

Assessment of mental health indicators in security sector employees during the war

Tetiana R. Morozova¹, Yana P. Komircha², Lesia V. Vavryk¹, Oleksandr M. Morozov¹, Ivan M. Okhrimenko²

¹NATIONAL ACADEMY OF THE SECURITY SERVICE OF UKRAINE, KYIV, UKRAINE

²NATIONAL ACADEMY OF INTERNAL AFFAIRS, KYIV, UKRAINE

ABSTRACT

Aim: To compare mental health indicators in security sector employees who complied (Group A) and did not comply (Group B) with the motor activity regimen during their training and combat activities.

Materials and Methods: The research, which was conducted in 2024-2025, involved 450 security sector employees – cadets ($n = 276$), officer trainees ($n = 71$) and commissioned officers ($n = 103$) of the National Academy of Internal Affairs (Kyiv, Ukraine) who complied (Group A, $n = 115$) and did not comply (Group B, $n = 335$) with the motor activity regimen during their training and combat activities. Research methods: analysis and generalization of literature sources, methods of psychodiagnostic, biostatistical methods.

Results: It was found that in the course of training and combat activities, mental health indicators (stress level, propensity to develop stress, stress resilience, nervous and emotional tension, stress resistance, reactive anxiety, emotional state) of security sector employees of both groups deteriorated. Still, in Group A, the changes are unreliable ($p > 0.05$), and in Group B, reliable ($p \leq 0.01-0.001$). It was found that at the end of the research, cadets, officer trainees, and commissioned officers of Group A had all the studied indicators significantly ($p \leq 0.01-0.001$) better than those of Group B.

Conclusions: The effectiveness of motor activity (physical exercises) in overcoming stress and strengthening mental health in security sector employees during their training and combat activities under martial law has been proven.

KEY WORDS: mental health, stress, motor activity, security sector employees, war

Wiad Lek. 2025;78(8):1641-1648. doi: 10.36740/WLek/209519 DOI

INTRODUCTION

The security sector is a set of state bodies and organizations designed to ensure the security of the individual, society, and the state [1]. Following the types of security that are widespread in our country, the most priority elements of the security sector are: personal security of citizens, public order – provided by law enforcement agencies; state security – provided by special services; economic, social, environmental, political security – provided by the relevant law enforcement agencies. Each type of security has its specifics and certain requirements for employees in their service (training and combat, law enforcement) activities. Still, all of them are characterized by a high stress level, especially under martial law [2-4].

The requirements of training and combat activities under martial law not only inevitably actualize the personal potential of a specialist, but also set them the task of their constant development and updating [5]. The substantive specificity of current social changes, which is manifested in the increased social mobility

of large groups of people, in the network principles of communication and collective organization, in numerous movements of people, determine the need for law enforcement officers to constantly “complete” the trajectories of realization of their professional and individual status. Therefore, the functional responsibilities of security sector employees during the war, in addition to the traditional ones (preventive activities, combating crime, ensuring public safety and order, etc.), have been expanded to include checkpoints measures and filtration activities, assistance in evacuating citizens, participation in hostilities within the armed conflict zone and stabilization activities in the de-occupied territories, etc. [6].

Being exposed to extreme conditions and various stressful situations, every security sector employee experiences heavy and sometimes extreme loads [7]. Stressful situations in the context of military operations are associated with the dynamic nature of unfolding events (enemy occupation of territory or de-occupation measures), the need for quick decision-making, especially in cases of

increased responsibility for the legal consequences of the decision, the regime and nature of the activity, which in aggregate can be aggravated by active confrontation of the criminal element, subversive actions of representatives of sabotage and reconnaissance groups and collaborators [8]. The consequences of professional stress can be quite diverse. The most pronounced symptoms can include the following: psychological – anger, irritability, mood swings, difficulty concentrating, anxiety, fear, etc.; physical – insomnia or nightmares, fright for no reason, strong heartbeat, pain, fatigue, nervousness, muscle tension, etc.; social – separation from other members of the workforce, proneness to conflict, etc. [9, 10].

With a further increase in the intensity of mental stress under the influence of negative psychological phenomena, mistakes begin to appear even in worked-out (typical) situations, their number gradually increases, and the effectiveness of law enforcement (combat) activities decreases rapidly. When excessive tension arises, fatal mistakes occur (for example, the use of firearms at the slightest suspicion); the acquired knowledge and instructions on response and interaction tactics “fly out of one’s head”; there are manifestations of outright cowardice, refusal to perform risky assignments, deception, dishonesty, etc. [11].

The above actualizes the search for effective ways to prevent stress and maintain the mental health of security sector employees during their training and combat activities under martial law. The analysis of the works of many scientists [12-14] has shown that one of the simple, affordable, and, at the same time, effective means of preventing stress in law enforcement officers during their training and combat activities in wartime is motor activity (exercise). Regular exercise helps reduce stress and anxiety symptoms, as physical activity produces endorphins, natural calming substances. In addition, physical training helps to increase self-esteem and self-respect, which is important for security sector personnel who often face situations that require self-confidence. Motor activity also plays a key role in regulating overall well-being, which in turn has a positive impact on psychological status. Systematic physical activity contributes to stress resilience by teaching the body to respond adequately to high loads and difficult situations. Therefore, according to many scientists [15-17], motor activity is not just a means of maintaining physical fitness, but also an effective tool for psychological self-regulation, which is extremely important for the effective work of security sector employees in wartime.

AIM

The aim is to compare mental health indicators in security sector employees who complied (Group A) and did

not comply (Group B) with the motor activity regimen during their training and combat activities.

MATERIALS AND METHODS

PARTICIPANTS

The research, which was conducted in 2024-2025, involved 450 security sector employees – cadets ($n = 276$), officer trainees ($n = 71$) and commissioned officers ($n = 103$) of the National Academy of Internal Affairs (Kyiv, Ukraine). The group of cadets included higher education students (cadets) of the 1st-3rd training years, whose training and combat activities lasted 1 month and took place in the form of practical exercises at training grounds and training centers that maximally simulate the real conditions of service in practical police units. The group of officer trainees included the 4th training year cadets, whose training and combat activities lasted 3 months. It was carried out during their utilization tours in practical police units, involving public safety and order, organizing pass control at checkpoints at the entrance to settlements and sectors of the state border, participating in search and prevention activities, etc. The group of commissioned officers included officers who had been performing special and combat missions as part of consolidated units in the combat zone for 6 months and participated in stabilization activities in the de-occupied territories. All research participants were male.

To study the impact of motor activity during martial law training and combat missions on the mental health indicators of security sector employees, we conducted a survey among cadets, officer trainees, and commissioned officers to determine whether they engaged in physical activity during their training and combat missions to overcome stress and improve mental health. Based on the survey results, two groups were formed: Group A ($n = 115$) – participants of which systematically (2-3 times a week) were engaged in physical exercises at training grounds, during utilization tours and rotations (cadets – 78 people (28.3 %), officer trainees – 18 people (25.4 %), commissioned officers – 19 people (18.5 %)); Group B ($n = 335$) – participants who did not exercise for various reasons or did not exercise systematically (cadets – 198 people (71.7 %), officer trainees – 53 people (74.6 %), commissioned officers – 84 people (81.5 %)).

The main criteria for inclusion of the research participants in the experiment were participation in training and combat activities (cadets – in practical training at training grounds, officer trainees – in utilization tours in practical units, commissioned officers – in special and combat missions to repel the russian aggressor)

and compliance or non-compliance with the regime of motor activity in the course of their training and combat activities. In addition, all participants were informed about the aim of the research and provided voluntary written consent to participate. The issue of participants' compliance or non-compliance with the motor activity regimen was revealed by interviewing them using a specially designed questionnaire containing 5 questions: bibliographic data, duration of participation in training and combat activities, whether or not they were or were not engaged in physical exercises to prevent stress, restore psycho-emotional state, how many times a week, by what means. Age, education, marital status, financial well-being, and physical health were not considered. The exclusion criterion was the desire of participants to withdraw from the research at any time.

Research methods: analysis and generalization of literature sources, methods of psychodiagnostic, biostatistical methods. Analysis and generalization of literature sources was used to conduct an analytical review of scientific sources on the outlined range of issues (24 sources (2018-2025) from MedLine, Scopus, Web of Science, and Index Copernicus were analyzed).

The mental health of security sector employees was assessed using psycho-diagnostic methods (stress level test, PSM-25 psychological stress scale, methodology for determining the propensity to develop stress, stress resilience self-assessment test, methodology for assessing nervous and emotional stress, "Stress Resistance" methodology, reactive anxiety scale, methodology for self-assessment of emotional state) [18].

The stress level test allows for assessing the symptoms of stress and its overall level. The questionnaire contains 4 sets of 12 symptoms each. For the presence of one of the intellectual and behavioral symptoms, the respondents scored 1 point; emotional symptoms – 1.5 points, and physiological symptoms – 2 points. The stress level was assessed by the sum of the points and was considered moderate at 6-12 points, significant at 13-24 points, severe at 25-40 points, and excessive at more than 40 points. The PSM-25 psychological stress scale is designed to measure the structure of stress. It contains 25 statements, answering which the respondents chose the frequency of their manifestation and rated in points from 1 to 8, where 1 is never, and 8 is constantly. After that, the sum of points for all statements was determined. Stress was assessed as follows: 99 or less points – low stress, 100-124 – average stress, 125 or more points – high stress. The methodology for determining the propensity to develop stress contains 50 statements and allows for assessing the level of anxiety and the person's tendency to develop stress. The respondents were

offered a form with statements opposite which they had to put "+" if the proposed answer "No" or "Yes" coincided with the respondent's opinion, or "-" if it did not. The propensity to develop stress was assessed as follows: 15 points or less – no stress, 16-24 points – moderate stress, 25-39 – average stress, 40-50 – high stress. The test of self-assessment of stress resistance contains 10 questions, answering which the cadets had to choose one of the proposed answers. The answers for questions 1, 2, 3, 7, 9, and 10 were evaluated as follows: never – 0, rarely – 1, sometimes – 2, quite often – 3, frequently – 4; for questions 4, 5, 6, and 8 – never – 4, rarely – 3, sometimes – 2, quite often – 1, usually – 0. If the sum was 6.8 points or less, the level of stress resistance was considered excellent; 6.9-14.2 – good; 14.3-24.2 – satisfactory; 24.3-34.2 – poor; 34.3 and more – very poor. The method for assessing nervous and emotional stress includes 30 signs of this condition, divided into three degrees of severity (a – low degree (complete absence), b – average degree, and c – high degree). The data were processed by summing the points: for answers a – 1 point, b – 2 points, and c – 3 points. The nervous and emotional stress level was considered low if the cadets scored 30-50 points, average – 51-70 points, and high – 71-90 points. The reactive anxiety scale contains 20 statements with response options, depending on how the respondents felt during testing: no, it is not true; probably true; true; quite true. The points were calculated using the formula: $RA = \Sigma 1 - \Sigma 2 + 50$, where RA is reactive anxiety, $\Sigma 1$ is the sum of the numbers on scale items 3, 4, 6, 7, 9, 12, 13, 14, 17, and 18; $\Sigma 2$ is the sum of the numbers on scale items 1, 2, 5, 8, 10, 11, 15, 16, 19, and 20. The level of anxiety was assessed as low with 30 points or less, moderate with 31-45 points, and high with 46 points or more. The emotional state self-assessment method includes four sets of 10 statements each ("Calm – Anxiety," "Energy – Fatigue," "Elevation – Depression," "Self-confidence – Helplessness"), among which in each set, it was necessary to choose the one that reflected the respondent's emotional state at the time of testing. The formula determined the emotional state: $ES = (I1 + I2 + I3 + I4) / 4$, where ES is an integral indicator of the emotional state; I1, I2, I3, and I4 are individual indicators on the respective scales. The emotional state was assessed as very good at 8-10 points, good – 6-7 points, poor – 4-5 points, bad – 1-3 points.

BIOSTATISTICAL METHODS

The biostatistical methods were used to process the data obtained. The compliance of the sample data distribution with the Gauss' law was assessed using the Shapiro-Wilk W test. All the data had a normal distribution,

Table 1. Dynamics of mental health indicators before and after training and combat activities in cadets (n = 276), officer trainees (n = 71) and commissioned officers (n = 103) who adhered (Group A) and did not adhere (Group B) to the motor activity regimen (Mean ± SE), points

Research participants	Group A		Group B		t _{AB}	
	Before	After	Before	After	Before	After
Stress level						
Cadets	7.6±0.59	8.2±0.61	7.9±0.47	10.5±0.49**	0.40	2.94
Officer trainees	6.6±1.19	7.4±1.22	6.8±0.69	10.7±0.78***	0.15	2.28
Commis. officers	8.1±1.21	10.3±1.25	8.4±0.61	14.3±0.65***	0.22	2.83
Psychological stress level						
Cadets	97.6±2.04	99.1±2.07	98.5±1.59	104.7±1.73*	0.35	2.08
Officer trainees	96.8±2.46	99.5±2.48	97.4±2.11	108.1±2.16**	0.19	2.61
Commis. officers	99.8±2.59	104.2±2.63	100.2±1.89	114.4±1.97***	0.12	3.10
Propensity to develop stress						
Cadets	18.7±1.28	19.6±1.31	18.8±1.07	23.2±1.09*	0.06	2.11
Officer trainees	18.9±1.68	20.7±1.72	18.5±1.39	24.1±1.42*	0.18	1.52
Commis. officers	20.2±1.79	22.6±1.83	20.6±1.13	27.5±1.18***	0.94	2.25
Stress resistance						
Cadets	16.2±0.95	17.3±0.97	16.0±0.76	19.9±0.80**	0.16	2.07
Officer trainees	15.7±1.59	17.8±1.61	15.8±1.06	22.1±1.11***	0.05	2.20
Commis. officers	16.0±1.63	18.9±1.65	16.3±0.92	23.2±0.98***	0.16	2.24
Nervous and emotional stress						
Cadets	53.1±1.15	54.8±1.17	52.9±0.75	58.2±0.81***	0.15	2.39
Officer trainees	52.3±2.16	55.1±2.19	52.7±1.24	60.6±1.28***	0.16	2.17
Commis. officers	57.1±2.27	62.5±2.31	57.4±1.13	68.6±1.15***	0.12	2.36
Stress resistance						
Cadets	14.9±1.28	16.2±1.30	15.1±0.84	19.5±0.89**	0.13	2.09
Officer trainees	14.1±2.09	17.0±2.13	14.3±1.45	22.1±1.51**	0.08	1.95
Commis. officers	17.3±2.14	20.5±2.17	17.9±1.18	25.9±1.23***	0.25	2.16
Reactive anxiety						
Cadets	40.7±0.92	41.1±0.95	40.6±0.73	43.6±0.77*	0.09	2.04
Officer trainees	40.1±2.17	42.3±2.21	40.8±1.08	48.2±1.14***	0.29	2.37
Commis. officers	42.5±2.07	44.9±2.12	43.1±0.96	52.8±0.99***	0.26	3.38
Emotional state						
Cadets	6.4±0.20	6.1±0.21	6.3±0.13	5.4±0.15***	0.42	2.71
Officer trainees	7.0±0.39	6.3±0.40	6.8±0.26	5.1±0.29***	0.43	2.43
Commis. officers	5.7±0.36	4.8±0.38	5.5±0.19	3.4±0.22***	0.74	3.29

Legend: n – sample size; Mean – arithmetic mean; SE – standard error; t_{AB} – Student's t-test value between the indicators of groups A and B; p – p-value; *, **, *** – statistically significant differences between the indicators of group before and after training and combat activities at the level of p≤0.05; p≤0.01; p≤0.001

Source: compiled by the authors of this study

and therefore a Student's t-test was chosen to check the reliability of the difference in the comparison groups. The reliability of the difference was set at p<0.05. The results were presented as Mean ± SE, where Mean is the arithmetic mean and SE is the standard error of the arithmetic mean. All statistical analyses were performed using SPSS software, version 10.0, adapted for medical and biological research.

ETHICS

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

RESULTS

The results of the study of mental health indicators in security sector employees who complied (Group A) and did not comply (Group B) with the motor activity regimen during their training and combat activities are presented in Table 1.

The analysis of the dynamics of stress levels in the participants showed that before the beginning of the research period, there were no statistically significant differences between the participants of groups A and B ($p > 0.05$). After the end of the training and combat activities, the stress level of participants in both groups worsened. Still, in Group A, the changes were not statistically significant ($p > 0.05$) for all participants. In Group B, the indicators worsened with statistical significance: for cadets by 2.6 points ($p \leq 0.01$), for officer trainees by 3.9 points ($p \leq 0.001$), for commissioned officers by 5.9 points ($p \leq 0.001$). At the same time, the comparative analysis of the level of stress in groups A and B at the end of the research period showed that all participants in Group A had significantly ($p \leq 0.05$) better indicators than in Group B, by 2.3 points for cadets, by 3.3 points for officer trainees and by 4.0 points for commissioned officers.

The study of the dynamics of psychological stress (according to the PSM-25 scale) shows that before performing the training and combat tasks, the indicators of the participants in groups A and B did not differ statistically ($p > 0.05$). During the practical training period at the training grounds, utilization tours, and rotations, the level of psychological stress in cadets, officer trainees, and commissioned officers of both groups worsened; however, in Group A, no statistically significant changes were found ($p > 0.05$). In Group B, a statistically significant deterioration was recorded by 6.2 points in cadets ($p \leq 0.05$), by 10.7 points in officer trainees ($p \leq 0.01$), and by 14.2 points in commissioned officers ($p \leq 0.001$). After completing the training and combat activities tasks, the psychological stress level in all participants of Group A was significantly ($p \leq 0.05$ -0.01) better than in Group B, by 5.6 points for cadets, 8.6 points for officer trainees, and 10.2 points for commissioned officers. This indicates the positive impact of motor activity on preventing stress in security sector employees during their training and combat missions under martial law.

The study of indicators of propensity to develop stress shows that in the training and combat activities, the participants of both groups showed a deterioration in their indicators. At the same time, in Group A, the difference between the indicators before and after the training and combat tasks is not statistically significant ($p > 0.05$). In Group B, the indicators deteriorated with statistical significance ($p \leq 0.05$ -0.001) by 4.4, 5.6, and 6.9 points

for cadets, officers trainees, and commissioned officers, respectively. Moreover, after the training and combat activities, all participants in Group B showed worse indicators of stress susceptibility than in Group A, by 3.6, 3.4, and 4.9 points, respectively. The study of the stress resilience level shows that during the training and combat activities, there is a deterioration in the stress resilience level in both groups. Still, in Group A, there were no statistically significant differences ($p > 0.05$). In Group B, the deterioration was 3.9, 6.3, and 6.9 points, respectively, for cadets, officer trainees, and commissioned officers, and was statistically significant ($p \leq 0.001$) for all participants in the research. At the end of the research period, the level of stress resilience in the participants of Group A was significantly better ($p \leq 0.05$) than in Group B, by 2.6-4.3 points, which confirms the positive effect of physical exercises during training and combat activities to counteract stress, as well as to maintain and restore the mental and physical health of security sector employees under martial law.

The study of nervous and emotional stress indicators shows that negative changes occurred in both groups during the training and combat activities. However, in Group A, no statistically significant changes were found ($p > 0.05$), and in Group B, statistically significant ($p \leq 0.001$) negative changes in the indicators of all research participants were noted: the deterioration in cadets was 5.3 points, in officer trainees – 7.9 points, and commissioned officers – 11.2 points. The comparative analysis of the indicators at the end of the research period showed significantly ($p \leq 0.05$) better results in Group A than in Group B, by 3.4, 5.5, and 6.1 points, respectively. The study of the dynamics of stress resistance indicators shows that during the performance of the training and combat tasks, the stress resistance level in all participants of groups A and B deteriorated. Still, in Group A, there were no statistically significant differences ($p > 0.05$). Group B had significant ($p \leq 0.01$ -0.001) changes, amounting to 4.4 points for cadets, 7.8 points for officer trainees, and 8.0 points for commissioned officers. After the training and combat tasks, Group A showed better indicators of stress resistance than Group B, by 3.3, 5.1, and 5.4 points, respectively. This confirms the effectiveness of motor activity as a means of counteracting the stressful effects of extreme activities under martial law.

The study of the dynamics of reactive anxiety indicators shows that during the training and combat activities the level of anxiety in participants of both groups A and B worsened, but significant ($p \leq 0.05$ -0.001) changes occurred only in Group B: the deterioration in cadets was 3.0 points, in officer trainees – 7.4 points, in commissioned officers – 9.7 points. At the end of the research period, all participants in Group A had a significantly lower level of anxiety than in Group B: 2.5 points for cadets, 5.9 points for officer trainees,

and 7.9 points for commissioned officers. The results suggest a positive impact of motor activity on reducing anxiety in security sector employees under martial law.

The analysis of the emotional state showed that during the period of performing the training and combat tasks in both groups, there was a deterioration in the emotional state. Still, in Group A, the differences were not significant ($p > 0.05$), and in Group B, significant ($p \leq 0.001$): in cadets by 0.9 points, in officer trainees – 1.7 points, in commissioned officers – 2.1 points. After completing the tasks of the training and combat activities, the level of emotional state of participants in Group A was significantly ($p \leq 0.05$) better than in Group B, by 0.7, 1.2, and 1.4 points for cadets, officer trainees, and commissioned officers, respectively. The research shows that adherence to the motor activity regimen (regular exercise) during the performance of training and combat activities under martial law has a positive effect on overcoming stress, its prevention, reducing anxiety and nervous and emotional stress, and restoring the psycho-emotional state of security sector employees.

DISCUSSION

War is an extraordinary psychological stimulus for every person, which is why any person, no matter how prepared, is still exposed to the negative effects of stress [19]. Law enforcement (training and combat) activities under martial law place rather high demands on the personal potential of law enforcement officers. Therefore, modern medical and psychological attention should focus on the psychological stability of a law enforcement officer's personality [6, 9]. Scientists [4] emphasize that the professional adaptation of a modern law enforcement officer to extreme situations of war is based primarily on the leading mechanisms of social and psychological adaptation. Thus, the studies of O. D. Volianiuk, I. V. Klymenko, O. A. Rivchachenko, et al. found that not every law enforcement officer is fully prepared to effectively perform their duties under martial law [20]. Our research complements this standpoint with the idea that law enforcement service in wartime radically changes their usual way of life and work, making significant adjustments to the psycho-emotional background and other personal indicators.

Scientists [1, 14] also emphasize the problem and risks of post-stress psychological trauma of modern law enforcement officers. While acute stress disorders, as an immediate response to a traumatic stressful event, are a demonstrative phenomenon, post-traumatic stress disorders are latent. Due to their latency, they become even more dangerous because, after prolonged containment, they accumulate, reaching a critical point. When the police officer's psyche is finally exhausted, even a minor event can act as a catalyst for a neuropsychiatric breakdown [4].

By studying the impact of motor activity on stress prevention and the restoration (maintenance) of mental health indicators of security sector employees, we found that this impact is positive, as it helps to reduce anxiety and nervous and emotional tension, and restore the psycho-emotional state of this category of employees. This confirms the effectiveness of motor activity as a means of counteracting the stressful effects of extreme activities under martial law, which coincides with the results of some scientific studies by researchers [21, 22].

At the same time, our data confirm the standpoint of scientists [23, 24] that the rational use of motor activity means for security sector employees will not only help to restore their emotional state, maintain mental health, but also improve the indicators of their service activities under martial law.

CONCLUSIONS

It was found that in the course of training and combat activities, mental health indicators (stress level, propensity to develop stress, stress resilience, nervous and emotional tension, stress resistance, reactive anxiety, emotional state) of security sector employees of both groups deteriorated. Still, in Group A, the changes are unreliable ($p > 0.05$), and in Group B, reliable ($p \leq 0.01-0.001$).

It was found that at the end of the research, cadets, officer trainees, and commissioned officers of Group A had all the studied indicators significantly ($p \leq 0.01-0.001$) better than those of Group B. Thus, the indicators of stress level in Group A are better than in Group B by 2.3, 3.3 and 4.0 points for cadets, officer trainees and commissioned officers, respectively; the indicators of psychological stress – by 5.6, 8.6 and 10.2 points; the indicators of stress propensity – by 3.6, 3.4 and 4.9 points; the indicators of stress resilience – by 2.6, 4.3 and 4.3 points; the indicators of nervous and emotional tension – by 3.4, 5.5 and 6.1 points; the indicators of stress resistance – by 3.3, 5.1 and 5.4 points; the indicators of reactive anxiety – by 2.5, 5.9 and 7.9 points; the indicators of emotional state – by 0.7, 1.2 and 1.4 points.

The effectiveness of motor activity (physical exercises) in overcoming stress and strengthening mental health in security sector employees during their training and combat activities under martial law has been proven.

PROSPECTS FOR FURTHER RESEARCH

It is planned to investigate the impact of physical exercises of different orientations and intensities on the level of stress symptoms manifestation in security sector employees during their assigned tasks.

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

CONFLICT OF INTEREST

The Authors declare no conflict of interest

CORRESPONDING AUTHOR

Ivan M. Okhrimenko

National Academy of Internal Affairs

1 Solomyanska Square, 03035 Kyiv, Ukraine

e-mail: ivango-07@ukr.net

ORCID AND CONTRIBUTIONSHIP

Tetiana R. Morozova: 0000-0002-0182-463X **A**

Yana P. Komircha: 0009-0000-5853-8151 **B** **D**

Lesia V. Vavryk: 0000-0002-0175-1880 **C** **E**

Oleksandr M. Morozov: 0000-0002-9847-3695 **D**

Ivan M. Okhrimenko: 0000-0002-8813-5107 **B** **F**

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

RECEIVED: 09.03.2025

ACCEPTED: 23.07.2025

