

<http://dx.doi.org/10.16926/sit.2023.01.05>Vladyslav OTKYDACH^a<https://orcid.org/0000-0002-3859-012>Pavlo POTSILUIKO^c<https://orcid.org/0000-0003-4402-3127>Svitlana INDYKA^e<https://orcid.org/0000-0003-0676-9227>Mukola KORCHAGIN^b<https://orcid.org/0000-0001-6788-1840>Ihor FISHCHUK^d<https://orcid.org/0000-0001-5567-9004>Natalia BIELIKOVA^f<https://orcid.org/0000-0003-2789-7586>

The influence of complex military and sports training on the psycho-physiological abilities of university cadets

How to cite [jak cytować]: Otkydach V., Korchagin M., Potsiluiko P., Fishchuk I., Indyka S., Bielikova N. (2023): *The influence of complex military and sports training on the psycho-physiological abilities of university cadets*. Sport i Turystyka. Środkowoeuropejskie Czasopismo Naukowe, vol. 6, no. 1, pp. 87–98.

^a Ivan Kozhedub Kharkiv National University of the Air Force, e-mail: boboklass@ukr.net

^b PhD in Physical Education and Sports, Institute of Legal Personnel Training for the Security Service of Ukraine of Yaroslav Mudryi National Law University, Department of Special Department № 3, e-mail: fomakolya75@gmail.com

^c Hetman Petro Sahaidachnyi National Army Academy, Department of Physical Education, Special Physical Training and Sports, e-mail: 545762akm@ukr.net

^d Hetman Petro Sahaidachnyi National Army Academy, Department of Physical Education, Special Physical Training and Sports, e-mail: fisuki47@gmail.com

^e PhD in Physical Education and Sports, Lesya Ukrainka Volyn National University, Faculty of Physical Culture, Sports & Health, Lutsk, Ukraine; e-mail: indika.sv@gmail.com (corresponding author)

^f Doctor of Pedagogical Sciences, Lesya Ukrainka Volyn National University, Faculty of Physical Culture, Sports & Health, Lutsk, Ukraine

Wpływ złożonego szkolenia wojskowo-sportowego na zdolności psychofizjologiczne kadetów uniwersyteckich

Streszczenie

Artykuł poświęcony jest zagadnieniu korekty cech psychofizjologicznych podchorążych wyższych wojskowych instytucji edukacyjnych. W badaniu wzięło udział 131 kadetów (17–26 lat), którzy zostali podzieleni na grupę kontrolną ($n = 95$) i eksperymentalną ($n = 36$). Grupa kontrolna kontynuowała realizację dotychczasowego programu szkoleniowego, a grupa eksperymentalna była zaangażowana w szeroko zakrojoną sekcję wojskowo-sportową.

Przeprowadzono badania pedagogiczne w celu oceny poziomu psychofizjologicznych wskaźników umiejętności. W celu określenia wpływu programu eksperymentalnego na zdolności psychofizjologiczne kadetów zastosowano metodę pretest-posttest. Rzetelność różnicy między wskaźnikami podchorążych obu grup ustalono za pomocą testu Studenta ($p < 0.05$).

Zbadanie wpływu złożonego szkolenia wojskowo-sportowego na zdolności psychofizjologiczne kadetów uniwersyteckich.

Wyniki eksperymentu wskazują na poprawę wskaźników zawodowo ważnych zdolności psychofizjologicznych przedstawicieli grupy eksperymentalnej w stosunku do respondentów grupy kontrolnej: szybkość uwagi wzrosła o 7,9% ($p < 0,05$), koncentracja uwagi o 15,4% ($p < 0,05$), umysłowa pojemność o 4,4% ($p > 0,05$), a współczynnik produktywności umysłowej o 8,3% ($p < 0,05$). Tym samym metody sportów wojskowych mogą być wykorzystywane do korygowania ważnych zawodowo zdolności psychofizjologicznych podchorążych wyższych wojskowych placówek oświatowych na całym świecie.

Słowa kluczowe: eksperyment, wszechstronne sporty wojskowe, trening psychofizjologiczny, kadeci, gotowość.

Abstract

The article is devoted to the issue of correcting psycho-physiological qualities of VVNIZ cadets. 131 cadets (17–26 years old) participated in the study. They were divided into control ($n = 95$) and experimental ($n = 36$) groups. The control group continued to perform the current training program, and the experimental group was engaged in the ICU section.

Pedagogical testing was conducted to assess the level of psycho-physiological indicators of abilities. A pretest-posttest method was used to determine the impact of the experimental program on the cadets' psycho-physiological abilities. The reliability of the difference between the indicators of the cadets from the two groups was established using Student's *t* test ($p < 0.05$).

To investigate the influence of complex military and sports training on the psychophysiological abilities of university cadets.

The results of the experiment indicate an improvement in the indicators of professionally important psycho-physiological abilities of the EG representatives in relation to the CG respondents: attention speed improved by 7.9% ($p < 0.05$), concentration of attention by 15.4% ($p < 0.05$), mental capacity by 4.4% ($p > 0.05$), and mental productivity coefficient by 8.3% ($p < 0.05$). Thus, the means of MSAC can be used to improve professionally important psycho-physiological abilities of cadets of higher military educational institutions.

Keywords: experiment, complex military sports, psycho-physiological training, cadets, readiness.

Introduction

Modern military specialties require a higher level of psychical standards and physical fitness of soldiers and also increase demands for their military-professional preparation [15]. The main advantage of modern professional armies is the ability to select the best representatives of the nation for military service. However, in Ukraine, given the low prestige of military service, it is impossible to ensure high quality professional selection. Taking into account the participation of Ukrainian Armed Forces in combat operations, the psychophysical readiness to perform assigned tasks increases the requirements for special physical training of servicemen [30].

The events of the last years in the east of Ukraine showed the importance of a personal ability to resist the influence of various stress factors, to maintain a high capacity level and keep psycho-physiological readiness to conduct the battle actions in extreme circumstances [16].

The authors of domestic scientific works [6, 8] assert that recently the psycho-physiological indexes of Ukrainian young people have clearly demonstrated a tendency to worsen. According to Ascii [1] the personal efficiency of functioning of sensory and sensor-motor systems, the parameters of memory and attention went down considerably. The motivation indexes of an educational activity also became worse [19]. High requirements for professional level military servicemen and the complexity of assigned tasks call for appropriate psycho-physical training [2]. The task of psycho-physical readiness of future professionals must be solved in the walls of higher educational establishments with the help of the professionally-oriented educational disciplines. There is such a discipline in Ukrainian civilian universities, i.e. the Professionally-Applied Physical Training [24]. As for higher military educational institutes it is the Special Physical Training [21]. One of its main tasks is the development and improvement of cadets' professionally important abilities, including psycho-physical endurance as a reliable basis for their successful professional military activity in extreme conditions of military life [11, 14]. Korovin and Kabachkov in their articles investigated the importance of professionally-applied physical preparation for cadets' future activity [9]. The problem of psycho-physical preparation in civilian higher education establishments was observed by Pichyrin, Phylypei, Ostapenko [17, 18, 20, 23]. The issue of psychological improvement by means of physical preparation was examined in works of Malyar, Budny, 2010, and Salatenko, Dubinskaya, 2015 [12, 28]. The subject of improvement of cadets' psycho-physical condition in the process of professionally-applied physical preparation was studied by Gusak, Romanchyk, 2011; Romanchyk, Korol, Gavrylenko, Festryga, 2019 [3, 27]. Korzan, Smirnova, Pavlos, Zelikova, 2021, present an organizationally-methodical solution of providing cadets' PE coaches in higher education establishments

with the devices of distance-controlled technologies exercising influence on the state of students' psycho-physical functions [10].

The previous researchers established a positive influence of special physical preparation facilities on the fitness level of military personnel [5]. The actuality of our study is predetermined by the necessity of tackling the problem of cadets' psycho-physiological abilities and their improvement by means of Military-Sports All-round Competition (MSAC).

Materials and Methods

Participants

36 cadets of experimental group (EG) that engaged in MSAC section from the first course during two years and 95 cadets of control group (CG) that engaged the traditional system of physical preparation were involved in an experiment. The average age of servicemen at the beginning of the experiment was 17.7 years. Well-educated groups of cadets were tested for the absence of a significant difference in indexes of psycho-physiological abilities at the beginning of the experiment ($p > 0.05$). All the participants were informed about participating in the experiment and gave their consent.

Study organization

The research was conducted from September, 2017 till October, 2019, at the base of the Kharkiv National Ivan Kozhedyb Air Force University, and it focused on the determination of cadets' psycho-physiological abilities' dynamic indexes. The research tasks were solved by the following research methods: a theoretical analysis, systematization and generalization of scientifically-methodical sources and leading documents, a pedagogical experiment, psycho-diagnostic methods. The theoretical analysis, systematization and generalization of scientifically-methodical sources and leading documents were applied to analyze the information about MSAC features implemented in cadets' PE in higher military educational institutes. The pedagogical experiment was used to determine the influence of MSAC facilities on the indexes of psycho-physiological abilities of cadets.

From the total number of cadets who studied at the 4th year of the university, a control and experimental group were selected. The control group was engaged in the traditional program of special physical training (SPT). The content of the SPT program of the experimental group consisted of aspects of MSAC, which can have a psychological impact on the personality of servicemen. Traditional and experimental SPT programs have the same number (2 per week) of training sessions of 90 minutes each, but their content is different. Instead of outdated ex-

ercises from the Soviet system of PT, the experimental SPT program included techniques and actions that are close to the specifics of military-professional activities: combat with weapons, combat without weapons, special actions of servicemen (shooting with air guns, 3000 m run with grenade throwing and shooting, 6 × 100 m run with a machine gun), swimming in a military uniform, diving and wrestling.

The pre-test – post-test method was used to determine the experimental SPT program influence on the cadets' psycho-physiological abilities. The psycho-diagnostic research methods included the determination of the following indexes by Byrdon-Anfimov method of a proof-reading test: speed of attention, attention concentration, mental capacity and the coefficient of mental productivity.

Statistical analysis

Statistical processing of the data was carried out on a computer using the standard STATISTICA 7.0 programs. Data were presented as means (X) and standard deviation (SD). The normality check of data was executed with the help of STATISTICA 7.0 programs using Distribution Fitting Module and Lilliefors test for normality. Also the homogeneity of variances of pre-post data was tested. The data were independent and normal. Therefore, a parametric test (i.e., the independent samples t-test) was used for analysis. During the study, the authenticity of difference between the indexes of the cadets from two groups was determined by means of Student's t test.

The significance for all statistical tests was set at $p < 0.05$. The dynamics of indexes in each group was also estimated. The percentage change was also calculated for both the experimental and the control group, using the equation: $[(\text{Meanpost} - \text{Meanpre}) / \text{Meanpre}] \times 100$.

Results

The results of determining the psycho-physiological abilities level development (Byrdon-Anfimov proof-reading test) and the dynamics of indicators of speed attention, attention concentration, mental capacity and the coefficient of mental productivity of cadets are presented in Table 1.

The analysis of indexes for psycho-physiological abilities of the cadets' representatives from two groups before the experiment witnessed the absence of reliable difference (Table 1).

The results for speed attention determination from two groups' representatives after the experiment demonstrate statistically reliable improvement of the index for the cadets of EG in relation to the CG at $p < 0.05$. The analysis of attention concentration changes of two groups after the experiment showed a

statistically reliable increase ($p < 0.05$) of that index for the EG representatives in comparison to the scores of the CG respondents. The comparative analysis of mental capacity of two cadet groups after the experiment demonstrated the index improvement for the EG representatives in relation to the CG. However, this difference is statistically reliable at $p > 0.05$. As for the coefficient of mental productivity, one could notice a statistically reliable ($p < 0.05$) improvement of scores after the experiment for the EG students in relation to the CG correspondents (Table 1).

Table 1. The cadets' psycho-physiological abilities' indexes during the experiment

№	Test		EG (n = 36)		CG (n = 95)		EG-CG Δ	Level of meaningfulness	
			X	SD	X	SD		t	p
1	Speed of attention, sign/c	Pre	4.45	0.17	4.36	0.18	0.09	0.47	$p > 0.05$
		Post	4.78	0.13	4.43	0.17	0.35	2.39	$p < 0.001$
		Pre-Post Δ	-0.33	0.14	-0.07	0.17	-0.26	9.31	$p < 0.001$
2	Attention concentration, point	Pre	344.25	26.08	334.31	17.40	9.94	3.61	$p < 0.01$
		Post	393.73	18.44	341.30	16.19	52.43	1.73	$p > 0.01$
		Pre-Post Δ	-49.48	21.67	-6.99	16.84	-42.49	10.61	$p < 0.001$
3	Mental capacity, sign/c	Pre	3.40	0.14	3.33	0.12	0.07	0.02	$p > 0.05$
		Post	3.81	0.12	3.65	0.12	0.16	0.01	$p > 0.05$
		Pre-Post Δ	-0.41	0.12	-0.32	0.12	-0.09	3.83	$p < 0.001$
4	Coefficient of the mental productivity, signs	Pre	1055.44	61.21	990.23	30.81	30.4	5.77	$p < 0.001$
		Post	1224.01	38.03	1129.74	18.03	20	2.67	$p < 0.05$
		Pre-Post Δ	-168.57	34.62	-139.51	26.07	-29.06	4.56	$p < 0.001$

Source: own research.

The result of the conducted experiment showed the improvement of the psycho-physiological abilities level of the EG representatives in relation to the CG respondents (EG-CG $\Delta\%$):

- speed of attention at 7.9% (the difference is statistically reliable);
- attention concentration at 15.4% (the difference is statistically reliable);
- mental capacity at 4.4% (the difference is not statistically reliable);
- the coefficient of mental productivity at 8.3% (the difference is statistically reliable).

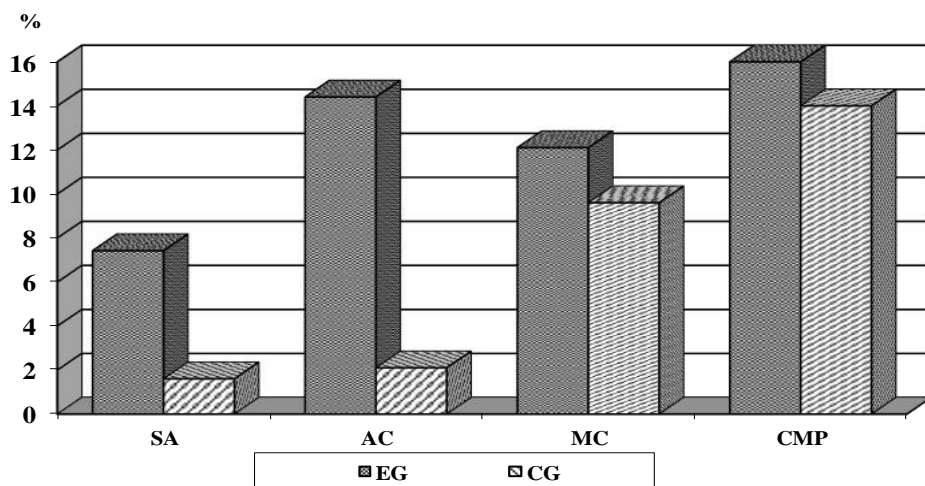


Figure 1. A diagram of psycho-physiological abilities indexes' changing during the experiment

Source: used the data obtained in the dissertation research by V. Otkydach.

For better visual demonstration of positive changes in the estimation of the cadets' psycho-physiological abilities, we presented the dynamics of indexes changing (intragroup differences Pre-Post $\Delta\%$) on a diagram (Fig. 1), where:

SA – speed of attention;

AC – attention concentration;

MC – mental capacity;

CMP – the coefficient of mental productivity

Discussion

Our research confirms the research of K. Prontenko, H. Hryban, A. Oderov and other scientists, who claim that the task of professional and applied physical training is not only to ensure physical fitness, but also to develop and improve basic psycho-physiological abilities complying with the profile of the future professional activity [13, 22]. Modern studies of military scientists [25, 29] have significantly expanded the concept of professionally important psycho-physiological abilities of military personnel. Professionally important abilities of military personnel are understood as integral psychological and psycho-physiological capabilities of the individual, as well as mental and psychomotor abilities that meet the requirements for the professional activity of a specific military specialist [26]. The results of our work are confirmed and coincide with the works of scientists such as M. Korchagin and O. Olkhovoy, according to whom [7] the main professionally important psycho-physiological abilities of military specialists-operators are the

functions of attention (speed of perception, concentration, stability) and the function of mental productivity. According to the assumptions of systemic psychophysiology, the function of attention is not an independent mental process, but it constitutes a component of a mechanism ensuring effective mental capacity. Attention is a selective orientation of perception towards a certain object. The concentration of mental efforts occurs at a certain moment in time, on a separate article (phenomenon) of objective or subjective reality. Attention, unlike other processes, does not have its own content, it is manifested in perception, thinking, imagination, translation and other mental processes. It is the dynamic description of the course of any mental activity that ensures the appropriate distribution of resources of the subject's information processing system. Our research confirms the conclusions of Kamaev, Gunchenko, Mulik and others (2018) about the positive impact of military exercises on the level of professionally important psychophysiological abilities of cadets of higher military educational institutions [4].

Conclusion

The results of the conducted experiment demonstrated the improvement of professionally important psycho-physiological abilities' indexes of the cadets of the experimental group in relation to the representatives of the control group: speeds of attention at 7.9% ($p < 0.05$), attention concentration at 15.4% ($p < 0.05$), mental capacity at 4.4% ($p > 0.05$), the coefficient of mental productivity at 8.3% ($p < 0.05$). This fact demonstrates the expedience of using MSAC facilities for the improvement of psycho-physiological abilities in higher military educational institutions.

STATEMENT OF ETHICS

This study was conducted in accordance with the World Medical Association Declaration of Helsinki. The study protocol was reviewed and approved by the Research Ethics Committee of the Lesya Ukrainka Volyn National University (20 June, 2022, Lutsk, Ukraine). All participants provided written informed consent to participate in this study.

DECLARATION OF CONFLICTING INTERESTS

The authors declared no potential conflicts of interests with respect to the research, authorship, and/or publication of the article *The influence of complex military and sports training on the psycho-physiological abilities of university cadets*.

FUNDING

The authors received no financial support for the research, authorship, and/or publication of the article *The influence of complex military and sports training on the psycho-physiological abilities of university cadets*.

Primary sources

- [9] Коровин С.С., Кабачков В.А. (1998): *Профессиональная физическая культура и формирование личности*: [в:] монографія, Оренбург: ОГПУ, 259с.
- [14] Пічурін В.В. (2013): *Психологічна і психофізична готовність студентів-залізничників до професійної праці* [в:] Науковий часопис НПУ ім. М.П. Драгоманова. №37, С. 95-103.
- [16] Бородин Ю.А., Добровольський В. Б., Романчук С.В., Таран В.С. (2003): *Воспитание психической устойчивости курсантов средствами и методами физической подготовки*. [в:] Физическое воспитание студентов творческих специальностей. №1. С. 30-40.
- [23] Пилипей Л.П. (2013). *Фізичне виховання: професійно-прикладна фізична підготовка студентів у ВНЗ*. [в:] навчально-методичний посібник. Суми: ДВНЗ «УАБС НБУ», 156 с.
- [24] Раевский Р.Т., Канишевский С.М. (2010): *Профессионально-прикладная физическая подготовка студентов высших учебных заведений*. [в:] Одесса: Наука и техника. 380 с.
- [30] Ванденко В.В. (2014): *Фізична підготовка в умовах антитерористичної операції*. [в:] Фізична підготовка особового складу Збройних сил, інших військових формувань та правоохоронних органів України: досвід, сучасність, проблеми та перспективи розвитку. Матеріали наук.-метод. конф. 26-28 листопада 2014 р. МОУ. Київ, с. 52-55.

References

- [1] Asci F. (2003): *The effects of physical fitness training on trait anxiety and physical self-concept of female university students*. Psychology of Sport and Exercise, no. 4, pp. 255–264; [https://orcid.org/10.1016/S1469-0292\(02\)00009-2](https://orcid.org/10.1016/S1469-0292(02)00009-2).
- [2] Borodyn Y., Dobrovolskyu V., Romanchuk S., Taran V. (2003): *Vospytanye psyhicheskoi ustoichyvosti kursantov sredstvamy u metody fyzycheskoi podhotovky*. Fyzycheskoe Vospytanye Studentov Tvorcheskykh Spetsyalnostei: sb. nauch. tr. 1, p. 30–40.
- [3] Gusak O., Romanchuk S. (2011): *A role of physical preparation in psychological preparation of servicemen*. Pedagogics, Psychology and Medical and Biological Problems of Physical Education and Sports, 4, pp. 61–64.
- [4] Kamaiev O., Hunchenko V., Mulyk K., Hradusov V., Homanyuk S., Mishyn M., Martynenko O., Shuryaev V. (2018): *Optimization of special physical training of cadets in the specialty "Arms and Military Equipment" on performing*

- professional military-technical standards*". Journal of Physical Education and Sport, 18 (Supplement issue 4), pp. 1808–1810; <https://orcid.org/10.7752/jpes.2018.s4264>.
- [5] Klymovych V., Oderov A., Korchagin M., Olkhovoy O., Romanchuk S. (2019): *The Influence of the System of Physical Education of Higher Educational School on the Level of Psychophysiological Qualities of Young People*. Sport Mont, 17 (2), pp. 93–97; <https://orcid.org/10.26773/smj.190616>.
- [6] Kokyn O., Tkachyk T. (2005): *Psychological accompaniment of professional activity of teachers. Liberal education in profile higher educational establishments*. Problems and prospects: Mater, VI Allround Ukraine, K.: NAU, p. 148.
- [7] Korchagin M., Kurbakova S., Olkhovyi O. (2017): *Dependence of the success of professional activity of servicemen-operators on the level of psychophysiological qualities*. Sports Gazette of Prydniprovia, 5 (3), pp. 65–68.
- [8] Korolchuk N., Kraunyk V., Kosenko A. (2002): *The Psychological providing of psychical and physical health*. Monograph, N.S. Korolchuk (ed.), K. 27.
- [9] Korovyn S., Kabachkov V. (1998): *Professyonalnaia fizycheskaia kultura y formirovanye lychnosty: monohrafiia*. Orenburh: OGPY, p. 259.
- [10] Korzan T., Smirnova L., Pavlos G., Zelikova T. (2021): *Correction influence on the state of psychophysiological functions of students in physical education by facilities using distance-controlled technologies*. Scientific Journal of National Pedagogical Drahomanov University, Issue 3 (133), pp. 61–65.
- [11] Kostiv S., Oderov A., Klymovich V., Agyrov V., Romanchuk S., Matveiko O., Baidala V., Lesko O., Ostrovskiy M., Kuprinenko O., Sydorko O. (2021): *Experimental results of the psychophysical endurance development of military professionals*. Journal of Physical Education and Sport, vol. 21, is. 2, pp. 1076–1083; <https://orcid.org/10.7752/jpes.2021.s2135>.
- [12] Malyar E., Malyar N., Budny V. (2010): *Methods of professional-applied physical training of students of higher educational institutions of economic trade*. Pedagogics, Psychology and Medical-Biological Problems of Physical Education and Sport, vol. 11. pp. 64–67.
- [13] Oderov A. and all. (2020): *Functional State of Military Personnel Engaged in Unarmed Combat*. Sport Mont, 18 (1), pp. 99–101; <https://orcid.org/10.26773/smj.200218>.
- [14] Oderov A., Klymovych V., Korchagin M., Olkhovyi O., Romanchuk S. (2019): *Optimization of the content of the physical training program of cadets-gunners*. International Journal of Recent Scientific Research. India, vol. 10 (№ 7), pp. 33340–33343.
- [15] Oderov A., Klymovych V., Pideteychuk R., Dobrovolsky V., Korchagin M. (2019): *Peculiarities of Organization and the Content of Physical Training Systems in the Armed Forces of NATO Members and Ukraine*. Ukrainian Jour-

- nal of Medicine, Biology and Sport, vol. 2 (24), pp. 271–282; <https://orcid.org/10.26693/jmbs05.02.271>.
- [16] Oderov A., Klymovych V., Romanchuk S., Pankevich Y., Pylypchak I., Roliuk O., Lesko O., Olena B., Dobrovolskyi V., Vorontsov O. (2020): *Functional state of military personnel engaged in unarmed combat*. Sport Mont, vol. 18 (1), pp. 99–101; <https://orcid.org/10.26773/smj.200218>.
- [17] Ostapenko Y., Ostapenko V. (2016): *Criteria for assessing the level of development of professionally important psychophysiological qualities of students of economic trade*. Physical Education, Sport and Health of the Nation: Comp.: Science Work Issue № 2. Zhytomyr, pp. 79–83.
- [18] Pichurin V. (2013): *Psikhologichna i psikhofizichna gotovnist' studentiv-zalznichnikiv do profesijnoi praci* [Psychological and psycho-physical readiness of students to professional work of railwaymen]. Naukovij Chasopis NPU im. M.P. Dragomanova, no. 37, pp. 95–103.
- [19] Pichurin V. (2014): *Psychological and psycho-physical training as a part of physical education of students in higher educational establishments*. Pedagogics, Psychology, Medical-Biological Problems of Physical Training and Sports, vol. 11, pp. 44–48; <https://orcid.org/10.15561/18189172.2014.1108>.
- [20] Pichurin V. (2015): *Coping strategies and psychological readiness of students for professional work*. Pedagogics, Psychology, Medical-Biological Problems of Physical Training and Sports, vol. 2, pp. 53–59; <https://orcid.org/10.15561/18189172.2015.0209>.
- [21] Popovich O., Fedak S., Romanchuk S. (2010): *The special physical preparation as means of adaptation to the stress factors of educational-battle and battle activity of servicemen*. Pedagogics, Psychology and Medical-Biology Problems of Physical Training and Sport, vol. 11, pp. 88–90.
- [22] Prontenko K., Griban G., Alosyna A., Bloshchynskyi I., Kozina Z., Bychuk O., Novitska I., Korchagin M. (2019): *Analysis of cadets' endurance development at higher military educational institutions during the kettlebell lifting training*. Sport Mont, 17 (2), pp. 3–8; <https://orcid.org/10.26773/smj.190601>.
- [23] Pylypei L. (2013): *Fyzichne vykhovannia: profesiino-prykladna fizychna pidhotovka studentiv u VNZ: navchalno-metodychnyi posibnyk*. Sumy: DVNZ «UABS NBU», p. 156.
- [24] Raevskyi R., Kanyshovskyi S. (2010): *Professyonalno-prykladnaia fizycheskaia podhotovka studentov vuisshykh uchebnukh zavedenyi*. Odessa: Nauka y tekhnika, p. 380.
- [25] Rolyuk A., Romanchuk S., Romanchuk V., Boyarchuk A., Kyrpenko V., Afonin V., Orest L. (2016): *Research on the organism response of reconnaissance officers on the specific load of military exercises*. Journal of Physical Educa-

- tion and Sport, 16 (1), pp. 132–135; <https://orcid.org/10.7752/jpes.2016.01022>.
- [26] Romanchuk S. (2016): *Innovative technologies of physical training organization in educational institutions of the Armed Forces of Ukraine*. Scientific Journal of National Pedagogical Drahomanov University, Issue 1 (70), pp. 157–162.
- [27] Romanchyk S., Korol O., Gavrylenko M., Fetryga S. (2019): *A correction of psychophysiological functions in the process of the professionally-applied physical preparation of students of establishments of higher education*. Scientific Journal of National Pedagogical Drahomanov University, ISSUE 3 (111), pp. 163–167.
- [28] Salatenko I., Dubinskaya O. (2015): *Psychophysical improvement of students of economic trade under the influence of sport-oriented technology on the basis of preferential use of volleyball*. Pedagogics, Psychology and Medical and Biological Problems of Physical Education and Sports, 12, pp. 103–108; <https://orcid.org/10.15561/18189172.2015.1216>.
- [29] Sung H., An J., Lee S. (2015): *Relationship Between Functional Movement Screen and Tactical Performance*. Journal of Sport and Human Performance, 3 (4), <https://orcid.org/10.12922/jshp.v3i4.75>.
- [30] Vandenko V. (2014): *Fizychna pidhotovka v umovakh antyterorystychnoi operatsiyi*. Fizychna pidhotovka osobovoho skladu Zbroynykh syl, inshykh viyskovykh formuvan ta pravookhoronnykh orhaniv Ukrainu: dosvid, suchasnist, problem ta perspektyvy rozvytku, Materialy nauk-metod konf, Kyiv: MOU, Nov. 26–28, pp. 52–55.