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ORIGINAL ARTICLE

CADETS' PHYSICAL HEALTH AND PSYCHO-EMOTIONAL STATE DURING COMBAT SPORT TRAINING

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ABSTRACT

The aim: To study the influence of sambo training on the dynamics of indicators of physical health and psycho-emotional state of cadets in the process of their education.

Materials and methods: The research was conducted at the National Academy of Internal Affairs in 2018-2021. The research involved 17-23 years old male cadets. Two groups of cadets were formed: the experimental group (EG, n = 30), the cadets of which were engaged in sambo during their physical training sessions, and the control group (CG, n = 30), the cadets of which were engaged in the traditional methods of physical training sessions. The level of cadets' physical health was examined according to the method of the professor G. L. Apanasenko.

Results: The positive effect of sambo training on the cadets' physical health and psycho-emotional state was revealed. The EG cadets showed significantly ($p < 0.05-0.001$) better indicators among the studied ones than the CG cadets.

Conclusions: The results of the research allows coming to the conclusion that the high level of physical health and psycho-emotional state of the cadets who were engaged in sambo training will improve the effectiveness of their service tasks performance in the future.

KEY WORDS: health, psycho-emotional state, sambo, cadets

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INTRODUCTION

The future service activities of cadets studying in educational institutions of the National Police of Ukraine involve significant physical and psychological stress. Their systematic influence on the body worsens the health of the police officer and can lead to such negative consequences as fatigue, overexertion, injury, illness, professional burnout, etc. [1]. Thus, for example, according to many scientists [2], the professional activities of a modern patrol police officer have its own specifics: round-the-clock patrolling of the service area in order to ensure proper protection of public order; maintaining public safety and monitoring compliance with traffic rules, ensuring road-traffic safety; first response to a report of an offense; self-detection and cessation of offenses during patrols; detention of offenders and escorting them to police stations; protection of the scene of the event; etc. Characteristic features of police service, according to scientists [3], are: social and state significance; significant physical, intellectual and psychological tension, high rate and dynamics of the service; stricter, compared to other professions, regulatory activity and legal regulation of relations between its members; the need to perform duties in different climatic, weather con-

ditions, time intervals, etc.; high degree of cooperation in the process of activities; orderliness of relations vertically and horizontally; frequent change of some types of actions to others, due to different operational environment, etc.. At the same time, police officers are in constant contact with persons under the influence of drugs and alcohol; aggressive individuals; mentally ill and other categories, which increases the requirements for the development of psychological qualities of police officers [4].

The scientists [5, 6] argue that a modern police officer should have not only knowledge of the legislature, but also developed physical and psychological qualities, a high level of physical health and developed skills and abilities to apply coercive measures. At the same time, special physical training, as an academic subject in higher educational institutions where future police officers are trained, does not fully ensure the solution of the tasks set to improve the efficiency of police work and strengthen their health. This necessitates the search for such means of special physical training that would contribute to the development of physical and psychological qualities of future police officers, strengthen their health, and improve their performance in general. Effective means of special physical training of

Table I. The dynamics of the indicators of physical health of EG (n=30) and CG (n=30) cadets in the process of training (Mean±SD)

The indicators investigated	Groups	Years of training				Level of significance (p_{1-4})
		1st	2nd	3rd	4th	
Body mass index, kg / m ²	EG	23.4±0.26	23.1±0.24	22.8±0.23	22.3±0.21	<0.01
	CG	23.3±0.23	23.2±0.22	23.3±0.21	23.4±0.22	>0.05
	p_{EG-CG}	>0.05	>0.05	>0.05	<0.01	
Vital index, ml / kg	EG	56.5±1.31	57.8±1.29	59.6±1.28	62.2±1.26	<0.01
	CG	56.7±1.29	56.9±1.28	57.2±1.29	57.5±1.27	>0.05
	p_{EG-CG}	>0.05	>0.05	>0.05	<0.05	
Strength index, %	EG	58.2±0.97	62.3±0.95	67.8±0.93	72.1±0.91	<0.001
	CG	57.9±1.02	59.2±0.98	61.3±0.96	63.7±0.95	<0.001
	p_{EG-CG}	>0.05	<0.05	<0.001	<0.001	
Robinson index, c.u.	EG	87.8±1.18	86.2±1.16	84.6±1.14	81.8±1.12	<0.01
	CG	87.9±1.20	87.3±1.19	86.4±1.17	85.5±1.16	>0.05
	p_{EG-CG}	>0.05	>0.05	>0.05	<0.05	
HRR time, s	EG	128.9±2.56	122.7±2.51	115.1±2.48	107.3±2.46	<0.001
	CG	129.1±2.61	124.4±2.56	119.8±2.53	114.6±2.50	<0.001
	p_{EG-CG}	>0.05	>0.05	>0.05	<0.05	
Physical health level, points	EG	3.71±0.41	4.29±0.40	7.84±0.38	11.64±0.35	<0.001
	CG	3.89±0.39	4.02±0.38	5.91±0.37	7.16±0.36	<0.001
	p_{EG-CG}	>0.05	>0.05	<0.01	<0.001	

Mean - arithmetical average, SD - standard deviation, p - the significance of the difference between the studied indicators

future police officers, according to many scientists [7, 8], are martial arts, the main place among which belongs to sambo.

Sambo (self-defence without weapons) is a modern sport, one of the most popular types of martial arts, which is currently widely cultivated in the international sports arena. Sambo, also called the “invisible weapon”, combines physical culture and entertainment, sports and self-defence [9]. Sambo is not only a form of martial arts and a system of counteracting the enemy without the use of weapons, but also a system of education that promotes the development of moral and psychological qualities, patriotism and civic consciousness. Sambo training form a strong character, resilience of spirit, develop strength and endurance, contribute to the improvement of self-discipline and the formation of qualities necessary to achieve life goals. Sambo forms people who are able to defend themselves, their family, the Motherland [10]. Sambo includes the most effective techniques and tactics of various types of martial arts, combat sport and wrestling. Constant development, renewal, openness to all the best is at the heart of the sambo philosophy. Sambo absorbed the moral principles of the peoples who passed sambo part of their culture along with the methods of struggle. These values gave sambo the strength to go through the severe trials of time, to endure and harden in them. And today, young people practicing sambo not only learn to defend themselves, but also gain experience of decent behaviour based on the values of patriotism [11]. Thus, the analysis of a number of scientific

publications on sambo problematics shows the effectiveness of this type of martial arts to improve the effectiveness of police service, but not enough research has been done in terms of the impact of sambo training on the dynamics of indicators of psychological qualities and physical health of cadets – future police officers in the process of their training in educational institutions.

THE AIM

The aim is to study the influence of sambo training on the dynamics of indicators of physical health and psycho-emotional state of cadets in the process of their education.

MATERIALS AND METHODS

MATERIALS

The research was conducted at the National Academy of Internal Affairs (Kyiv, Ukraine) in 2018-2021. The research involved 17-23 years old male cadets during the 1st – 4th years of their training at the academy. The experiment lasted for 4 years. Two groups of cadets were formed: the experimental group (EG, n = 30), the cadets of which were engaged in sambo during their physical training, and the control group (CG, n = 30), the cadets of which were engaged in the traditional methods of physical training. The EG training sessions were conducted by a professional coach-instructor in sambo, and the CG training sessions

Table II. The dynamics of the indicators of psycho-emotional state of EG (n=30) and CG (n=30) cadets in the process of training (Mean±SD)

The indicators investigated	Groups	Years of training		Level of significance (p ₁₋₄)
		1st	4th	
Distribution and scope of attention, points	EG	5.06±0.23	8.21±0.19	<0.001
	CG	5.09±0.22	8.04±0.18	<0.001
	p _{EG-CG}	>0.05	>0.05	
Visual operative memory, points	EG	5.17±0.25	7.75±0.22	<0.001
	CG	5.21±0.24	7.68±0.20	<0.001
	p _{EG-CG}	>0.05	>0.05	
Features of thinking, points	EG	4.87±0.27	6.89±0.25	<0.001
	CG	4.90±0.25	6.76±0.23	<0.001
	p _{EG-CG}	>0.05	>0.05	
Concentration and stability of attention, %	EG	88.07±0.74	94.26±0.68	<0.001
	CG	87.89±0.72	93.67±0.69	<0.001
	p _{EG-CG}	>0.05	>0.05	
Situational anxiety, c.u.	EG	52.94±0.94	30.91±0.85	<0.001
	CG	53.05±0.95	34.95±0.88	<0.001
	p _{EG-CG}	>0.05	<0.01	
Self-assessment of emotional state, points	EG	5.12±0.21	7.41±0.19	<0.001
	CG	5.08±0.22	6.27±0.19	<0.001
	p _{EG-CG}	>0.05	<0.001	
Well-being, points	EG	6.82±0.21	8.48±0.18	<0.001
	CG	6.77±0.20	7.92±0.16	<0.001
	p _{EG-CG}	>0.05	<0.05	
Activity, points	EG	5.91±0.25	8.13±0.22	<0.001
	CG	5.87±0.24	7.19±0.22	<0.001
	p _{EG-CG}	>0.05	<0.05	
Mood, points	EG	6.94±0.22	8.26±0.19	<0.001
	CG	6.99±0.20	7.73±0.17	<0.05
	p _{EG-CG}	>0.05	<0.05	

Mean - arithmetical average, SD - standard deviation, p - the significance of the difference between the studied indicators

were piloted by an academic instructor of the department of special physical training.

The selection of cadets into groups was carried out by the method of questionnaires at the cadets' own will to engage in sambo training. The number of hours for physical education training sessions was the same for the cadets of both groups and made 4 academic hours of training per week (2 times for 2 hours). The initial level of indicators of psychological qualities and physical health in the EG and the CG cadets did not differ significantly.

METHODS

The level of students' physical health was examined according to the method of the professor G. L. Apanasenko [12] based on the anthropometry indicators (height, weight, lungs vital capacity, wrist dynamometry) and the state of the cardiovascular system (heart rate, arterial blood pressure). The health level was evaluated in points and it

included the estimation of the body mass index, vital index, strength index, Robinson's index and heart rate recovery (HRR) time after a standard exercise. The cadets' physical health surveys were conducted in the medical support department of the National Academy of Internal Affairs by medical staff four times during each year of their training.

The research of the psycho-emotional state of cadets during the process of their training was carried out according to the following methods: the test of "Finding numbers" (assessment of distribution and scope of attention), the methods of operating with numbers (visual operative memory), the method of "Complex Associations" (features of thinking), the method of Ch. D. Spielberger, Yu. L. Khanin (situational anxiety), the correction task of Bourdon-Anfimov (concentration and stability of attention), the method of A. Wessman and D. Rix (self-assessment of emotional state), the method of "WAM" (well-being, activity, mood) [13]. The choice of these methods is due to the need to study the professionally important psycho-

physiological qualities of cadets both in the process of their training activities at the academy and during their future service activities. The study of the cadets' psycho-emotional state was conducted twice during the training period (the 1st and 4th years of their training) by the specialists of the Department of Psychological Support of the National Academy of Internal Affairs.

Research methods: theoretical analysis and generalization of literature sources, medical and biological methods, psychological testing, pedagogical experiment, methods of mathematical statistics. During the researches the authenticity of difference between the indicators of cadets by means of Student's t-test was determined.

ETHICAL APPROVAL STATEMENT

The research was carried out according to the requirements of the Code of Ethics of National Academy of Internal Affairs, which was approved by the Academic Council (protocol No. 01 of 10 January 2019) and implemented by the order of the Rector of the Academy. Informed consent was received from all individuals who took part in this research.

RESULTS

The analysis of body mass index in the EG and the CG cadets showed that no significant difference was found between the indicators of the EG and the CG cadets ($p > 0.05$) during the 1st, the 2nd and the 3rd years of their training (Table I). The 4th year cadets of the EG revealed significantly better body mass index than the CG cadets by $1.1 \text{ kg} / \text{m}^2$ ($p < 0.01$). The research of the vital index in the cadets of the studied groups shows that the indicators in the EG cadets during the 4th year of training were better than in the CG cadets; the difference is $4.7 \text{ ml} / \text{kg}$ and is significant ($p < 0.05$) (Table I). The analysis of the dynamics of the vital index in each group showed that the indicators in both groups improved during the period of training at the academy, but the difference between the indicators of the 1st year and the 4th year cadets is $5.7 \text{ ml} / \text{kg}$ in the EG and is significant ($p < 0.05$), and in the CG it makes $0.8 \text{ ml} / \text{kg}$ ($p > 0.05$). The comparative analysis of strength index indicators shows that the difference between the indicators of the EG and the CG cadets during the 2nd year of their training makes 3.1% ($p < 0.05$), the 3rd – 6.5% ($p < 0.001$), the 4th – 8.4% ($p < 0.001$) (Table I). The strength index of the cadets of both groups significantly ($p < 0.001$) improved during the period of their training, but if the difference between the indicators of the 1st and the 4th year cadets of the CG is 5.8% , then it makes 13.9% in the EG. The analysis of the Robinson index in the EG and the CG cadets showed that no significant difference between the indicators of the EG and the CG cadets was detected ($p > 0.05$) during the 1st year of their training, as well as during the 2nd and the 3rd years of education (Table I). The EG cadets showed significantly ($p < 0.05$) better indicators during the 4th year of training, compared

with the CG cadets: the difference is 3.7 c.u. The analysis of the time of recovery of heart rate to baseline shows that significant difference was found only in the 4th year of training – the indicators of the EG cadets were significantly better at 7.3 s than those of the CG cadets' (Table I). The research of the level of cadets' physical health showed that this level was significantly higher in the EG cadets than in the CG cadets during the 3rd year of their training by 1.93 points ($p < 0.01$), and by 4.48 points ($p < 0.001$) during the 4th year of their training (Table I). The difference between the indicators of the 1st and the 4th years of training is 3.27 points in the CG cadets, then this difference makes 7.93 points in the EG cadets, which indicates a positive effect of sambo training on the health of cadets.

The analysis of indicators of distribution and scope of attention in the cadets on the test of finding numbers showed that the indicators of the EG and the CG cadets did not differ significantly among themselves ($p > 0.05$) both at the beginning and at the end of the research. The indicators of distribution and scope of attention in both groups significantly ($p < 0.001$) improved in the process of training (Table II). The dynamics of the indicators of visual operative memory, studied by the method of operating with numbers, the indicators of features of thinking (by the method of "Complex Associations"), as well as concentration and stability of attention (by the correction task of Bourdon-Anfimov) is similar to the dynamics of distribution and scope of attention character i. e. significant ($p < 0.001$) improvement of the indicators in both groups of the cadets for the period of their training and the absence of a significant difference between the indicators of the groups both of the 1st and the 4th years of training ($p > 0.05$). The research of the indicators of situational anxiety in the cadets shows that the level of anxiety was assessed as "high" and did not differ significantly ($p > 0.05$) during the 1st year of cadets' training of both study groups. During the training period, the level of anxiety in the EG and the CG cadets significantly decreased ($p < 0.001$), but the comparative analysis of the indicators showed that the level of anxiety is significantly lower in the EG than in the CG at 4.04 c.u. ($p < 0.01$) (Table II). The analysis of the indicators of self-assessment of emotional state of the cadets showed that if they did not differ significantly ($p > 0.05$) in the study groups during the 1st year of training, then the level of self-assessment of emotional state was significantly better in the EG cadets during the 4th year of their training than in the CG cadets by 1.14 points ($p < 0.001$) (Table II). The level of self-assessment of emotional state of the cadets in both groups significantly ($p < 0.001$) improved during their training period, but a more pronounced difference was found in the EG cadets. The research of the dynamics of such characteristics of the emotional state of the cadets as well-being, activity and mood according to the method of "WAM" shows that they significantly improved during the training period ($p < 0.05$ – 0.001) in both study groups (Table 3). At the same time, all studied indicators of the emotional state of the EG cadets were significantly better than in the CG cadets ($p < 0.05$) during the 4th year.

DISCUSSION

Professional personnel training for the National Police of Ukraine requires constant improvement. This is due to a number of reasons, including: reforming the law enforcement agency, changing the concept of the National Police, applying new forms of selection of candidates for police service, optimizing the structure and content of police training, the specifics of police service [14]. The service activities of police officers of most units of the National Police of Ukraine are characterized by irregular working hours, day's duties, frequent services for the protection of public safety and order, etc. [15]. The forcible detention of offenders occupies a particularly important place in the service activities of the police. Detention of the offender is accompanied by forceful resistance and requires the performance of the fastest possible and exact actions; pursuit and overcoming obstacles overloads the musculoskeletal and cardiovascular systems. This results in constant physical and psychological overload and, over time, to chronic fatigue of police officers [16].

The modern police officer must ensure the safety of people by applying, if necessary, sufficient coercive techniques and methods; be able to distinguish situations of danger; under any circumstances to act without prejudice, guided by ethical norms. The analysis of law enforcement practice shows that the functional responsibilities of a modern police officer can be performed by a person with a high level of responsibility for the results of his own activities, who has a set of knowledge, practical skills and professionally important traits, good health, high level of physical and psychological qualities acquired during special training. It is these components that ensure the professional readiness of police officers to effectively perform complex, sometimes dangerous tasks. However, today, the training of future police officers requires further improvement, as the analysis of their service activities revealed a high level of injuries and even deaths of police officers in the line of duty.

The scientists [17, 18] consider the improvement of special physical training of cadets on the basis of modern martial arts, in particular sambo, to be a promising direction for improving the efficiency of police service activities. Our research has confirmed the findings of many scientists, which show the positive impact of sambo training on the level of physical health and psycho-emotional state of cadets.

CONCLUSIONS

The research revealed a more pronounced positive effect of sambo training, compared to the traditional method of conducting physical training sessions, to improve the physical health of cadets during their training. Thus, the 4th year cadets engaged in sambo training revealed significantly ($p < 0.05$) better indicators of body mass index, vital index, strength index, the Robinson index, heart rate recovery time and physical health than the CG cadets. The results of the comparative analysis of psycho-emotional

state of the EG and the CG cadets revealed that the indicators of situational anxiety, self-assessment of emotional state, well-being, activity and mood in the EG cadets during the 4th year of their training are significantly better than in the CG cadets. The results suggest that the high level of physical health and psycho-emotional state of the cadets who were engaged in sambo training during their education will improve the effectiveness of their service tasks performance in the future.

REFERENCES

1. Okhrimenko I., Lyhun N., Pryimak V. et al. Negative factors of management activities of the security and defence sector representatives and directions of their overcoming. *Wiad. Lek.* 2021; 74(4): 891-895. doi: 10.36740/WLek202104115.
2. Schaible L.M. The impact of the police professional identity on burnout. *Policing: An International Journal*. 2018; 41(1): 129-143, 2018. doi: 10.1108/PIJPSM-03-2016-0047.
3. Anderson G., Litzenberger R., Plecas D. Physical evidence of police officer stress. *Policing: An International Journal*. 2002;25(2):399-420. doi:10.1108/13639510210429437.
4. Faull A. Police culture and personal identity in South Africa. *Policing: A Journal of Policy and Practice*. 2017; 11(3): 332-345. doi: 10.1093/polic/pax016.
5. Shvets D., Yevdokimova O., Okhrimenko I. et al. The new police training system: Psychological aspects. *Postmodern Openings*. 2020; 11(1): 200-217. doi:10.18662/po/11.1sup1/130.
6. Kyslenko D., Bondarenko V., Plisko V. et al. Dynamics of security specialists' physical condition during professional training. *J Phys Educ Sport*. 2019; 19(2): 1099-1103. doi: 10.7752/jpes.2019.02159.
7. Griban G., Dzenzeliuk D., Dikhtiarenko Z. et al. Influence of sambo wrestling training on students' physical fitness. *Sport Mont*, 2021; 19(1): 89-95. doi: 10.26773/smj.210219.
8. Tron R., Hruzevych I., Salnykova S. et al. Psychophysiological conditions and competition in highly qualified combat sambo wrestlers. *J Phys Educ Sport*. 2018; 18(2): 600-605. doi: 10.7752/jpes.2018.02087.
9. Osipov A., Kudryavtsev M., Kuzmin V. et al. Methods of operative and informative control of the muscle loading level used during the training of sambo wrestlers. *J Phys Educ Sport*. 2016; 16(4): 1247-1252. doi: 10.7752/jpes.2016.04198.
10. Dadelo S., Mečkovskis A., Štarevičius E. Sports and combat sambo exposure and differences in stage-activity. *Education. Physical Training. Sport*. 2013; 89(2): 12-18.
11. Trivic T., Eliseev S., Tabakov S. et al. Somatotypes and hand-grip strength analysis of elite cadet sambo athletes. *Medicine (Baltimore)*. 2020; 99(3): e18819. doi:10.1097/MD.00000000000018819.
12. Apanasenko G.L. *Knygha o zdorov'je [Health Book]*. Kyiv: Medknygha. 2007, 132p. (In Russian).
13. Korolchuk M.S., Kraynyuk V.M. *Socialjno-psykhologichne zabezpechennja dijalnosti v zvyčajnykh ta ekstremalnykh umovakh [Socio-psychological support of activities in normal and extreme conditions]*. Kyiv: Nika-centr. 2006, 580p. (In Ukrainian).
14. Barrett G.V., Miguel R.F., Hurd J.M. et al. Practical issues in the use of personality tests in police selection. *Public Personnel Management*. 2003; 32(4): 45-57. doi:10.1177/009102600303200403.
15. Gül Z., Delice M. Police job stress and stress reduction/coping programs: the effects on the relationship with spouses. *Turkish Journal of Police Studies*. 2011; 3(13): 19-38.

16. Okhrimenko I., Hrebeniuk M., Borovyk M. et al. Sport classes as effective means for psychophysical health improvement of representatives of the security and defense sector. *Wiad. Lek.* 2021; 74(5): 1142-1146. doi: 10.36740/WLek202105118.
17. Bloshchynskyi I., Griban G., Okhrimenko I. et al. Formation of psychophysical readiness of cadets for future professional activity. *The Open Sports Sciences Journal.* 2021; 14: 1-8. doi: 10.2174/1875399X02114010001.
18. Okhrimenko I., Pasko O., Prudka L. et al. The influence of modern sports technologies on health and professional activity of law enforcement officers. *Wiad. Lek.* 2021; 74(6): 1365-1371. doi: 10.36740/WLek202106115.

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