



METHODOLOGY FOR IMPROVING PHYSICAL TRAINING OF CADETS OF THE MINISTRY OF EMERGENCY SITUATIONS ACADEMY

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Annotation: This article highlights the results of training conducted under a program aimed at improving the physical fitness of cadets of the Academy of the Ministry of Emergency Situations, and also outlines the results achieved as a result of the training.

Key words: Academy of the Ministry of Emergency Situations, cadets, professional and physical training, fire training, fire-applied sports.

МЕТОДИКА ПОВЫШЕНИЯ ФИЗИЧЕСКОЙ ПОДГОТОВКИ КУРСАНТОВ АКАДЕМИИ МЧС

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Аннотация: В данной статье освещены результаты тренировок, проводимых по программе, направленной на улучшение физической подготовленности курсантов Академии МЧС, а также обозначены результаты, достигнутые по итогам обучения.

Ключевые слова: Академия МЧС, курсанты, профессиональная и физическая подготовка, огневая подготовка, пожарно-прикладной спорт.

Relevance of the topic

The development of civil society, the introduction of automated systems and improved mechanisms, the construction of multi-story buildings and structures, as well as a number of other factors, necessitate the adaptation of professional and physical training of rescuers to the requirements of the time [6,10].

The scientific and technical process, covering all areas of production, requires constant improvement of the professional skills of rescuers and improvement of rescue methods [9]. In many emergency situations, no



advanced technology can replace a person, which places high demands on both special knowledge, professional skills, and the physical and psychophysiological training of rescuers.

Depending on the nature and scale of the emergency, rescuing people can take anywhere from a few minutes to several hours or days. In such cases, the higher not only the professional, but also the physical training of the rescuer, the faster and better quality assistance will be provided to the victims [1,2]. In addition, an important factor is the huge number of associated factors that limit the physical and psychological capabilities of rescuers [5,7]. All this requires a comprehensive improvement in the quality of physical training, improving the physical and psychophysiological capabilities of rescuers [3,4,8].

The transfer of the Main Fire Safety Directorate of the Ministry of Internal Affairs of the Republic of Uzbekistan, its structural and territorial structures to the system of the Ministry of Emergency Situations of the Republic of Uzbekistan, the termination of the activities of the State Fire Safety Service, the scope of professional duties performed by military personnel has been expanded. Accordingly, the Academy of the Ministry of Emergency Situations faced the need to revise and qualitatively improve the training programs for future specialists for fire and rescue units. Research aimed at improving the professional and physical training of cadets does not raise doubts about the relevance of the chosen topic of this work.

Significant experience gained in the field of rescue operations, setting strategic objectives and a number of regulatory and legal documents, such as: Constitutional Law of the Republic of Uzbekistan dated December 15, 2021 N ZRU-737 "On a state of emergency", "On the introduction of a qualitatively new systems for preventing and responding to emergency situations, as well as ensuring fire safety" dated 04/10/2019 No. UP-5706, "On measures to radically improve the efficiency of the system for preventing and responding to emergency situations" dated 06/01/2017 No. UP-5066, " On organizational measures to further improve the activities of the Ministry of Emergency Situations" dated April 10, 2019 No. PP-4276, "On measures for the widespread introduction of a healthy lifestyle and the further development of mass sports" dated October 30, 2020 No. UP-6099, " On additional measures to organize physical training of military personnel of the armed forces of the Republic of Uzbekistan at a high level" dated December 10, 2021 No. PP-40, will largely serve as an incentive for active development in this direction.

Purpose of the study. Achieving high physical fitness of cadets of the Academy of the Ministry of Emergency Situations of the Republic of Uzbekistan by optimizing training loads.

Research objectives. Development and testing of a program based on optimization of the process of physical training of cadets of the Academy of the Ministry of Emergency Situations of the Republic of Uzbekistan.

Object of study. Cadets of the Academy of the Ministry of Emergency Situations of the Republic of Uzbekistan completed training in the process of physical training.

Subject of study. Methodology for conducting physical training exercises to perform physical tasks by cadets of the Academy of the Ministry of Emergency Situations of the Republic of Uzbekistan.

Research methods. Analysis of scientific and methodological literature, pedagogical observation, pedagogical tests, teaching experience, mathematical and statistical analysis.

Scientific novelty of the research: lies in the development of a training methodology for cadets of the Academy of the Ministry of Emergency Situations of the Republic of Uzbekistan, modeled in the form of physical exercises and based on scientific experience, determination of criteria for assessing the performance of special exercises in the created set of exercises, determination of the level of influence of factors that impede the development of cadets and their physical condition, as well as modeling sets of exercises taking into account the level of their physical fitness.

During the initial period of the study, tests were conducted to determine the level of professional physical fitness of cadets.



To determine the professional and physical preparedness of the cadets, samples were taken on the following exercises:

Exercise 1 – climbing the assault ladder to the 4th floor of the training tower;

Exercise 2 – 100m hurdles,

Exercise 3 – climbing to the 3rd floor using a three-legged retractable ladder;

Exercise 4 – pull-ups on the horizontal bar;

Exercise 5 – 3000 meter run.

Accepted standards are assessed using a 5-point system, and the results are displayed in Chart 1.

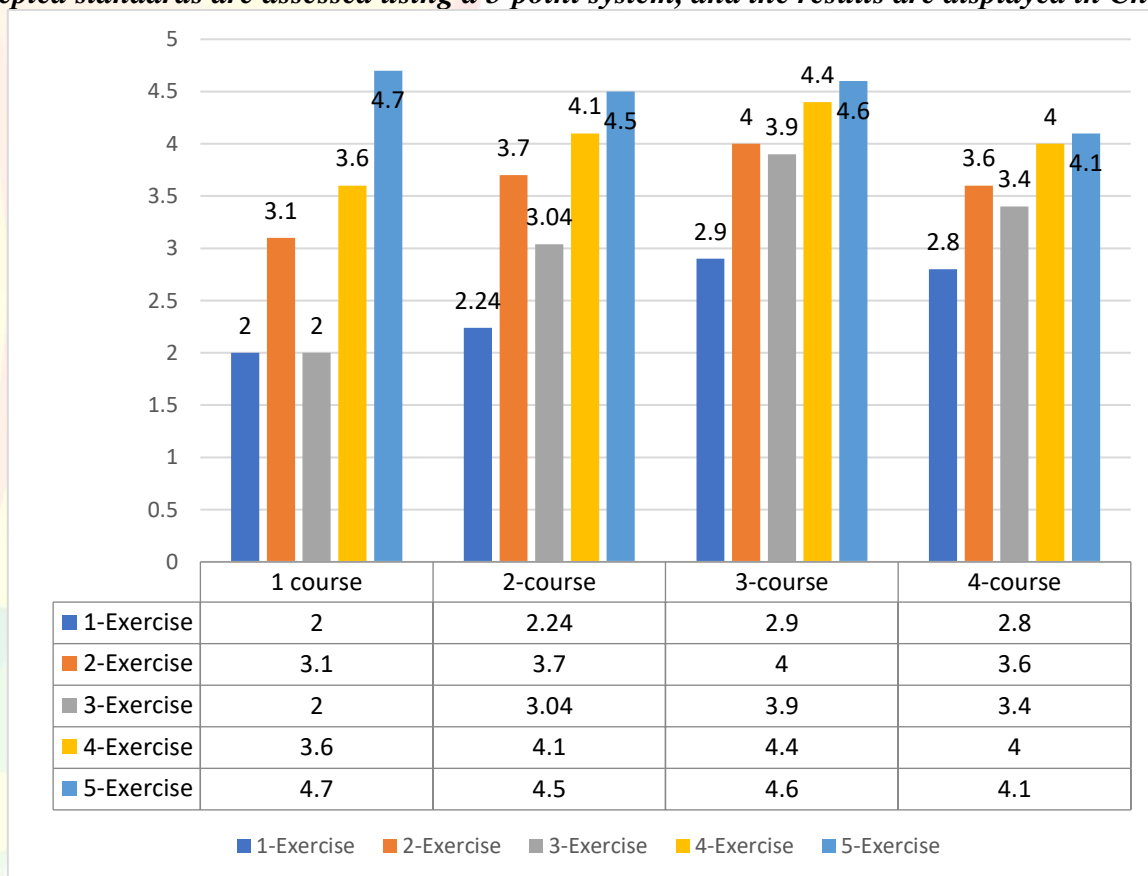


Diagram 1 Indicators of the level of professional, practical and physical training of cadets of the Academy of the Ministry of Emergency Situations of the Republic of Uzbekistan

According to the test results, the physical fitness of the cadets was 4.26 points.

As a result of the tests, it turned out that despite the good physical preparation of the cadets, the level of professional training was determined to be unsatisfactory.

The current state of professional training of cadets at the Academy of the Ministry of Emergency Situations of the Republic of Uzbekistan does not provide full training for future specialists and requires improvement. One of the ways to improve is to develop a methodology for combining professional training and physical training using a special set of exercises for a practical firefighting sports course. The combination of a traditional system of organizing training and a methodology that provides the ability to simulate the conditions for performing professional tasks makes it possible to increase the effectiveness of the professional training



of future rescuers.

In addition, a survey was conducted to obtain information about the content of physical training sessions, their connection with general physical and special sports training, and the influence of special training on the level of physical fitness. In total, 396 cadets from the Academy of the Ministry of Emergency Situations and 38 fire and rescue service specialists took part in the survey.

Analysis of the results showed that before the start of the pedagogical experiment there were no significant differences in the level of physical fitness of cadets in the experimental and control groups, with the exception of the 3000 m run (control group - 13.17 ± 0.36 , experimental group - 13.11 ± 0.42). At the end of the pedagogical experiment, a control test of physical fitness in comparison with the test results of cadets in the control group ($p < 0.05$) showed a statistical improvement in the results in the experimental group.

After the experiment, the cadets in the experimental group showed a slight tendency towards a decrease in weight-height by an average of 0.4%, and among the cadets in the control group - by 0.2%. Breast circumference increased from 84.4 ± 1.7 cm to 92.6 ± 1.8 cm in the experimental group and from 85.0 ± 2 cm to 92.7 ± 2.1 cm in the control group. The vital capacity values were 27.2% in the experimental group and 18.5% in the control group. The vital capacity of the lungs increased to 63.4 ± 3 ml/kg, which indicates increased external (pulmonary) respiration. There were no significant differences in physical development indicators before and after the experiment in the experimental group. Positive changes among cadets in the control group were significantly lower than 2.0-8.0% and statistically insignificant.

Functional physical performance status was also assessed by PWC 170 index, MKI, resting heart rate and Ruffe index. The functional level of cadets in the experimental group was lower than in the control group. The average values of heart rate at rest in the experimental and control groups were assessed as satisfactory according to the Ruffe indices. Table 1 shows that at the end of the pedagogical experiment, the results of the PWC 170 test increased by an average of 45% in the experimental group and by 11.5% in the control group.

Table 1. Indicators of the functional level of physical performance of cadets of the Academy of the Ministry of Emergency Situations of the Republic of Uzbekistan

Indicators	Control group	Experimental group	Difference
Before the experiment			
<u>PWC 170 (kgm/min)</u>	<u>5424.59±83.2</u>	<u>5438.65±78.2</u>	<u>>0.05</u>
<u>MKI (ml/min)</u>	<u>10971.8±342.3</u>	<u>1095.5±252.3</u>	<u>>0.05</u>
<u>MKI (ml/min)</u>	<u>166.33±20.7</u>	<u>156.55±16.8</u>	<u>>0.05</u>
<u>Heart rate at rest</u>	<u>75.0±3.5</u>	<u>82.8±6.16</u>	<u>>0.05</u>
<u>Ruffier index</u>	<u>10.1±1.1</u>	<u>11.7±0.8</u>	<u>>0.05</u>
After the experiment			
<u>PWC170(kgm/min)</u>	<u>6384.75±51.5</u>	<u>6625.55±501.1</u>	<u><0.05</u>
<u>MKI (ml/min)</u>	<u>11094.04±266.8</u>	<u>12503.3±312.1</u>	<u><0.05</u>
<u>MKI (ml/min)</u>	<u>173.02±23.2</u>	<u>186.62±23.54</u>	<u><0.05</u>
<u>Heart rate at rest</u>	<u>74.1±4.12</u>	<u>75.5±5.55</u>	<u><0.05</u>



Ruffier index	<u>9.1±0.8</u>	<u>8.5±0.4</u>	<u><0.05</u>
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The average heart rate at rest in the experimental group by the end of the experiment significantly decreased by 9.8%, which indicates the efficiency of the heart. The value of the Ruffe index decreased from 11.7±0.8 to 8.5±0.4 in the experimental group and from 10.1±1.1 to 9.1±0.8 in the control group, which indicates a satisfactory cardiovascular condition -vascular system. A decrease in heart rate leads to a decrease in breathing intensity and, as a result, energy consumption decreases, which in turn has a beneficial effect on the recovery process. In the experimental group, according to these indicators, the morphofunctional value of the activity of the cardiovascular system was assessed as good.

Conclusion

According to the results of the testing, despite the good physical preparedness of the future rescuers, it was found that professional and practical skills were not sufficiently developed. This, in turn, indicates the need to develop a comprehensive set of exercises that connect physical fitness and professional and practical training of future rescuers.

A comparative analysis of the physical training of cadets using traditional methods shows that both general and individual endurance, agility, flexibility, speed, quick thinking and endurance are insufficient for professional and practical physical training.

The result is the introduction of professional training methods and the use of special training in the firefighting training complex, which allows trainees to effectively solve professional and practical problems and simulate cross-border situations. At the end of the pedagogical experiment, the cadets of the experimental group showed higher results than the cadets of the control group on all tasks ($p < 0.05$).

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