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Original Article

Use of boxing to improve the physical education content in lyceums with intensive military and physical training

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Abstract:
The introduction of the innovative physical education technologies in the educational process of military lyceums can provide a decrease in the share of teachers impromptu and contribute to the achievement of the planned result. *Purpose*: to explore the effectiveness of the application of boxing means within a framework of the variable part of the content of the discipline "Physical Education" to improve the physical preparedness of pupils of the lyceums with intensive military and physical training. *Methods*: theoretical analysis and generalization of data from scientific and methodological literature and Internet data, pedagogical observation, pedagogical experiment, methods of mathematical statistics. *Organization.* The pupils of Mukachevo lyceum with intensive military and physical training participated in the study; they were divided into two groups (control group, n=63 and experimental group, n=29) in the second term of 2014-1015 academic year. *Results.* The effectiveness of the application of boxing means within the framework of the variable module of the educational subject "Physical Education" is associated with reliable intra-group increases in the indicators of students according to such manifestations of physical qualities: the maximum strength is 10.55-12.31 %, $p \leq 0.05$-0.0; the explosive strength – 5.86-17.06 % at $p \leq 0.05$-0.1; the flexibility – 12.69-24.82 % at $p \leq 0.05$-0.01; the speed capabilities – 18.77-25.13 %, at $p \leq 0.01$; the strength endurance and speed-strength endurance - 18.03-28.50 % at $p \leq 0.01$ and general endurance - 9.42 % at $p \leq 0.01$ compared to the baseline level.
Key words: lyceum, pupils, means, boxing, curriculum classes, physical education.

Introduction

The development of the physical education technologies in military lyceums can ensure a reduction in the share of teachers' impromptu and contribute to the achievement of the planned result, which is largely attributed to the application of the leading principles of individualization, differentiation, variability, etc. (Mysiv, 2005; Skavronskyi, 2009; Gorshova, 2017). It gives grounds for solving new scientific tasks concerning substantiation of the application of means of various sports, in particular boxing, in the physical education system of the abovementioned specialized educational institutions (Honshowskyi, 2012). The process of physical education in lyceums with intensive military and physical training have not been overlooked by scientists (Popadin, 2013; Ilnytskyi, 2017; Oderov, 2017).

The search for scientific information noted the elaboration of the general methodological approaches (Finogenov, 2011; Ilnytskyi, 2015) and certain aspects of the control and modelling of physical fitness (Krutsevych, 2011); the individualization and differentiation of physical education (Honshowskyi, 2012), the structure and content of physical education during the class time and extracurricular activities (Horodynska, 2004); confirmation of the effectiveness of means of different sports (Balushka, 2016; Briskin, 2016; Ivashchenko, 2017). This gave grounds to single out the scientific and practical task concerning the improvement of the physical fitness of students of lyceums with intensive military and physical training by taking into consideration the possibilities of the variability of the educational process in Physical Education and the introduction of boxing means into its structure and content (Briskin, 2015; Melnyk, 2017).

Materials and methods

There were applied such methods: theoretical analysis and generalization of data from scientific and methodological literature and Internet data, pedagogical observation, pedagogical experiment, methods of mathematical statistics. Evaluation of the effectiveness of the boxing means application program in the process of improving the physical fitness of students of lyceums with intensive military and physical training within the framework of the variable module of the educational subject "Physical Education" was held in the conditions of the educational process at Physical Education lessons at Mukachevo lyceum with intensive military and physical

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training. To conduct the pedagogical experiment, the students were divided into a control group and an experimental group (63 and 29 pupils respectively).

For the representatives of the experimental group, there was developed the boxing means application program for the variable part of the content of curriculum classes in the educational subject "Physical Education", which was designed for the second term of 2014-1015 school year. At the same time the representatives of the control group were working under the standardized program of the educational subject "Physical Education", which also contained a variable component at the teacher's choice. It included elements of various sports (except for boxing).

Results

The information presented in this article refers to the application of the boxing means in the educational process at Physical Education lessons at the lyceums with intensive military and physical training as a methodical tool. It provided for the development of a program for the variable part of the content of the curriculum classes in the educational subject "Physical Education". The results of the implementation of the boxing means application program in the conditions of the educational process at Physical Education lessons as a variable component of the content of the educational subject "Physical Education" in the framework of a local pedagogical experiment with the students of Mukachevo lyceum with intensive military and physical training, indicated the following (Table 1).

Table 1. Changes in indicators of physical fitness of students of the lyceum with intensive military and physical training based on the results of the implementation of the boxing means application program within the variable module of the educational subject "Physical Education".

№	Indicator	The contingent of students involved in the study			
		EG2 (n=29)		CG2 (n=63)	
		Baseline data	Final data	Baseline data	Final data
1.	Deadlift dynamometry	101.66±7.11	112.38±5.63	104.73±10.33	109.70±7.97
2.	Hand grip dynamometry	28.86±4.95	32.41±5.15	27.95±3.44	32.94±3.09
3.	Seated medicine ball throw for distance (2 kg)	380.66±20.01	425.10±23.53	391.03±17.63	403.98±16.47
4.	Tennis ball throwing for distance	39.66±3.73 36.79±3.55	44.97±3.32 43.07±3.02	38.25±3.76 35.57±3.50	42.89±2.55 39.84±2.76
5.	Standing long jump	174.21±11.61	184.41±6.97	183.57±10.57	185.11±7.58
6.	Back scratch test	58.41±5.92	51.00±3.73	61.38±8.73	66.03±5.60
7.	Bending forward from the standing position	9.72±3.56	12.12±2.43	9.97±3.83	7.48±2.97
8.	20 m Sprint Run	2.99±0.18	2.92±0.15	2.92±0.14	2.93±0.15
9.	5 seconds running in the place	18.86±3.35	22.03±2.36	18.70±2.79	19.06±3.12
10.	Running 100 m	14.61±0.19	14.55±0.18	14.78±0.50	14.59±0.44
11.	Tennis ball throwing on the accuracy	6.72±1.20	8.41±0.62	6.29±1.03	7.17±0.95
12.	Shuttle running 4 × 9 m	10.21±0.34	10.10±0.23	10.21±0.37	10.20±0.31
13.	Three forward rolls	4.83±0.60	3.92±0.31	4.77±0.55	4.62±0.36
14.	Flexion and extension of arms in front lying support	36.34±3.63	42.90±2.70	35.33±4.09	43.90±2.09
15.	Sit-up from the back-lying position in 30 seconds	21.17±2.04	27.21±2.58	20.29±2.41	22.84±2.37
16.	Bent suspension	32.38±4.43	39.93±2.90	34.30±5.79	37.32±4.64
17.	Pulling up on the crossbar	12.79±1.85	15.76±1.36	13.03±2.20	16.11±1.56
18.	The Cooper Run test, 12 minute running	2331.79±61.79	2551.48±53.72	2349.49±48.31	2558.21±43.38

According to the main results of the performance of control exercises for determining the physical fitness of students of lyceums with intensive military and physical training before and after the pedagogical experiment, there were registered changes in the representatives of the control group. In particular, significant differences between baseline and final data are available in a large number of the control exercise results (14 of

19 indicators). Among them, there are changes in the maximum strength indices ("Deadlift dynamometry", "Hand grip dynamometry") - 4.97 kgf (4.74 % at p≤0.05) and 4.98 kgf (17.83 % at p≤0.01); in the explosive strength indices ("Seated medicine ball throw for distance", "Tennis ball throwing for distance (by dominant and non-dominant hand)" - 12.95 cm, 4.63 and 4.27 m (3.31 %, 12.12 % and 12.00 % at p≤0.01); in the spine and hip joint flexibility indices ("Bending forward" - 2.49 cm (25.00 % at p≤0.05); in the speed capabilities indices ("Running 100 m") - 0.19 s (1.26 % for p ≤0.05); in the coordination abilities indices ("Tennis ball throwing on the accuracy") - 0.89 units (14.14 % at p≤0.01); in the strength endurance and speed-strength endurance indices ("Flexion and extension of arms in front lying support", "Sit-up from the back-lying position in 30 sec", "Bent suspension", "Pulling up on the crossbar") - 8.57 times (24.26 %), 2.56 times (12.60 %), 3.02 s (8.79 %) and 3.08 times (23.63 %), respectively, in all cases, p≤0.01. For all other manifestations of physical qualities, which are reflected in the structure and content of the control exercises "Standing long jump", "20 m Sprint Run", "5 seconds running in the place", "Shuttle running", "Three forward rolls"), significant changes have not been recorded. At the same time there are certain shifts in the indices according to these control exercises in the range from 0.08 to 3.13 % at p> 0.05. For the students of the experimental group there is also a considerable amount of significant changes in indicators. In total, we recorded (16 out of 19 positions). They are associated with all manifestations of the physical qualities of students.

Among them, the most significant changes occurred in the results of the control exercises "Bending forward", 24.82 %; "Tennis ball throwing on the accuracy" 25.13 %; "Sit-up from the back-lying position" 28.50 %; "Bent suspension" 23.32 % and "Pulling up on the crossbar".

A number of indicators were in the improvement zone from 10.55 to 18.77 % of the initial level ("Deadlift dynamometry", "Hand grip dynamometry", "Tennis ball throwing for distance (dominant and non-dominant hand)", "Back scratch test", "5 seconds running in the place", "Three forward rolls", "Flexion and extension of arms in front lying support"), all these indicators had the level of reliability of the changes p≤0.05-0.01. There were no positive, reliable changes in the results of the three control exercises that characterize the dexterity manifestations ("Shuttle running 4 × 9 m", 0.12 s, 1.15 % at p> 0.05); speed abilities ("Running 100 m" and "20m Sprint run", 0.06 and 0.07 s, 0.40 and 2.42 % at p> 0.05). A separate indicator of the results of the control exercise "Sit-up from the back-lying position for 30 seconds", characterizing the speed-strength endurance, showed significant differences at the level p≤0.05. They were 0.89 times (4.37 % with p≤0.05) in favour of the students in the experimental group.

The representatives of the control group did not manage to get the reliable advantage according to the physical fitness indicators. There are minor (p>0.05) dominance in the average group results in the control exercises "Hand grip dynamometry" (0.52 kgf, 1.59 %); "Standing long jump" (0.70 cm, 0.38 %); "Flexion and extension of arms in front lying support" (1.01 times, 2.30 %); "Pulling up on the crossbar" (0.35 times, 2.19 %) and "The Cooper Run" (6.72 m, 0,26 %.) It is likely that with a longer application of the standardized program, they could go through a certain level of reliability, but it requires the organization of additional research and is not included in the context of our work. However, the representatives of the experimental group have obtained differences in a much larger number of indicators, in comparison with the students of the control group. First of all, let us consider those changes that have reached the largest critical values (p≤0.01).

This group has included indicators of physical fitness, characterized by the control exercises "Tennis ball throwing for distance (non-dominant hand)" 3.23 m, 8.10 %; "Back scratch test" 15.03 cm, 22.76 %; "Bending forward from the standing position" 4.66 cm, 62.35 %; "5 seconds running in place" 2.97 times, 15.58 %; "Tennis ball throwing on the accuracy" 1.24 units, 17.27 %; "Three forward rolls" 0.69 s, 15.02 %; "Sit-up from the back-lying position for 30 s" 4.37 times, 19.11 %. The second group includes those indicators that had a confidence level of changes p≤0.05: "Bent suspension" 2.61 s, 7.00 %; "Tennis ball throwing for distance (dominant hand)" 2.08 m, 4.84 %; "Seated medicine ball throw" 21.12 cm, 5.23 %; "Deadlift dynamometry" 2.68 kgf, 2.44 %. The third group includes those indicators in which the advantages of the experimental group (2) over the control group (1) are observed, but a certain critical level is not reached (p>0.05: "20 m Sprint run" (0.01 s, 0.33 %), "Running 100 m" (0.05 s, 0.31 %), "Shuttle running 4×9 m" (0.11 s, 1.06 %).

The comprehensiveness of the results obtained on improvement of the physical fitness of students of the lyceums with intensive military and physical training needs to be supplemented in the aspect of mastering them with special-applied boxing skills. These data are reflected in the second part of the analysis of the effectiveness of the author's program and provide for the identification of changes in the indicators of special boxing working capacity of the students of the experimental and control groups of Mukachevo Lyceum with intensive military and physical training (Table 2).

Table 2. Changes in the indices of special preparedness for boxing of the students of lyceums with intensive military and physical training based on the results of the implementation of the boxing means application program within the variable module of the educational subject "Physical Education"

№	Indicator	The contingent of students involved in the study			
		EG(n=29)		CG (n=63)	
		Baseline data	Final data	Baseline data	Final data
1.	The number of blows in 8 seconds (times)	28.55±2.24	37.93±2.85	27.63±3.01	31.41±2.61
	Average force of blows (kgf)	23.14±2.06	30.07±2.88	22.38±2.10	25.49±2.36
2.	The number of blows in 40 s (times)	97.72±3.63	152.72±4.56	96.21±3.31	102.40±5.63
	Average force of blows (kgf)	15.62±1.32	21.55±2.09	15.43±1.27	17.65±1.79
3.	Accuracy of blows (times)	7.86±0.90	8.41.±0.77	8.11±1.04	8.27±0.86
4.	Coefficient 8/40 (units)	0.69±0.06	0.81±0.06	0.70±0.08	0.66±0.07

The implementation of the boxing means application program as a variable part of the content of the curriculum classes in the educational subject “Physical Education” - a lesson form of physical education in the lyceums with intensive military and physical training led to a comparison of the indicators of special performance in boxing of students of the experimental and control groups.

It should be noted that we could not predict with accuracy the final structure and content of the preparedness of the representatives of Mukachevo lyceum with intensive military and physical training. This is due to the fact that unlike in Lviv lyceum named after Heroes of Kruty, in Mukachevo specialized educational institution, the educational process was conducted (2014-2015 academic year) without additional (extra-curricular forms) activities. However, the realized direction of the boxing means application within the framework of the lesson forms and the current changes have indicated the need for a more detailed discussion of the results.

Thus, we have ascertained the absence of differences in the baseline data of the experimental and control groups. According to all control exercises on special working capacity in boxing, pupils were at a relatively equal level.

Insignificant advantages in favour of this or that group were observed in such control exercises: “The number of blows in 8 seconds” (number and strength), “The number of blows in 40 seconds” (number and strength) - in favour of the students of the experimental group (2), the advantage was in range from 1.25 to 3.38% at $p > 0.05$; “Accuracy of blows" and “Coefficient 8/40” - in favour of the students of the control group, the advantage was 2.20-3.07 % at $p>0.05$.

After the completion of the pedagogical experiment in the conditions of Mukachevo lyceum with intensive military and physical training, we processed the data of three groups. The first group of data is a comparison of the baseline and final indicators of the students of the control group, the second is the comparison of the baseline and final indicators of the students of the experimental group, and the third is the comparison of the final results of the students of the control and experimental groups.

According to the data of the control group, we observe a significant improvement in the results of the control exercises on the special working capacity in boxing. The increases of indicators are observed in five of the six cases. There are no reliable changes in the control exercise "Accuracy of blows". In it the average group result increased by 0.16 blows (1.96 % at $p > 0.05$).

So, positive changes are observed for blows in time intervals of 8 and 40 seconds (3.78 blows, 13.67 % and 6.19 blows, 6.43 % respectively at $p \leq 0.01$), the average indicator of the force of blows in the periods of 8 s and 40 s (3.11 kgf, 13.90 % and 2.22 kgf, 14.40 %, respectively, at $p \leq 0.01$). At the same time, there was a decrease in the absolute and relative index of the “Coefficient 8/40” (0.05 units, 6.78 % at $p \leq 0.05$).

It can be stated that the students have the greatest achievements in performing the control exercises “The number of blows in 40 seconds” (an increase was 55.00 blows, 56.28 % for $p \leq 0.01$), “The number of blows in 8 seconds” (an increase of 9.38 blows, 32.85 % at $p \leq 0.01$) and the average indicator of the force of blow in the period of 40 seconds (increase of 5.93 kgf, 37.97 % at $p \leq 0.01$). Other indicators have increased by 7.02-29.96 % at $p \leq 0.05$-0.01. The obtained results from the data of the experimental group (2) were predictable to some extent, because most of the means that were applied in the main part of the lessons were the means of boxing.

However, our interest was not actually a change in the level of special preparedness, but its combination with the increases in the physical preparedness of the students of the lyceums with intensive military and physical training and a comparison of the two methodical tools of boxing means application (in the conditions of the class time and after-school forms of physical education). These data are presented below.

According to the third group of data, which concerned the comparison of the final data of students of the control and experimental groups, we have ascertained the following. There is a significant advantage

according to the most indicators of control exercises of the students of the experimental group over the control group. The exception is the result of the exercise "Accuracy of blows". There are no significant differences between the control and experimental groups, and value of the differences is 0.14 blows (1.74 % at $p > 0.05$).

Regarding the indicators of other control exercises, the advantage of students of the experimental group is more indicative. For the most control exercises, it ranges from 17.95 to 23.26 % (at $p \leq 0.05$-0.01). However, it is worth to be noted that the greatest value of the differences of students, is 49.15 % (50.33 blows at $p \leq 0.01$) in the control exercise "The number of blows in 40 seconds" in favour of the students of the experimental group. We assume that this exercise by its structure and content has the most pronounced specialized character of motor activity, inherent for special working capacity in boxing. This fact confirms that the main purpose of development of the boxing means application program in the lesson forms of physical education (on the example of the variable part of the content of the curriculum classes in the educational subject "Physical Education") is achieved.

Based on the results of the final testing of the physical fitness of the students of the control group, there is a significant deterioration in the parameters of the control exercise "Back scratch test", which characterizes the mobility in the shoulder joints. The result is 4.65 cm (7.58 % at $p \leq 0.01$). Thus, under the conditions of a standardized version of the structure and content of the curriculum classes in the educational subject "Physical Education", it was not possible to change the negative trends that we had detected at the stage of the preliminary and basic pedagogical observations. This phenomenon is associated with a decrease in the flexibility (mobility of some joints) in students of the second year of training compared with the students of the first year. This indicates the necessity to take into consideration the need for accentuated attention to this physical quality in further researches on physical fitness of students of lyceums with intensive military and physical training.

The obtained data indicate that at the current growth rate of indicators of the students of the control group, their structure is not homogeneous. The presence of a significant decrease in the indicator "Coefficient 8/40" points out a disproportionate increase in the results of the two leading control exercises. That is, the number of blows in the student with an increase in the number of blows in a small time interval (8 s), does not always increase, but more often on the contrary, decreases in the average time interval (40 s). In the opinion of many boxing scientists, this is evidence of the lack of the effective unidirectional mechanisms for ensuring special working capacity, particularly, in boxing. However, taking into account that the students of the control group did not have the system of exercises with the application of boxing means coordinated with the tasks of the educational process in physical education, such a result is logical.

Discussion

The generalization of the experience of physical education of students of lyceums with intensive military and physical training indicates the preservation of common basic tasks for general educational institutions and specialized educational institutions. However, the current social and political conditions set new demands, in particular, to the physical fitness of students of the lyceums with intensive military and physical training, with the need for a qualitative transfer to further professional and applied activities.

The main directions of the implementation of scientific research in physical education among students of lyceums with intensive military and physical training are associated with the formation of the physical training and educational environment, general methodological approaches, ascertainment of the cadets' morphofunctional indicators. Separate blocks of research are aimed at the scientific substantiation of the issues of control and modelling of physical fitness, individualization and differentiation of physical exertion, study of various aspects of the structure and content of physical education within the framework of the lessons and after-school forms of work. In the conditions of partial interpretation of physical education in lyceums with intensive military and physical training, a certain part of the scientific provisions concerning physical training in military institutions of higher education can be adapted. At the same time, the substantiation of the variability of the content of physical education is concentrated on a small number of studies and the effectiveness of the means of various sports (wrestling, hand-to-hand fighting, weightlifting, etc.).

This gave grounds to highlight the scientific and practical task to improve the physical fitness of pupils of the lyceums with intensive military and physical training by taking into consideration the possibilities for the variability of the educational process in physical education and the introduction of boxing means into its structure and content. The obtained data indicated the presence of significant changes in certain indicators of control exercises determining the physical fitness of students of the both groups (control and experimental). In connection with this, we have chosen a sequence of descriptions of the results: the changes in the control group, the changes in the experimental group, the comparison of changes in the control and experimental groups during the pedagogical experiment. We associate the absence of reliable positive changes in the experimental group with several factors, the reasoning of which is found in scientific and methodological literature (Dudnyk, 2017; Galan, 2017; Yarmak, 2017; Pityn, 2017; Nakonechnyi, 2017). On the one hand, the manifestations of these physical qualities in the conditions of the defined control exercises are quite conservative, their development and improvement of their effectiveness is a complex and multifactorial phenomenon. A significant number of

scientists, in particular in track and field athletics, indicate that with the increase in the result, each subsequent shift occurs with a greater effort. All control exercises, in which no positive changes have occurred, are short-lived, which makes it impossible to provide a qualitative representation of the minimum changes in the preparedness of the students.

On the other hand, when developing the boxing means application program, we took into account the structure of the differences in the physical fitness of students in the first and second years of training, the possibility of qualitative interpretation of various manifestations of physical qualities, and the direct structure and content of the load, inherent in boxing means. Thus, the number of running exercises of different duration, in our opinion, was insufficient for the formation of reliable impact on this component of the physical fitness of the students of the experimental group of Mukachevo Lyceum with intensive military and physical training. Also, when developing our own program, we focused on the volumes of an exclusively variable part of the content of the main part of the lesson and ignored the preparatory (mostly) and final part of the curriculum classes in "Physical Education". In the context of the work performance, it is especially important for us to compare the indicators of the control and experimental groups. After all, in the conditions of constructing this part of the study, we used the similarity of volumes according to the curriculum classes in the absence of additional influences within the framework of physical education of Mukachevo Lyceum with intensive military and physical training. This pedagogical experiment is designed for such a version of the educational process. The only and, in our opinion, decisive changes were the introduction of the boxing variation module, built on the basis of our program, to the content of the curriculum classes in the educational subject "Physical Education".

Comparison of the indicators of the control and experimental groups before the introduction of the boxing means application program showed similarity of results within a reliable difference ($p>0.05$) according to the majority of indicators.

So, according to the results of the implementation of the "Physical Education" program at Mukachevo lyceum with intensive military and physical training at the final stage of the pedagogical experiment, there were found the significant differences in the control and experimental group in eleven of the nineteen indicators.

For substantiating of the effectiveness of our program of boxing means application within the variable part of the content of the curriculum classes in the educational subject "Physical Education" in lyceums with intensive military and physical training, the differences presented in the first and second groups are of the greatest value. An analysis of the structure of the most pronounced advantages of the experimental group over the control group states that most of them are related to the means which we used in developing the program. In fact, the main mechanisms of energy supply, the structure and content of exercises, the focus of their content, the correction of physical education problems, based on our preliminary pedagogical observations, determined the increase of the following physical qualities (coordination abilities, strength and speed-strength, etc.) in the representatives of the experimental group at a more pronounced level than in the representatives of the control group. We can explain the available reliable increase in the representatives of the control group by an effective solution of the general common tasks of the educational process in physical education. After all, while the boxing means were applied in the experimental group, in the control group there were also applied effective means of other sports, among them there were elements of wrestling, military all-around, hand-to-hand fighting and the like. That is, the structure and content of means in the variable part of the curriculum classes in the educational subject "Physical Education" contributed significantly to the improvement of professional and applied skills (Yedynak, 2004). Those, in their turn, were found during the final control of the special working capacity in boxing of the students of the control group of Mukachevo lyceum with intensive military and physical training. The second group of the analysed data (comparison of baseline and final indicators of students of the experimental group) gave the ground to make the following generalizations. In the process of the pedagogical experiment with the use of the program of boxing means application within the variable part of the curriculum classes in "Physical Education" as a lesson form of physical education in the lyceums with intensive military and physical training, increases were found in the majority of indicators of special working capacity in boxing. In the students of the experimental group, there was recorded a reliable increase in all, without exception, results of the control exercises proposed in the study.

Conclusions

The effectiveness of the boxing means application within the variable module of the educational subject "Physical Education" in the improvement of the physical fitness of pupils of the lyceums with intensive military and physical training, is associated with reliable intra-group increases in the indices of the students of Mukachevo Lyceum according to such manifestations of physical qualities: the maximum strength indices (according to the indicators of control exercises "Deadlift dynamometry", "Hand grip dynamometry"- 10.55 and 12.31 %, $p\leq0.05$-0.01 of the baseline level); the explosive strength indices ("Seated medicine ball throw", "Tennis ball throwing for distance (dominant and non-dominant hand)", "Standing long jump" - 5.86-17.06 % at $p\leq0.05$-01 from the baseline level); the flexibility indices ("Back scratch test", "Bending forward from the standing position" - 12.69-24.82 % at $p\leq0.05$-0.01 of the baseline level); the speed capabilities indices ("5

seconds running in the place" – 16.82 %, at p ≤0.05); the coordination abilities indices ("Tennis ball throwing on the accuracy", "Three forward rolls" - 18.77-25.13 %, at p≤0.01 from the baseline level); the strength endurance and speed-strength endurance indices ("Flexion and extension of arms in front lying support", "Sit-up from the back-lying position for 30 s", "Bent suspension", "Pulling up on the crossbar" - 18.03-28.50 % at p≤0.01 of the baseline level) and general endurance ("Cooper test" - 9.42 % at p≤0.01 of the baseline level).

Conflict of interests

The authors declare that there is no conflict of interests.

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