried out

through financing from 1 to 3 percent from the budget of foreign countries, as well as at the expense of the population. But today, some countries are strengthening their role and the role of local authorities in improving mass sports to promote a healthy lifestyle.

Thus, financing of the sphere of sports and physical culture in foreign countries is carried out through the following sources: from income from commercial sports and recreation services provided to citizens, from subsidies from state authorities and local governments, with the help of public funds, proceeds from lotteries and sports sweepstakes, from income from paid activities of sports organizations. Let's take a closer look at how the development of the sports industry in a number of countries is ensured.

For example, in China, sports development is carried out mainly at the state level, but other sources of financing are also allowed, for example, through large commercial organizations. It is worth noting that mass sports prevail in China: there are many sports grounds with various fitness equipment in cities, and the vast majority of sports palaces and halls are publicly available. In addition, China has established a set of interconnected national sports centers, educational institutions, sports schools, and institutes. Special emphasis is placed on school and student sports: National Games are periodically organized for secondary school students and university students. Thus, the country has a high level of sports training for young people, which is almost 100% compliant with sports standards [12].

The Greek authorities, for example, ensure that the sports industry is accessible to citizens by providing sports programs for them free of charge or at very low prices [11]. For this purpose, municipalities have formed organizations and hired a significant number of physical education instructors. These organizations implement sports and leisure activities for all citizens, using municipal and public sports facilities, as well as improving sports centers, gyms and fitness programs to meet the increasing needs of citizens of different ages and sports programs to connect citizens with nature (mountaineering, trekking, skiing, etc.). In addition, The country is actively implementing the Sports for All program, which includes sports activities in schools, clubs, and the organization of scientific events and conferences [15].

In the USA, on the contrary, the importance of the state in the development of sports is almost eliminated: there is no government structure regulating this area (the Ministry of Sports, for example). In addition, there are also no State instruments for financing sports and physical education. The Government's role is to approve laws and monitor compliance with existing rules and regulations. Therefore, mass sports in the USA are supported by municipal authorities, patrons, universities and schools. Organizations provide their employees with maximum opportunities for sports: they build a large number of sports facilities and complexes, free playgrounds, and gyms. In turn, Olympic sports are supported by large business representatives [3, 4].

In France, the state actively provides financial support for mass sports, giving priority to increasing the number of citizens involved in mass sports [9].

In Germany, public sports organizations and unions that receive government funding to ensure this development, such as the German Sports Union and the German National Olympic Committee, play a leading role in the development of mass sports [13]. This format of mass sports support is very effective, as German athletes show outstanding results in winter and summer sports.

In the UK, as well as in the USA, mass sports are not fully supported by the state, since the main assistance is provided by individuals who consume sports services. Therefore, the leading role is played by the fact that the British highly understand the importance of physical activity and maintaining a healthy lifestyle.

Thus, the total cost of sports in developed European countries is approximately 0.2-2% of the gross national product. For example, the share of funds from the state sports budget in the UK, Germany, Denmark, Finland, and Sweden is less than 20% of the amount of local budgets in the field of sports. The difference is 30% for Italy and France, and 40% for Spain and Portugal. The share of investments of regional, municipal and local governments in the total sports budget is 95% in the UK, 98% in Germany, 76% in Spain, 85% in Finland, 77% in France, 90% in Sweden, and 57% in Italy [2, 14]. Consequently, in foreign countries, local authorities play an important role in supporting sports [2]. Through local self-government, citizens can benefit from the positive effects of sports [14].

Thus, analyzing the foreign experience of sports management in different countries, it seems possible to conclude that mass sports are of great importance for improving the health of the population, their moral

education, providing citizens with additional abilities of self-expression, as well as for eliminating negative social phenomena. The gradual development of the sports industry in foreign countries is ensured by the joint efforts of the state, its subordinate structures, commercial organizations, as well as other institutions. Having analyzed the management of sports and physical culture in foreign countries, we will proceed to the study of the organization of sports management in the Russian Federation to identify similarities and differences in the approaches of the state and commercial organizations to the management of this field.

It is worth noting that Russian sports management was formed in stages. At the first stage, sports in Russia had state significance, was a component of state regulation to ensure state defense capability. Sailing was actively developing in the 18th century, and the first sailing schools appeared in the 19th century. Further, sports management acquired an institutional character – the Russian Gymnastic Society was established in Moscow in 1882, the Russian Olympic Committee in 1911, and the "Office of the Chief Overseer of the Physical Development of the Population in the Russian Empire" in 1913, through which two All-Russian Olympiads were held. At the second stage, the formation of sports management took place in Soviet times. The sports were managed by the USSR Committee on Physical Culture and Sports (USSR State Sports Committee). He played a leading role in financing physical education and sports, supplying sports equipment, and shaping sports infrastructure and facilities. At this time, a research base is being actively created: educational institutions are implementing training areas in the field of physical culture and sports. However, even at this stage, there is almost no commercialization of the sports sector.

Already at the third stage, a situation arises in Russia in which the field of sports is being commercialized: Sport is becoming an enterprise, and the degree of comprehensive state control and planning is decreasing. The main functions of government agencies are to standardize the rules of sports and implement major events [8, 10].

Currently, it is worth noting that in the Russian Federation the main role in supporting sports is played by the state. Financing is provided through state and municipal programs. This method of financing is very effective and flexible, since it ensures the targeted use of resources, allows making changes to activities and resources in accordance with external and internal environmental factors, takes into account the interests of society in the first place, and is aimed at meeting their needs [5, 6].

However, along with the advantages of this approach to sports management, there are also certain disadvantages: financial support for these programs is based on the availability of funds in the budget, there are almost no extra-budgetary sources of funding, as well as optimal methods for calculating the effectiveness of programs, programs are developed for quite a long time, while prompt decision-making is periodically required.

The entire management of the sports industry is entrusted to the Ministry of Sports of the Russian Federation: this government body manages mass and Olympic sports, and heads the work of national sports federations. In addition, Russia has a system of youth sports schools and voluntary sports societies. It is also important to note the approval by the decree of the Government of the Russian Federation dated September 30, 2021. No. 1661 of the program "Development of physical culture and sports", which is the basis of the state policy in the field of physical culture and sports.

Conclusions. Thus, analyzing the management experience in the field of sports and physical education in Russia and abroad, it seems possible to draw the following conclusions: in foreign countries, the practice of supporting mass sports prevails through the joint efforts of the state, regional and municipal structures and commercial organizations, or solely through the efforts of large business representatives, while in the Russian Federation, the practice of supporting mass sports is The state plays a key role in sports. In addition, in the Russian Federation, a program-oriented approach to supporting the sports industry is very effective, ensuring a balance between federal and regional events and contributing to the development of physical culture and sports in the territories of municipalities. Undoubtedly, such increased attention to mass sports entails its modernization and gradual transformation in the context of external and internal changes taking place in the Russian Federation.

References

1. Alekseev S.V. Sportivnoe pravo Rossii. Pravovye aspekty osnovy fizicheskoj kultury i sporta. M.: YuNITI-DANA, 2005.

2. Vasyukova V.A., Vorobeva I.V., Kovalenko N.P. Innovacionnaya deyatelnost v sfere fizicheskoj kultury i sporta kak neot"emlemaya chast elementa nacionalnoj ekonomiki. ANI: ekonomika i upravlenie. 2019. No. 3(16). P. 68-73 (data obrashcheniya 09.04.2023).
3. Viter K.A., Kemhashvili T.A. Zameshchenie sobstvennika biznesa naemnym menedzherom: vliyanie na biznes-processy. Rossijskij ekonomicheskij internet-zhurnal. 2023. No. 2. EDN ZIZQYI.
4. Viter K.A., Kemhashvili T.A. Optimizaciya biznes-processov. Rossijskij ekonomicheskij internet-zhurnal. 2019. No. 3. P. 16. EDN BORSYF.
5. Karlina A.A., Ustina N.A. Sovershenstvovanie processa razrabotki i realizacii municipalnyh programm kak mekhanizma strategicheskogo upravleniya socialno-ekonomicheskim razvitiem. Vestnik sovremennyh issledovanij. 2018. No. 7 (22). P. 442-447.
6. Karlina A.A., Seskutova I.A. Problemy povysheniya effektivnosti realizacii gosudarstvennoj politiki v sfere kultury na regionalnom i mestnom urovnyah. Vestnik Mezhdunarodnogo instituta rynka. 2017. No. 2. P. 103-108.
7. Kemmer G.G. Sportivnye kluby i ih vklad v fizicheskoe razvitie i «Sport dlya vsekh». Teoriya i praktika fizicheskoy kultury. 1991. No. 2. P. 55-57.
8. Levchenko A.V., Nikolaev P.P., Gurova N.V. i dr. Istoriya formirovaniya sportivnogo menedzhmenta v Rossii. Uchenye zapiski universiteta im. P.F. Lesgafta. 2023. No. 4(218). P. 221-224. DOI 10.34835/issn.2308-1961.2023.04. p221-225. EDN HYYTVR.
9. Namazov A.K., I.S. Gazieva. Massovyj sport za rubezhom. Zdorove – osnova chelovecheskogo potenciala: problemy i puti ih resheniya. 2016. No. 11 (1). P. 433-437.
10. Saveleva O.V., Ivanova L.A., Danilova A.M., Galkin A.A. Razvitie fitnes industrii v realizacii gosudarstvennoj politiki v oblasti fizicheskoj kultury i sporta. Uchenye zapiski universiteta im. P.F. Lesgafta. 2019. No. 5 (171). P. 267–272.
11. Samohina E.A. Razvitie chelovecheskogo kapitala kak osnova informacionnogo obshchestva i modernizacii ekonomiki. Vestnik Chelyabinskogo gosudarstvennogo universiteta. 2019. No. 7(429). P. 203-209. DOI 10.24411/1994-2796-2019-10723. EDN RSRXDD.
12. Simashenkov P.D., Bukov A.V. Sravnitelnyj analiz sistemy upravleniya sferoj fizicheskoj kultury i sporta v Rossijskoj federacii i za rubezhom. Vestnik Mezhdunarodnogo instituta rynka. 2019. No. 1. P. 97-102. EDN LAXHGQ.
13. Sokolov A.S. Rol i uchastie mestnyh organov vlasti Germanii i Francii v razvitii fizicheskogo vospitaniya i sporta. Teoriya i praktika fizicheskoy kultury. 1999. № 4.
14. Usov D.R. Zarubezhnyj opyt gosudarstvennogo upravleniya v sfere fizicheskoj kultury i sporta. Flagman nauki. 2023. No. 3(3). P. 317-324. DOI 10.37539/2949-1991.2023.3.3.026. EDN IOATEY.
15. Cheryasova O.Yu., Onishchuk M.A. Fizicheskaya kultura i sport v zhizni sovremennogo obshchestva. Molodoj uchenyj. 2020. No. 48 (234). P. 332-336.

Can the BRICS Games replace the Olympics?

UDC 796.093+796.03

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

Corresponding author: shvedcov2004@yandex.ru

Received by the editorial office on 15.01.2025

Abstract

Objective of the study. The purpose of this work is to study the results of the participation of Russian athletes in the V BRICS Games, as well as to assess the contribution of these competitions to the formation of an alternative model of international sporting events.

Methods and structure of the study. To achieve this goal, an analysis of information materials related to Olympic issues was carried out.

Results and conclusions. The study found that in March 2022, Russian and Belarusian athletes were excluded from most international competitions on the recommendation of the IOC Executive Committee. The reason for this decision was a special military operation conducted by the Russian Federation on the territory of Ukraine. After two years of restrictions, Russia has demonstrated its ability to organize large-scale competitions by successfully hosting the V BRICS Games. This event can serve as a starting point for the development of a new international competition system independent of the IOC.

Keywords: *Russian athletes, V BRICS Games, alternative model, international sports events, Olympic issues, exclusion of athletes, international competitions, restrictions, organization of competitions.*

Introduction. BRICS is an interstate association of five states: Brazil, Russia, India, China and South Africa, the first letters of which in English form the abbreviation BRICS. BRICS Sports Games (hereinafter referred to as BRICS Games) – a multi-sport event that takes place in the country that chairs the association. The history of the BRICS games dates back to 2016, when only football was played at the trial Games in Goa (India). The programs of the next games included from three to five sports. The first Games in Guangzhou (China, 2017) included basketball, volleyball and wushu; II Games in Johannesburg (South Africa, 2018) – volleyball, football and netball. Due to the coronavirus pandemic, no games were held for three years, and the third games in 2022 were held in online format (breaking, chess and wushu). Awards in swimming, badminton, table tennis, tennis and beach volleyball were awarded in four days at the IV Games in Durban (South Africa, 2023). On October 22-24, 2024, the Russian Federation hosted the BRICS Summit. Anticipating this event, the country organized and hosted the V BRICS Sports Games, which were held from June 12 to 23, 2024 in Kazan, the capital of the Republic of Tatarstan.

Objective of the study. The purpose of this work is to study the results of the participation of Russian athletes in the V BRICS Games, as well as to assess the contribution of these competitions to the formation of an alternative model of international sporting events.

Methods and structure of the study. To achieve this goal, an analysis of information materials related to Olympic issues was carried out.

Results and conclusions. According to the corresponding member. RAO O.V. Matytsina the main goals of the games were: "...comprehensive strengthen-

ing of friendly sports ties based on the principles of equality, non-discrimination and equal admission of athletes to competitions, the development of new formats of interstate sports events" [1].

For the first time, the games were held in an open format, that is, with the participation of non-BRICS countries. Invitations to the games were sent to more than 70 countries, but in the end, representatives of 56 teams competed in Kazan. Undoubtedly, the number of teams would have been higher, and the levels of preparation of foreign athletes and, consequently, the competition at the Games would have been higher, if not for three reasons. Firstly, due to the timing of the Olympic Games in Paris (July 26-August 11), it was initially clear that the strongest foreign athletes would not attend the BRICS Games, for whom the OI-24 is the main start of the quadrennial. Secondly, the organizers had to refuse to pay for travel for the foreign teams.

Previously, this was a mandatory point for all major tournaments in Russia. Now, everyone who got to the BRICS Games did it at their own expense. Thirdly, there are political risks. The very fact of the arrival of foreign (and even more so elite) athletes in Russia at the present time was a sufficient reason for the IOC to impose sanctions on these teams and athletes. Therefore, many delegations brought non-core teams, as they did not want to risk the training and career of their leading athletes. Despite all the difficulties, Russia organized and hosted the V BRICS Games at a high level.

Deputy Prime Minister Dmitry Chernyshenko called them the most exciting competitions of the summer and even called the sanctions a "gift": "Despite serious external threats, Russian sports is developing dynamically. Russia has once again proved that it sets trends, including sports ones. The sanctions of unfriendly countries were a gift to us. They have given us opportunities, and we will develop new innovative formats" [2].

For Russian athletes, these games have become the main start of the season in terms of competition with foreign athletes and numerous fans in the stands. The competition was broadcast live on the state TV channel "Match!TV", which sent seven mobile television stations to Kazan. 4,600 athletes from 56 countries competed in the V BRICS Games. Athletes from 38 countries won medals at the Games, and 16 became champions. 387 sets of awards in 27 sports, 19 of which were Olympic, were awarded at 17 sports venues in Kazan.

The BRICS V Games team medal standings, unlike the OI [3, 4], were official, and the results of the first six leading countries in the team medal standings are shown in Table 1.

Table 1. TOP-6 of the V BRICS Games team medal standings

A country	Gold	Silver	Bronze	Total
Russia	266	142	101	509
Belarus	55	85	107	247
China	20	24	18	62
Uzbekistan	17	39	58	114
Brazil	8	20	23	51
Iran	4	12	20	36

Russia won 266 gold medals (68.7%) and a total of 509 medals (43.8%). The Belarusians who finished second have almost five times fewer wins (55) and 247 medals. China is in third place, with 20 gold and 62 awards in total, respectively. Uzbekistan's athletes demonstrated a high level of preparedness for the competition, with 114 medals in total. Russia's confi-

Table 2. Russian multi–medalist athletes of the V BRICS Games

Sportsman	Type of sport	Medals	Prize money
Alexander Maltsev	synchronized swimming	4+0+0	1 433 600
Doroshko Maya	synchronized swimming	4+0+0	1 433 600
Artemyev Vladislav	chess	3+1+0	1 254 400
Daniel Marinov	athletic gymnastics	2+1+2	1 111 000
Svetlana Kolesnichenko	synchronized swimming	3+0+0	1 075 200
Tulupova Agnia	synchronized swimming	3+0+0	1 075 200
Yesipenko Andrey	chess	3+0+0	1 075 200
Lagno Ekaterina	chess	3+0+0	1 075 200
Nikita Schleicher	diving	3+0+0	1 075 200
Kalmykova Anna	athletic gymnastics	2+2+0	1 075 200

dent victory in the team competition is a direct result of weak competition from other teams, as well as encouraging Russians with prize payments from the Ministry of Sports: 358.4 thousand rubles for gold.; 179.2 – for silver and 107.5 – for bronze.

The Russian athletes who distinguished themselves most at these Games and their prize money are shown in Table 2.

The competition program also influenced the number and quality of awards won (and the amount of prize money for Russians). For example, 11 sets of awards were awarded in synchronized swimming, while only two were awarded at the Olympic Games. Therefore, among the most successful Russian athletes there are four representatives of this sport, three more chess players, two gymnasts and a diver. Among the foreign athletes, representatives of Belarus distinguished themselves – V. Kravets (5 victories in rowing) and I. Shimanovich (4 victories in swimming).

In terms of the organization of competitions, the number of sports and awards being awarded, the number of fans in the stands and the coverage of the BRICS Games in Kazan in Russian media, they made a huge leap compared to their predecessors and set the bar high for the organizers of future competitions of this project.

However, the main sporting event of 2024 and the quadrennial anniversary were the XXXIII Olympic Games in Paris, which were attended by 10.7 thousand athletes from 206 teams, and at which 329 sets of awards in 36 sports were awarded. 63 teams became the champions of OI-24, and 85 became the winners. This sports forum once again confirmed that modern olympic games have become a symbol of sports and a global phenomenon that attracts thousands of the best athletes from all over the world, millions of tourists, fans and billions of TV viewers.

But increased interest in the Olympic Games began to form from the second half of the last century, when representatives of the countries of the socialist camp entered the Olympic arenas and there was a sharp increase in scientific and technological progress and the development of sports science. All these factors contributed not only to the rapid spread of the ideas of Olympism on all continents, but also to the professionalization and commercialization of Olympic sports. This has led to the fact that the ideas of Olympism have become attractive in terms of making a profit for multinational corporations and television companies (chap. mainly from the USA and Anglo-Saxon countries), with which the IOC cooperates on an ongoing basis. Currently, television is the main source of funding for the Olympic Games and Olympic sports. Thus, the IOC's revenues for 2017-2021 amounted to $ 7.6 billion, of which the sale of television broadcasts accounted for 61%, sponsorship and partnership (mainly the TOP program) – 30%, ticket sales and licensing – 5%, other revenues – 3% [5].

Therefore, Olympic sports is increasingly moving away from the original ideas of Coubertin and his supporters, and the Olympic Games have become a big business project dependent on the activities of the same sponsors and television companies. And already the IOC, the World Anti-Doping Agency (WADA) and many international sports federations (IF), in order to please the countries of the Anglo-Saxon bloc, are making decisions that contradict the main provisions of the Olympic Charter and violate this document. In many ways, these decisions are aimed at weakening the influence of the Russian Federation not only in the Olympic movement, but also in world politics and the economy.

Now Russian athletes are in complete discrimination. At first, they were disqualified on the basis of collective responsibility (because of the "state doping program" identified by WADA), and for the last 2.5 years, Russians have not been allowed to participate in international competitions on national and political grounds (because of their own). As a result of such sanctions and restrictions on the OI-24, Russia was represented by only 15 athletes competing in the team of independent neutral athletes (AIN). Naturally, the current political situation forces Russia to take retaliatory actions, including holding international competitions of a new format – without the participation of the IOC and WADA.

Conclusions. The results of this study can be considered as follows:

1. Russia won the medal standings of the V BRICS Games in Kazan with a huge advantage. The balance of power in the team competition and the level of competition were largely influenced by the difficult geopolitical situation in the world and the IOC sanctions aimed at isolating Russia from Olympic sports, due to which foreign delegations did not bring the main national teams.

2. The BRICS sports games have created an image of a successful major sports forum in their less than ten-year history and difficult political

conditions. It is obvious that the BRICS Games in Kazan are the first real attempt to create normal alternatives in sports without sanctions for political reasons, without any preferences for transgender people and without the dubious anti–doping fight by the IOC and WADA. In the medium term, the BRICS games will not become an alternative to the Olympic Games, but they can take their rightful place in world sports.

3. In the coming years, Russia has almost no chance of fruitful cooperation with the IOC, WADA and many IFAS. Therefore, in conditions of isolation from Olympic sports, further state and corporate support for physical culture and sports, as well as the holding and participation of Russian athletes in international competitions of a new format, which include the BRICS Games, the CIS Games, the "Games of the Future", etc., is more relevant than ever for the Russian Federation.

References

1. Matytsin O.V. MOK zanemog? https: rt-online. ru/mok-zanemog. Date of access 25.09.2024.
2. Chernyshenko D.V. Sankcii nedruzhestvennyh stran byli nam podarkom. https://www. gazeta.ru/2024/04/25/22873093 Date of access 27.09.2024.
3. ShvetsovA.V. Obshchekomandnyj medalnyj zachetsov remennyh Olimpijskih igr. Sport – doroga k miru mezhdunaro dami. Proc. VII nternat. scientific and practical conf. M., 2022. pp. 208-213.
4. Shvetsov A.V. Olimpijskie zimnie igry: etapyrazvitiyaistrany-lidery obshchego medalnogo zacheta. Gumanitarnye nauki. Vestnik Finansovogo universiteta. 2023. T. 13. No. 1. pp. 41-49.
5. Shvetsov A.V. Zimnie Olimpijskie igry-2022 narossijskih gosudarstvennyh telekanalah. Gumanitarnye nauki. Vestnik Finansovogo universiteta. 2024. T. 14. No. 1. pp. 126-133.

Provision of personnel in the field of physical culture and sports in the context of the implementation of the «Strategy for the development of physical culture and sports in the Russian federation for the period up to 2030»

UDC 331.108:796

PhD, Associate Professor **A.V. Sharonova**[1]
PhD, Associate Professor **A.M. Leontyuk**[1]
E.A. Tsymbal[1]
PhD, Associate Professor **I.I. Kiprushina**[2]
[1]St. Petersburg State University, St. Petersburg
[2]Herzen Russian State Pedagogical University, Saint Petersburg

Corresponding author: mironova.olga2014@gmail.com

Received by the editorial office on 11.05.2025

Abstract

Objective of the study. As part of the implementation of the "Strategy for the Development of Physical Culture and Sports in the Russian Federation until 2030," this study aims to determine the current requirements imposed by employers on personnel in the field of physical culture and sports.

Methods and structure of the study. To achieve this goal, regulatory documents, scientific and methodological materials, and training programs for specialists in the field of physical culture and sports related to personnel training were analyzed. In addition, a survey was conducted among employers and the data obtained was systematized about their expectations from employees working in this field.

Results and conclusions. The results showed that, despite the high level of training of specialists at federal universities, there are problems associated with insufficient integration of various disciplines, limited application of knowledge in practice and weak interaction with the professional community. In conclusion, the authors propose a number of recommendations aimed at improving the quality of specialist training and, as a result, at the successful implementation of the Strategy for the Development of Physical Culture and Sports in the Russian Federation until 2030.

Keywords: *physical education, human resources, development strategy, regulatory legal acts, scientific and methodological literature, specialist training programs, human resources, specialist training, interdisciplinarity, training effectiveness.*

Introduction. In the modern world, physical culture and sport play a key role in improving the quality of life of citizens, forming a healthy lifestyle and human development. The importance of this is confirmed at the state level and is reflected in the implementation of the Strategy for the Development of Physical Culture and Sports in the Russian Federation until 2030 (hereinafter referred to as the Strategy) [1].

The development of the human resources potential of physical culture, sports and sports medicine is one of the priorities for the development of the field of physical culture and sports according to the Strategy, since in a highly competitive environment (including through the use of advanced technologies) Both in the international arena and within the country, new requirements are being placed on the training of personnel and scientific support for sports [1; 2, p. 105; 8, p. 120].

Moreover, the remaining priority areas (from the development of the sports reserve training system and high-performance sports to the development of the economic model of physical culture and sports) directly depend on the level of training of specialists.

An analysis of key indicators of the development of physical culture and sports, which determine the need for personnel, revealed a significant lag in the

growth rate of staffing from the necessary (stagnation has been observed in the last three years), based on the growth rate of the number of citizens systematically engaged in physical culture and sports (an annual increase of at least 4%, currently 56.8% of the Russian population are engaged) [5, p. 58; 8, p. 120]. At the same time, there is a stabilization of the ratio of the number of athletes per coach in additional education organizations, which is due to the approved standards of occupancy [2, p.105].

Since 2006, federal universities have been created in Russia to solve the problem of staffing, as educational, scientific and even innovative clusters aimed at developing regions through the training of highly qualified specialists [8, p. 120]. It should be noted that 9 out of 10 such universities have either an entire structural unit (institute, faculty, etc.) or an educational program in the areas of 49.03.01 "Physical culture", 49.03.04 "Sports" or 44.03.01 "Pedagogical education". Solving the tasks set out in the Strategy, as well as implementing the goals of state programs developed on its basis, requires educational institutions to train personnel that meet the modern needs of society and the state.

Thus, the purpose of the study is to identify the current demands of employers in the field of staffing in the field of physical culture and sports in the framework of the implementation of the "Strategy for the development of physical culture and sports in the Russian Federation until 2030."

Methods and structure of the study. As part of the study in 2025, educational programs for the training and advanced training of specialists in the field of physical culture and sports at federal universities were analyzed, as well as rapidly changing data on the needs of both employers and society, the needs of the labor market and expectations from specialists in the field of physical culture and sports. The following professions were selected for detailed study: sports coach, physical education teacher and fitness trainer. To identify the expectations of the applicant for the vacant position, an employer survey was conducted, which was attended by the heads of organizations and/or HR services of organizations in St. Petersburg and the Leningrad region (6 sports and 10 secondary schools, and 3 networks of fitness clubs).

Results and conclusions. The analysis of the labor market and expectations from specialists revealed that it is no longer enough to have only basic knowledge in the field of theory and practice of physical culture and sports, it is necessary to be competent in related fields, for example, management, psychology, economics and others. In a rap-

Table 1. The necessary knowledge and skills of the candidate applying for the vacant position in the opinion of the employer

Required skills	Sports coach	Physical Education teacher	Fitness Trainer
Professional skills	*A high level of knowledge of the basics of theory and methodology of physical culture and the chosen sport, the basics of sports training methods*		
	In-depth knowledge in the field of physiology and sports medicine; basic understanding of the anti-doping system	Knowledge in the field of recreational and/or adaptive physical culture; experience in organizing mass sports events	High level of knowledge of modern fitness programs, including those used in this fitness club; retraining or advanced training in the field of nutrition and dietetics
Digital skills	A confident level of skill in working with: trackers (Wearables); applications for motion video analysis; load tracking software (TrainingPeaks). The ability to adapt training to online mode, use VR/AR to simulate competitive conditions, analyze statistics to optimize training plans	The ability to use digital tools for online learning and interactive games. Proficiency in working in office programs	The ability to conduct online training and video channels. Maintaining social networks to attract customers. The ability to engage in network promotion (participation in partner programs and cooperation with fitness brands)
Personal qualities	*The ability to work in a team is important. A high level of development of managerial and organizational skills is required*		
	Empathy; focus on results	The ability to create a positive atmosphere during classes; high level of emotional intelligence and psychological literacy, compliance with ethical rules	Have developed "soft skills", willingness to change, the ability to work in a team, maintain KPIs and continuous training
Additional skills	*Legal literacy*		

idly transforming world, one of the most sought–after skills is the ability to adapt quickly. In this case, training should go beyond traditional disciplines and include the development of skills such as the study of modern technologies, understanding current trends, as well as the development of abilities for self-learning and self-organization.

New technologies are already being actively introduced into the field of sports and fitness. These can be applications for monitoring physical activity indicators, as well as the use of artificial intelligence to create customized training programs. Trainers and teachers should be able to work with these tools in order to make the most effective decisions in their work [1].

However, it is important not only to possess technologies, but also the ability to use them competently, analyze data, interpret results and apply them in practice, which requires a high level of digital literacy.

The strategy in its content provides for its own ways of developing the human potential of physical culture and sports [1]. However, most of them are exclusively related to specialists in the field of sports or cannot be implemented by federal universities within the framework of the education system, despite the fact that they participate in the implementation of the goals and objectives of this field. Based on a comprehensive analysis of the data obtained, we have developed the following recommendations that universities should pay attention to during the training of future specialists, including to increase the competitiveness of graduates [3-7; 9-10]:

1. Constant monitoring of labor market needs and employment conditions. An important point for building a future learning trajectory is to predict future needs.

2. Addition and updating of educational programs taking into account modern trends [4, p. 53; 6, p.44; 9, p. 641]. For example, the introduction of new disciplines into the educational program and training in the use of digital technologies and the study of new fitness technologies or immersion in digital sports.

3. Increasing the volume of practical training, including through professionally oriented (pedagogical and coaching) practices and internships in sports and educational organizations [7]. Another way to gain practical experience may be to introduce project activities, during which students, with the support of the university, can develop and implement their own training programs or activities.

4. Creation and / or development of a modern research base at universities in the field of physical culture and sports, as well as the establishment and development of partnerships with research institutes, sports and general education schools, sports federations for joint research.

5. Transformation of infrastructure, involving not only the modernization of the material and technical base itself, but also the modernization of organizational mechanisms.

6. Support for student self-government and stimulation of their organizational, managerial, research and professional activity.

Conclusions. Federal universities are the fundamental basis for training human resources and play a key role in this process, which consists not only in providing high-quality education, but also in creating an environment conducive to professional growth and, as a result, successful implementation of the Strategy. I would like to note that the current system of training future specialists in the field of physical culture and sports demonstrates a high level, however, it requires to be more variable depending on the needs of the labor market and current trends in the field of physical culture and sports.

References

1. Rasporyazhenie Pravitelstva RF ot 24.11.2020 № 3081-r «Ob utverzhdenii Strategii razvitiya fizicheskoj kultury i sporta v Rossijskoj Federacii na period do 2030 goda».
2. Vorobev S.A., Shchennikova M.Yu., Brejder N.A., Shchennikov A.N. Vostrebovannost v specialistah fizicheskoj kultury i sporta s uchetom pokazatelej kadrovogo obespecheniya otrasli. Teoriya i praktika fizicheskoy kultury. 2021. No. 8. P. 104-106.
3. Koval T.E., Yarchikovskaya L.V., Lukina S.M. Ispolzovanie opyta raboty v distancionnom formate pri provedenii uchebnoj trenerskoj praktiki v SpbGU. V knige: Filosofiya i kultura informacionnogo obshchestva. Tezisy dokladov Odinnadcatoj Mezhdunarodnoj nauchno-prakticheskoj konferencii. Sankt-Peterburg, 2023. P 330-332.
4. Lesheva N.S., Sharonova A.V. Sravnitelnyj analiz obrazovatelnyh onlajn-platform po fizicheskoj kulture v usloviyah distancionnogo obucheniya. Teoriya i praktika fizicheskoy kultury. 2021. No. 6. P. 52-54.

5. Lesheva N.S., Sharonova A.V., Mironova O.V., Moskalenko I.S. Formirovanie tvorcheskoj kompetentnosti studentok v usloviyah elektivnyh kursov po fizicheskoj kulture i sportu. Teoriya i praktika fizicheskoy kultury. 2019. No. 11. P. 58-59.
6. Lukina S.M., Lobanov Yu.Ya., Sharonova A.V. i dr. Osvoenie discipliny «Fizicheskaya kultura i sport» v vuze s primeneniem innovacionnyh tekhnologij. Teoriya i praktika fiz. kultury. 2019. No. 4. P. 44-45.
7. Pedagogicheskaya i trenerskaya praktika dlya obuchayushchihsya po osnovnoj obrazovatelnoj programme vysshego obrazovaniya bakalavriata «Fizicheskaya kultura i sport» (napravlenie podgotovki 49.03.01 – «Fizicheskaya kultura»): uchebnoe posobie kollektiv avtorov; pod red. L.V. Yarchikovskoj, O.V. Mironovoj, S.M. Lukinoj. SPb.: Izdatelsko-poligraficheskaya associaciya vysshih uchebnyh zavedenij, 2024. 166 p.
8. Tappaskhanova M.A. Federalnye universitety kak novaya forma organizacii vysshego professionalnogo obrazovaniya. Otechestvennaya i zarubezhnaya pedagogika. 2012. No. 2(5). P. 119-126.
9. Sharonova A.V., Zhilin S.S., Mironova O.V. Kafedra fizicheskoj kultury: nastoyashchee i budushchee. V sbornike: Sovremennye paradigmy ustojchivogo razvitiya regionalnyh socialno-ekonomicheskih sistem v usloviyah rosta neopredelennosti vneshnej sredy. Materialy Mezhdunarodnoj nauchno-prakticheskoj konferencii. 2023. P. 640-643.
10. Increasing the efficiency of students learning process at a university through physical education. A.V. Sharonova, O.V. Mironova, L.V. Yarchikovskaya, B.A. Mikhailov, O.V. Vashchuk, I.I. Kiprushina. Theory and Practice of Physical Culture. 2024. No. 1. P. 42-45.