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IMPROVEMENT OF STRONG TRAINING IN THE PROCESS SPECIAL PHYSICAL TRAINING

Віктор Богуславський, Дмитро Петрушин, Володимир Рогальський, Володимир Шеверун. УДОСКОНАЛЕННЯ СИЛОВОГО ТРЕНУВАННЯ В ПРОЦЕСІ СПЕЦІАЛЬНОЇ ФІЗИЧНОЇ ПІДГОТОВКИ. Визначено, що спеціальна фізична підготовка є невід'ємною складовою навчального плану підготовки спеціалістів, частиною життєдіяльності курсантів, від правильних і систематизованих навантажень на заняттях залежить їх рівень підготовленості. Вона є важливим елементом всебічного розвитку курсантів, збереження та зміцнення здоров'я, його фізичного і духовного вдосконалення і спрямована на якісну професійну підготовку до майбутньої професійної діяльності. Визначено прикладне значення силового тренування, заходи, спрямовані на його формування, вдосконалення здібностей поліцейського з урахуванням особливостей його професійної діяльності.

Теоретично і експериментально обґрунтовано організаційно-педагогічні умови тренування силових якостей майбутніх фахівців кримінальної поліції в процесі спеціальної фізичної підготовки. Досліджено показники спеціальної фізичної підготовки як складової службової підготовки курсантів, а саме оцінювали загальні і спеціальні силові якості: статичну та динамічну силову витривалість, швидкісно-силові якості, максимальну силу. Завдяки застосуванню організаційно-педагогічних умов та диференційованого підходу до тренування силових якостей у курсантів експериментальної групи відбулись значні зміни за показниками загальної і спеціальної фізичної підготовленості.

Проведені дослідження дали підстави свідчити, що рівень їх підготовленості курсантів до експерименту знаходилися не на достатньому рівні, що не може задовольнити вимоги, поставлені перед майбутніми спеціалістами. Отримані результати підтверджують думку провідних науковців про необхідність врахування заданих модельних характеристик та період збереження і ступінь

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зниження досягнутого тренувального ефекту. Доведено, що використання організаційно-педагогічних умов на заняттях зі спеціальної фізичної підготовки для курсантів досліджуваних груп з урахуванням диференційованого підходу достовірно ($p<0,05$) сприяло підвищенню їх ефективності.

***Ключові слова**: курсанти, спеціальна фізична підготовка, фізична підготовленість, фізичні якості, засоби, методи.*

Relevance of the study. In modern society, education has become one of the largest areas of human activity. Education, especially higher education, is seen as a major, leading factor in social and economic progress. Rapid changes in scientific and technological progress are radically transforming the working conditions of the modern specialist and making ever higher demands on him. This requires from future specialists of the national police the ability to form in resonance with the intensive development of the professional environment, requires an innovative approach to the development of theoretical and methodological foundations of special physical training of cadets of higher education institutions. There is a transition from a strictly regulated organization of education to variable, block-modular, contextual learning, which provides a high level of development of educational independence, self-education [1].

Significant political and socio-economic changes taking place in society, Ukraine's entry into the world community require structural modernization of the national system of physical education in higher education, aimed at ensuring the task of educating physically healthy, socially active, well-developed student youth.

The trend of modern education, and especially in the field of training specialists for the national police, has led in recent years to the emergence of new forms of education, new methodological approaches to the theoretical, methodological and professional training of cadets.

During the general training such tasks as progress of the basic physical qualities, development of functional possibilities, processing of volume of motor skills, increase of professional working capacity, multifaceted physical development, activization of processes of recovery, strengthening of health as a whole are solved.

Today, the technology of improving the level of physical fitness of cadets is not the property of personal experience of scientific and pedagogical staff of the department, they are developed in accordance with the achievements of modern science. Any technology to improve the physical fitness of future professionals includes setting goals, objectives, implementation in the classroom means of developing the appropriate physical qualities in one form or another.

The effectiveness of the training of future criminal police specialists depends on many components, one of which is a comprehensive general and special physical training.

Special physical training is an integral part of the curriculum for training specialists, part of the life of cadets, from the correct and systematic workload depends on human health, receptivity to new information, willpower, fatigue. It is an important element of comprehensive development of cadets, preservation and strengthening of health, its physical and spiritual improvement, but also high-quality professional preparation for future professional activity. However, it cannot be said that the problem of cadets' interest in special physical training, and sports in general, is completely solved. There is still a certain percentage of cadets who have a negative attitude to sports, do not improve physically due to low motivation, lack of willpower, laziness, as well as due to disabilities and for a number of other reasons.

Classes in special physical training should be considered as a pedagogical process aimed at developing professionally important physical and psychophysiological qualities, the formation of applied motor skills and abilities, in the aggregate it will ensure the objective readiness of the specialist for successful professional activity.

Strength is one of the vital qualities that allows a person to be successful in professional activities related to physical labor and provides physical comfort in everyday life [2-3]. In modern labor, strength is still significantly independent and ancillary to the successful performance of professional tasks in many specialties, as muscle strength largely determines the speed of movement and plays an important role in work that requires endurance and coordination [4] .

The most favorable age period for the development of strength qualities for young men comes after their musculoskeletal system and neuromuscular system are almost completely formed. According to research by sports physiologists, the maximum value of strength quality

reaches the age of 18-20 years [5]. This age period covers the majority of first-year students, ie the period when the module of disciplines "Physical Culture" is implemented.

It is known that the purpose of strength training in universities is to ensure a high level of general strength training of students, necessary for their full performance of professional activities, comprehensive physical development and proportional physique.

Recent publications review. Numerous studies of physical fitness of young people indicate a sharp decline in strength in students of universities of different specialties [6-7]. As a result, some standards of a sufficient level of force development are adjusted to reduce them.

Theoretical analysis of the literature shows that currently there are a large number of publications with recommendations on methods of strength development in people of different ages and physical fitness, especially in young people [8-9].

Analyzing the requirements of educational and professional activities of servicemen of the Ministry of Internal Affairs, it can be noted that for effective performance of tasks the system of special physical training should be aimed at developing general and strength endurance and ability to act in difficult, dangerous and unexpected situations.

Thus, the issue of substantiation of organizational and pedagogical conditions for training strength qualities in cadets of different faculties of higher education institutions of the Ministry of Internal Affairs of Ukraine, who in the future are able to perform tasks at a high level.

The article's objective is a theoretical and experimental justification of organizational and pedagogical conditions for improving strength training of future criminal police specialists in the process of special physical training.

The main research methods are: – theoretical analysis and generalization of literature sources; – study of program and normative documentation on special physical training in higher education institutions; – pedagogical testing; – pedagogical experiment; – methods of mathematical statistics.

The research was conducted with 1st year cadets of Dnipropetrovsk State University of Internal Affairs at the faculties: training of specialists for preventive units (boys – n = 20) and training of specialists for criminal police units (boys – n = 20) in which they determined the level of development of force. Pedagogical control was carried out by scientific and pedagogical workers, who carried it out with the use of test physical exercises to assess professionally important physical qualities. The cadets were evaluated strength qualities – assessment of general and special strength qualities: static and dynamic strength endurance, speed-strength qualities, maximum strength.

The following exercises were used for testing: – running 100 m, s, – running 3000 m, min, – hanging on the crossbar, s (time was fixed); – pull-up on the crossbar, – lifting the torso (number of times); – long jump from a place (cm), – wrist dynamometry; – state of dynamometry (kg.). The survey was conducted at the same stages of training.

Discussion. Pedagogical control – a systematic process of obtaining information about the physical condition of persons engaged in physical culture and sports. Pedagogical control in physical education is considered by scientists from two positions: as a function of the teacher and as a system of measures, namely the control carried out by the teacher-specialist (teacher, trainer, methodologist, etc.) according to his professional functions, using those means and methods. , which he can and should competently apply on the basis of special education and practical experience in the specialty [3]. Pedagogical control is a system of measures that provide verification of planned indicators of physical education, to assess the tools, methods and loads used.

Analysis of curricula for training specialists in different universities of the country shows a variety of planning options. All options can be combined into three groups: – intensive planning (all workload is planned for the first two courses); – optimal planning (the load is distributed over three years of study); – distributed planning for the entire training cycle (in the first two courses classes are planned twice a week, in the next two – once).

The current stage of development of society is characterized by high dynamics of transformations in the field of training in higher education institutions. Transformations concern legal, program, methodical, organizational, logistical, personnel maintenance of realization of disciplines, sections, modules of training. This also applies to the system of implementation of the requirements of state standards for physical culture for professional activities.

The use of physical culture and sports for training is based on the phenomenon of

transfer of training. This uses the effect of training in some activities to improve results in others [10].

Special physical education classes are a pedagogical process aimed at the development of professionally important physical and psychophysiological qualities, the formation of applied motor skills, together provide the objective readiness of a specialist for successful professional activity.

For training of cadets at the department of special physical training by scientific and pedagogical workers the technique of employment within the limits of the educational program on the basis of modeling of extreme conditions of professional activity is proved.

To develop a scientific approach to rational planning, it is necessary to turn to the physiological justification of the distribution of physical activity in the weekly training cycle. It is believed that the following loads for the untrained body should always fall on the phases of either full recovery or super-recovery (supercompensation) [11].

To develop an experimental method of training the strength of future criminal police specialists and selecting the necessary and sufficient number of strength exercises should consider the existing classification of muscle modes and their relationship with the modes of work in professional activities (static, overcoming and yielding modes).

All three modes of muscle work take place in the professional activities of specialists. On the basis of these modes, the following types of strength are distinguished: maximum strength, strength endurance and explosive strength.

The development of strength training techniques has always been based on scientific data on physiological and psychophysiological features of muscle contraction, new scientific data have been used in the development of modern methods of strength training in cadets [12].

On the basis of data of scientific and methodical literature and own experience of practical activity the most effective exercises with free weights for complex development of power qualities for cadets of experimental group were selected. The selection of training aids used and their dosing was carried out on the basis of strict consideration of age and level of physical fitness of cadets.

Most cadets at the initial stage of strength training classes are dominated by the idea of the possibility of achieving a high training effect in a short period of time. It is based, firstly, on the data of mass advertising and publications in popular magazines about bodybuilding, offering the development of "superpowers" in 12-16 weeks and, secondly, on the subjective feelings of rapid growth in the initial stage of training beginners.

In order to select the optimal methods and means for the development of force in future specialists used methods of force development: the method of maximum effort, the method of repeated efforts, the method of ultimate effort (to failure), the method of dynamic effort, "shock" method. When performing the exercises, the application of weights, the number of repetitions, the pace of movements and the duration of rest breaks depending on the physical fitness of the cadets were differentiated.

To test the effectiveness of the content and model of the organization of strength training of future specialists in training sessions in the disciplines of "Special Physical Training" was conducted formative pedagogical experiment. For this purpose experimental (young men – n = 20 faculty of preparation of experts for divisions of preventive activity) and control (young men – n = 20 faculty of preparation of experts for divisions of criminal police) groups were formed.

At the beginning and at the end of the autumn semester of 2019/2020 academic year, the level of general and special physical fitness was monitored in accordance with the recommendations of the curriculum of the discipline "Special Physical Training". Mandatory tests to determine general physical fitness include: – tests of speed and strength; – tests for strength training; – tests for general endurance. Analysis of the initial data of physical development and physical fitness of cadets indicates the need to find innovative approaches in the system of special physical training of higher education, which will improve their level of preparedness.

This contributed to the selection of exercises aimed at developing those physical qualities that the cadets at the beginning of the experiment, were underdeveloped.

The generalized results of research of power qualities at the cadets studying on corresponding specialties are resulted in tab. 1. The indicators listed in the table show that the level of development of back muscle strength and endurance is at a relatively sufficient level, but the strength of the hand in various tests is quite low, so when building a technique of

strength training of future professionals must provide exercises to develop m ' ulcers of the hand.

Table 1

The results of testing professionally significant strength qualities and general physical fitness of cadets at the beginning of the experiment (x, S ± m)

№	Test	Experimental group (= 20)		Control group (= 20)	
		to the expert.	after the expert.	to the expert.	after the expert.
Загальна фізична підготовленість					
1.	Running 100 m	13,8±1,3	13,3±1,4	14,0±1,6	13.8±1.7
2.	Pull-ups on the crossbar, number	8,1±3,3	12,5±2,9	7,2±4,3	8,1±3.9
3.	Running 3000 m	810,2±24,8	790,3±21,8	830,4±27,6	820,2±23.8
Special physical fitness					
1.	Wrist dynamometry, kg	43,3±6,4	45,7±5,8	42,3±7,2	42,2±6,8
2.	Condition dynamometry, kg	156,1±24,8	174,8±21,2	152,0±29,2	156,1±28,4
3.	Hanging on the crossbar	84,4±13,1	90,6±10,4	68,1±14,2	72,5±13,5
4.	Long jump from a place, centimeters	210,4±25,6	232,7±18.9	212,2±21,8	216,3±19,7
5.	Lifting the torso to the side, the number	40,3±3,8	44,8±3,4	38,4±4,3	39,6±4,1

Based on the results shown in table. 1, which indicate the absence of differences between the indicators of strength in the cadets of the studied specialties, they are due to natural physical development, the subsequent analysis of pedagogical control data was conducted after the pedagogical experiment.

The obtained test results indicate the presence of positive dynamics in the tests of all groups participating in the experiment. The ratio of indicators of general physical fitness in the cadets of the experimental group was significantly higher ($p < 0,05$) in relation to the control. In the indicators of special physical fitness there are significant ($p < 0.05$) improvements in the experimental group on a number of indicators, such as height on the crossbar and the state of the dynamometer, higher than the control group. These data can be explained by the fact that special training sessions were more intense.

The results in the control group at this stage of preparation began to differ significantly from the results of the experimental group, as the increase in many tests in this group was not detected.

The level of general physical fitness in all study groups that participated in the experiment, reached and even exceeded the regulatory requirements of the standard program of the discipline "Special Physical Training". The biggest changes, compared with the test results at the beginning of the pedagogical experiment is observed in the experimental group.

With regard to special strength training, the greatest changes are observed in the experimental group, which performed a larger total amount of training work.

The intensification of the process of applied strength training, which is called for by most researchers, has also led to significant significant ($p < 0.05$) changes in the indicators of general and special strength training. Many indicators exceeded the model characteristics.

Due to the application of organizational and pedagogical conditions and a differentiated approach to strength training, the cadets of the experimental group have undergone significant changes in terms of general and special physical fitness.

Thus, the cadets improved their performance according to the tests: "Running 100 m, s" – by 3.62% ($p < 0.05$), "Pull-ups on the crossbar, number" – by 54.32% ($p < 0$, 05), "Running at 3000 m, min" – by 2.56% ($p < 0.05$), "Wrist dynamometry, kg" – by 5.54% ($p < 0.05$), "Conductive dynamometer, kg "- by 6.14% ($p < 0.05$)," Height on the crossbar, c "- by 7.35% ($p < 0.05$)," Long jump from a place, cm "- by 10, 60% ($p < 0.05$), "Lifting the torso in a sitting position, the number" – by 11.17% ($p < 0.05$).

Our results confirm the opinion of leading scientists. Thus, in a number of scientific works on professionally applied physical training of most specialties in assessing the effectiveness of new methods of training professionally important qualities indicates the need to take into account two parameters, first, the achievement of experimental participants [13, 14].

V.N. Platonov [15] in his scientific work on the training of qualified athletes, showed

the following: the frequency of training depends on both the dynamics of growth of maximum strength and the peculiarities of its preservation after the cessation of regular training.

Analysis of the dynamics of changes in the applied power qualities after the experiment allows us to note the following:

– to achieve model characteristics of the formation of strength qualities is possible in a relatively short period of time;

– the period of maintaining a sufficient level of strength training depends on the duration of the stages of strength training, the longer the period of strength training, the longer the period of maintaining a sufficient level of strength training. Therefore, only the cadets of the experimental group after the end of the experiment can be recommended to work to perform work operations using force. The cadets of the control group need additional independent classes for quick recovery of strength.

The results of the obtained data confirmed the effectiveness and practical significance of the organizational and pedagogical conditions introduced by us in classes on special physical training for cadets of the studied groups, taking into account a differentiated approach in dosing physical activity to increase their level of strength development. , intensity and volume.

Conclusions

1. The analysis of scientific and methodical literature shows that in the present time there is a tendency to constant deterioration of health and reduced physical fitness of student youth when entering higher education institutions; the preparation of cadets for professional duties is always relevant, and in today's conditions becomes especially important; professional activity is under the influence of significant physical and psychological stress, and one of the effective ways to solve the problem is the adaptation of cadets to the educational process, special physical education classes and independent physical training.

2. The results of the statement experiment show that the peculiarities of the organization of special physical training in higher education affect the attitude of cadets to physical culture, indicators of their physical condition and physical fitness, the level of theoretical and methodological training.

3. The use of organizational and pedagogical conditions for training the strength of future criminal police specialists in the process of special physical training determined the maximum allowable and optimal parameters of physical activity, corresponding to their individual physical, functional and mental characteristics.

4. It was found that after the pedagogical experiment in terms of speed and strength training, as well as overall endurance in the cadets of the experimental group was significantly higher ($p < 0.05$) improvement over the control. It is proved that our use of organizational and pedagogical conditions in classes on special physical training for cadets of the studied groups, taking into account the differentiated approach, helped to increase their efficiency.

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Abstract

It is determined that special physical training is an integral part of the curriculum for training specialists, part of the life of cadets, from the correct and systematic workload in the classroom depends on their level of preparedness. It is an important element of the comprehensive development of cadets, maintaining and strengthening health, its physical and spiritual improvement and is aimed at quality training for future professional activities. The applied value of strength training, measures aimed at its formation, improvement of the policeman's abilities taking into account the peculiarities of his professional activity are determined.

The conducted researches gave grounds to show that the level of their preparation of cadets for the experiment was not at a sufficient level, which cannot satisfy the requirements set for future specialists. The obtained results confirm the opinion of leading scientists about the need to take into account the given model characteristics and the period of preservation and the degree of reduction of the achieved training effect.

Keywords: *cadets, special physical training, physical fitness, physical qualities, means, methods.*