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The effectiveness of the application of the methodology for the formation of physical fitness of young students

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Abstract

Purpose: Organization of trainings for participants of the experimental group during the pedagogical experiment on the basis of a program aimed at developing the physical fitness of young students of a higher educational institution and developing it using a set of physical exercises.

Methods: The following methods were used during the study: 1) Analysis of literary sources, research papers and scientific articles in which scientific research, scientific and practical experience of foreign and domestic scientists in the field of sports were studied and analyzed 2) A pedagogical test during which the technical actions of young gymnasts players during competitive activities were monitored 3) Mathematical and statistical calculation, in which the coefficient of useful movement of technical movements of young gymnasts in attack was calculated using a mathematical formula 4) Methods of pedagogical control were used.

Results: At the end of the pedagogical experiment, the average relative increase in the arithmetic mean values of 7 indicators of the level of physical fitness recorded by the subjects of the experimental and control groups was 7.48% in the control group, this indicator in the experimental group was 12.77% (the positive change was 5.29% more than in the control group).

Conlcusion: The results of the conducted pedagogical experience allowed us to note the following conclusions: An analysis of the literature on the development of physical fitness of young students shows that scientific research aimed at improving the level of physical fitness of students was insufficient.

Keywords: young students, indicators of the level of physical fitness, statistical characteristics, amplitude, a set of exercises, articular reflex.

Introduction

Improving the physical fitness of students is a process focused primarily on the comprehensive and special physical development of an athlete. General physical training refers to strengthening the organs and systems of the body through the harmonious development of students, that is, the development of the muscles of the body, their gaining functionality, improving their ability to control, increasing their physical qualities, that is, strength, dexterity, endurance, agility and flexibility, correction of deficiencies in the structure of the body. To achieve this, it is necessary to regularly use physical means to influence the organs and systems of the athlete's body involved in various motor activities. To do this, the use of exercises from the three groups mentioned above, especially exercises aimed at developing general physical fitness, can lead to good results.

Special physical training should be aimed at developing the physical qualities necessary for this sport and developing all the functional capabilities of the body, all organs and systems at a high level. For this, of course, general and special exercises of the chosen sport are used.

Young students who are engaged in any kind of physical culture and sports must use strength exercises in their training. But in the chosen sport, attention should be paid to the development of the most important muscle groups for performing exercises.

Methods

The following methods were used during the study:

1) Analysis of literary sources, research papers and scientific articles in which scientific research, scientific and practical experience of foreign and domestic scientists in the field of sports were studied and analyzed

2) A pedagogical test during which the technical actions of young gymnasts players during competitive activities were monitored

3) Mathematical and statistical calculation, in which the coefficient of useful movement of technical movements of young gymnasts in attack was calculated using a mathematical formula

4) Methods of pedagogical control were used.

Results and discussion

To improve the ability to exercise muscle strength in the chosen sport, methods of high and maximum tension are used. Strength is increased by repeatedly performing these specially selected exercises with high and

Table-2. Statistical characteristics of the indicators of physical fitness of the subjects of the experimental group at the end of the experiment (n=25)

№	Full name	100 m running (s)1 (сония)	4x10 m shuttle run	3000 m (min/s)	Long jump from a place (cm)	Flexion-extension of the arms (times)	Jumping rope (1 min) (time)	Pull-ups (times)
1	A.I	*12,7*	*8,9*	*748*	*245*	*62*	*151*	*14*
2	A.E	*13,3*	*9,6*	*752*	*242*	*52*	*107*	*11*
3	A.J	*13,9*	*9,1*	*766*	*239*	*49*	*124*	*14*
4	A.M	*13,2*	*9,6*	*683*	*249*	*57*	*148*	*16*
5	B.Sh	*12,8*	*9,2*	*728*	*229*	*43*	*143*	*13*
6	G.A	*12,2*	*8,9*	*649*	*256*	*62*	*157*	*17*
7	J.D	*11,9*	*9,2*	*652*	*239*	*63*	*159*	*16*
8	M.J	*12,7*	*9,1*	*724*	*251*	*61*	*153*	*15*
9	M.L	*13,1*	*9,4*	*793*	*231*	*43*	*136*	*12*
10	N.Sh	*13,6*	*9,8*	*847*	*226*	*59*	*133*	*11*
11	N.J	*12,8*	*8,9*	*665*	*243*	*52*	*142*	*13*
12	P.D	*12,6*	*9,2*	*683*	*244*	*55*	*154*	*11*
13	K.A	*13,8*	*9,6*	*728*	*228*	*44*	*148*	*12*
14	R.A	*12,5*	*8,9*	*721*	*246*	*57*	*149*	*14*
15	R.I	*12,3*	*9,2*	*797*	*257*	*45*	*141*	*12*
16	R.D	*13,4*	*8,9*	*743*	*239*	*39*	*136*	*11*
17	S.S	*11,7*	*9,1*	*718*	*253*	*51*	*153*	*14*
18	T.A	*13,6*	*9,8*	*892*	*242*	*39*	*109*	*10*
19	T.M	*12,7*	*8,8*	*793*	*251*	*65*	*152*	*13*
20	T.S	*13,3*	*9,2*	*838*	*252*	*51*	*145*	*14*
21	V.A	*12,2*	*9,1*	*769*	*241*	*56*	*136*	*12*
22	Y.Sh	*13,5*	*9,6*	*826*	*232*	*45*	*126*	*10*
23	U.E	*13,3*	*9,8*	*822*	*244*	*49*	*145*	*11*
24	A.B	*12,9*	*8,9*	*793*	*241*	*56*	*133*	*13*
25	Y.M	*13,8*	*9,2*	*784*	*228*	*47*	*114*	*9*
	$\overline{X}$	*12,95*	*9,24*	*756,56*	*241,92*	*52,08*	*139,76*	*12,72*
	σ	*1,31*	*0,84*	*84,34*	*29,34*	*6,83*	*15,56*	*1,54*
	V, %	*10,12*	*9,13*	*11,15*	*12,13*	*13,11*	*11,13*	*12,12*

maximum effort (75-100% of maximum intensity). Increasing the endurance of students is considered one of the necessary qualities of preparation not only during participation in competitions, but also when performing large-scale training loads. It depends on the level of preparedness of the athlete's organs and body systems (especially the central nervous system, heart, blood vessels, respiratory system and muscular apparatus), the level of mastery of sports equipment and the level of economical execution of movements.

Endurance is divided into general and special. General endurance is an integral part of the overall physical development of any student -athlete and, first of all, creates significant positive changes in the central nervous system, cardiovascular, respiratory and other systems.

Depending on the chosen sport, students develop special endurance. In annual classes with students, general endurance is formed by almost all physical exercises. Of course, this also increases overall endurance with special training in some types of athletics. But the best way to increase overall endurance is to use running, swimming and other athletic exercises during long runs at a moderate pace. There is a difference in the methodology of developing students' special endurance when practicing different sports or running different distances. First of all, it is determined by the physiological characteristics of various organs, systems and changes throughout the body of young people involved in sports, depending on the speed of

Table-2. Dynamics of changes in statistical characteristics of physical fitness indicators of the experimental group of subjects during the pedagogical experiment

	Experimental group			Control group			
	$\overline{X}$	σ	V, %	$\overline{X}$	σ	V,%	Abs.
1.	13,88	1,53	10,98	12,95	1,31	10,12	0,93
2.	10,29	1,03	9,98	9,24	0,84	9,13	1,05
3.	847,36	101,53	11,98	756,56	84,34	11,15	90,80
4.	216,28	28,09	12,99	241,92	29,34	12,13	25,64
5.	45,16	6,31	13,97	52,08	6,83	13,11	6,92
6.	121,28	14,54	11,99	139,76	15,56	11,13	18,48
7.	10,88	1,41	12,98	12,72	1,54	12,12	1,84

running and the duration of running. It is especially important to take into account the increased need for oxygen and the peculiarities of its consumption. It is known that the efficiency of the body, and especially the nervous tissue of the brain, is associated with oxygen consumption. With a lack of oxygen in the body, especially with long working hours, performance decreases. Therefore, it depends on the level of development of respiration and the cardiovascular system that supplies the body with oxygen. Based on the information received from the subjects of the experimental group, we have developed a training complex for them to develop their level of physical fitness during the training course. When performing various running movements in the content of training sessions, it is necessary to develop a common center of gravity, that is, the reflex of moving the foot, in order to perform a repulsive movement closer to the pelvic joint. Therefore, to ensure the effectiveness of short-distance running, long jumps and throwing exercises, a set of exercises performed in a large ampoule was developed for students, taking into account the tests of training sessions. For types requiring endurance, a set of exercises performed in low amplitude was used. The results are shown in Tables 1-2-3-4.

In order to determine the effectiveness of the training complex we use, the latest test experiments were conducted after the pedagogical experiment. According to it, the average result of the experimental group of testers in the 100 m run, which reflects the ratio of speed and power at the end of the experiment, was improved by 12.95± 000 seconds. In the control group, this indicator was 13.29±000 seconds. In the next 4×10 m shuttle run, representing fast strength endurance, the experimental group recorded a result of 9.24± 0.84 seconds. In the control group, it was observed that the result of this indicator was 10.01± 0.91 seconds. In the test for special endurance in running at a distance of 3000 m, the experimental team showed 756.56 ± 84.33 minutes/seconds, while in the control group in the pedagogical experiment the result for this indicator was 818.24 ±91.14 minutes/seconds. The final result of the long jump test from a place that determines the quality of fast leg strength was 241.92±29.34 cm in the experimental group.

In the control group, this indicator was 229.32±27.78 cm. While the arm strength test during arm flexion improved the results of the experimental group by 52.08±6.83 times, in the control group this indicator was 47.76± 5.41. In the experiment of jumping rope in 1 minute, the experimental team made a jump of 139.76± 15.56 times. In the control group, this indicator was 132.12±14.68 times. In our last test, the result of pull-up on the horizontal bar in the experimental group was 12.72± 1.54 times. In the control group, this indicator showed an improvement of 11.52± 1.40 times. A comparative analysis of the results shows that the training package developed for the experimental group of subjects allowed students to develop physical fitness and improve their daily lifestyle. Thus, the results of this study indicate that the development of the knee reflex when running at different distances or performing movements in the experimental group gives them the basis for

effective performance of various movements in everyday life.

Conclusion

Students should be involved in physical education and sports in order to effectively spend their free time. Since physical education and sports have a big role in shaping their daily lifestyle, they can improve hormonal development, improve health and especially improve their daily lifestyle.

- The use of a set of exercises for the development of joint reflexes in classes with young students will lead to an increase in their physical fitness and improve their functional state.

At the end of the pedagogical experiment, the average relative increase in the arithmetic mean values of 7 indicators of the level of physical fitness recorded by the subjects of the experimental and control groups was 7.48% in the control group, this indicator in the experimental group was 12.77% (the positive change was 5.29% more than in the control group). Among the statistical reliability of the absolute differences in the results for these indicators, one is reliable at a good level of significance (with a value of t=3.39 and P<0.01), three are reliable at a satisfactory level of significance (between t=2.27 and t=2.58 and P<0.05) and the remaining three are statistically unreliable at the level of significance (they are in the range of t=1.71 and t=1.75). The fact that four of these 7 changes in test results in the experimental group are higher (between t=3.94 and t=3.72 and t=4.40 and P<0.001), and the remaining three are statistically significant at the level of good significance (between t=3.16 and t=3.44 and P<0.01), is a confirmation of the effectiveness of the tools and methods used in the experimental group during the pedagogical experiment compared with the control group.

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