

Sports Pedagogy: Readiness of Cadets to Apply Physical Action in Different Conditions of Service Activity

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Abstract: *This study aims to investigate the development of applied skills in physical force utilization among prospective female officers of the Ministry of Internal Affairs of Ukraine, considering their physiological characteristics. The research has validated the hypothesis that enhancing the preparation of cadets from higher education institutions of the Ministry of Internal Affairs of Ukraine in applying physical force measures under various service conditions can be achieved through specific organizational and pedagogical conditions. They are as follows: tailoring technical and tactical methods of physical force application to cadets' unique physiological traits; incorporating specialized exercises and techniques in service-oriented hand-to-hand combat into cadet training to enhance task performance efficiency across diverse service contexts; intensifying technical and tactical training focused on physical force application. This training emphasized improvements in offensive and defensive actions, technical proficiency, transition efficiency between defence and offence, increased striking power and speed, development of explosive force and customization of force application approaches based on individual cadet profiles. The study involved 110 cadets from two higher education institutions within the Ministry of Internal Affairs of Ukraine. Data collection utilized a hardware-software system for measuring striking forces during martial arts techniques and a video-computer system ("Katsumoto") for rapid biomechanical movement analysis. Analysis of empirical data demonstrated positive advancements in female cadets' readiness to apply physical force measures across different service conditions within the experimental group (EG). Specifically, the proportion of EG cadets with low readiness levels decreased significantly (by 32-33%), while those with high readiness levels increased (by 14-16%). Conversely, the control group (CG) did not exhibit significant changes. The validity of these findings was confirmed through χ^2 criterion testing.*

Keywords: *Physical force; female physiological features; scientific tools; female law enforcement officers; special physical training.*

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Introduction

The primary emphasis of the transformation in the training system for law enforcement officers in Ukraine is shifting towards the adoption of international standards, necessitating corresponding adjustments in the educational process for future officers. This initiative fosters an environment conducive to the holistic development of competent specialists capable of continuing professional development throughout their tenure in the police force. Among the existing problems of the mentioned transition are historically formed traditions in the system of professional education of would-be officers, which do not fully take into account gender specifics. This negatively affects the quality of performance by female law enforcement officers of the tasks assigned to them under different conditions of service, especially when they directly use physical force against aggressive offenders.

Female law enforcement officers often perform tasks under extreme conditions, which involve the use of physical force, and this requires them to special physical training. Importantly, under these circumstances, female law enforcement officers are more vulnerable during hand-to-hand combat with an opponent (opponents) than male law enforcement officers. The importance of the chosen study underscores the need for strategic adjustments to the content and structure of educational programmes, including the educational components within them, and the specialized training regimen designed for female law enforcement officers.

The integration of current pedagogical methods and technologies within the training system for prospective female law enforcement officers plays a crucial role in developing their applied professional competencies, representing an important practical imperative.

Numerous studies by various scholars have focused on delineating gender-specific factors in the development of human resources for service activities within military formations and law enforcement agencies (Bondarenko, 2018; Dekanoidze & Khelashvili, 2018; Lema-Villalba et al., 2021; Medvid, 2015; Navarro-Patón et al., 2018; Stelmach et al., 2022; Torlo, 2008). It is also advisable to adapt the core theoretical tenets from these works to suit the nuances of training and to incorporate them into the educational curriculum of universities.

The Regulation governing the Organization of Training Services for Employees of the National Police of Ukraine (Ministerstvo vnutrishnikh sprav Ukrainy, 2016) delineates key components related to police training organization and outlines protocols for the use of physical force during missions. However, according to leading experts in the field of service-applied

martial arts adopted by the Ministry of Internal Affairs of Ukraine (2016), the police physical force's ethical and tactical arsenal requires quality modernization, taking into account the individual typological characteristics of the female body, which will ensure reliability and efficiency. The content and organization of the specialized physical training system for cadets are detailed in works by Khatsaiuk (2013; 2019), Khatsaiuk et al. (2020; 2021). Simultaneously, it is noteworthy that the methodology employed in special physical training for female cadets at corresponding universities lacks individualization in equipment and tactical approaches within hand-to-hand combat practical sessions (physical training formats). The above slows down the formation of applied skills of use of physical force by female cadets and reduces their motivation for self-development, and in the future, it may lead to unsatisfactory performance of their assigned tasks (Palamarchuk et al., 2020).

Through the analysis of specialized scientific and methodological literature and legal documents (Polisar & Milgram, 1998; Maksymenko, 2010; Smirnova, 2015; Medvid, 2012), pertinent issues related to gender considerations within the professional training system for female police officers (specifically, the professional education of female cadets at universities and military units subjected to the Ministry of Internal Affairs of Ukraine) have been identified. Taking into account the gender approach, as well as individual and typological characteristics of the female body when developing training programs for police officers (vocational education of female cadets of the MIA of Ukraine Universities) will ensure sustainable and effective development of applied professional competencies that will increase the quality of the assigned tasks under different conditions. In our opinion, scientific works (Bugajewski, 2020) are important and determine the features of the organization of long-term training of women wrestlers. Adaptation of long-term training programs for female wrestlers to the standards of professional education of cadets of the MIA of Ukraine Universities (training of female law enforcement officers) will provide individualized and phased mastery of their technical and tactical arsenal of service-applied hand-to-hand combat of law enforcement officers. In turn, this will increase the level and efficiency of the tasks assigned by female cadets (female law enforcement officers) under different conditions of service (Maksymchuk et al., 2020).

Based on a comprehensive analysis of scientific, methodological and specialized literature, along with legal documents, it is evident that despite a considerable volume of existing research, there remains a notable gap in addressing the development of applied skills in the use of physical force among prospective female police officers, with due consideration of their

physiological characteristics. This deficiency underscores the necessity for further scientific investigation into this critical area, which represents a significant and pressing practical challenge.

Material and Methods

To propose organizational and pedagogical conditions (measures), the implementation of which will neutralize the negative impact on the performance results under the use of physical force circumstances by female law enforcement officers we are to understand the difference in physiological characteristics of women as opposed to men and how this affects the police performance results under use of physical force circumstances by female law enforcement officers, and who were trained following the current legal framework. The research findings were derived through an examination of the aforementioned literature, supplemented by consultations with experts from the Department of Tactical and Special Physical Training at Kharkiv National University of Internal Affairs and the Department of Physical Training and Sports at the National Guard Military Academy of Ukraine (see Table 1).

Table 1. The identification of organizational and pedagogical conditions, whose implementation should mitigate the negative impact on police performance outcomes resulting from the use of physical force by female law enforcement officers

The difference in the physiological characteristics of women in contrast to men	Impact on the police performance results under the use of physical force circumstances by female law enforcement officers who received training following the current legal framework	Organizational and pedagogical conditions (measures), the implementation of which will ensure the neutralization of the negative impact on the police performance results under the use of physical force circumstances by female law enforcement officers
Smaller height, smaller shoulder width, larger and wider pelvis	The difficulties were observed while on duty at the direct use of physical force against tall offenders; while overcoming man-made and natural obstacles, the time and speed of chasing the offender were lost.	Introduction of applied exercises, hand-to-hand combat complexes and special functional complexes conducted in uniform into the training process of female cadets (regular training system for female police officers).
Anthropometric indicators of arms and legs; placement of the general centre of gravity	While using active defence equipment (baton, riot shield, etc.) there is a disproportion in the police formation; attacking with baton aggressive protesters (offenders) were not	Involvement of experienced martial arts trainers (leading female athletes specializing in full-contact martial arts) in the practical training of specialized physical training (hand-to-hand training in the system of

	always effective and accurate; during the movement of the police formations, the pace of movement was lost and caused breakdowns in the combat formations. optional classes). Alterations in the content of physical and specialized physical training focusing on the flexor and extensor muscles of police officers, the development of tactical combinations using physical impact events (force) by cadets, police officers who do not use the techniques of combat in a close embrace of the enemy and require significant physical exertion, development of physical exercises to improve the used movements equipment) in police officers of different categories and ages of participation of police officers (cadets) in the competition Development and introduction of physical exercises performed on devices (special equipment) that promote flexibility, rhythm and high tactile sensitivity into the training process of cadets (police officer training system). Implementation of functional training complexes aimed at enhancing endurance and specialized endurance within the physical and specialized physical training regimen for female police officers. Development and implementation of mental self-regulation complexes in the service training of female police officers (cadets). Using the experience of psycho-physical training of highly qualified female athletes specializing in biathlon.
The structure of the spine	when performing assigned tasks (use of physical force) in full equipment, movements become more complicated, natural flexibility decreases, balance is lost, the effectiveness of the force of an individual bio link decreases, and the speed and dynamics of force are lost

Muscle mass (flexor and extensor muscle structure), coordination skills, natural flexibility (plasticity), sense of rhythm, high tactile sensitivity	while the use of physical force there is not enough muscular effort to detain the offender, put on handcuffs, escort; when using active defence equipment, the equipment lacks special endurance, which affects the effectiveness of physical impact (striking with a baton). Less muscle strength and the ability to exert effort for a long time (while the use of physical force), limits the physical activities of females, which harms women's bodies and reduces the effectiveness of the tasks assigned to them.
Heart rate (HR), blood pressure, weight and heart size	when the use of physical force there is a negative dynamic in the development of special endurance, which negatively affects the level of assigned tasks; under extreme conditions of a fight with the offender, there is a decrease in psychophysical stability, as well as an increase in heart rate (blood pressure) to critical levels.
Data on stroke and minute blood mass, complete pulmonary volume, vital breathing capacity, functional residual quantity, exhalation reserve, and inhalation capacity	when performing high-energy movements in the process of direct physical impact, the female maximum pulmonary ventilation is 20-30% lower than the male one (lower respiration rate, less oxygen consumption).

Source: the authors' own conception

The hypothesis posited that the development of readiness among female cadets to apply physical force in diverse service conditions should show better performance through the implementation of specific organizational and pedagogical conditions. They are the following: 1) individualization of technical and tactical approaches for applying physical force by female cadets, considering their unique physiological characteristics;

2) incorporation of specialized exercises and techniques in the training curriculum of female cadets to enhance task performance under various service conditions; 3) elevation of technical and tactical proficiency among female cadets in applying physical force across different service scenarios, achieved through increased training duration, intensity and frequency of activities; 4) enhancement of combat potential effectiveness in hand-to-hand combat for female cadets during missions and operations, tailored to individual physiological traits (this involves optimizing offensive and defensive actions, expanding technical skills, and refining attack and defense transitions); 5) augmentation of striking force and speed, as well as development of explosive power, tailored to physiological and individual-typological characteristics; 6) adaptation of force application models to align with the physiological profiles of female cadets; 7) emphasis on theoretical understanding and practical skills for targeting vital points on an opponent's body; 8) integration of effective psychological techniques within the special physical training system to bolster the psycho-physical resilience of female law enforcement officers (cadets) against adverse service factors, especially those involving direct physical force; 9) revision of educational and methodological support for the "Special Physical Training" component to align with these objectives.

A pedagogical experiment was conducted to test the hypothesis.

The pedagogical experiment was accorded with a pre-designed plan, which in addition to the main research provided for compliance with ethical standards and injury prevention requirements at "Special Physical Training" practical classes.

The objective of the experiment was to assess the efficacy of specific organizational and pedagogical conditions in developing the readiness of female cadets to apply physical force in varying service conditions.

Independent variables involved organizational and pedagogical conditions designed to develop the readiness of female cadets to apply physical force in diverse service conditions.

A dependent variable included the level of readiness of female cadets to apply physical force in various service conditions.

Experiment participants were female cadets enrolled at the Universities subjected to the Ministry of Internal Affairs of Ukraine.

Given the training characteristics of future officers within the Ministry of Internal Affairs of Ukraine, the research selected Kharkiv National University of Internal Affairs and the National Guard Military Academy of Ukraine (see Table 2). The study included advanced female cadets aged between 18 and 21. The female cadets were divided into study

groups based on the number of higher education applicants: the control group (CG) consisted of 53 cadets, while the experimental group (EG) comprised 57 cadets.

Table 2. The number of female cadets who were involved in the experiment

The name of a higher education institution	Number of participants		
	Total	CG	EG
Kharkiv National University of Internal Affairs	91	44	47
The National Guard Military Academy of Ukraine	19	9	10
Total	110	53	57

Source: the authors' own conception

Upon analyzing the experimental data, three types of tasks can be identified:

- *Data description.* This involves presenting the results of measurements of researched objects in a concise and informative manner.
- *Establishing the coincidence of characteristics between the two groups.* This task involves assessing whether the characteristics of the two groups are similar or coincide.
- *Identifying differences in characteristics between the two groups.* This task involves determining and analyzing differences in characteristics between the two groups under study.

Applicants for both EG and CG did not exhibit significant differences in the level of readiness of female cadets to apply physical force under varying service conditions. This ensured group uniformity at the outset of the pedagogical experiment.

Based on the theoretical framework, this research and experimental work proceeded through three stages: ascertainment, formation and control.

During the first ascertainment stage, the authors analyzed research data, selected applicants for the CG and EG, assessed the readiness level of female cadets to apply physical force under diverse service conditions through a preliminary assessment and compared statistical data between CG and EG.

At the formative stage, specific organizational and pedagogical conditions were identified and implemented to develop the readiness of female cadets to apply physical force under various service conditions within the EG. These include the consideration of individual-typological

(physiological) features of the female body during the physical training process. For the CG that was involved in the research and experimental work, the training process was traditional with the use of traditional methods of development and improvement of applied skills of use of physical force by law enforcement officers under different conditions of service and provided by the relevant “Special Physical Training” educational and methodological complex.

At “Special Physical Training” classes (content module 1. Use of physical force) EG cadets widely used modern technical teaching facilities. To improve the technique of law enforcement hand-to-hand combat such as punches, kicks and explosive power, during the training the EG cadets used the “Katsumoto” hardware and software complex to register the power efforts of martial arts techniques.

Katsumoto is designed to measure the biomechanical performance of punches and kicks in full-contact martial arts. This complex allows quick, accurate and reliable measuring of the power of the impact, the speed of the impact force, the speed of reaction of trained athletes in combat and light and sound stimuli. It consists of such components as a testing platform, a testing device with the PIC16F876A microcontroller (or its analogue) and a personal computer (laptop) with special software.

Using the “Katsumoto” with a computer (laptop, mobile device) and especially developed software, allows one to obtain detailed and reliable information about the characteristics of punches and kicks of wrestlers in the form of graphs of increasing the amplitude of the impact over time (an example is shown in Fig. 1), and thus see how quickly the trainee reaches the maximum amplitude, power and speed of the learned technical and tactical actions. It is important to note that the assessment of technical skills of punches and kicks of wrestlers is based on the analysis of the most informative indicators of the studied sport (martial arts), which are closely related to the practical application of various technical and tactical combinations.

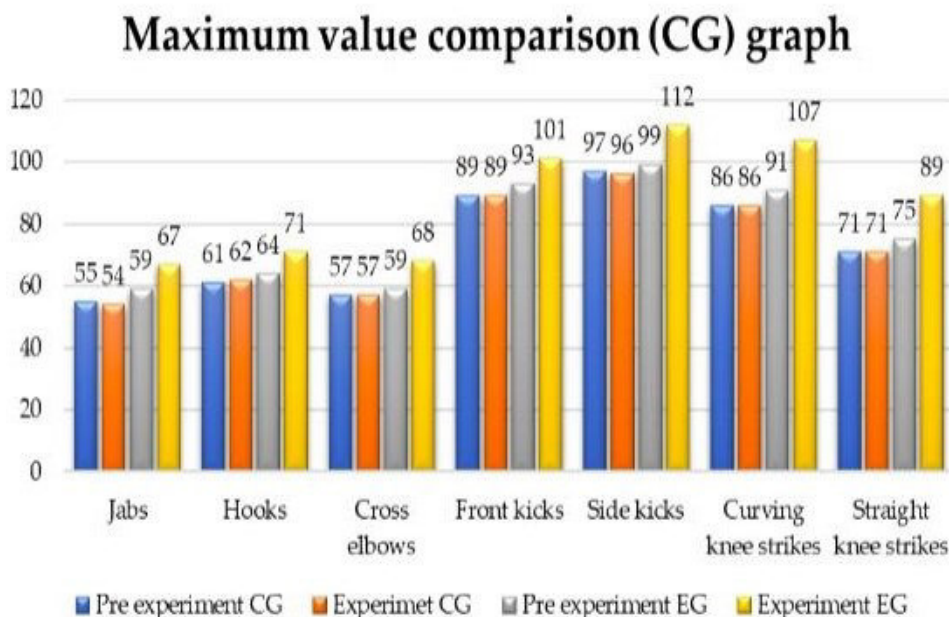


Fig. 1. Dynamics of “punches and kicks” indicators by CG and EG female cadets during the pedagogical experiment

Source: the authors’ own conception

In parallel with the “Katsumoto”, the authors used video analysis of the technical actions of the studied martial arts, which allowed for a qualitative comparative analysis of graphs of speed and power of punches and kicks by EG female cadets at the end of practical training. This enabled the research group (instructors) to devise a plan for further enhancement of the “striking technique” in service-oriented hand-to-hand combat for the female cadets in the EG, making necessary adjustments to refine (individualize) and optimize their motor skills and actions.

To improve the technique of throws and tactical combinations of the practical application under different conditions of service by EG female cadets, the authors used a “Katsumoto” video computer system of rapid analysis of individual biomechanical movements. This system allows the effective conduct of a comparative analysis of the implementation of special exercises and movements (methods of use of physical force, power) at practical classes in “Special Physical Training”. Also, “Katsumoto” determines the speed of technical actions, acceleration, movement of the general centre of mass, individual bio links of the individual and the radius

of technical actions. Thus, the comparative graphs are designed based on the obtained data (see Figure 2).

At all stages of the experiment, the authors filmed using video cameras. Today, video cameras allow filming rapidly changing processes with a shutter speed of 1/3500 sec. – 1/50 sec. that fully meets the requirements of determining the spatial coordinates of biolanes and excludes fuzzy (blurred) images. To reduce the influence of perspective deformations, the video camera image was placed on a tripod (height 100 cm). During practical exercises on “hand-to-hand training” (forms of physical training) with cadets we used two video cameras of this class simultaneously shooting in different projections (horizontal and vertical). The cameras were placed so that the lens completely covers the places of training (practising technical tasks) in special physical training, thereby achieving a minimum impact of nonlinearity of scanning and optical distortions at the edges of the frame. With the help of “Katsumoto”, the spatial characteristics of performing technical applied martial arts under study were determined.

The final (control) stage assumed a comparison of the levels of formation of readiness of female cadets to apply measures of physical influence in different conditions of service activity of CG and EG. At this stage, a generalization of the results of the pedagogical experiment was made, and conclusions about the formation of such readiness were drawn.

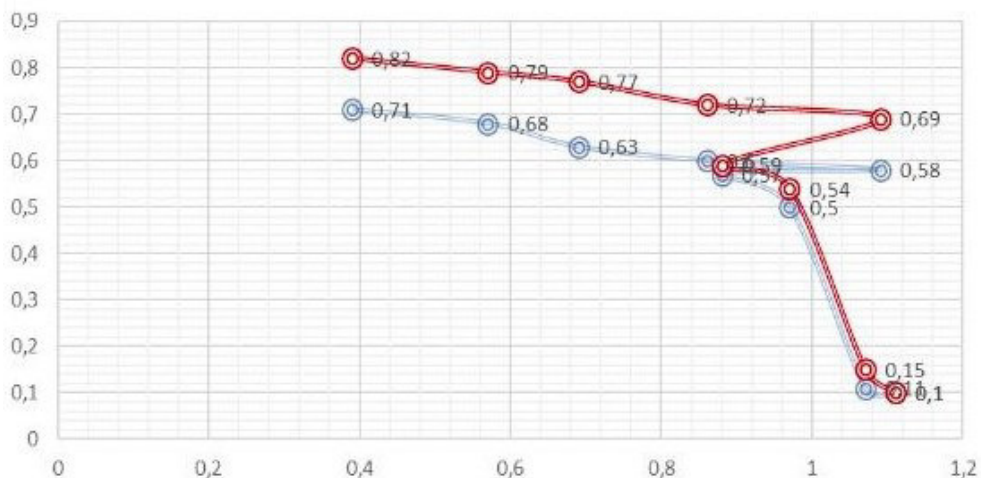


Fig. 2. Dynamics of movement of the general centre of mass of the studied EG female cadets and CG, throwing through the hip

Source: the authors' own conception

Results

To begin with, it is essential to consider the results of the ascertaining experiment.

The outcomes of the experiment can be measured on an ordinal scale or can be transformed from a relational scale to an ordinal scale. Therefore, the data should be analyzed and interpreted within the framework of ordinal scale measurements.

Following the Regulation of the Ministry of Internal Affairs on the organization of training for employees of the National Police of Ukraine (Ministerstvo vnutrishnikh sprav Ukrainy, 2016), the assessment of proficiency levels in physical skills and tasks related to age groups is conducted using a 4-point rating scale on a national basis:

- Excellent: one demonstrates confident, quick performance with a logical conclusion (such as effectively applying pain control techniques, providing support to a partner, or executing a sequence of actions).
- Good: one shows confident performance with a logical conclusion, albeit at a slower pace.
- Satisfactory: one completes the task as a whole but with some uncertainty (e.g., unconvincing execution of pain control techniques, ineffective strikes, irrational defensive manoeuvres).
- Unsatisfactory: one fails to perform the task or specific elements thereof (e.g., lacks protective measures, fails to apply pain control techniques, omits final actions or support).

The assessment of female cadets' readiness to apply physical force under various service conditions is detailed in Table 3.

Table 3. The findings concerning the development of readiness among female cadets to apply physical force under various service conditions

Level	Control group		Experimental group	
	Before the experiment (number of participants)	After the experiment (number of participants)	Before the experiment (number of participants)	After the experiment (number of participants)
On the motivational criterion				
Well motivated	17	25	21	32
Motivated	11	13	12	20
Low motivated	25	15	24	5
Theory knowledge				
Excellent	14	17	15	24
Good	12	12	13	23
Satisfactory	27	24	29	10
Practice actions				
Excellent	10	15	13	21
Good	14	16	15	25
Satisfactory	29	22	29	11

Source: the authors' own conception

Upon comparing the control and experimental groups before the experiment, the results are as follows: motivational criterion ($\chi^2 = 0.3399$); theory knowledge criterion ($\chi^2 = 0.0005$); practice actions criterion ($\chi^2 = 0.2807$). The critical value for the χ^2 criterion is 5.991. Given that the empirical values are less than the critical value, the characteristics of the compared groups are deemed to coincide at the significance level of 0.05. This statistical analysis allows one to confidently conclude that both groups exhibit statistical similarity, meeting the conditions necessary for the observational experiment.

During the control stage of the experiment, the readiness of female cadets to apply physical force under various service conditions was assessed. Statistical comparisons between groups were conducted based on specific criteria, while the experimental data obtained was analyzed comprehensively.

The experimental intervention had a positive impact on enhancing the special physical fitness and readiness of female cadets in the EG to apply physical force under various service conditions. Notably, the implementation of increased training duration, volume and intensity resulted in a 21.4% improvement in the effectiveness of tactical combinations in service-applied hand-to-hand combat among EG cadets, compared to a 12.7% improvement in the CG.

Furthermore, the adoption of organizational and pedagogical conditions recommended by the research group within the special physical training of EG cadets led to the following improvements:

- effectiveness of offensive and defensive actions: EG – 23.4%, CG – 12.4%;
- coefficient of reliability in applying technical and tactical combinations under variable combat conditions: EG – 17.3%, CG – 9.3%;
- the volume of offensive and defensive actions: EG – 18.6%, CG – 12.1%.

Additionally, the integration of modern scientific tools such as “Katsumoto” during practical classes on special physical training contributed to:

- expansion (by 26.5%) of the technical arsenal in hand-to-hand combat training for EG cadets, compared to 16.5% in CG cadets;
- increased strength of punches and kicks: EG – 23.6%, CG – 16.7%;
- enhanced speed of punches and throwing actions: EG – 27.4%, CG – 12.5%;
- improved explosive force: EG – 19.4%, CG – 14.1%;
- higher activity rate (number of technical actions per unit time): EG – 27.1%, CG – 15.1%.

By considering the individual-typological and physiological features of the female body, the implementation of organizational and pedagogical conditions aimed at developing the readiness of female cadets to apply physical force under various service conditions enabled the individualization of attacking and defensive actions. This approach contributed to reducing the transition time between defensive and offensive actions, as well as minimizing the interval between attack and defence actions in simulated combat scenarios with adversaries.

After experimenting to assess the readiness of female cadets to apply physical force under varying service conditions, the following results were obtained.

Based on the analysis of the motivational criterion during various stages of comparison between CG and EG, the following conclusions were drawn:

1. Before the experiment, comparing CG before and after the experiment revealed that the characteristics of the groups were statistically similar, as indicated by the empirical χ^2 value (4.1905) being less than the critical value (5.991).

2. After the completion of the experiment, comparing CG and EG showed statistically significant differences, with the empirical χ^2 value (7.2086) exceeding the critical value (5.991) at a reliability level of 95%.

3. Before the experiment versus after its completion within the experimental group, significant differences were observed, with the empirical χ^2 value (16.7313) surpassing the critical value (5.991) at a 95% reliability level.

These findings suggest that the experimental conditions led to positive changes in the readiness of female cadets to apply physical force across diverse service conditions.

According to the analysis of the theoretical material during various stages of comparison between CG and EG, the following results were obtained:

1. Before the experiment, comparing CG before and after the experiment revealed that the characteristics of the groups were statistically similar, as indicated by the empirical χ^2 value (0.4668) being less than the critical value (5.991) at a significance level of 0.05.

2. After the completion of the experiment, comparing CG and EG showed statistically significant differences, with the empirical χ^2 value (10.2851) exceeding the critical value (5.991) at a reliability level of 95%.

3. Before the experiment versus after its completion within EG, significant differences were observed, with the empirical χ^2 value (14.1111) surpassing the critical value (5.991) at a 95% reliability level.

These results indicate that the experimental conditions have led to positive changes in the readiness of female cadets to apply physical force across diverse service conditions, as supported by the theoretical analysis.

The comparison of practice actions within CG before and after the experiment yielded an empirical χ^2 value of 2.0941, which was found to be less than the critical value of 5.991 at a significance level of 0.05. This analysis indicates that the characteristics of the compared groups are statistically similar following the experiment.

Conversely, when comparing practice actions between CG and EG post-experiment, the empirical χ^2 value was calculated at 6.5054, exceeding the critical value of 5.991 with the reliability of differences at 95%. This finding leads to a statistically sound conclusion that the groups are statistically different.

Similarly, comparing practice actions within EG before and after the experiment, the empirical χ^2 value was 12.4824 against a critical value of 5.991, again confirming statistical differences at a 95% reliability level.

In summary, all conditions for experimenting with practice were met, revealing a positive trend in the level of readiness among female cadets to apply physical force across varying service conditions within EG.

The diagnostic results illustrating the development of readiness among EG and CG female cadets to apply physical force across various service conditions are summarized in Table 4.

Empirical data analysis revealed a positive trend in the readiness of EG female cadets to use physical force under different service conditions. Specifically, there was a notable decrease of 32-33% in the number of low-level EG cadets, accompanied by an increase of 14-16% in the number of high-level cadets. Conversely, changes observed among CG respondents were insignificant.

Table 4. Trends in the development of physical readiness among female cadets across various service conditions

Level	The group of applicants					
	CG (53)			EG (57)		
	Before the experiment (people/percentage)	After the experiment (people/percentage)	Dynamics of change (people/percentage)	Before the experiment (people/percentage)	After the experiment (people/percentage)	Dynamics of change (people/percentage)
On the motivational criterion.						
Well motivated	17 / 32	25 / 47	8 / 15	21 / 37	32 / 56	11 / 19
Motivated	11 / 21	13 / 25	2 / 4	12 / 21	20 / 35	8 / 14
Low motivated	25 / 47	15 / 28	-10 / -19	24 / 42	5 / 9	-19 / -33
Theory knowledge						
Excellent	14 / 26	17 / 32	3 / 6	15 / 26	24 / 42	9 / 16
Good	12 / 23	12 / 23	0 / 0	13 / 23	23 / 40	10 / 18
Satisfactory	27 / 51	24 / 45	-3 / -6	29 / 51	10 / 18	-19 / -33
Practice actions						
Excellent	10 / 19	15 / 28	5 / 9	13 / 23	21 / 37	8 / 14
Good	14 / 26	16 / 30	2 / 4	15 / 26	25 / 44	10 / 18
Satisfactory	29 / 55	22 / 42	-7 / -13	29 / 51	11 / 19	-18 / -32

Source: the authors' own conception

The systematic and tailored training regimen, aligned with the individual physiological and typological characteristics of the studied female cadets in EG, encompasses physical exercises, functional complexes and

techniques of service-oriented hand-to-hand combat. This training approach also emphasizes tactics for applying these skills in scenarios involving rapid assimilation of critical information about specialized movements. The goal is to foster readiness among female EG cadets to effectively apply physical measures in diverse service environments.

Discussion

The article, drawing on study results, substantiated the research hypothesis predicated on the premise that enhancing the readiness of female cadets to apply physical force in diverse service conditions is more effective with the implementation of specific organizational and pedagogical conditions. They are as follows: 1) individualization of technical and tactical approaches based on unique physiological characteristics of female cadets; 2) inclusion of specialized exercises and techniques in training to improve performance in various service scenarios; 3) increased training duration, intensity and frequency to elevate technical and tactical proficiency; 4) optimization of combat potential in hand-to-hand combat, focusing on offensive and defensive actions tailored to individual traits; 5) development of striking force, speed, and explosive power aligned with physiological and individual-typological traits; 6) adaptation of force application models to match the physiological profiles of female cadets; 7) emphasis on theoretical knowledge and practical skills for targeting vital points on an opponent's body; 8) integration of effective psychological techniques to enhance psycho-physical resilience against adverse service factors; 9) revision of educational and methodological support for the "Special Physical Training" component to align with these objectives.

The study enlisted 110 female cadets from two universities subjected to the Ministry of Internal Affairs of Ukraine. Utilizing the "Katsumoto" hardware and software complex for registering martial arts impact forces and a video-computer system for rapid biomechanical movement analysis, empirical data analysis demonstrated positive advancements in the readiness of EG female cadets to apply physical force across various service conditions. Specifically, the experiment witnessed a notable decrease in the proportion of low-level EG cadets by 32-33%, coupled with a corresponding increase of 14-16% in high-level cadets. Conversely, there were negligible changes among CG respondents. The reliability of these findings was substantiated through verification using the χ^2 criterion.

The research findings have been integrated into the special physical training programmes for female cadets at Kharkiv National University of Internal Affairs, the National Guard Military Academy of Ukraine and the

special physical training system for female police officers at the National Police Headquarters in Kharkiv region. Future research prospects in this domain involve advancing and refining the specific and overall endurance capabilities of female cadets within the Ministry of Internal Affairs of Ukraine Universities, as part of their professional education system.

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