THE EFFICIENCY OF APPLICATION OF THE "TABATA" SYSTEM IN THE PROCESS OF STRENGTH TRAINING OFCADETS OF HIGHER EDUCATION INSTITUTIONS WITH SPECIFIC LEARNING CONDITIONS

Torlo O. I., Shutka G. I., Chervonoshapka M. O., Knytsiak M. V., Golubeva O. T., Sopila Yu. M., Mazur T. R. The efficiency of application of the Tabata system in the process of force training of cadets of higher education institutions with specific learning conditions. An important component in the structure of the overall physical fitness of cadets is a high level of strength abilities, which greatly affect the effectiveness of activities in extreme situations. The choice and application of the most effective means and methods of force training is relevant in the process of training applicants in institutions of higher education with specific learning conditions. The purpose of the work was to study the indicators of the development of strength abilities of cadets under the influence of classes on the traditional program of "Special Physical Training" and under the influence of training on the Tabata system. In the process of work, a pedagogical experiment was conducted. The control and experimental groups included cadets (men) of the second year of study, applicants for the educational degree "bachelor" in the specialty "Law enforcement activity". Indicators of the development of strength abilities were researched by tests: complex strength exercise, pull-ups on the crossbar, squats in 20 s, jump up from the place, flexion and extension of the arms in the stop lying in 20 s. The results of the pedagogical experiment showed, that the use of the traditional method of motor abilities development, as well as the use of training according to the Tabat system, allows achieving reliable positive changes in the indicators of power preparedness of applicants for higher education. At the same time, the implementation of exercise complexes according to the Tabata protocol allows achieving a more pronounced improvement.

Key words: higher education institutions, cadets, law enforcement activity, physical training, power abilities, "Tabata".
Formulation of the problem. One of the important tasks of the process of training future law enforcement officers in higher education institutions with specific learning conditions under martial law is the formation of a high level of readiness for the use of measures of physical influence and special means both under the usual conditions of law enforcement activity and in conditions of complication of the operational situation (various phenomena of social, natural, technogenic nature) [13, 14].

An important component in the structure of the overall physical fitness of cadets is a high level of strength abilities that significantly affect the effectiveness of law enforcement officers activity, in particular, the effectiveness of the application of measures of physical influence in extreme situations of official activity [15, 16].

The results of our preliminary studies [12] showed that the most pronounced increase in the level of strength training of cadets is observed during the first year of study. In the future, there is a slowdown in the rate of improvement and stabilization of the level of force preparedness. An obvious reserve for optimizing the process of force training of cadets is the search and application of the most effective means and methods of force training, which would ensure the proper dynamics of the level of development of force abilities of applicants at all stages of the training process.

The analysis of scientific and methodological sources has shown that the attention of scientists has recently been caused by the use of high-intensity interval training in the Tabata system in the process of developing the motor abilities of applicants for higher education. The high efficiency of this system is due to the fact that it creates a significant load on both aerobic and anaerobic mechanisms of energy supply, and therefore contributes to increasing their productivity [10, 11].

Analysis of literary sources. A number of scientific studies have been conducted aimed at testing the effectiveness of Tabata system training in the field of physical education and sports.

The analysis of scientific and methodological works showed that high-intensity interval training, proposed by Izumi Tabata, allows for a short period of time to increase both aerobic and anaerobic abilities of the body and purposefully develop endurance in the process of practical training with students [6]. The authors recommend using this method in training sessions for trained students 2-4 times a week, for students with a low level of preparedness 1-2 times a week, alternating with other types of classes to increase interest in physical education and sports activities.

The effectiveness of the Tabata technique in physical education classes with low intensity and exercises selected in accordance with the preparedness of future design specialists has been proved [3].

In addition to the positive impact on the development of motor skills, experts note that the use of the Tabata technique during physical education classes with students has a positive effect on improving the attitude of students to physical culture and recreational activities; formation of sustained interest in physical education; increasing the level of confidence in one's abilities; improving the state of attending classes by applicants for higher education; activation of physical culture and recreational work with students [2].

Research has established that the implementation of the method of interval training according to the "Tabata" system as part of the physical education of students of non-physical education institutions of higher education has a positive effect on the training of endurance, strength, speed-power qualities, speed and dexterity [8]. It also has a positive effect on the physical performance of students (according to the indicators of the Harvard Step Test) [7].

The application of the "Tabata" system is also relevant for the process of sports training. The results of the pedagogical experiment showed that the use of training according to the "Tabata" system allows to achieve a more pronounced increase in the level of general physical fitness of cadets of higher education institutions of the Ministry of Internal Affairs of Ukraine in the process of sectional judo classes, compared to traditional methods [5]. Also, in the course of the pedagogical experiment, a significant increase in the results of the physical fitness indicators of student athletes aged 17–20 years engaged in mini-football was established, namely, a significant improvement in the technique of performing exercises directly related to the effectiveness of technical and tactical actions in football [4].

We consider it relevant to continue scientific research in this direction and to study the effectiveness of the application of the "Tabata" system in the educational process of "Special physical training" for the development of strength abilities of cadets.

The purpose of the work was to research indicators of strength development of cadets under the influence of classes under the traditional program of "Special physical training" and under the influence of training under the "Tabata" system.

To achieve the set goal, the following research methods were applied: theoretical analysis and generalization of data from scientific and methodological literature and empirical materials of scientific research; pedagogical experiment; pedagogical examination (testing); methods of mathematical statistics. The following indicators were calculated in the study: mean values (X), standard deviations σ, Student's t- criterion.

The contingent of the researched consisted of two groups of cadets (men) of the second year of study, applicants for the educational degree "bachelor" in the specialty "Law enforcement activity". In the control group of the researched (19 people), the improvement of readiness indicators took place according to the traditional program of the educational discipline "Special physical training". An experimental group of 20 people was engaged in increasing the level of strength abilities using the "Tabata" training program developed by us. In the course of the research, indicators of the development of strength abilities were studied according to the tests [1, 9]: complex strength exercise, pull-ups on the crossbar, squats in 20 s, jump up from from a place, flexion and extension of the arms in the stop lying in 20 s. At the beginning of the pedagogical experiment, the level of physical fitness of the cadets of the control and experimental groups did not differ significantly (p < 0,05).

Presentation of the main material of the research. The analysis of the obtained results shows that in the second year of training, the cadets have a high and above average level of strength development. As a result of the pedagogical experiment, a significant improvement (p < 0,05) of the researched indicators of strength training was noted both in the control group (as a result of using traditional training methods) and in the experimental group (as a result of training according to the "Tabata" protocol (Table 1). However, in the experimental group, the increase in the level of strength training of the cadets was more pronounced.
Results of testing the physical fitness of cadets in the specialty "Law enforcement activity"

<table>
<thead>
<tr>
<th>Test</th>
<th>Group</th>
<th>The beginning of the pedagogical experiment</th>
<th>The end of the pedagogical experiment</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>X</td>
<td>σ</td>
<td>X</td>
</tr>
<tr>
<td>Pull-ups on the crossbar, times</td>
<td>K</td>
<td>13.3</td>
<td>1.5</td>
<td>14.2</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>13.2</td>
<td>1.5</td>
<td>14.6</td>
</tr>
<tr>
<td>Squats in 20 seconds, times</td>
<td>K</td>
<td>29.4</td>
<td>1.7</td>
<td>31.9</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>30.0</td>
<td>2.2</td>
<td>33.8</td>
</tr>
<tr>
<td>Flexion-extension of the arms in the stop</td>
<td>K</td>
<td>27.7</td>
<td>3.1</td>
<td>30.4</td>
</tr>
<tr>
<td>lying in 20 s, times</td>
<td>E</td>
<td>27.9</td>
<td>2.6</td>
<td>33.9</td>
</tr>
<tr>
<td>Complex strength exercise, times</td>
<td>K</td>
<td>48.3</td>
<td>2.5</td>
<td>50.4</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>48.8</td>
<td>2.5</td>
<td>54.3</td>
</tr>
<tr>
<td>Jump up from a place, cm</td>
<td>K</td>
<td>41.0</td>
<td>2.4</td>
<td>41.9</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>41.4</td>
<td>2.8</td>
<td>43.1</td>
</tr>
</tbody>
</table>

Also, during the pedagogical experiment with the use of training according to the "Tabata" system, an increase in the emotional saturation of the physical training process and an increase in the efficiency of the process of mastering the technique of applying physical impact measures (detention techniques, throwing techniques, etc.) were noted.

Conclusions. The results we obtained showed that the use of the traditional method of developing motor skills in the educational process of the "Special Physical Training" discipline, as well as the use of training according to the Tabata system, allows us to achieve positive changes in the indicators of strength training of applicants for higher education. At the same time, according to our results, performing complexes of exercises according to the Tabata protocol allows to achieve a more pronounced improvement. This determines the relevance of its application in the process of conducting practical classes and independent work of cadets. The methodology, which is based on performing complexes of exercises according to the Tabata system, will allow to effectively supplement and expand the range of traditional means and methods of physical training of cadets of higher education institutions of the Ministry of Internal Affairs of Ukraine.

Prospects for further research in this area are to study a wider range of indicators of physical fitness of male and female students in higher education institutions with specific learning conditions under the influence of Tabata training and in the development of scientifically based recommendations for their improvement.

Reference
ЮНІХ ФУТБОЛІСТІВ НА ЕТАПІ ПОЧАТКОВОЇ ПІДГОТОВКИ

Організований футбол все частіше іде в розріз із можливостями та потребами дитини. Особливо критично дана тенденція виглядає на етапі початкової підготовки. Окрім негативних впливів на фізичний розвиток юних футболістів, такі впливи можуть сприяти їх соціальному і психологічному розвитку. Так, через чимало тренувальних вправ, відсутність адекватної наведенням, ігнорування вікових особливостей та потреб дитини можуть негативно позначитися на їхній самостійності та мотивації.

Зосередження на виховуванні дітей починається у середовищі яке формує їх. Національний університет фізичного виховання і спорту України, Київ

Дейнеко І.В.
старший викладач
Національного авіаційного університету, Київ

РОЛЬ ТА ЗНАЧЕННЯ РУХЛИВИХ ІГР В ПРОЦЕСІ ПСИХОЛОГІЧНОГО ТА ПСИХОФІЗІОЛОГІЧНОГО РОЗВИТКУ ЮНІХ ФУТБОЛІСТІВ НА ЕТАПІ ПОЧАТКОВОЇ ПІДГОТОВКИ

Байрачний О.В., кандидат наук з ф.а.с, доцент, завідувач кафедри футболу
Національного університету фізичного виховання і спорту України, Київ

Дейнеко І.В.
старший викладач
Національного авіаційного університету, Київ

Ключові слова: юні футболісти, розвиток, рухливі ігри, психологічні характеристики, вікові особливості.