

**IMPROVEMENT OF THE METHODOLOGY OF PHYSICAL
TRAINING OF CADETS OF THE WESTERN MILITARY DISTRICT WITH
SPECIFIC TRAINING CONDITIONS OF THE MINISTRY OF INTERNAL
AFFAIRS OF UKRAINE**

Andrii Zabora¹

Oleg Kamaev²

Kharkiv National University of Internal Affairs

*Kharkiv, Ukraine*¹

Kharkiv State Academy of Physical Culture,

*Kharkiv, Ukraine*²

Purpose: to develop and experimentally substantiate the improved methodology of physical training of cadets.

Material and methods: the study was carried out at the educational and sports base of the KhNUIA. The study involved 46 cadets from two academic groups of the second year of study. Experimental (n-24) and control (n-22) groups were created. The experiment continued throughout the fourth semester. The following research methods were used in the work: analysis and generalization of scientific and methodological information, pedagogical observation, testing, pedagogical experiment, methods of mathematical statistics.

Results: due to the use of the experimental methodology, selection of means and methodology of complex exercises fulfillment, an increase in the indices of physical and special readiness of cadets was obtained.

Conclusions: the methodology of physical fitness improvement was developed; it provided a reliable improvement of cadets' physical readiness indices, contributes to the successful mastering of self-defense tactics exercises.

Keywords: cadets, physical training, testing, physical qualities, crossfit.

Introduction

At the present stage of development and formation of independence of the Ukrainian state, the process of social, political, economic transformations is aimed at democratizing and reforming all spheres of civil society: science, education, health care, army, police in accordance with European and world standards. But due to the difficult socio-economic and moral-political conditions, the development of independent Ukrainian statehood is accompanied by a high level of criminality, negatively affects the state of law and order in the country [2; 6; 7].

In such conditions, society and the state clearly define the tasks for the employees of the National Police of Ukraine. So, in the regulatory documents, in particular in the Law of Ukraine "On the National Police" (2015), it is regulated and specified that the police, while exercising the powers defined by this Law, are authorized to apply the following coercive measures: physical pressure (force); use of special means; use of firearms [8].

In this regard, at the present stage of development of professional education in the training of specialists of the National Police, a special place is occupied by the problem of the formation of an appropriate level of physical fitness. But the expediency of solving this problem is associated with the need to overcome the contradictions between modern requirements, which is declared in the regulatory and legislative documents of the Ministry of Internal Affairs of Ukraine on the formation of physical fitness and the actually existing level of general physical preparedness of cadets, between the objective need for the formation of an appropriate level of physical fitness and the level of general physical preparedness of applicants entering higher educational institutions of the Ministry of Internal Affairs; between the significantly significant existing potential for the complex formation of a sufficient level of physical preparedness and effective combination with other areas of professional training, in particular tactical, fire, psychological; between the need for

effective mastery of self-defense techniques and motor-coordination abilities of cadets [1; 3; 4; 5].

In this regard, the search for the most effective means and methods of physical training within the framework of existing regulatory and legislative requirements is of particular relevance.

Purpose of the study: to develop and experimentally substantiate the improved methodology of physical training of cadets of the Kharkiv National University of Internal Affairs (KhNUIA).

Material and Methods of research

Research methods: analysis and generalization of scientific and methodological information, pedagogical observation, testing, pedagogical experiment, methods of mathematical statistics.

The study was carried out at the educational and sports base of the KhNUIA. The study involved 46 cadets from two academic groups of the second year of study. An experimental and control group was created. The experiment continued throughout the fourth semester. Conducted 40 practical sessions.

Physical fitness of cadets was determined using the following test exercises: running 100 m; complex strength exercise (30 s) - flexion, extension of the arms in a lying position, 30 s - lifting the body from a supine position); pull-up on the bar; standing long jump; lifting the body from a supine position bend the legs; a specialized complex test (on the 10-meter part of the tatami the following were performed - forward roll, backward roll, 5 kicks on the bag - 2 feet, 3-handed kicks - front step and restraints - bending the arm behind the back with a jerk) and 1000 m running. Training sessions for cadets of the control group were conducted entirely according to the existing curriculum.

Results of the research

The experimental group (24 cadets) at the end of the main part of the lesson for 8-10 minutes performed a complex of 11-12 exercises of speed-strength orientation and exercises of self-defense tactics using a circular method according to the crossfit program. During the transition from exercise to exercise, it was gradually reduced

from 30 to 3-5 s. The complex included the following exercises: jumping up from a half-squat position; lifting the torso and legs from a supine position; flexion and extension of the arms in a lying position; performing 2 forward rolls, 2 backward; from a lunge position with a foot forward in a jump, a change in the position of the legs; pull-up on the bar; protection from blows with legs and arms lifting kettlebells (16 or 24 kg) with both hands to the chest; jumping onto a gymnastic bench with two legs; lifting the body from a supine position; legs bent; release from grips; in the hang on the crossbar, raising the legs up. The exercise time gradually increased from 30 to 60 s.

The analysis of the initial test results at the beginning of the study showed that the difference between the physical readiness indices of the cadets of the experimental and control groups did not have a significant difference (the value of the Student's t-criterion ranged from 0,31 to 1,29; $p > 0,05$). At the end of the study, among the cadets of the experimental group, the indices of physical fitness improved from 3,3 % to 25,1 % (on average by 10,78 %) (Table 1).

Table 1

Physical readiness indices of cadets of the experimental group (n-24) before and at the end of the experiment

Test	Before experiment	After experiment	Percentage of improvement	Reliability	
	x±m	x±m		t	p
Run 100 (s)	14,61±0,15	14,13±0,13	3,3	2,42	<0,05
Complex strength exercise (once per minute)	55,41±1,34	62,73±1,08	13,2	4,66	<0,05
Pull-up (times)	12,26±0,54	15,34±0,27	25,1	5,13	<0,05
Standing long jump (cm)	234,41±1,63	248,73±1,13	6,1	7,26	<0,05
Lifting the torso (once per minute)	49,13±1,26	54,38±0,81	10,7	3,5	<0,05
Specialized test (s)	13,4±0,51	11,59±0,21	13,7	3,36	<0,05
Run 1000 m (s)	243,61±4,39	235,29±2,62	3,5	1,63	<0,05

Improvement of test results in the experimental group of cadets is confirmed by the reliability of changes ($t=2,42-5.13$; $p < 0,05-0,001$), only in the 1000-meter run the average group results were unreliable ($t=1,63$; $p > 0,05$) (Table 1).

Table 2

Physical readiness indices of cadets of the control group (n-24) before and at the end of the experiment

Test	Before experiment	After experiment	Percentage of improvement	Reliability	
	x±m	x±m	%	t	p
Run 100 (s)	14,48±0,16	14,27±0,27	1,5	0,67	>0,05
Complex strength exercise (once per minute)	54,69±1,12	58,36±1,29	6,7	1,98	>0,05
Pull-up (times)	12,45±0,48	13,68±0,64	9,8	1,53	>0,05
Standing long jump (cm)	233,71±1,96	236,49±1,78	1,18	1,05	>0,05
Lifting the torso (once per minute)	48,64±1,11	50,86±0,93	4,5	1,54	>0,05
Specialized test (s)	13,18±0,43	12,64±0,39	4,1	0,95	>0,05
Run 1000 m (s)	245,48±4,41	241,69±3,18	1,5	0,55	>0,05

In cadets of the control group, the indicators of test exercises at the end of the study improved from 1,5 % to 9,8 % (on average by 4,18 %), but not significantly ($t=0,55-1,98$; $p<0,05$) (Table 2).

Table 3

Indicators of physical readiness of cadets of the control and experimental groups at the end of the study

Test	Control group (n-22)	Variability (V)	Experimental group (n-24)	Variability (V)	Reliability	
	x±m	%	x±m	%	t	p
Run 100 (s)	14,27±0,27	8,9	14,13±0,13	4,5	0,47	>0,05
Complex strength exercise (once per minute)	58,36±1,29	10,4	62,73±1,08	8,4	2,60	<0,05
Pull-up (times)	13,68±0,64	21,9	15,34±0,27	8,6	2,51	<0,05
Standing long jump (cm)	236,49±1,78	3,5	248,73±1,13	2,2	5,80	<0,05
Lifting the torso (once per minute)	50,86±0,93	8,6	54,38±0,81	6,2	2,86	<0,05
Specialized test (s)	12,64±0,39	14,5	11,59±0,21	8,8	2,37	<0,05
Run 1000 m (s)	241,69±3,18	6,2	235,29±2,62	5,4	1,30	>0,05

Comparative analysis of physical readiness indices among cadets of the experimental and control groups at the end of the study indicates that the experimental training program allowed to significantly improve the results in speed-

strength test exercises and in a specialized test (the value of the t criterion ranges from 2,37 to 5,80; $p < 0,05-0,001$). In running exercises, the changes were significant, but insignificant (100 m – $t=0,47$; $p < 0,05$; 1000 m – $t=1,30$; $p < 0,05$) (Table 3).

Comparison of the coefficients of variations (V) shows that the density of the results in accordance with the homogeneity of the indicators of test exercises at the end of the experiment among the cadets of the experimental group is much better. So, in the experimental group, the value of the coefficient of variation ranges from 2,2 to 8,8 (on average, $V=6,3\%$), and in the control group, the average indicator is $V=10,57\%$, which indicates a large variability of cadets' physical readiness indices of this group.

Conclusions / Discussion

In recent years, considerable attention has been paid to the problem of improving the methodology of cadets' physical fitness and is considered in a significant number of scientific studies [2, 3, 7] These works are aimed at solving certain aspects of the process of physical training. Taking into account the indicated contradictions between the regulatory and legislative requirements and the level of physical fitness of future officers of the National Police [2, 3, 4, 5], it is necessary to search for the most effective means, methods and forms of physical training of cadets.

In this regard, a study was carried out on the use of a complex of speed-strength exercises and exercises in self-defense tactics according to the crossfit program allowed to significantly improve the results in 100 m running ($t=2,42$; $p < 0,05$), in complex strength right ($t=4,66$; $p < 0,01$), pulling up ($t=5,13$; $p < 0,001$), lifting the trunk ($t=3,5$; $p < 0,05$) and in exercises in self-defense tactics ($t=3,36$; $p < 0,05$). Therefore, in order to improve endurance, it is necessary to increase the volume of running training in the training program for cadets.

Prospect of further research consists in certain optimal means and methods of speed-strength and running training of cadets.

Conflict of interest. The authors state that there is no conflict of interest that could be perceived as prejudicial to the impartiality of the article..

Financing sources. This article didn't get the financial support from the state, public or commercial organization.

References

1. Bondarenko, V. V., Radziievskyi, R. M., Krymets, O. I. (2019), «Dynamics of indicators of physical fitness of patrol police officers at the stage of professional development», Naukovyi chasopys Natsionalnoho pedahohichnoho universytetu imeni M.P. Drahomanova. Seriiia 15. Naukovo-pedahohichni problemy fizychnoi kultury (fizychna kultura i sport). Vypusk 8 (116). pp. 28-37. (in Ukr.)
2. Borovyk, M. O. (2019), Okremi aspekty monitorynhu fizychnykh zdibnostei maibutnykh ofitseriv Natsionalnoi politsii Ukrainy. stan ta perspektyvy rozvytku pedahohiky ta psykhologhii v Ukraini ta sviti: materialy Mizhnarodnoi naukovo-praktychnoi konferentsii. Ch.2. Kyiv: HO «Kyivska naukova orhanizatsiia pedahohiky ta psykhologhii», pp. 10-13. (in Ukr.)
3. Horpinich, O. O. (2010), Optyimizatsiia navchalno-sluzhbovoi diialnosti kursantiv VNZ systemy MVS zasobamy fizychnoho vykhovannia: avtoref. dys. na zdobuttia stupenia kynd. n. z fiz. vykh. i sportu. Kharkiv, 21 p. (in Ukr.)
4. Koliesnikov, V. V., Zabora, A.V. (2020), «Increasing the level of physical fitness of cadets of higher education institutions of the Ministry of Internal Affairs of Ukraine by means of functional all-around (crossfit)», Pidhotovka politseiskykh v umovakh reformuvannia systemy MVS Ukrainy: zb. nauk. pr. / MVS Ukrainy, Kharkiv. nats. un-t vnutr. sprav, Kaf. taktychnoi ta spets.-fiz. pidhot. f-tu №2. Kharkiv: KhNUVS, 336 p. (in Ukr.)
5. Kolomiets, Yu. M., Pashaiev, A. Z., Uvarova, O. Yu. (2018), «Improving the level of physical training of cadets of universities of the Ministry of Internal Affairs of Ukraine by conducting sectional work on martial arts», Pidhotovka politseiskykh v umovakh reformuvannia systemy MVS Ukrainy. Kharkiv, pp. 73-76. (in Ukr.)
6. Kushnirenko, R. O. (2019), «Some aspects of physical training of cadets in higher

education institutions of the Ministry of Internal Affairs of Ukraine», *Pidhotovka politseiskykh v umovakh reformuvannia systemy MVS Ukrainy*. (m. Kharkiv, 31 travnia 2019 roku), pp. 252-255. (in Ukr.)

7. Morhunov, O. A., Yareshchenko, O. A. (2020), «Physical training of cadets of higher education institutions with specific training conditions of the Ministry of Internal Affairs of Ukraine», *Pidhotovka politseiskykh v umovakh reformuvannia systemy MVS Ukrainy: zb. nauk. pr. MVS Ukrainy, KhNUVS, Kafedra taktychnoi ta spetsialnoi fizychnoi pidhotovky f-tu №2*. Kharkiv: KhNUVS, 336 p. (in Ukr.)

8. Pro Natsionalnu politsiiu : Zakon Ukrainy vid 02 lypnia 2015 roku stanom na 01 sichnia 2019 roku. *Vidomosti Verkhovnoi Rady (VVR)*, 2015, № 40-41, p. 379. URL: <https://zakon.rada.gov.ua/laws/show/580-19> (in Ukr.)

9. Savchuk, P., Shesterova, L. (2016), «Development of specific coordination abilities and vestibular stability in the process of physical training of cadets of the National Academy of the National Guard of Ukraine», *Slobozhanskyi naukovo-sportyvnyi visnyk*, №6 (56), pp. 105-109. (in Ukr.)

10. Seliukov, V. S., Kushnirenko, R. O., Konstantynov, D. V. (2018), «Physical education as a direction of police training in Ukraine», *Porivnialno-analitychne pravo*, № 4, pp. 338–340. (in Ukr.)

11. Kyslenko D., Bondarenko V., Plisko V., Bosenko A., Danylchenko V., Kuzmichova-Kyslenko Ye., Tylchyk V., Donets I. (2019), «Dynamics of security specialists' physical condition during professional training», *Journal of Physical Education and Sport*. No. 19 (2). P. 1099–1103. (in Eng.)

12. Plisko V., Doroshenko T., Prontenko K. (2018), «Informational indicators of functional capacities of the body for teaching cadets from higher military educational institutions power types of sports», *Journal of Physical Education and Sport*. No. 17 (2). P. 1050–1054. (in Eng.)

13. Prontenko K., Griban G., Prontenko V., Bezpaliy S., Bondarenko V., Andreychuk V., Tkachenko P. (2017), «Correlation Analysis of Indicators of Athletes' Readiness and their Competitive Results in Kettlebell Sport», *Journal of Physical Education and Sport*. No. 17 (4). P. 2123–2128. (in Eng.)

Received: 19.05.2021.

Published: 23.06.2021.

Information about the Authors

Andrii Zabora: Candidate of Sciences in Physical Education and Sports, Associate Professor; Kharkiv National University of Internal Affairs: 27 Lva Landau Ave., Kharkiv, Ukraine.

ORCID: <https://orcid.org/0000-0003-4952-1598>

E-mail: raandrej1967@gmail.com

Oleg Kamaev: Doctor of Sciences (Physical Education and Sports), Professor; Kharkiv State Academy of Physical Culture: 61058, Kharkiv, st. Klochkivska, 99, Ukraine.

ORCID: <https://orcid.org/0000-0003-4358-888X>

E-mail: kamaevoi45@gmail.com