

# The impact of negative factors of professional activities on the health of law enforcement officers

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## ABSTRACT

**Aim:** To study the impact of negative factors of professional activities on the health of law enforcement officers.

**Materials and Methods:** The research involved 89 law enforcement officers (58 men, and 31 women) who served for a year in practical police units after graduating from a higher educational institution. Methods: analysis and generalization of scientific and methodological literature, anthropometry, physiometry, testing, and statistical methods. The health status was assessed by body mass index, Robinson index, and vital index.

**Results:** It was found that the body mass index of law enforcement officers for one year of service in practical units deteriorated in both men and women by 1.3 kg/m<sup>2</sup> and 0.9 kg/m<sup>2</sup>, respectively. More negative changes were observed in men. At the same time, after one year of service, the number of men with overweight (27.5 %) and even obesity of the first (13.9 %) and second (5.2 %) degrees increased significantly. In women, the changes were less pronounced. The dynamics of Robinson and vital indices, as well as the level of physical fitness, were also negative.

**Conclusions:** The results of the research indicate a negative impact of professional factors in terms of professional activities on the health of law enforcement officers. It has been found that adherence to the principles of a healthy lifestyle, in particular, a regimen of rationally organized motor activity, is an important area in combating the impact of negative factors of professional activities on the health of law enforcement officers.

**KEY WORDS:** health, professional activity, law enforcement officers, negative factors

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## INTRODUCTION

Any professional activity has its peculiarities, its specifics and is accompanied by the influence of several negative factors. Police service is a complex type of professional activity, which is characterized by increased responsibility for professional mistakes, the presence of authority, a high level of mental stress and overload in the course of service activities, the presence of extreme service situations, the fulfillment of which is associated with danger to the life of a police officer, the likelihood of harm to citizens in the course of professional activities, the aggressiveness of the criminal environment, unregulated diet, rest, sleep, motor activity, and other factors [1]. It is difficult for graduates of higher educational institutions with specific learning environment (HEI SLE) to adapt to new and unusual conditions of service as officers in the National Police. This problem has become especially pronounced since the beginning of the full-scale invasion of Ukraine by Russian invaders, which has significantly worsened the mental state of

the population, and increased the level of anxiety, depression, etc. [2]. Scientists [3, 4] identify several negative factors that accompany law enforcement officers' service activities in modern conditions: the need to make decisions that will significantly affect the fate of other people, which requires not only knowledge of numerous legal documents but also the ability to interpret them correctly and apply them promptly. This imposes on law enforcement officers external (from disciplinary to criminal) and internal responsibility for their actions; the need to perform professional actions and solve problems in a limited period, often in conditions of time pressure or conditions of a large number of simultaneous tasks; "inexhaustibility" of the goals of the activity, the fundamental impossibility of gaining success in work by achieving its goals (it is impossible to "fight crime"). Therefore, operating results are often replaced by imitation (indicators, reports, etc.); unexpectedness, sudden emergence of new urgent tasks, and new important information (at any time of the day,

day of the week, etc.). This results in irregular working hours of law enforcement officers, their involvement in the performance of service duties beyond the working day; the presence of elements of risk and danger to the life and health of law enforcement officers and their family members; tense professional communication with either “bad” people (criminals, lumpenized citizens, etc.) or “good” people in bad conditions (victims, witnesses, etc.); negative attitudes of citizens, low legal culture, their unrealistically high expectations of the government in general and negative attitudes towards police officers. All of these negative factors hurt the health (both physical and mental) of law enforcement officers [5, 6]. This is especially true for police officers who have recently graduated from HEIs SLE, where all their activities were regulated by daily routines and orders from commanders. After graduation from HEIs SLE and being assigned to practical police units, young officers face many difficulties related to the performance of professional duties and the organization of their own lives and household activities. The study of the impact of negative factors of law enforcement officers’ professional activities on their health status to find effective ways to solve this problem led to the choice of the topic of this work.

## AIM

The aim is to study the study the impact of negative factors of professional activities on the health of law enforcement officers.

## MATERIALS AND METHODS

The research was conducted in 2023-2024 at National Academy of Internal Affairs (NAIA). The research involved 89 NAIA graduates of 2023 who received a bachelor’s degree in the specialty 262 “Law Enforcement” and entered the NAIA for a master’s degree one year later (58 men, 31 women). After graduation from the HEI SLE, all law enforcement officers served in practical police units with a pronounced impact of negative factors of professional activities on their health. The research was conducted in two stages: the first in 2023, and the second in 2024.

Methods: analysis and generalization of scientific and methodological literature, anthropometry, physiometry, testing, and statistical methods. The health status of law enforcement officers was assessed by body mass index (BMI characterizing the harmony of body structure and composition), Robinson index (RI characterizing the state of the cardiovascular system), and vital index (VI characterizing the state of the respiratory

system). In addition, the comparative analysis of the scores for the following physical exercises performed by law enforcement officers before graduation and after one year of their service was conducted: 100 m run (males, females), pull-ups (males), push-ups (females), 1 km run (males, females). To assess the reliability of changes in law enforcement officers’ health indicators, the Student’s t-test was used. Statistical analysis was performed using STATISTICA 10 software. The research was carried out according to the requirements of the Code of Ethics of the NAIA and regulations of the World Medical Association Declaration of Helsinki. Informed consent was received from all individuals who took part in this research.

## RESULTS

The comparative analysis of the BMI in law enforcement officers showed that over one year of service in practical units, both men’s and women’s indicators deteriorated (Table 1). More negative changes were observed in men; the difference between the indicators for 2023 and 2024 in men was 1.3 kg/m<sup>2</sup> and was significant ( $p \leq 0.05$ ), and in women – 0.9 kg/m<sup>2</sup> and it was not significant ( $p > 0.05$ ).

The detailed analysis of the BMI in law enforcement officers before and one year after graduation from the HEI SLE showed that in 2023, the BMI in most men (89.6 %) and women (87.0 %) was within the age norm (18.5-24.9 kg/m<sup>2</sup>) (Table 2).

After one year of service, the number of male law enforcement officers with a normal BMI decreased to 53.4 %. In contrast, the number of overweight (27.5 %) and even obesity of the first degree (13.9 %) and obesity of the second degree (5.2 %) increased significantly. In women, changes in BMI levels were less pronounced: the number of overweight women increased to 16.1 %, and the number of women with obesity of the first degree increased to 3.2 %. This indicates that the factors of professional activities have a more pronounced negative impact on male law enforcement officers.

Studies of Robinson and vital indices showed negative dynamics for both men and women during one year of service in practical police units. The RI significantly deteriorated in men by 7.7 c. u. ( $p \leq 0.001$ ) and in women by 5.2 c. u. ( $p \leq 0.05$ ); the VI – by 5.3 ml/kg ( $p \leq 0.01$ ) in men and by 3.8 ml/kg ( $p \leq 0.05$ ) in women.

We also conducted the comparative analysis of the scores for physical fitness tests of law enforcement officers before and one year after graduation from the HEI SLE in three exercises (Table 3).

It was found that during one year of service, the level of physical fitness of both men and women deterio-

**Table 1.** Comparative analysis of health indicators in law enforcement officers before and one year after graduation from the HEI SLE ( $M \pm m$ ,  $n = 89$ )

Health indicators	Years of research		The difference	Reliability of the difference (t, p)
	2023	2024		
Men (n=58)				
BMI, kg/m <sup>2</sup>	24.3±0.31	25.6±0.45	1.3	2.38; ≤0.05
RI, c. u.	82.6±1.06	90.3±1.14	7.7	4.95; ≤0.001
VI, ml/kg	59.7±0.94	54.4±1.11	5.3	3.64; ≤0.01
Women (n=31)				
BMI, kg/m <sup>2</sup>	22.6±0.37	23.5±0.46	0.9	1.52; >0.05
RI, c. u.	83.7±1.34	88.9±1.51	5.2	2.58; ≤0.05
VI, ml/kg	53.2±1.27	49.7±1.33	3.8	2.07; ≤0.05

Legend: M – arithmetic mean; m – error of arithmetic mean; n – number of law enforcement officers; t – t-test value; p – significance of difference between the law enforcement officers' health indicators.

**Table 2.** Correlation of BMI levels in law enforcement officers before and one year after graduation from the HEI SLE ( $n = 89$ , %)

Years of research	BMI levels, kg/m <sup>2</sup>				
	Body mass deficit (<18,5)	Norm (18,5-24,9)	Excessive body mass (25,0-29,9)	Obesity of the 1 <sup>st</sup> degree (30,0-34,9)	Obesity of the 2 <sup>nd</sup> degree (35,0-39,9)
Men (n=58)					
2023	3.5	89.6	5.2	1.7	-
2024	-	53.4	27.5	13.9	5.2
Women (n=31)					
2023	6.5	87.0	6.5	-	-
2024	6.5	74.2	16.1	3.2	-

**Table 3.** Comparative analysis of law enforcement officers' physical fitness test scores before and one year after graduation from the HEI SLE ( $n = 89$ , %)

Years of research	Scores for physical fitness tests			
	Excellent	Good	Satisfactory	Unsatisfactory
Men (n=58)				
2023	57.8	21.1	15.8	5.3
2024	13.2	18.4	44.7	23.7
Women (n=31)				
2023	80.6	13.0	6.4	-
2024	16.1	25.8	25.8	32.3

rated significantly. Thus, in 2024, the vast majority of law enforcement officers were rated as "satisfactory" and "unsatisfactory". The results of the tests indirectly reveal the negative impact of professional factors on the health of law enforcement officers.

## DISCUSSION

In the works of scientists [2], the deterioration of the health of the male population of Ukraine in recent years in the context of social, economic, and political instability is noted: in terms of depopulation, Ukraine ranks 2<sup>nd</sup> in the world, it takes the 1<sup>st</sup>-2<sup>nd</sup> places in Europe in terms of mortality from cardiovascular diseases; the average life expectancy of men in Ukraine is 10-12 years

lower than in the European Union; more than 70 % of the adult male population has low and below-average physical health [7]. The probability of death of men in the working age is 38.4 %, which is one of the worst indicators among civilized countries of the world [8].

The analysis of scientific works by scientists [9] showed that the cumulative impact of the negative factors of modern professional activities of law enforcement officers, which mostly takes place under conditions of stress and nervous as well as emotional stress, leads to various disorders of the functions of body systems, metabolism, and overweight, which adversely affects health and causes various diseases. First of all, the cardiovascular system begins to suffer (atherosclerosis, hypertension, coronary heart disease, etc.), and the condition of the

musculoskeletal system deteriorates [10]. According to scientists [11], hypertension, atherosclerosis, and obesity currently account for 60 to 80 % of fatalities in middle-aged and elderly people. In addition to cardiovascular diseases, overweight law enforcement officers may suffer from respiratory system diseases; endocrine system disorders (diabetes, hormonal disorders of the gonads); digestive system diseases (cholelithiasis, cholecystitis); deterioration of the musculoskeletal system (circulatory disorders, weakened muscles, arthritis, osteoporosis). When performing professional tasks under conditions of constant stress and nervous as well as emotional tension, law enforcement officers' psychophysiological indicators deteriorate: the distribution of attention slows down, the volume of attention and memory narrows, the speed of reaction decreases, the number of erroneous actions increases, and fatigue sets in quickly [12]. In turn, constant fatigue leads to a deterioration in health, emotional state, irritability, and aggressiveness, which accelerates the progression of professional deformation of law enforcement officers [13]. The results of our research confirmed the findings of many scientists regarding the negative impact of professional factors on the health of law enforcement officers. In addition, in our opinion, the reasons for the deterioration of law enforcement officers' health after graduation from the HEI SLE include the insufficient level of understanding by graduates of the role and importance of the principles of a healthy lifestyle and, in particular, physical activity in ensuring the effectiveness of their professional activities. According to scientists [14], a healthy lifestyle is a key element in maintaining and improving the health (physical and mental) of law enforcement officers, preventing stress, increasing the body's resistance to the negative factors of professional activities, improving the quality of performance of service tasks and prolonging professional longevity. Among the components of a healthy lifestyle, experts consider physical activity to be one of the most important components [15], which ensures an excellent level of health, high productivity of law enforcement officers, and a whole range of recreational and rehabilitation activities. Studies [16] have shown that under the influence of unfavorable factors, performance indicators of service activities decrease in law enforcement officers who systematically engage in physical activity by 10-20 %, and in those who do not – by 40-50 %. Rationally organized physical activity stimulates and regulates metabolism and the activity of important functional systems of the body, which in general has a targeted effect on improving health, maintaining body mass within the norm, increasing working capacity, and improving the effectiveness of law enforcement officers'

professional activities [17]. Scientists [18] have proven that the use of physical exercises helps to increase the activation of the synthesis of proteins and nucleic acids in the body, improve the immunobiological properties of blood and skin, and increase the body's resistance to several infectious diseases. Exercise is also an important means of preventing coronary artery disease, atherosclerosis, and its complications; improving the functioning of mechanisms that regulate vascular tone; constant activation of the circulatory system through exercise helps to strengthen the cardiovascular system and its functional capacity [19]. A trained person's cardiovascular system has more stable regulatory mechanisms than an untrained one, and sudden significant physical or mental stress in the latter can lead to a breakdown of compensatory capabilities and pathological changes in the body [20]. Scientists [21] have proven that exercise: stimulates the intestines, which reduces the time of contact of carcinogenic substances with the intestinal mucosa; reduces the risk of developing prostate disease; stimulates the immune system, especially white blood cells, which destroy cancer cells; strengthens skeletal muscles and the musculoskeletal system, preventing osteoporosis; improves the functioning of the heart and respiratory system; and helps to normalize body mass. Thus, the results of our research have shown the negative impact of professional activity factors on the health of law enforcement officers i. e. graduates of HEIs SLE. In addition, based on the work of many scientists, it can be argued that adherence to the principles of a healthy lifestyle, in particular a regimen of rationally organized motor activity, is an important area in combating the impact of negative factors of professional activities on the health of law enforcement officers.

## CONCLUSIONS

It was found that the BMI of law enforcement officers for one year of service in practical units for both men and women deteriorated by 1.3 kg/m<sup>2</sup> and 0.9 kg/m<sup>2</sup>, respectively. More negative changes were observed in men. At the same time, after one year of service, the number of men with overweight (27.5 %) and even obesity of the first (13.9 %) and the second (5.2 %) degrees increased significantly. In women, the changes were less pronounced: the number of overweight women increased to 16.1 %, and the number of obese women increased to 3.2 %. The dynamics of Robinson and vital indices were also negative, both for men and women: the RI significantly deteriorated in men by 7.7 c. u. ( $p \leq 0.001$ ) and in women by 5.2 c. u. ( $p \leq 0.05$ ); the VI – by 5.3 ml/kg ( $p \leq 0.01$ ) in men and by 3.8 ml/kg ( $p \leq 0.05$ ) in women.

It was also found that during one year of service, the level of physical fitness of law enforcement officers significantly deteriorated. Thus, at the end of the research, the vast majority of both men and women were rated as “satisfactory” and “unsatisfactory”. The results of the research indicate a negative impact of professional factors in terms of professional activities on the health of law enforcement officers. It has been found that adherence to the principles of a healthy lifestyle, in particular, a regimen of rationally


organized motor activity, is an important area in combating the impact of negative factors of professional activities on the health of law enforcement officers.

## PROSPECTS FOR FURTHER RESEARCH

It is planned to investigate the effectiveness of stress management tools for law enforcement officers during martial law activities.

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### **CONFLICT OF INTEREST**

The Authors declare no conflict of interest

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