Swimming training using fins as a method of developing physical fitness of students studying in preparatory educational institutions of the Ministry of Defense of the Russian Federation

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Abstract

Objective of the study is to experimentally confirm the effectiveness of a specialized set of exercises for swimming with fins. This complex is aimed at improving the physical fitness of students studying in pre-university educational institutions under the jurisdiction of the Ministry of Defense of the Russian Federation.

Methods and structure of the study. To solve the problems, the following research methods were used: theoretical analysis and generalization of literary sources, survey, pedagogical observation, pedagogical experiment.

Results and conclusions. The analysis of the results showed that the average values of the exercises performed in the experimental group exceeded the similar indicators of the control group. Consequently, there is a positive trend in improving the strength and speed-strength characteristics of the experimental group participants, which indicates the effectiveness of the applied set of exercises in swimming training with the inclusion of finswimming elements. The conclusions made confirm the rationality of using elements of underwater swimming in practical classes on physical training of cadets within the framework of the discipline "Swimming". This is considered as an additional way to improve overall physical fitness, increase the level of development of speed, endurance, strength and coordination, as well as the formation of moral, ethical and volitional qualities necessary for the development of a sporting character in students in pre-university educational institutions of the Ministry of Defense of the Russian Federation.

Keywords: *swimming with fins, methodology, general physical training, special complex, development of physical qualities, improvement.*

Introduction. As of 2023, there were 32 educational institutions in the pre-university education system of the Russian Ministry of Defense: 11 Suvorov military schools; Nakhimov Naval School and four of its branches; 7 presidential cadet schools; 9 cadet corps. All pre-university educational institutions of the Russian Ministry of Defense are equipped with very good educational and material base for physical training, including flat structures, swimming pools, various sports complexes, etc. Since January 1, 2005, the Instructions on physical training and sports for Suvorov military, Nakhimov naval, military music schools and cadet, naval cadet, music cadet corps of the Russian Ministry of Defense have been approved and put into effect. In accordance with the instructions, physical education of students in pre-university general education institutions of the Ministry of Defense of the Russian Federation is an integral part of their education and upbringing. It includes: physical training, sports and health and recreational activities [3].

Much attention is paid to the physical training of students in pre-university institutions, because the graduates of these institutions in the overwhelming majority are candidates for admission to military educational institutions of higher education. Military applied swimming is one of the sections of physical training of military personnel. Swimming classes are aimed at developing the skills of competitive swimming, diving and providing assistance to a drowning person; developing general endurance; cultivating courage and determination, and for Nakhimov cadets additionally - the skills of diving in length and depth.

Teaching swimming, developing on its basis general and speed endurance, coordination, improving health indicators are an important task of the educational process of pre-university educational institutions of the Ministry of Defense of the Russian Federation. At the same time, underwater sports are becoming increasingly popular today. Underwater swimming, in turn, is a component of military-applied swimming. The variety of underwater swimming directions makes it attractive for systematic training.

One of the basic directions of underwater sports is swimming with fins. An important advantage of swimming with fins is the ability to significantly reduce the time of learning classical swimming without fins. The swimmer's ability to use his strength abilities in swimming can be significantly expanded with the help of various methodological techniques, which are based on the desire to bring strength training exercises as close as possible to swimming exercises, both in terms of the direction of impact and in time [2]. The inclusion of new elements of physical exercises in the program can contribute to the increase and improvement of the general physical qualities of students.

Objective of the study is to experimentally substantiate a special set of exercises for swimming with fins, which allows for a systematic impact on increasing the level of development of physical qualities of students of pre-university educational institutions of the Ministry of Defense of the Russian Federation, to prove its effectiveness and to introduce it into the educational process.

Methods and structure of the study. The study was conducted for 30 days at the Naval Cadet Military Corps. The experimental group (EG), consisting of 10 young men aged 15-16, trained 6 times a week for 90 minutes (40 minutes in the gym and 50 minutes in the water). Classes were carried out using the proposed set of exercises at the stage of the general preparatory period.

The complex was based on exercises in pairs, exercises with weights, exercises on exercise machines, swimming in different ways for different distances using separate fins, swimming with a board in separate fins, swimming in the basic position with a load using separate fins, swimming with weights, swimming using separate fins with resistance, swimming in competitive conditions using separate fins. The control group (CG) also consisted of 10 young men of the same age, trained 6 times a week, the duration of classes was 90 minutes. Classes were held according to the traditional method in accordance with the training program.

At the beginning of the experiment, preliminary testing was carried out in the control and experimental groups. For the study, the method of control exercises was used, selected according to the following principles: accessibility, compliance with the basics of the theory and methodology of physical education, high information content of the results of exercise performance [1].

Results and conclusions. Comparative results of the preliminary testing of the control and experimental groups are presented in Table. 1 and 2, formed on the basis of the statements of verification of the indicators of physical fitness of pupils.

Statistical processing of the experimental data of the initial testing did not show reliable differences between the results of the control and experimental groups. This proves that initially the pupils of the EG and CG were on average equal in the level of physical fitness.

After the experiment, final testing was conducted, which showed positive dynamics in the growth rates for all tests in the experimental group. The growth rate for the exercise "Squat" is 4.8% and the growth rate for the exercise "Long jump from the spot" is 0.5%, which indicates positive dynamics in the development of strength and speed-strength physical qualities of

Table 1. Results of preliminary testing of the experimental group

Exercises	Experimental group										Average value
	Luzin A.A.	Parinov D.R.	Parinov N.R.	Teslenko M.V.	Fomich B.S.	Shchablev N.V.	Terekhov D.D.	Urusov A.R.	Tsependa M.P.	Poludnitsyn I.P.	
Squat	56	58	48	71	59	53	59	73	59	69	**60,5**
Shuttle run 10x10 m	26,7	25,6	27,0	25,7	26,3	26,9	25,8	25,1	26,5	27,1	**26,3**
3 km run	12,12	12,58	12,56	12,35	13,2	11,51	12,0	12,17	12,41	12,44	**12,33**
Long jump from a standing position	225	216	220	232	214	225	229	231	225	230	**224,7**

Table 2. Results of preliminary testing of the control group

Exercises	Control group										Average value
	Bobrovsky D.A.	Buyanov N.M.	Byankin D.N.	Grigoriev V.V.	Gubin A.A.	Gurov V.D.	Ermolitsky D.S.	Kalinin I.D.	Kislukhin A.V.	Kravtsov D.S.	
Squat	70	58	53	50	61	58	69	55	72	63	**60,9**
Shuttle run 10x10 m	25,9	26,3	27,4	26,9	25,6	26,1	25,7	27,3	25,8	25,8	**26,3**
3 km run	12,25	12,37	13,1	13,27	12,1	12,47	12,21	12,38	11,5	12,05	**12,37**
Long jump from a standing position	230	217	226	220	227	222	228	218	230	225	**224,3**

Table 3. Comparative analysis of the results of checking the physical fitness of the experimental group after the experiment

Exercise	Experimental group Mean value	Control group Mean value	Difference in EG and KG indicators, %
Squats	63,4	61,2	**3,6**
Shuttle run 10x10 m	26,1	26,2	**-0,6**
3 km run	12,14	12,36	**-1,8**
Long jump from a standing position	225,9	224,5	**0,6**

the pupils of the experimental group. The growth rate for the exercise "Shuttle run 10x10 m" was -0.8% and the growth rate for the exercise "Run 3 km" was -1.6% (a negative indicator means an increase in the average value by 0.8% and 1.6%, respectively). It can be concluded that there is a positive dynamic in the development of such physical qualities of the pupils of the experimental group as endurance and speed.

The highest growth rate in the experimental group occurred in the exercise "Squats" (4.8%). A comparative analysis of the results of checking the physical fitness of the control group before and after the experiment indicates the absence of significant differences in the performance indicators of practical exercises.

A comparative analysis of the physical fitness indicators of the experimental and control groups was conducted after the experiment (Table 3).

The analysis showed that the average indicator for all exercises in the experimental group is higher than in the control group. Thus, positive dynamics of development of strength and speed-strength physical qualities of the pupils of the experimental group was registered, which confirms the effectiveness of the introduced set of exercises in swimming classes using elements of finswimming.

Conclusions. The results of the pedagogical experiment indicate that the use of a special set of finswimming exercises contributes to an increase in the indicators of the level of development of physical qualities of pupils in the experimental group.

All of the above indicates the advisability of using elements of underwater swimming in practical classes on the section of physical training of cadets "Swimming" as an additional means of improving general physical fitness, increasing the level of development of speed, endurance, strength and coordination capabilities, fostering moral and ethical and volitional qualities, forming a sports character in pupils of preuniversity educational organizations of the Ministry of Defense of the Russian Federation.

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