and implementation of programs aimed at supporting a healthy lifestyle, regarding the ban on the sale of tobacco products and alcoholic beverages to minors, smoking and drinking in public places, etc. [2].

Conclusions. I confirmed the hypothesis that most cases of young people following harmful habits are associated with the goal of improving their mood, and the reason why they first began to use these substances (alcohol, cigarettes, drugs) is the desire to try. This study in the literature does not reveal all the factors contributing to the spread of these harmful habits, therefore, it is necessary to study this issue again and again until a clear answer is received to the question of what makes people harm their health. But research alone is not enough; based on them, it is necessary to take measures to improve the situation by involving society and the state in this problem.

The topic of mutual influence of physical culture and harmful habits is extremely relevant: a lot of research is being conducted in this direction, there are ambiguous and sometimes opposing discussions positions. A sociological survey of a group of students confirmed a direct connection between sports and giving up bad habits to varying degrees. A negative attitude towards bad habits in particular alcohol and smoking were revealed. The lifestyle of most students shows a negative attitude towards drinking low-alcohol drinks, smoking, and a critical attitude towards others who abuse these habits.

Reference
2. Pavlova D.M., Smoking, use of alcohol and narcotic substances among adolescents studying distribution and trends in Ukraine: according to the results of the 2019 study within the framework of the international project "European survey of students on the use of alcohol and other narcotic substances - ESPAD" / O.M. Balakireva (director of the author's group), N.M.K.: "OBNOVA KOMPANI" LLC, 2019. - 104 p.

DOI: https://doi.org/10.31392/UDU-nc.series15.2024.2(174).02

Otkydash Vladyslav, PhD, senior lecturer of the department of special physical and combat training of the National Academy of the Security Service of Ukraine, Kyiv;
Bondarivitch Oleg, senior lecturer department of special physical and combat training National Academy of the Security Service of Ukraine, Kyiv.

THE INFLUENCE OF MILITARY-SPORTS ALL-AROUND TRAINING ON THE HEALTH OF CADETS OF THE SECURITY AND DEFENSE SECTOR

The experience of combat operations in the anti-terrorist operation in the east of Ukraine and the war of the Russian federation against Ukraine proved the need to develop and improve the military-applied physical skills of servicemen in moving on the battlefield, overcoming obstacles in full equipment and means of ballistic protection, firing small arms from various positions, throwing grenades, close combat (especially all-style combat). There are different approaches to the content of special physical training of cadets. The influence of military-sports all-around training on the health of cadets of the security and defense sector. The results of the study demonstrate a statistically significant improvement in the level of physical health of EG cadets. No statistically significant changes were noted in the representatives of the CG.

Key words: military-sport all-around, health status, cadets, higher military educational institutions.

Откідча В.С., Богданов М.В., Віндрорович О.Л., Вплив військово-спортивних багатоборстя на здоров’я курсантів сектору безпеки та оборони. Досвід бойових дій в антитерористичній операції на сході України та війні Російської Федерації проти України, довів необхідність розвитку та удосконалення військово-прикладних фізичних навичок військовослужбовців з пересування на полі бою, подолання перешкод у повному спорядженні та засобах балістичного захисту, ведення воєнної стрілецької зброї з різних положень, метання гранат, ближнього бою (в особливості всестильового бою). Існують різні підходи до змісту специфічної фізичної підготовки курсантів. Проте недостатньо обґрунтовано використання засобів фізичного виховання в системі спеціальної фізичної підготовки, які найбільшою мірою впливають на формування психофізичного готовності мобільних військових до ведення безпосередніх бойових дій в сучасних умовах. Аналізуючи вимоги навчально-боєвої та боєвої діяльності до професійної підготовленості військовослужбовців можна зазначити, що для ефективного використання завдань система спеціальної фізичної підготовки (СФП) має бути спрямована на формування професійних військових навичок діяти у складних та небезпечних умовах. Стаття присвячення актуальному питанню покращення здоров’я та особливого завдання військовослужбовців військової аерічної підготовці та оборони. Глібокою дослідження є твердження науковців про поступове покращення стану здоров’я курсантів сектору безпеки і оборони.
The key to high combat readiness and combat capability of the personnel of the Armed Forces of Ukraine is the necessary level of professional knowledge, sufficient motivation, excellent physical development and high functional state of the main body systems of servicemen [1, 2]. Foreign experts I. Mikloka, S. Keinänen-Kiukaanniemi, J. Jokelainen, A. Peitso, P. Härkönen, M. Timonen, 2012; K. Friedl, J. Knapik, K. Hääkkinen, N. Baumgartner, H. Groeller, N. Taylor, 2015 confirm that the physical development and functional state of body systems are a guarantee of effective performance of combat tasks by military personnel of various specialties [3, 4]. Authors of domestic scientific works O. Lavrut, T. Lavrut, 2009; O. Olkhov, 2014; V. Klymovych, O. Olkhov, S. Romanchuk, 2016, claim that the success of military professional activities and the results of professional training of future officers depend on their physical condition [5, 6, 7]. However, physical development and the corresponding functional state of body systems are components of the level of physical health.

Analysis of literary sources. The term “physical health” is characterized and considered by modern scientists from different points of view. V. Bobrytska believes that physical health is determined by the figure, the condition of hair and skin, the harmonious development of all physical qualities (speed, strength, endurance, flexibility), as well as the ability of the body to maintain the constancy of the internal environment (homeostasis) [8]. A. Furmanov, M. Yuspa claim that physical health is the level of growth and development of body organs and systems; its basis consists of morphological and functional reserves that provide adaptive reactions [9]. According to D. Voronin, physical health is the level of development and functional capabilities of the body’s organs and systems [10]. T. Krutsevich considers physical health as a dynamic state, characterized by the reserve of functions and organs, and is the basis of the individual’s performance of his biological and social functions [11]. In our opinion, the most acceptable definition of the term “physical health” is the dynamic state of the organism, which can gradually change under the influence of the process of physical education - T. Krutsevich, 2008 [11].

The analysis of the latest publications gives reason to claim that physical training has significant opportunities for improving the level of physical development of military personnel, strengthening their health and increasing professional performance [12, 13, 14]. Researchers claim that military sports are effective means of physical training for military personnel [15, 16, 17]. On the one hand, they provide a high level of general physical fitness, on the other hand, they form professionally necessary applied skills and skills (hand-to-hand combat, overcoming obstacles, military swimming, throwing grenades, shooting, etc.).

Military all-around sport is a Neo-Olympic sport with a military focus and is included in the “List of sports recognized in Ukraine” [18]. Military sports all-around includes two sections: combat duels and military-sports heptathlon. In Ukraine, military-sports all-around is developed and popularized by the Public Organization “All-Ukrainian Federation of Military-Sports All-Around”, which was created on February 8, 2000 on the basis of the Federation of Military-Applied Sports of Kharkiv Region (registered on 31.01.1997). The Law of Ukraine “On Amendments to the Law of Ukraine “On Physical Culture and Sports” Regarding the Introduction of Service Applied and Military Applied Sports” dated June 6, 2017 No. 2080-VIII decrees the development and implementation of military applied sports in the Armed Forces of Ukraine. Since 2010, military sports all-around has been introduced into the sports and mass work of higher military educational institutions of the Armed Forces of Ukraine.

Previous studies have determined the deterioration of the physical condition of first-year cadets of higher military educational institutions over the past 10 years [19]. The hypothesis of the following work was the statement of the authors [17] about the possibility of using means of military applied exercises in the process of sports and mass work to improve the physical development and state of health of military personnel.

The purpose of the work - to investigate the impact of military sports all-around training on the level of physical health of cadets of the security and defense sector.

Research material and methods. The study was conducted in the period from January 2020 to September 2021 on the basis of the Kharkiv National University of the Air Force named after Ivan Kozyhedub and was aimed at determining the level of physical health of cadets according to the method of G. L. Apanasenko. The experiment involved 45 cadets of the experimental group (EG), who participated in the author’s program of special physical training using military sports equipment at another level of higher education, and 74 cadets of the control group (CG), who participated in the current system of physical training. All cadets were informed about participation in the experiment and about their consent.

Anthropometric (measurement of anthropometric data) and medical-biological (rhythmovasometry, electromanometry) research methods were used to determine the level of physical health of cadets. Based on the results of anthropometric and medical-biological measurements, weight-growth, vital, strength indices, Robinson’s index, and the time to restore the heart rate to a resting state after 20 squats in 30 seconds were determined. The weight-height index characterizes the peculiarities of the physique and the increase in the ratio of body weight to body length. The vital index allows you to evaluate the reserves of the respiratory system and increase the ratio of the vital capacity of the lungs to body weight. The strength index characterizes the state of the human muscular system and the increase in the ratio of the average arithmetic value of the dynamometry of two hands to body weight. The Robinson index characterizes the efficiency of the functioning of the cardiovascular system. It is determined by the product of the heart rate and systolic blood pressure, divided by 100. The time of recovery of the heart rate to the state of rest after 20 squats characterizes the physical capacity of a person.
For a detailed analysis of the level of physical health of cadets, a highly informative method was used - express assessment of the level of physical health according to the method of G.V. L. Apanasenko. This technique involves determining the sum of points for each of the 5 indicators (calculated indices) [20].

The methods of mathematical statistics (one-dimensional statistical analysis) were used to prove the regularities discovered in the research process of such hypothesis testing. The probability of differences was estimated by Student's t-test and was considered statistically significant at p<0.05.

**Research results.** During the experiment, anthropometric and medico-biological indicators of the physical condition of the cadets of the experimental and control groups were determined. Based on the experimental data, the assessment of the level of physical health of two groups of cadets before and after the experiment was determined. The data are included in Table 1.

### Table 1

<table>
<thead>
<tr>
<th>Indexes</th>
<th>Control group (n = 74)</th>
<th>Experimental group (n = 45)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight-height index, kg·m⁻¹</td>
<td>403.18 ± 2.41</td>
<td>404.62 ± 2.63</td>
</tr>
<tr>
<td>Vital index, ml·kg⁻¹</td>
<td>53.29±0.77</td>
<td>53.29±0.88</td>
</tr>
<tr>
<td>Power index, %</td>
<td>57.26±0.82</td>
<td>58.18±1.12</td>
</tr>
<tr>
<td>Robinson’s index, conditional units</td>
<td>85.83±1.19</td>
<td>85.51±1.40</td>
</tr>
<tr>
<td>Recovery time Heart rate after 20 squats, s</td>
<td>88.86±0.83</td>
<td>88.84±1.20</td>
</tr>
</tbody>
</table>

Based on the obtained data, an analysis of the dynamics of the physical health indicators of the cadets of the control and experimental groups during the experiment was carried out. The weight-growth index of the students of both groups suffered a slight deterioration. The changes that have taken place are not statistically significant (p>0.05). In our opinion, the slight deterioration of the weight-growth index of cadets at the second level of higher education is associated with an increase in body weight.

We note similar changes in the numerical value of the life index of the representatives of both groups, but for CG students these changes are statistically significant (p<0.05), and for EG cadets, the indicator has not changed statistically (p>0.05).

The analysis of the strength index and Robinson index values of CG cadets proved the absence of statistically significant changes during the experiment. On the other hand, the strength index of EG achievers experienced a statistically significant improvement at p<0.05, and the Robinson index at p<0.001.

The specified changes in the relevant indices - components of the express assessment of the level of physical health according to the method of G.L. Apanasenko was allowed to assess the impact of the experimental program on the state of health of the cadets of the experimental group. Assessment of the level of physical health of the students of the two groups before the start of the experiment shows the absence of statistically significant differences. According to the results of the study, the average value of the assessment of the level of physical health in the EG recipients underwent a statistically significant improvement (p<0.001), while no statistically significant differences were recorded in the CG recipients (p>0.05).

### Table 2

<table>
<thead>
<tr>
<th>Indexes</th>
<th>Test results</th>
<th>Level importance, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group (n = 74)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight-height index, kg·m⁻¹</td>
<td>7.39±0.30</td>
<td>7.03</td>
</tr>
<tr>
<td>Vital index, ml·kg⁻¹</td>
<td>7.87±0.30</td>
<td>21.09</td>
</tr>
<tr>
<td>Power index, %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robinson’s index, conditional units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recovery time Heart rate after 20 squats, s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Validity of differences between groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>t = 1.08</td>
<td>p = 0.05</td>
<td></td>
</tr>
<tr>
<td>t = 3.78</td>
<td>p &lt; 0.01</td>
<td></td>
</tr>
</tbody>
</table>

In order to determine the impact of the experimental program on the level of physical health of the cadets, we compared the ratio of the express assessments of the students of the two groups before the beginning and after the experiment.

CG before the experiment CG after the experiment EG before the experiment EG after the experiment

**Figure 1.** Correlation of express assessments of physical health of cadets of both groups before and after the experiment.
In the control group before the experiment, 14 cadets received a "low" grade (up to 4 points according to G.L. Apanasenko's method), 41 cadets received a "below average" grade (from 5 to 9 points), and 19 cadets received an "average" grade (from 10 to 13 points). After the experiment, the number of cadets receiving low grades decreased to 3, the number of "below average" grades increased to 54, but the number of "average grades" decreased to 17.

The results of the experimental group showed significantly better dynamics. The following ratings were obtained before the experiment: "low" - 4, "average" - 38, and "average" 64. After the experiment, there were no "low" grades, 22 "below average" grades, 21 "average" grades, and 2 "above average" grades (14-16 points).

**Conclusion.** This fact indicates the expediency of using military-sports all-around equipment to improve the health of servicemen. In the course of the formative experiment, the positive influence of the special physical training program was determined on the indicators of heart rate at rest (p<0.05), physical condition according to the method of O.A. Pirogova (p<0.05), strength index (p<0.01), Robinson index (p<0.001), heart rate recovery time after 20 squats (p<0.001), level of physical health (p<0.001).

**Prospects for further research** It is planned to focus on the study of the impact of military sports all-around training on the level of psychological qualities of cadets of the security and defense sector.

**References**


The degree of influence of stressors on our body can be different: from mild excitement in anticipation of, say, a trip on vacation, to a severe psychosomatic disorder of post-traumatic stress. In any case of manifestation of stress, it affects all components of our individuality (individuality itself), such as memory, thinking, language, emotional and volitional sphere. However, this does not mean that stress is only evil, trouble, it is also the most important tool for training and hardening a person, since stress helps to increase the resistance of the psyche and the body in general, training its adaptive mechanisms. Stress is our faithful ally in continuous adaptation to any changes in the environment. For some students, student life is associated with student societies, communication with interesting people, various activities and fun. For others, it is a serious test, a life change, a difficult life situation to which it is necessary to adapt. Students are young and face various problems, new learning conditions require more independence, responsibility, self-organization, and not all students are ready to solve numerous problems and tasks. Which gives life. In any case, studying at a higher educational institution is stressful for many students. The student needs to overcome difficulties, master new roles and modify old ones, adapt to new life conditions.

There is a lot of evidence that chronic stress is a companion of student life. Researchers note that the causes of stress in students are related to problems of finances, housing, security, etc. The stress experienced by students can affect learning (acquiring, applying, and processing knowledge), which hinders academic performance. Problems with academic performance also create discomfort, as a result of which general stress increases.

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Key words: study, stress, analysis, students, factors, influence.