Health Prob Civil. 2025, Volume 19, Issue 3
ORIGINAL PAPER ISSN 2353-6942, eISSN 2354-0265

EFFECTIVENESS OF THE TECHNOLOGY FOR DEVELOPING PROFESSIONALLY IMPORTANT QUALITIES OF CADETS OF HIGHER EDUCATION INSTITUTIONS OF THE NATIONAL GUARD OF UKRAINE THROUGH SPORTS AND PHYSICAL TRAINING

Andrii Andres[1,2(A,D)], **Ivanna Bodnar**[1(A,C)], **Valerii Kryzhanovskyi**[2(B,C,D,E)]

[1]Department of Theory and Methods of Physical Education, Lviv State University of Physical Culture named after Ivan Bobersky, Lviv, Ukraine

[2]Department of Physical Education, Lviv Polytechnic National University, Lviv, Ukraine

Authors' contribution:

A. Study design/planning
B. Data collection/entry
C. Data analysis/statistics
D. Data interpretation
E. Preparation of manuscript
F. Literature analysis/search
G. Funds collection

Summary

Background. In Ukraine, there is an urgent need for significant improvement in the efficiency of training personnel of the security and defense sector during service in extreme and psychologically tense situations.

Material and methods. The research consisted of two stages: preliminary and main. 15 experts were involved in the main stage of the research. The Delphi method was used to assess the effectiveness of the technology.

Results. Based on the preliminary stage of the research, a technology was justified and created for the development of professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine through sports and physical training. The components of the technology included the target, organizational-content, and result-control blocks, as well as the block for analyzing the requirements for future officers.

Conclusions. The technology for the development of professionally important qualities of cadets of higher educational institutions of the National Guard of Ukraine by means of sports and physical training is a new, original development, which is characterized by conciseness, high practical significance, and scientific importance for the industry, and has a high (8.41±0.13 out of 9 possible points) predictive efficiency.

Keywords: psycho-physical training, Delphi method, individualization, cadets, qualities

Introduction

In our time, marked by military actions on the territory of Ukraine, there is a pressing need for significant changes in the professional training of personnel in the National Guard of Ukraine as a unit within the Ministry of Internal Affairs. The relevance of the topic is justified by the insufficient preparedness of the personnel of the security and defense sector during service in extreme and psychologically tense situations.

Tables: 2
Figures: 2
References: 28
Submitted: 2024 Feb 5
Accepted: 2024 Apr 29
Published Online: 2024 May 17

Andres A, Bodnar I, Kryzhanovskyi V. Effectiveness of the technology for developing professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine through sports and physical training. Health Prob Civil. 2025; 19(3): 326-338. https://doi.org/10.5114/hpc.2024.139342

Address for correspondence: Ivanna Bodnar, Department of Theory and Methods of Physical Education, Lviv State University of Physical Culture named after Ivan Bobersky, Tadeusha Kostyushka St. 11, 79000 Lviv, Ukraine, e-mail: ivannabodnar@ukr.net, phone: +380 032 255 32 01

ORCID: Andrii Andres https://orcid.org/0000-0002-1472-9009, Ivanna Bodnar https://orcid.org/0000-0002-7083-6271, Valeriy Kryzhanovskyi https://orcid.org/0000-0003-4044-8582

Experts [1] have identified that the pressing issues requiring resolution include the search for effective means, methods, and technologies to improve the physical fitness of officers (47.6%). The proposed content-functional model for forming the psycho-physical readiness of officers in the National Guard of Ukraine to perform assigned tasks by specialists [2], with an emphasis on the use of special physical training means, does not include (nor indicate ways of) individualization of the training process for cadets. This is considered one of the fundamental requirements of a modern approach to shaping training programs for cadets [3,4]. Special physical training programs presented in literature are built on the application of a single type of sport: hand-to-hand combat [5], military-sports pentathlon [6], military pentathlon [7], CrossFit [8], Horting [9], and kettlebell sport [10]. Programs with the comprehensive application of means essential for military-applied physical training of cadets are lacking.

The presence of isolated and unsystematized contradictory data in specialized literature does not allow for the development of effective training programs for cadets of higher education institutions of the National Guard of Ukraine, preparing them for productive work in their field and resisting professional burnout. This does not contribute to ensuring the safety of citizens, maintaining law and order within the country, and increasing its defense capabilities.

Aim of the work

The aim of the research was to develop a technology for the development of professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine through sports and physical training and to assess its prognostic effectiveness.

Material and methods

Organization of the research

The research consisted of two stages: preliminary and main.

Preliminary stage of the research (October 2020 – May 2022)

During the preliminary stage, studies were conducted that formed the basis for justifying and developing a technology for the development of professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine through sports and physical training (Figure 1).

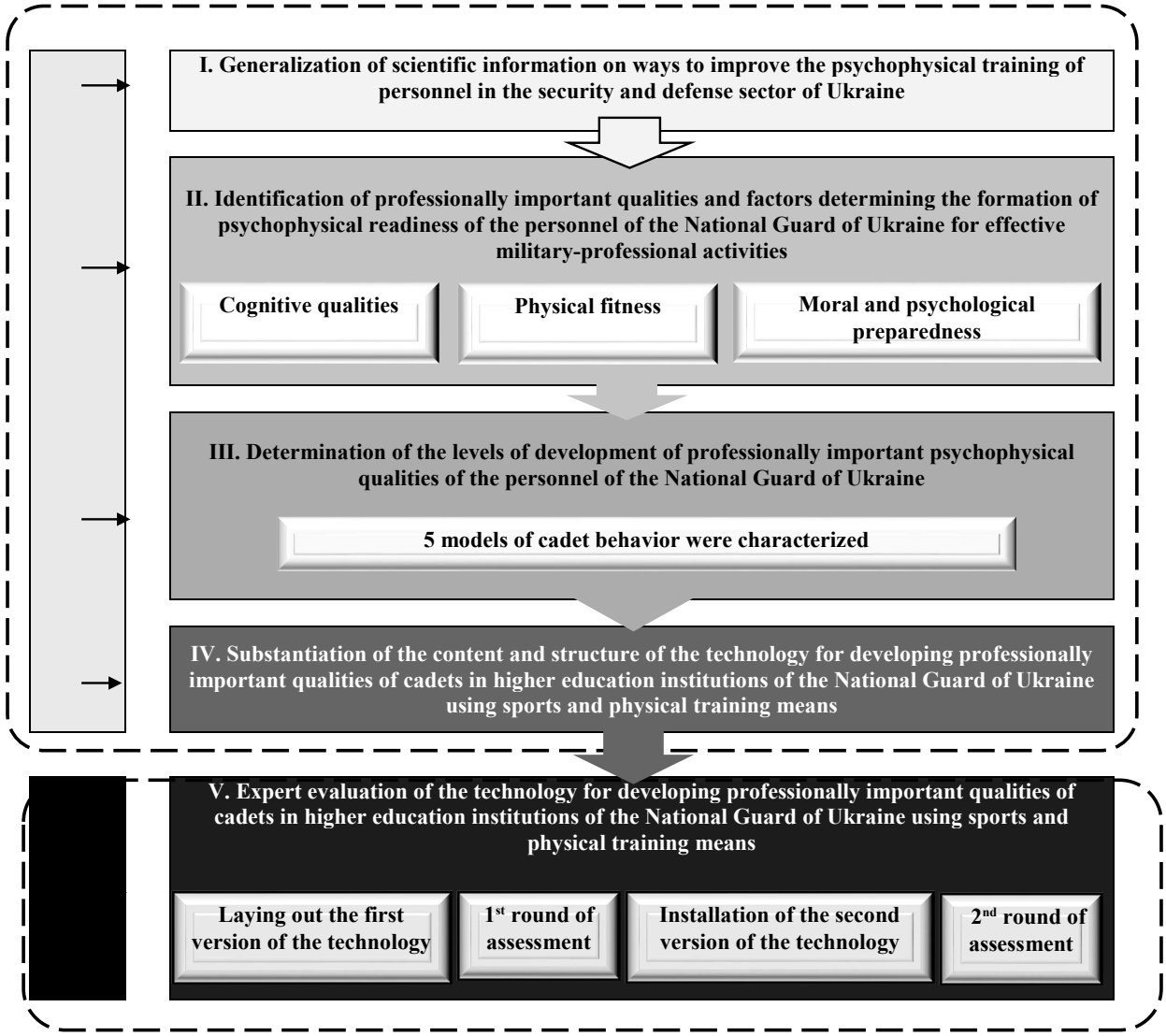

Figure 1. Content of the research stages

To justify the technology for developing professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine through sports and physical training, the following research methods were applied: testing the physical fitness of cadets (n=168); surveys (questionnaires n=168); psychodiagnostic research methods (n=282). Statistical research methods were applied at all stages.

Testing of the physical fitness of cadets was conducted in order to determine the level of development of individual physical qualities. 8 test exercises were used. They were selected in such a way as to obtain information about all physical qualities and the level of development of all major muscle groups: 1) pull-ups on the crossbar (times); 2) pull-up with a twist on the bar (repetitions); 3) shooting a pistol from a place at a specified size of the target (by feet) during a limited time during the day (number of hits); 4) complex strength exercise (number of times); the exercise consists of two parts: the first one is bending and extending the trunk, the second one is bending and extending the arms while lying down; 5) general control exercise on a single obstacle course; this is performed without weapons, with the distance being 200 m (min, s); 6) shuttle run 10×10 (m, s); 7) throwing an F-1 grenade at a distance; the weight of the grenade was 600 g (m); 8) running for 3,000 m (min, s).

To determine the degree of importance of professionally significant physical qualities and psycho-physical indicators of moral-psychological qualities, a survey (questionnaire) was conducted. Respondents assessed the importance of qualities on a 5-point scale. The questionnaire was developed by the authors of the article and consisted of 3 parts. The internal consistency of the questionnaire was assessed using Cronbach's alpha. The result was considered satisfactory if its value was ≥0.7. The Cronbach's alpha value of the questionnaire was 0.980, specifically for the part related to physical fitness: 0.952, and for the part related to professionally significant psycho-physical qualities, social, and personal aspects: 0.973. The alpha coefficient of each scale was at an acceptable level and did not significantly improve upon excluding individual questions.

Psychodiagnostics included the use of standard techniques to assess the level of life satisfaction (SWLS) [11], emotional control [12], anxiety [13], and coping strategies [14].

Main stage of the research (June 2022 – May 2023)

During the main stage of the research, the prognostic effectiveness of the technology for developing professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine through sports and physical training was evaluated. The Delphi Method of expert assessments was applied for this purpose. Initially, the working group compiled the first version of the technology. The components of the technology were systematized into blocks reflecting the requirements for cadets of higher education institutions of the National Guard of Ukraine: future officers, goals, content and organization of physical training, and the results of this process.

After the initial evaluation of the technology (June 1st, 2022), experts recognized all the proposed blocks by the working group as important and necessary. Only one component of the second block –tasks related to the formation of military discipline and responsibility, general culture, and ethics – was assessed by experts with a small number of points.

Based on the information obtained from the experts, the working group compiled a second improved version of the technology, taking into account all aspects raised by the experts. The break between two separate surveys lasted less than a month.

After the re-survey by the experts (June 15th, 2022), the indicators of the standard deviation and coefficient of variation of the mean arithmetic value of their ratings were not significant, serving as the criterion for completing the expert survey. The working group compiled all the proposals, comments, and recommendations of the experts into a single document, which was sent to all the experts for final approval. The experts highly rated the second version of the technology. Thus, the final version of the technology for developing professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine through sports and physical training was compiled.

Participants

15 individuals were involved in the expert assessment. The requirements for experts included: academic degree (PhD or Doctor of Philosophy, Doctor of Science), and/or academic title (associate professor, professor); military rank (officer rank); publications in the field of knowledge; practical experience in the armed forces and security and defense sector structures of Ukraine in physical training and sports for at least 7 years; and exclusion criteria included conflicts of interest with organizers and unwillingness to participate in the survey. The average age of the experts was 43.80±14.34 years, experience: 21.92±16.65.

Statistical analysis

In order to quantitatively describe empirical data, descriptive statistical methods were employed, such as calculating statistical indicators. The empirical data was described through basic statistical indicators: mean, median, mode, standard deviation, coefficient of variation, and minimum and maximum values of the variable.

To determine the significance of the relationship between the level of physical, psychophysical readiness, and moral-psychological qualities of the personnel of the National Guard of Ukraine, correlation analysis was conducted. The Spearman rank correlation coefficient was calculated.

For comparing whether the mean values of the results of psychodiagnostics of two samples differed significantly, a one-way analysis of variance (One-Way ANOVA) was conducted.

To test the null hypothesis that the sample comes from a normally distributed population, the Shapiro-Wilk test was performed.

Cluster analysis was carried out to identify groups of cadets with similar characteristics, needs, or behavior, and to divide them into groups, allowing for a better understanding of the target audience of cadets and the development of more effective training strategies for them.

IBM SPSS Statistics V. 23 (SPSS Inc., Chicago, Illinois, USA) was used for statistical analysis of the questionnaire data.

The Delphi Method was used for the expert assessment to evaluate the structure and content of the technology for developing professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine through sports and physical training. All the experts had a high level of professionalism and significant work experience. The experts rated the components of the technology for developing professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine through sports and physical training, as well as the technology as a whole, on a 9-point scale, according to 7 criteria developed by us. The arithmetic mean values of the expert assessments of the components of the technology and their standard deviations were calculated. The reliability of differences between the mean values of technology assessments of two rounds was determined using the Student's t-test for paired samples.

Results

Preliminary stage of the research

At the preliminary stage of the research (through the synthesis of scientific information on ways to improve the psychophysical training of personnel in the security and defense sector of Ukraine), we found that the level of physical fitness of a significant portion of cadets was low, and the development of professionally important physical qualities was heterogeneous; the moral-psychological indicators of participants in combat actions were often unsatisfactory. Despite numerous scientific studies dedicated to finding ways to improve professionally important psychophysical qualities, the psychophysical training of personnel in the security and defense sector of Ukraine requires improvement. One possible way to enhance the psychophysical training of personnel in the security and defense sector of Ukraine may be the application of sports and physical training means.

A correlation between physical fitness and psychomotional indicators was established. Dexterity (primarily such manifestations as coordination of movements, a sense of rhythm, the ability to differentiate efforts and movements in space, the ability to maintain static and dynamic balance), as well as speed strength

and speed, are important professional and important physical qualities for the personnel of the National Guard of Ukraine. The improvement of dexterity is accompanied by an increase in the level of development of a whole range of competencies of the defenders of the country's interests. Cognitive indicators included: stability of attention (r=0.640) and the ability to concentrate it (r=0.691), correlate reliably (p<0.05) with dexterity indicators, volume (r=0.610) and attention switching (r=0.612), logical thinking (r=0.650), as well as moral and psychological qualities (p<0.05), such as: the ability to manage personnel, elements of strategic thinking, the ability to learn new knowledge and skills, switching attention, motivation, leadership qualities, prudence, receptiveness to innovation, the ability to take the initiative, skills in planning daily activities, self-confidence, perseverance, the ability to work in a group, knowledge of one's own strengths and weaknesses, the ability to listen and communicate, mental abilities, the ability to care for the professional growth of subordinates, communicative skills, ability to make necessary decisions, etc.

However, there is occasional and conflicting data on the characteristics of motor activity that contribute to the formation of leading professionally important qualities of personnel in the security and defense sector of Ukraine [3,7,15]. Technologies that meet modern requirements were not identified.

As a result of a series of conducted studies, we identified professionally important qualities and factors that determine the formation of psychophysical readiness of the personnel of the National Guard of Ukraine for effective military-professional activities [1,15-17]. The factors that we consider to determine the formation of psychophysical readiness of the personnel of the National Guard of Ukraine include: 1) cognitive qualities: attention (persistence, concentration, switching ability, distribution, and volume), thinking (strategic and logical); leadership qualities: the ability to manage personnel and achieve common goals; 2) courage (fearlessness, confidence in one's abilities, perseverance) and emotional intelligence (ability to understand others' feelings and influence them, ability to work in a group); 3) physical qualities (agility: ability to maintain dynamic balance, ability to differentiate movements in space, sense of rhythm), strength: maximum strength, speed strength.

We determined the levels of development of professionally important psychophysical qualities of the personnel of the National Guard of Ukraine [12]. Using the obtained data, we created psychophysical "profiles" for five models of cadet behavior [18]. Model A: physically enduring, passive, risk-averse, stress-sensitive, unwilling to make decisions in stressful situations, do not rely on societal support. Model B: life-satisfied, possess well-developed strength and muscular endurance, critically low levels of specialized endurance and agility development, stress-resistant, responsible, perceive stressful situations as challenges, take risks, assert their own interests. Model C: least satisfied with life, below-average physical fitness, particularly low scores in specialized endurance and muscular endurance, resilient, capable of exerting aggressive efforts, able to find opportunities for using informational, emotional and physical support. Model D: lowest indicators of physical fitness, adaptive level of psychological preparedness. With these profiles, it is possible to predict the psychological characteristics of cadets based on the results of their physical training and propose an intervention program to address the "weak" aspects of psychophysical preparedness.

Analysis, synthesis, and generalization of the results of three periods of the preliminary research stage allowed us to substantiate the content and structure of the technology for developing professionally important qualities of cadets in higher education institutions of the National Guard of Ukraine using sports and physical training means and to develop the technology [19] (Figure 2).

1. ANALYSIS OF REQUIREMENTS FOR FUTURE OFFICERS

Professional requirements and needs in the context of service in the National Guard of Ukraine:

1. Relevance in addressing the resolution of the military conflict in the country's East and exploring effective means, methods, and technologies for developing professionally important qualities of cadets.
2. Relevance of scientific research dedicated to improving the psychophysical professionally important qualities of future officers of the National Guard of Ukraine.
3. High significance of the level of development of the professionally important qualities for military personnel/officers.
4. Social and political importance of high-quality professional-applied physical training: improving the country's defense capabilities, increasing the prestige of military service, enhancing the image of military personnel/officers and Ukraine on the international stage, preserving the mental and somatic health of military personnel, and improving their quality of life.

Key qualities professionally required for cadets:

1. Agility (especially coordinated movement, sense of rhythm, ability to differentiate efforts and movements in space, as well as the ability to maintain static and dynamic balance), speed strength, and speed.
2. Attention endurance and its ability to concentrate, attention span, logical thinking, sense of rhythm, and long-term memory.
3. Low morale and psychological qualities of cadets, emotional intelligence.

2. OBJECTIVE BLOCK

The goal of the educational and training process using sports and physical training means for cadets of higher education institutions of the National Guard of Ukraine is the development of professionally important qualities necessary for the effective performance of official duties and successful functioning of military units.

Tasks:

1. Development of physical qualities and sports skills, providing necessary knowledge.
2. Development of applied motor skills (training in shooting, martial arts, etc.).
3. Facilitation of personality formation.
4. Formation of effective communication, cooperation, and leadership skills.
5. Adaptation to extreme conditions during service. Developing stress resistance.

3. ORGANIZATIONAL-CONTENT BLOCK

1. Development of training programs (organizational forms, scope, and intensity).
2. Organization and individualization of the training process (by categorizing cadets into 5 types).
3. Ensuring safety and injury prevention.

4. RESULTS-CONTROL BLOCK

1. Determination of the initial level of preparation.
2. Establishment of intermediate and final goals.
3. Monitoring progress in achieving these goals.

Result – Development of professionally important qualities.

Figure 2. Scheme of the technology for developing professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine using sports and physical training means

Main stage of the research

After the first round of expert assessment, our developed technology for fostering professionally important qualities among cadets of higher education institutions of the National Guard of Ukraine through sports and physical training had an average effectiveness score of 7.73±0.34 out of 9 possible points. According to the recommendations of the experts, we refined the formulation of the first three tasks of the technology and added the formulation of its final result.

After considering the experts' suggestions, in the second evaluation, the average effectiveness score of the technology was 8.11±0.14 points. Changes in the ratings were statistically confirmed (p<0.001), indicating an increase in the prognostic efficiency of the technology.

The coefficient of variation of expert opinions between iterations decreased from 15.97% to 9.57% (from moderate to low variability), indicating an increase in the uniformity of their assessments. The final version of the technology developed by us was highly appreciated by the experts (Table 1). The average rating of the technology by criteria was 8.41±0.13 points (on a 9-point scale). The experts gave the highest scores to the practical significance of the technology (8.60±0.74 points), its novelty (8.53±0.64 points), and the relevance of the development to its title (8.73±0.59 points).

Table 1. Evaluation results of the technology for developing professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine through sports and physical training means

Criteria	Round 1		Round 2	
	M*	±SD	M	±SD
Relevance of content to the title of the development	8.40	0.74	8.73	0.59
Practical significance	8.53	1.36	8.60	0.74
Novelty, originality of the development	8.73	1.25	8.53	0.64
Relevance of the development	8.40	1.22	8.40	0.74
Conciseness	7.87	0.92	8.40	0.63
Scientific significance	8.33	0.89	8.33	0.90
Clarity and comprehensibility	8.60	0.74	7.87	0.92
Average	8.15	0.26	8.41	0.13

Notes: M – mean, * on a 9-point scale, SD – standard deviation.

Discussion

We have justified the structure and content of the technology for developing professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine using sports and physical training means.

In contrast to existing models [2], our proposed technology includes, in addition to the target, organizational-content, result-control blocks, and a block for analyzing the requirements for future officers. This block consists of two components: professional requirements and needs in the context of service in the National Guard of Ukraine and the essential qualities professionally required for cadets (physical, cognitive, and moral-psychological).

Our data indicates that coordination indicators are relatively the most critical in the professional training of cadets of higher education institutions of the National Guard of Ukraine, placing them at the forefront of the list. This contrasts with the views of some experts [20-22] who consider overall endurance and strength

as the main physical qualities. However, this aligns with results [23-26] highlighting the importance of coordination qualities in the psychophysical preparation of military personnel and extends the opinion [27,28] on the feasibility of incorporating coordination improvement into cadet training programs.

Our organizational-content block consists of three components: the creation of training programs (organizational forms, direction, means, volume, and intensity), organization and individualization of the training process (by dividing cadets into five clusters), and ensuring safety and injury prevention. According to the third block component, our proprietary technology involves considering individual and group features of cadets during the preparation process. To achieve this, we recommend applying the recommendations we have developed.

Using the data obtained in the previous stage, we compiled psychophysical characteristics of 5 groups of cadets [18] with similar characteristics, needs, or behaviors within the group, significantly differing them from representatives of other groups. The application of our compiled psychological portraits will allow for the selection of appropriate physical loads for cadets representing each group, predicting their psychological characteristics, and proposing a training program to address the "weak" aspects of psychophysical preparation. This will contribute to enhancing the individualization of the development process of professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine using sports and physical training means. Thus, we have refined the content-functional model of forming the psychophysical readiness of officers of the National Guard of Ukraine for performing tasks, with an emphasis on the use of specialized physical training means, as developed by experts [2].

To minimize the impact of stress factors inherent in working in extreme situations, scientists [3] recommend applying individually beneficial sports aimed at developing professionally important physical qualities. For this purpose, they developed and tested training programs for specific physical qualities through personalized sports activities, including swimming, bodybuilding, karate, and general physical training. The research findings [3] confirmed the effectiveness of the program in shaping specific physical qualities through individual sports. However, during the study, they could not identify a specific sport to unequivocally recommend for inclusion in the physical training program for professionals working in extreme conditions [3]. This underscores the importance of using a combination of different sports in the training of cadets.

According to the technology we propose, the training program consists of elements from various sports, unlike existing single-modal programs of special physical training developed by experts based on hand-to-hand combat [5], military sports pentathlon [6], military pentathlon [7], CrossFit [8], Horting [9], and kettlebell sports [10].

Based on the analysis of scientific results obtained in the previous stage of research, we recommend using the following means of physical training and sports to accomplish the tasks of our technology (Table 2).

Table 2. Recommended means of physical activity to address technology tasks

Means of physical training and sports	Technology tasks			
	1. Development of physical qualities and sports skills, provision of necessary knowledge	2. Development of applied motor skills (training in shooting, martial arts, etc.)	3-4. Facilitating personality development; formation of skills in effective communication, cooperation, and leadership	5. Adaptation to extreme conditions during military service; formation of stress resilience
Military-applied exercises, sports, and multi-discipline competitions	*	*	*	*
Individual combat sports (sambo, combat Hopak, hand-to-hand combat, martial arts)	*	*	*	*
Team sports	*	*	-	*
Aerobic and anaerobic exercises of moderate intensity, CrossFit, sports orientation	*	*	*	*
Highly coordinated sports, shooting	*	*	*	*
Mountaineering, sport climbing	*	-	-	*
Bodyflex, Pilates, horseback riding, yoga	*	-	*	*

The high evaluation by the experts (8.41±0.13 points out of 9) of the technology for developing professionally important qualities of cadets in higher education institutions of the National Guard of Ukraine using sports and physical training means attests to its prognostic effectiveness. The synthesis of the expert survey results indicates that the technology we developed is a new, original creation distinguished by conciseness, high practical significance, has scientific value for the field, and its content aligns with its name and objectives. The application of this technology for developing professionally important qualities of cadets in higher education institutions of the National Guard of Ukraine through sports and physical training will contribute to raising the prestige of military personnel in the country, strengthening the authority of military service and enhancing the defense capabilities of Ukraine, thus contributing to the growth of its reputation. For officers, this means that the use of this technology will help improve their physical and mental health, positively impacting their quality of life.

Conclusions

We have created a technology for the development of professionally important qualities of cadets in higher education institutions of the National Guard of Ukraine through sports and physical training. It is a new, original development characterized by conciseness, high practical significance, has scientific value for the field, and its content aligns with its name and objectives, possessing high prognostic effectiveness (8.41±0.13 points out of 9).

Its structure differs from existing structures through the initial block "Analysis of Requirements for Future Officers", consisting of two components: professional requirements and needs in the context of service in the National Guard of Ukraine and basic qualities professionally necessary for cadets: physical, cognitive, and moral-psychological. The content of the authors' technology stood out with the authors' elaborations on the division of cadets into groups, allowing for a better understanding of the target audience and the development of more effective preparation strategies.

Disclosures and acknowledgements

The authors declare no conflicts of interest with respect to the research, authorship, and/or publication of this article.

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Artificial intelligence (AI) was not used in the creation of the manuscript.

References:

1. Andres A, Kryzhanovskyi V, Rymar O. [Socio-personal aspects of psychophysical training of personnel of the National Guard of Ukraine]. Physical Education, Sports and Health Culture in Modern Society. 2021; 2(54): 3-11. https://doi.org/10.29038/2220-7481-2021-02-03-11 (in Ukrainian).
2. Vysochina N, Gunina L, Khatsayuk O, Kotlyarenko L, Golovashchenko R, Ivchenko A. [Model of psychophysical readiness of future officers to perform assigned tasks]. Military Education. 2021; 1(43): 24-43 (in Ukrainian).
3. Shil'ko VG, Potovskaya ES, Shil'ko TA, Guseva NL. Physical qualities improvement via sports to step up stress control under extreme conditions. Teoriya i Praktika Fizicheskoy Kultury. 2016; 8: 91-2.
4. Hunter-Johnson YO, Closson RB. Learners' educational orientation as a design tool for human resource development professionals in law enforcement: a Caribbean context. Human Resource Development International. 2012; 15: 2: 193-208. https://doi.org/10.1080/13678868.2011.647462
5. Yareshchenko OA. [Justification of the content and organization of special physical training of cadets of higher educational institutions of the Ministry of Internal Affairs of Ukraine] [author's abstract]. Kharkiv: Kharkiv. State Acad. Physical Cultures; 2008. p. 20 (in Ukrainian).
6. Otkydach VS. [Improvement of special physical training of cadets by means of military sports all-around] [Dissertation]. Dnipro: Dnipro State Academy of Physical Culture and Sports; 2023 (in Ukrainian).
7. Lototskyi IR. [Structure and content of physical training of athletes in military pentathlon] [Dissertation]. Lviv: Ivan Bobersky Lviv State University of Physical Culture; 2021 (in Ukrainian).
8. Pylypchak IV. [Improvement of physical training of cadets of military institutions of higher education by means of crossfit at the stage of primary training] [Dissertation]. Lviv: Ivan Bobersky Lviv State University of Physical Culture; 2021 (in Ukrainian).

9. Eremenko EA, Poltaratskyi SS. [Military-applied and combat horting in the system of professional training of pre-conscription youth, military personnel and law enforcement officers. Proceedings of the international science and practice internet conference Ways of improving the professional competences of specialists in today's conditions]. Lutsk: East European National University named after Lesya Ukrainka; 2020, p. 527-33 (in Ukrainian).
10. Prontenko KV. [Improving the physical fitness of cadets in camera specialties by means of kettlebell sports at the stage of primary training] [Author's abstract]. Lviv: Lviv State University of Physical Culture; 2009 (in Ukrainian).
11. Diener E, Emmons R, Larsen R, Griffin S. The Satisfaction With Life Scale. J Pers Assess. 1985; 49(1): 71-5. https://doi.org/10.1207/s15327752jpa4901_13
12. Watson M, Greer S. Development of a questionnaire measure of emotional control. J Psychosom Res. 1983; 27(4): 299-305. https://doi.org/10.1016/0022-3999(83)90052-1.
13. Spielberger C, Sydeman S. State-Trait Anxiety Inventory and State-Trait Anger Expression Inventory. In: Maruish ME, editor. The use of psychological testing for treatment planning and outcome assessment. Hillsdale, NJ: Lawrence Erlbaum Associates; 1994.
14. Kryukova TL, Kuftiak OV. [Coping Styles Questionnaire (adaptation of the WCQ methodology)]. Journal of Practical Psychology. 2007; 3: 93-112 (in Russian).
15. Andres A, Kryzhanovskyi V, Pavlova Yu, Duh T. [Factor structure of professionally important psychophysical qualities of personnel of the National Guard of Ukraine]. Sports Bulletin of the Dnieper Region. 2022; 2: 3-12 (in Ukrainian).
16. Bodnar I, Andres A, Kryzhanovskyi V, Shvets V. The influence of sports on emotional control in cadets of the National Guard of Ukraine at the beginning of the war. Health Prob Civil. 2023; 17(3): 269-276. https://doi.org/10.5114/hpc.2023.128805
17. Andres A, Kryzhanovskyj V, Krasovska I. The influence of agility indicators on formation of vocational readiness in law enforcement officers. Proceedings of the International Scientific Conference May 26th-27th 2023. SOCIETY.INTEGRATION.EDUCATION. 2023; 1: 165-179. https://doi.org/10.17770/sie2023vol1.7105
18. Pavlova Y, Bodnar I, Kryzhanovskyi V, Shvets V. [Psychophysical condition of cadets of future law enforcement officers in war conditions. Physical culture in university education: world practice and modern trends]. Proceedings of the International Science and Practice Conference. 2023 Apr 13; Dnipro. Dnipro: Dniprop. State University of Internal Affairs Business; 2023. p. 54-7 (in Ukrainian).
19. Andres AS, Kryzhanovskyi VO. [Technology of development of professionally important qualities of cadets of higher education institutions of the National Guard of Ukraine by means of sports and physical training]. [Author's certificate of Ukraine N 121020. 2023 Aug. 2.] (in Ukrainian).
20. Petrachkov O. [Analysis of the relationship between physical and professional fitness of servicemen of various military specialties]. [Theory and Methodology of Physical Education and Sports]. 2007; 4: 67-9 (in Ukrainian).
21. Fedak SS. [Correlational analysis of indicators of physical condition, health and physical fitness of servicemen who participated in peacekeeping operations]. Pedagogy, Psychology and Medical and Biological Problems of Physical Education and Sports. 2014; 1: 80-4 (in Ukrainian).
22. Zhevaga SI, Prontenko KV, Bezpaly SM. [Physical training of the teaching staff of higher educational institutions of the Ministry of Internal Affairs of Ukraine: teaching method manual]. Zhytomyr: ZVI NAU; 2013 (in Ukrainian).

23. Bondarenko VV. [Formation of motor skills and skills of cadets of higher educational institutions of the Ministry of Internal Affairs of Ukraine in the process of classes on special physical training] [Dissertation]. Chernihiv: Chernihiv National Pedagogical University named after T. G. Shevchenko; 2012 (in Ukrainian).
24. Khmilyar OF. [Psychomotor development of an officer's personality]. In: Svistun VI, Petrachkov OV, editors. Proceedings of the International Science and Practice Conference. Kyiv; 2017 Nov 29-30. Kyiv: NUOU; 2017. p. 344-346 (in Ukrainian).
25. Lisowski V. Mihuta I. Importance of coordination skills essential psychophysical demonstrated competencies as a military specialist. Physical Education of Students. 2013; 17(6): 38-2. https://doi.org/10.6084/m9.figshare.840501
26. Pankevich Y, Lesko O, Afonin V, Kuznetsov M, Romaniv I, Demkiv A. [Professionally important qualities of future officers of engineering units of the Armed Forces of Ukraine]. Bulletin of the Kamianets-Podilskyi National University named after Ivan Ohienko. Series: Physical Education, Sports and Human Health. 2020; 16: 47-53 (in Ukrainian). https://doi.org/10.32626/2309-8082.2020-16.47-53
27. Shalupin V, Rodionova I, Kumantsova E. Improving the coordination capabilities of air transport control specialists as a condition for the safety of civil aviation. Transportation Research Procedia. 2022; 63: 525-9. https://doi.org/10.1016/j.trpro.2022.06.044
28. Rolyuk O. Special military training of reconnaissance officers. Physical Education, Sports and Health in Modern Society. 2016; 33(1): 57-63.