

ORIGINAL ARTICLE

Assessment of subjective and objective health indicators in cadets during professional training

Valentyn V. Bondarenko¹, Vasyl V. Prontenko², Vitalii P. Dvoretzkyi³, Serhii M. Bezpalnyi¹, Oleh O. Sushkov¹, Ihor M. Mazur¹, Vadym V. Voloshyn¹

¹NATIONAL ACADEMY OF INTERNAL AFFAIRS, KYIV, UKRAINE

²S.P. KOROLIOV ZHYTOMYR MILITARY INSTITUTE, ZHYTOMYR, UKRAINE

³NATIONAL ACADEMY OF THE NATIONAL GUARD OF UKRAINE, KYIV, UKRAINE

ABSTRACT

Aim: To investigate the prevalence of healthy lifestyle skills and physical health indicators among future law enforcement officers during their professional training under martial law.

Materials and Methods: Conducted between 2025 and 2026, this research involved 171 male cadets enrolled in the first ($n = 59$), second ($n = 57$), and third ($n = 55$) academic years. Subjective health indicators were assessed based on the level of health-promoting skills development using the "Health-Promoting Lifestyle Profile, Adult Version" questionnaire. In contrast, objective health indicators were determined via Professor G. L. Apanasenko's rapid assessment method.

Results: It was found that the overall level of health-promoting skills development among cadets is average. Statistically significant differences were found in the development of healthy lifestyle skills between third- and junior-year cadets ($p \leq 0.05$). The application of the rapid method for determining somatic health levels in cadets confirmed the consistency between survey data and objective indicators. The increase in the level of health-promoting skills development among senior-year cadets is accompanied by improvements in somatic health indicators, indicating a correlation between subjective and objective characteristics.

Conclusions: An average level of healthy lifestyle skills development was observed among cadets, with significant improvements in indicators during the academic training process. A positive trend in cadets' physical health was observed, indicating improved functional capabilities and suggesting directions for optimizing the professional training system for future law enforcement officers.

KEY WORDS: health, health-promoting, healthy lifestyle, cadet, law enforcement officer, physical training

Wiad Lek. 2026;79(8):1842-1849. doi: 10.36740/WLek/235879 DOI

INTRODUCTION

Human health is shaped by the complex interactions among social, biological, psychophysiological, and behavioral factors, which, in contemporary scientific discourse, are integrated into the concept of a healthy lifestyle as a systemic determinant of an individual's life-sustaining activities [1, 2]. In today's context, the issue of developing healthy lifestyle habits among the population has become particularly relevant. This is due to the influence of a complex of destabilizing factors, including full-scale war, post-pandemic consequences, and the intensive processes of globalization, digitalization, and technological advancement, accompanied by physical inactivity, stress, increased psycho-emotional tension, and disruption of established patterns of life [3, 4].

Consequently, the issue of developing healthy lifestyle habits among cadets – future law enforcement officers – takes on particular significance. The pro-

fessional activities of this category of specialists are characterized by high stress levels, significant physical and psycho-emotional strain, the need for rapid decision-making, and the performance of service duties under extreme conditions, particularly during martial law. Under such circumstances, health-promoting skills development is not only an individual characteristic but also an important component of professional readiness, directly influencing the effectiveness of service duties, the level of occupational capacity, and the functional reliability of future police officers.

An analysis of scientific sources indicates that developing healthy lifestyle skills among future professionals across various fields is the subject of interdisciplinary research that examines the topic from the perspectives of medical, psychological-pedagogical, social, and physical education and health sciences [5]. Scholars note that the health status of higher education students is

an integral indicator of the effectiveness of the educational process and a determining prerequisite for their future professional success [6, 7]. At the same time, the modern higher education system is designed to ensure not only the development of professional competencies but also the cultivation of a sustained motivation for health preservation, the ability to self-regulate, and responsible behavior regarding one's own health [8].

Despite extensive scientific research, theoretical analysis suggests no unified approach to defining the essence of a healthy lifestyle for cadets – future law enforcement officers. Its structure includes interrelated components, the leading ones being physical activity, a balanced diet, the absence of harmful habits, psycho-emotional stability, a culture of safe behavior, and adherence to hygiene standards [9, 10].

At the same time, empirical studies indicate a significant discrepancy between higher education students' awareness of the principles of a healthy lifestyle and the actual development of the corresponding skills. This discrepancy manifests as insufficient physical activity, disruption of work-rest patterns, harmful habits, and low self-monitoring of the body's functional state [11, 12]. In this context, the issue of appropriately assessing the level of development of health-promoting skills among cadets becomes particularly relevant. In scientific and educational practice, the use of questionnaires and self-assessment methods is widespread, as they allow for the determination of students' subjective perceptions of their own lifestyles. At the same time, such data do not always correlate with objective indicators of physical health obtained through standardized physiological and functional methods.

In light of this, there is a scientifically grounded need to conduct a comparative analysis of the level of development of healthy lifestyle skills, as determined by questionnaires, and the actual level of health, as established by objective diagnostic results. The analysis of these indicators in the context of professional training under martial law – particularly across academic years – also gains additional significance, as it will help identify trends in the development of relevant skills.

Implementing this approach will help establish the degree of alignment between subjective self-assessment and objective health characteristics, identify problematic aspects, determine the level of development of health-promoting behavior among future law enforcement officers, and identify areas for improving their professional training system.

Thus, the insufficient development of issues regarding the comprehensive comparison of subjective and objective indicators of a healthy lifestyle, as well as the lack of systematic studies of their dynamics during

professional training under martial law, determine the relevance and practical significance of the chosen research direction.

AIM

The aim is to investigate the prevalence of healthy lifestyle skills and physical health indicators among future law enforcement officers during their professional training under martial law.

MATERIALS AND METHODS

PARTICIPANTS

The research, conducted in 2025-2026, involved 171 male cadets from the National Academy of Internal Affairs (NAIA, Kyiv, Ukraine) majoring in "Law Enforcement Activities" specialty. The sample consisted of future law enforcement officers in their first ($n = 59$), second ($n = 57$), and third ($n = 55$) academic years. The processing and analysis of the results were carried out at the Department of Special Physical Training of the National Academy of Internal Affairs. No special selection of research participants was conducted; therefore, the inclusion criteria were: male cadets, enrollment in a specific academic year, and the major they were pursuing at the higher educational institution ("Law Enforcement Activities"). Each cadet provided voluntary written consent to participate in the research. The exclusion criterion was the cadet's desire to withdraw from the research at any point during the research. Research limitations: the research focused exclusively on subjective indicators related to professional training at the higher educational institution; we did not set out to assess the cadets' subjective health indicators outside the educational institution.

METHODS

The research used a combination of theoretical, empirical, and statistical methods. Theoretical methods included the analysis and generalization of literary sources. Analysis and generalization of literary sources were used to conduct an analytical review of scientific sources on the outlined range of issues (23 sources from PubMed, Scopus, Web of Science, and Index Copernicus were analyzed).

Empirical methods were used to assess subjective and objective health indicators. Subjective health indicators were assessed based on the level of development of health-promoting skills using the "Health-Promoting Lifestyle Profile, Adult Version" questionnaire. In

contrast, objective somatic health indicators were determined via Professor G. L. Apanasenko's rapid assessment method.

The "Health-Promoting Lifestyle Profile, Adult Version" questionnaire contains 52 statements and six scales: responsibility for health, physical activity, nutrition, spiritual development, interpersonal relationships, and stress management [13, 14]. Responses were rated on a four-point scale ("never," "sometimes," "often," "systematically"); the respondent's average score determined the level of development of healthy lifestyle skills: up to 1.5 – insufficient, 1.6-2.0 – low, 2.1-2.5 – satisfactory, 2.6-3.0 – average, over 3.1 – high.

The level of cadets' somatic health was determined using the rapid assessment method proposed by Professor G. L. Apanasenko. The method is based on anthropometric indicators and the condition of the cadets' cardiovascular system. During professional training, the following parameters of cadets were examined: body weight, body height, vital lung capacity (VLC), dynamometry of the dominant hand, resting heart rate (HR), blood pressure, body mass index (BMI), vitality index (VI), strength index (SI), Robinson index (RI), Martine-Kushelevsky index (MKI), and somatic health level (SHL). According to the method of G. L. Apanasenko, cadets' somatic health level (SHL) was determined by the sum of points received by cadets for each of the 5 indices. If the total score was less than 3 points, the SHL was assessed as "low"; 4-6 points – "below average"; 7-11 points – "average"; 12-15 – "above average"; 16-18 – "high."

STATISTICAL METHODS

The methods of mathematical statistics were used to process the data obtained. The reliability of the difference between the indicators was determined using the Student's t-test. The results were presented as Mean $\pm$ m, where Mean is the arithmetic mean, m is the standard error. The reliability of the difference was set at $p < 0.05$. All statistical analyses were performed using STATISTICA 6.1 software package (number AGAR909E-415822FA), adapted for medical and biological research.

ETHICS

The procedure for organizing the study and the topic of the article were previously agreed with the Committee on compliance with Academic Integrity and Ethics of the NAIA. Also this study followed the regulations of the World Medical Association Declaration of Helsinki. Informed consent was received from all participants who took part in this study.

AI STATEMENT

The author states that no AI tools were used in writing this article.

FRAMEWORK

This scientific article was carried out according to the plan of the research work of the National Academy of Internal Affairs for 2020-2026 "Psychological, pedagogical and sociological support of law enforcement officers" (state registration number 0113U008196).

RESULTS

Based on the analysis of empirical data, cadets from all three academic years who participated in the survey rated the development of healthy lifestyle skills at an average level. Specifically, the overall index of health-promoting skills development was as follows: for first-year cadets – 2.61 ± 0.03 points, for second-year cadets – 2.63 ± 0.05 points, and for third-year cadets – 2.84 ± 0.05 points (Table 1). The results of the mathematical analysis of the data revealed a statistically significant difference between third-year cadets and first- and second-year cadets ($p \leq 0.05$), indicating a positive trend in the development of healthy lifestyle skills during professional training. At the same time, no significant differences were found between first- and second-year cadets ($p \geq 0.05$), suggesting relative stability in these indicators during the initial stages of training. The obtained values generally support the conclusion that the majority of respondents possess basic health-promoting concepts and behavioral models; however, their insufficient stability and awareness limit the effectiveness of implementing a healthy lifestyle in daily activities.

A comparative analysis of indicators across individual scales revealed structural features of the development of health-promoting skills among cadets. Thus, on the "Responsibility for Health Status" scale, the lowest mean scores were recorded among first- (2.32 ± 0.08 points) and second-year (2.34 ± 0.06 points) cadets, which corresponds to a satisfactory level. This may indicate a predominance of external regulation of health-promoting behavior, in which responsibility for maintaining one's own health is partially attributed to the organization of the educational process, the activities of the medical service, or the regulatory requirements of the educational institution. At the same time, among third-year cadets, this indicator is significantly higher – 2.89 ± 0.05 points ($p \leq 0.05$) – which is assessed as an average level and reflects an increase in personal responsibility for one's own health during the process of professional development.

Table 1. Level of development of healthy lifestyle skills (subjective indicators) and somatic health (objective indicators) among cadets in different academic years (n = 171), points

Indicators	Years of study			Significance of the difference		
	1 st (n=59)	2 nd (n=57)	3 rd (n=55)	t ₁₋₂ (p)	t ₁₋₃ (p)	t ₂₋₃ (p)
Level of development of healthy lifestyle skills (based on "Health-Promoting Lifestyle Profile, Adult Version" questionnaire)						
Responsibility for Health Status	2.32±0.08	2.34±0.06	2.89±0.05	0.20 p≥0.05	6.042 p≤0.001	7.042 p≤0.001
Physical Activity	2.71±0.10	2.76±0.07	2.93±0.07	0.410 p≥0.05	1.802 p≥0.05	1.717 p≥0.05
Nutrition	2.44±0.06	2.46±0.05	2.47±0.07	0.256 p≥0.05	0.384 p≥0.05	0.116 p≥0.05
Spiritual Development	2.93±0.09	2.94±0.08	3.09±0.09	0.083 p≥0.05	1.257 p≥0.05	1.246 p≥0.05
Interpersonal Relationships	2.84±0.11	2.88±0.06	3.04±0.09	0.319 p≥0.05	1.407 p≥0.05	1.479 p≥0.05
Stress Management	2.40±0.10	2.44±0.06	2.78±0.04	0.343 p≥0.05	3.528 p≤0.001	4.715 p≤0.001
Overall indicator of health-promoting skills	2.61±0.09	2.63±0.05	2.84±0.05	0.194 p≥0.05	2.234 p≤0.05	2.970 p≤0.05
Somatic health level (according to Professor G. L. Apanasenko's method)						
BMI, kg/m ²	23.18±0.09	23.29±0.1	23.61±0.1	0.818 p≥0.05	3.196 p≤0.01	2.263 p≤0.05
VI, ml/kg	56.13±0.46	56.93±0.44	58.22±0.48	1.257 p≥0.05	3.144 p≤0.01	1.981 p≥0.05
SI, %	64.94±0.32	65.56±0.31	66.28±0.29	1.392 p≥0.05	3.103 p≤0.05	1.696 p≥0.05
RI, c. u.	86.61±0.45	87.15±0.46	87.79±0.46	0.839 p≥0.05	1.834 p≥0.05	0.984 p≥0.05
MKI, s	120.57±1.39	117.85±1.44	115.74±1.37	1.359 p≥0.05	2.475 p≤0.05	1.062 p≥0.05
SHL, points	2.46±0.28	4.22±0.27	5.24±0.25	4.525 p≤0.001	7.406 p≤0.001	2.772 p≤0.01

Legend: Mean – arithmetic mean; m – standard error; t – Student's test value; p – level of significance of the differences between studied indicators

Source: compiled by the authors of this study

On the "Physical Activity" scale, the highest scores were recorded among third-year cadets (2.93 ± 0.07 points), while first- and second-year cadets scored 2.71 ± 0.10 points and 2.76 ± 0.07 points, respectively. However, the observed differences are not statistically significant ($p \geq 0.05$). These results are likely due to the specific nature of cadet training, which includes mandatory specialized physical training sessions and a sufficient level of physical activity within the educational process. At the same time, the average level of this indicator suggests that physical activity is largely regulated and does not always translate into an internal need for independent exercise during extracurricular activities.

An analysis of the "Nutrition" scale revealed a satisfactory level of development of relevant skills among cadets in all three academic years, with no statistically significant differences ($p \geq 0.05$). On the one hand,

these results may be due to limited opportunities for individual dietary choices under a centralized meal plan. On the other hand, they indicate insufficient awareness of the role of a balanced diet in maintaining occupational capacity, recovery, and the body's adaptation to physical and psycho-emotional loads.

Relatively higher indicators were recorded on the "Spiritual Development" scale; however, no statistically significant differences were found among cadets in different academic years ($p \geq 0.05$). The average level of development of this component attests to the positive influence of the higher educational institution's educational and social environment on the formation of value orientations and moral-ethical attitudes among future police officers.

For representatives of all academic years, the "Interpersonal Relationships" indicator also corresponds to

the average level. The observed positive trend reflects the gradual improvement of cadets' communication skills and social cohesion, which are important factors for psychological resilience, teamwork, and professional adaptation in the context of service activities.

The results on the "Stress Management" scale deserve special attention. For first- and second-year cadets, this indicator is at a satisfactory level, which may indicate insufficient development of psycho-emotional self-regulation skills and stress resilience. Under conditions of martial law, intensive academic training, and heightened demands for discipline and responsibility, these conditions can increase the risk of overexertion, emotional exhaustion, and reduced occupational capacity. At the same time, third-year cadets showed significantly higher values ($p \leq 0.001$), corresponding to the average level and indicating the gradual development of stress management skills during professional training.

The BMI analysis revealed statistically significant differences among cadets in different academic years. Specifically, a significant difference was found between the indicators of first- and third-year cadets ($p \leq 0.01$), as well as between second- and third-year cadets ($p \leq 0.05$). The mean BMI values were 23.18 ± 0.09 , 23.29 ± 0.10 , and 23.61 ± 0.10 , respectively, indicating the average level. The observed trend toward a gradual increase in the BMI during academic training may indicate adaptive changes in the body, particularly an increase in muscle mass due to systematic physical exercise; however, this requires a comprehensive interpretation that takes into account other indicators of physical condition.

Assessment of the VI, calculated as the ratio of VLC to body weight, revealed a positive trend in its changes during professional training. A statistically significant difference was found between cadets in the first and third academic years ($p \leq 0.01$), indicating an improvement in respiratory system functional capacity. Nevertheless, the VI level among cadets across all academic years is assessed as average, indicating reserves for further improvement in functional fitness.

An analysis of the SI, determined by the ratio of the dynamometric indicators of the stronger hand to body weight, revealed significant differences only between the first- and third-year cadets ($p \leq 0.05$). For first-year cadets, this indicator was $64.94 \pm 0.32 \%$ and was assessed as below average, whereas for second- and third-year cadets, it was $65.56 \pm 0.31 \%$ and $66.28 \pm 0.29 \%$, respectively, indicating an average level of development. Thus, a positive trend in muscle strength development is observed during the academic training process, likely due to the influence of systematic, specialized physical training sessions.

The RI was used to determine the functional state of the cardiovascular system and the efficiency of cardiac function. The results of the analysis confirm a positive trend toward improvement in indicators during the academic training process; however, no statistically significant differences were found between the academic years ($p \geq 0.05$). In all study groups, the RI level is at the average, indicating a relatively stable cardiovascular system without pronounced adaptive changes.

The MKI, which characterizes the rate at which heart rate returns to normal after a standard physical exercise, proved to be more sensitive to changes in functional status. Among the first-year cadets, this indicator was 120.57 ± 1.39 s and was assessed as below average. For the second-year cadets, it was 117.85 ± 1.44 s (average level), and for the third-year cadets, 115.74 ± 1.37 s, which is significantly better compared to the first-year cadets. This trend indicates an increase in the cardiovascular system's adaptive capacity and more effective recovery after physical exertion during professional training.

The comprehensive SHL assessment enabled us to summarize the results and identify general trends. Among the first-year cadets, the average score was 2.46 ± 0.28 points, indicating a low level. The second- and third-year cadets' scores were higher – 4.22 ± 0.27 and 5.24 ± 0.25 points, respectively – which are assessed as below average. At the same time, a statistically significant improvement in the SHL was observed during the academic training process, indicating a positive impact of the professional training system on the health of future law enforcement officers.

A comparative analysis provides grounds for concluding that there is general consistency between cadets' subjective assessments of their own health (based on survey results) and objective indicators of somatic health (according to Professor G. L. Apanasenko's method). Thus, the increase in the level of health-promoting skills development among senior-year cadets is accompanied by improvements in somatic health indicators, indicating a correlation between subjective and objective health indicators. At the same time, first-year cadets tend to overestimate their own health-promoting skills relative to objectively recorded indicators, which may be due to insufficient development of reflective assessment and practical experience in applying these skills.

Overall, the research results demonstrate heterogeneity in the dynamics of individual indicators of physical and functional condition: alongside significant improvements in strength, respiratory, and recovery characteristics, some indicators (in particular, the RI) remain relatively stable. This points to the complex, multi-component nature of somatic health development and the need for its comprehensive assessment. The identified differences among cadets from different

academic years provide grounds for asserting positive changes in the process of professional training; however, they also indicate insufficient development of certain health components, necessitating further improvement of the physical training system and health-promoting technologies at the higher educational institution.

DISCUSSION

The results obtained are consistent with current scientific understanding [2, 15] regarding the multifaceted nature of a healthy lifestyle and its close connection to somatic health level. The positive trend in indicators observed during professional training demonstrates the effectiveness of the educational environment in shaping cadets' basic health-promoting attitudes as future law enforcement officers. At the same time, the absence of significant changes in certain functional indicators (in particular, the Robinson index) suggests a limited impact on the cardiovascular system's adaptive mechanisms, warranting further scientific research.

A contradiction was noted between the relatively stable average values of subjective indicators in the junior academic years and the dynamics of objective somatic health characteristics. The data obtained suggest that physiological adaptation to academic and training loads occurs more rapidly than the development of conscious health-promoting behavior. This asynchrony in development underscores the need to strengthen educational interventions that foster intrinsic motivation and responsibility for one's own health [16, 17].

An important finding is the establishment of consistency between subjective and objective indicators, which indirectly confirms the validity of the questionnaire used to assess healthy lifestyle skills. At the same time, the absence of high levels of development, even among senior-year cadets, indicates that existing educational and training programs primarily provide an average level of development in the relevant competencies.

Overall, the research results confirm the feasibility of a comprehensive approach to health assessment that combines subjective (questionnaire-based) and objective (physiological) methods. Such an approach provides a comprehensive reflection of the actual state of health-promoting skills development. It helps justify directions for optimizing the professional training system for future law enforcement officers. The data we obtained confirm the conclusions of many scholars who have addressed the issue of preserving and strengthening cadets' health during professional training [9, 10, 18-23], and supplement and expand upon them.

CONCLUSIONS

Based on the research conducted, the average level of development of healthy lifestyle skills among cadets was established, with statistically significant improvements in indicators during the academic training process ($p \leq 0.05$). It was found that the least developed components were those related to responsibility for one's health, nutrition, and stress management. A positive trend in the somatic health of future law enforcement officers was recorded ($p \leq 0.05-0.001$), indicating an improvement in the body's functional capabilities. A comparative analysis revealed a general consistency between the cadets' subjective and objective health indicators. At the same time, first-year cadets tended to overestimate their own health-promoting skills relative to objectively recorded indicators.

PROSPECTS FOR FURTHER RESEARCH

Prospects for further research should be linked to an in-depth analysis of the relationships between individual components of a healthy lifestyle and indicators of the body's functional state, as well as to the development and implementation of programs to foster health-promoting competence under martial law conditions.

REFERENCES

1. Höchsmann C, Dorling JL, Lavie CJ, Katzmarzyk PT. Healthy Lifestyle and Cardiac Rehabilitation for Weight Loss. *Curr Cardiol Rep*. 2024;26(11):1321-1327. doi:10.1007/s11886-024-02130-6. DOI
2. eBioMedicine. Healthy ageing begins with a healthy lifestyle. *EBioMedicine*. 2023;89:104528. doi:10.1016/j.ebiom.2023.104528. DOI
3. Chatterjee A, Prinz A, Gerdes M, Martinez S. Digital Interventions on Healthy Lifestyle Management: Systematic Review. *J Med Internet Res*. 2021;23(11):e26931. doi:10.2196/26931. DOI
4. Katerynychuk IP, Nikolaiev OT, Smirnova OM et al. Dynamics of stress symptoms manifestation in law enforcement officers in the process of performing their service and combat missions during the war. *Wiad Lek*. 2025;78(12):2577-2585. doi:10.36740/WLek/215797. DOI
5. Sidossis A, Gaviola GC, Sotos-Prieto M, Kales S. Healthy lifestyle interventions across diverse workplaces: a summary of the current evidence. *Curr Opin Clin Nutr Metab Care*. 2021;24(6):490-503. doi:10.1097/MCO.0000000000000794. DOI
6. Marques A, Loureiro N, Avelar-Rosa B, Naia A, Matos MG. Adolescents' healthy lifestyle. *J Pediatr (Rio J)*. 2020;96(2):217-224. doi:10.1016/j.jped.2018.09.002. DOI

7. Griban G, Kobernyk O, Terentieva N et al. Formation of health and fitness competencies of students in the process of physical education. *Sport Mont.* 2020;19(3):73-78. doi:10.33462/jotaf.10.26773/smj.201008. DOI [DOI](#)
8. Prontenko KV, Okhrimenko IM, Yevdokimova OO et al. Peculiarities of formation of cadets' psychological resilience and physical readiness for combat stress. *Wiad Lek.* 2023;76(6):1450-1456. doi:10.36740/WLek202306118. DOI [DOI](#)
9. Volianiuk OD, Klymenko IV, Rivchachenko OA et al. Peculiarities of psychophysical readiness formation in future law enforcement officers for their professional activities under martial law. *Pol Merkur Lekarski.* 2025;53(1):81-87. doi:10.36740/Merkur202501111. DOI [DOI](#)
10. Martenko YI, Malysenko YL, Bushai IM et al. Impact of stressors of academic activities under martial law on the cadets' mental health. *Pol Merkur Lekarski.* 2025;53(2):250-255. doi:10.36740/Merkur202502114. DOI [DOI](#)
11. Griban GP, Tymoshenko OV, Arefiev VG et al. The role of physical education in improving the health status of students of special medical groups. *Wiad Lek.* 2020;73(3):534-540.
12. Deng N, Soh KG, Abdullah BB et al. Effects of plyometric training on health-related physical fitness in untrained participants: a systematic review and meta-analysis. *Sci Rep.* 2024;14(1):11272. doi:10.1038/s41598-024-61905-7. DOI [DOI](#)
13. Zhou J, Liu Y, Yang F et al. Health-promoting lifestyle among Chinese patients with colorectal polyps: a cross-sectional study. *Sci Rep.* 2025;15(1):10150. doi:10.1038/s41598-025-90352-1. DOI [DOI](#)
14. Habibzadeh H, Shariati A, Mohammadi F, Babayi S. The effect of educational intervention based on Pender's health promotion model on quality of life and health promotion in patients with heart failure: an experimental study. *BMC Cardiovasc Disord.* 2021;21(1):478. doi:10.1186/s12872-021-02294-x. DOI [DOI](#)
15. Nunes YC, Mendes NM, Pereira de Lima E et al. Curcumin: A Golden Approach to Healthy Aging: A Systematic Review of the Evidence. *Nutrients.* 2024;16(16):2721. doi:10.3390/nu16162721. DOI [DOI](#)
16. Zhao YC, Zhao M, Song S. Online Health Information Seeking Behaviors Among Older Adults: Systematic Scoping Review. *J Med Internet Res.* 2022;24(2):e34790. doi:10.2196/34790. DOI [DOI](#)
17. Prontenko KV, Chornous VD, Aleksandrov YV et al. Mental cognitive processes and intellectual working capacity in cadets who were engaged in different types of physical activities. *Wiad Lek.* 2025;78(8):1462-1469. doi:10.36740/WLek/209498. DOI [DOI](#)
18. Prontenko K, Bondarenko VV, Plisko VI et al. Dynamics of indicators of cadets' daily motor activity in different training years. *Pol Merkur Lekarski.* 2024;52(4):433-438. doi:10.36740/Merkur202404108. DOI [DOI](#)
19. Snyatkova TM, Miroshnychenko OM, Bushai IM et al. Volitional qualities development in future law enforcement officers during various types of motor activity. *Wiad Lek.* 2026;79(1):46-53. doi:10.36740/WLek/217267. DOI [DOI](#)
20. Blacker SD, Horner FL, Brown PI et al. Health, fitness, and responses to military training of officer cadets in a Gulf Cooperation Council country. *Mil Med.* 2011;176(12):1376-1381. doi:10.7205/MILMED-D-11-00166. DOI [DOI](#)
21. Poirier S, Trudeau F, Houle J. Leisure-Time Physical Activity and Motivation in Police Cadets: A Self-Determination Study. *Int J Exerc Sci.* 2024;17(5):1504-1516. doi:10.70252/INVF3871. DOI [DOI](#)
22. Schlegel P. CrossFit® Training Strategies from the Perspective of Concurrent Training: A Systematic Review. *J Sports Sci Med.* 2020;19(4):670-680.
23. Prontenko KV, Konstantynov DV, Tomenko OA, et al. Riven' psykhofizychnoho rozvytku kursantiv, shcho zaymayut'sya sportyvnyim oriyentuvannyam, porivnyano z predstavnykamy inshykh vydiv sportu. [The level of psychophysical development of cadets engaged in orienteering compared to representatives of other sports]. *Klinichna ta profilaktychna medytsyna.* 2024;8:153-162. doi:10.31612/2616-4868.8.2024.18. DOI [DOI](#)

CONFLICT OF INTEREST

The Authors declare no conflict of interest

CORRESPONDING AUTHOR

Vasyl V. Prontenko

S. P. Koroliov Zhytomyr Military Institute
22 Myru Avenue, 10004 Zhytomyr, Ukraine
e-mail: prontenko.v@gmail.com

ORCID AND CONTRIBUTIONSHIP

Valentyn V. Bondarenko: 0000-0002-0170-2616 [A](#) [B](#)

Vasyl V. Prontenko: 0000-0003-2454-6190 [D](#)

Vitalii P. Dvoretzkyi: 0000-0001-8694-7569 [C](#)

Serhii M. Bezpalyi: 0000-0002-8760-3255 [B](#) [D](#)

Oleh O. Sushkov: 0000-0002-7356-462X [B](#)

Ihor M. Mazur: 0000-0001-9809-0224 **E**

Vadym V. Voloshyn: 0009-0008-7113-7596 **F**

A – Work concept and design, **B** – Data collection and analysis, **C** – Responsibility for statistical analysis, **D** – Writing the article, **E** – Critical review, **F** – Final approval of the article

RECEIVED: 18.03.2026

ACCEPTED: 27.07.2026

