

CORRECTION OF PSYCHOPHYSIOLOGICAL STATUS AND PROFESSIONAL BURNOUT AMONG FEMALE TEACHERS THROUGH FITNESS

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Abstract. Aim. The study aims to investigate the impact of physical fitness on psychophysiological well-being and the incidence of professional burnout among female teachers of mature age, focusing on the academic year's dynamics. **Materials and methods.** The research sample comprised 40 female teachers, aged 40–45, engaged in middle-level teaching (grades 5–9). Participants were randomly allocated into two groups. The assessment of situational anxiety, as per the Spielberger methodology (Russian adaptation by Khanin), was conducted to evaluate the teachers' physiological stress response. Personality traits were assessed using Eysenck's EPI/A test. The psychoemotional state of the teachers was monitored over the academic year using the WAM method (well-being, activity, mood). **Results.** The study revealed that 70% of the surveyed female teachers exhibited a sedentary lifestyle, characterized by minimal physical activity and frequent mental stress due to various academic responsibilities. Despite the prevalence of physical inactivity, the majority of teachers in the main group maintained a relatively stable psychoemotional state over six months, as per the WAM questionnaire. The study found an increase in emotional burnout among teachers, with 13.7% of the teachers in the group experiencing "exhaustion" and 54.7 showing "resistance" to stress. Among the main group, the incidence of the "stress" phase of emotional burnout rose to 49.5%, alongside a slight increase in the "exhaustion" phase. **Conclusion.** The introduction of fitness classes during the academic year was found to contribute to the stabilization of the psychophysiological state of mature female teachers. This was achieved by reducing emotional stress and situational anxiety, thereby mitigating the risk of professional burnout.

Keywords: psychophysiological status, professional burnout, female teachers, stress resistance, fitness, situational anxiety

For citation: Nenasheva A.V., Semchenko A.A., Shevtsov A.V., Mamyлина N.V., Ivlev V.I. Correction of psychophysiological status and professional burnout among female teachers through fitness. *Human. Sport. Medicine*. 2024;24(S1):148–157. DOI: 10.14529/hsm24s120

Научная статья
УДК 796 + 612.1/8
DOI: 10.14529/hsm24s120

КОРРЕКЦИЯ ПСИХОФИЗИОЛОГИЧЕСКОГО СТАТУСА И ПРОФЕССИОНАЛЬНОГО ВЫГОРАНИЯ У ЖЕНЩИН-ПЕДАГОГОВ СРЕДСТВАМИ ФИТНЕСА

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Аннотация. Цель: изучить влияние двигательной активности средствами фитнеса на психофизиологический статус и уровень профессионального выгорания женщин-педагогов зрелого возраста в динамике учебного года. **Материалы и методы.** В исследовании приняли участие 40 женщин в возрасте 40–45 лет, преподающие в средней школе (5–9-е классы). Все участники исследования были случайно разделены на две группы. Исследование стрессоустойчивости (ситуационной тревожности) организма педагогов проводилось по методике Ч.Д. Спилберга (русскоязычная адаптация Ю.Л. Ханина); индивидуальные черты личности были типизированы нами с помощью тест-опросника Г. Айзенка (форма А). Психоэмоциональное состояние учителей в динамике учебного года изучалось по методике «САН» (самочувствие, активность, настроение). **Результаты.** В результате нашего опроса мы выяснили, что 70 % опрошенных женщин-учителей ведут малоподвижный образ жизни, передвигаясь на транспорте и по незначительной траектории по школе. На фоне гиподинамии они часто подвергаются постоянным умственным нагрузкам (подготовка к урокам на компьютере, внеурочная деятельность, проверка домашних заданий и т. д.). У большинства преподавателей основной группы в течение шести месяцев деятельности наблюдалось относительно стабильное психоэмоциональное состояние, косвенно зафиксированное по методике «САН». Результаты тестирования уровня эмоционального выгорания после шести месяцев профессиональной деятельности свидетельствуют об увеличении количества педагогов контрольной группы, находящихся в фазе «истощения» (13,7 % от общего числа педагогов группы); «сопротивления» – 54,7 %. Среди женщин-педагогов основной группы увеличилось количество тех, кто находился в «стрессовой» фазе эмоционального выгорания (49,5 % от общего числа в группе) на фоне незначительного увеличения количества учителей в фазе «переутомления». **Заключение.** Занятия фитнесом в течение учебного года способствовали стабилизации психофизиологического статуса организма женщин-педагогов зрелого возраста за счет снижения эмоционального напряжения и уровня ситуационной тревожности.

Ключевые слова: психофизиологический статус, профессиональное выгорание, женщины-педагоги, стрессоустойчивость, фитнес, ситуативная тревожность

Для цитирования: Correction of psychophysiological status and professional burnout among female teachers through fitness / A.V. Nenasheva, A.A. Semchenko, A.V. Shevtsov et al. // Человек. Спорт. Медицина. 2024. Т. 24, № S1. С. 148–157. DOI: 10.14529/hsm24s120

Introduction. The teaching profession refers to intellectual forms of work, being an extremely responsible, socially significant activity in which the element of creativity is great [2, 13]. However, not all the conditions in which pedagogical activity is carried out can be considered favorable.

Most definitely, some of them contain risk factors and have an adverse effect on the human body [7, 15]. The main risk factors of the teacher's work are increased psycho-emotional stress associated with the need for constant self-control, attention, emotional arousal; significant

vocal load; static load with little overall muscle and motor activity; a large amount of intensive visual work; high density of epidemic contacts; lack of a stable daily routine; load on the same centers of the cortex of large hemispheres, a sharp redistribution of cerebral blood flow [1, 3, 6, 9].

Often, a teacher hides from others the manifestations of his chronic emotional stress, continuing to perform his professional duties, without receiving proper support and psychological assistance from the administration of an educational institution. Symptoms of emotional burnout begin almost imperceptibly, but their increase leads to irreversible consequences for the body of teachers. This negatively affects not only the state of health but may further lead to the complete disqualification of the teacher, completely reducing his motivation, interest in work and any professional activity [1, 4]. All the above is relevant for female teachers aged 40–45, whose teaching experience is more than 15 years, and their professional activity is saturated with numerous stressful factors throughout the school year, including the unfavorable epidemiological situation, undoubtedly affecting school teams in recent years [5, 10]. It is essential that the teachers of the studied groups work with the adolescent contingent, whose psychophysiological features of the organism are characterized by instability against the background of hormonal and personal changes, an imbalance in the functioning of the nervous and other systems, which is an additional stressful factor [8]. Studies devoted to the correction of the psychophysiological status and reducing the degree of professional burnout of mature-age female teachers by means of physical exertion in the dynamics of the academic year are insufficient [12]. Therefore, it is relevant to develop and implement various ways to correct emotional stress and professional burnout of teachers with significant professional experience by means of physical culture, including fitness.

Aim. The purpose of the study is to study the effect of physical activity by means of fitness on the psychophysiological status and the level of professional burnout of mature-age female teachers in the dynamics of the academic year.

Materials and methods. The organization of the study was regulated by the protocol of the Council of Europe Convention on Human Rights and Biomedicine (1999) and the Helsinki Declaration of the World Medical Association (2013 edition). The experiments were conducted on healthy volunteers in accordance with the ap-

proval granted by the Ethical Committee of the University, prior to the study the participants' informed consent was obtained.

The study involved 40 women aged 40–45 years, teaching at the middle level (grades 5–9), of which two groups of 20 people each were formed. Female teachers of the control group were engaged in pedagogical activities in the usual mode without additional physical exertion. Female teachers of the main group, in addition to teaching activities, additionally engaged in fitness in combination with swimming in the pool (twice a week for 45 minutes), and had aerobic exercise (1 time a week) lasting 60 minutes. As you know, classes in water have a healing effect, have a positive effect on the functioning of all body systems (cardiorespiratory, endocrine, digestive, musculoskeletal system, etc.). The study was conducted in the dynamics of the academic year – at the beginning of the year (background level), as well as during six months of teaching at school. The body mass index of the teachers of the studied groups was 26.1 ± 0.4 ; all women, according to the results of a medical examination, were admitted to teaching at school, had at least 15 years of work experience. In addition, the teachers of the study sample did not suffer from hypertension, coronary heart disease, atherosclerosis, persistent cardiac arrhythmias, diseases of the endocrine and respiratory systems.

The study of stress resistance (situational anxiety) of the teachers' organism was carried out according to the methodology of Ch.D. Spielberg, Yu.L. Khanin; individual personality traits were typed by us using the questionnaire G. Aizenk's test of (form A). The psychoemotional state of teachers in the dynamics of the academic year was studied by the method of WAM (well-being, activity, mood (V.A. Doskin, N.A. Lavrentieva, V.B. Sharai and M.P. Miroshnikov)). The results were presented in points, conditionally highlighting the levels of WAM: 1–3 points – low; 4–5 points – average; 6–7 points – high level. To assess the severity of “emotional burnout”, the method of V.V. Boyko was used, which includes the diagnosis of the leading symptoms and phases of the development of emotional burnout.

Statistical processing of the research results was carried out using MS Excel 2016 and STATISTICA 8.0 using the Student t-test criteria for dependent and independent samples. The U-criterion Mann-Whitney was used to assess the differences between the groups of sub-

jects in terms of the level of measured features. The differences were considered statistically significant was less than 0.05.

Results. As a result of the survey conducted by us, it was found out that 70 % of the surveyed female teachers lead a sedentary lifestyle, moving by transport and along an insignificant trajectory around the school. Against the background of physical inactivity, they are often subjected to constant mental stress (preparing for computer lessons, extracurricular activities, checking homework, etc.). All teachers did not engage in systematically active muscular activity, including fitness, aerobics, swimming, etc. Among the transferred diseases, female teachers noted colds (1–2 times a year), ENT-diseases, visual impairment, problems with the gastrointestinal tract. Some of the teachers noted that they were not completely satisfied with their nutrition, several hygienic conditions for ensuring the educational process, the lesson schedule, pointing out the insufficient health-saving component of providing educational and labor activities.

According to the results of the questionnaire conducted by G. Aizenk, 30 extroverts were identified among the teachers of both groups, the remaining 10 were introverts. Extroverts include persons with a scale of 15–24 points, introverts – 0–11 points. According to the scales of extroversion, introversion and neuroticism, we did not find significant differences between the studied groups of women. As you know, extroverts are characterized by sociability, impulsivity, initiative, sufficient flexibility of behavior. In an overly extroverted teacher, manifestations of rigidity, stereotypical perception and reaction will increase with age. For introverts – closeness, low sociability, self-concentration, a tendency to introspection, but a rather large persistence in behavior. 20 % of teachers showed high indicators on the neuroticism scale, 65 % – average.

At the beginning of the academic year, there

were no significant differences between the level of situational anxiety among female teachers of the studied groups. After six months of professional activity, the average indicators of situational anxiety among female teachers of the control group increased by 8 % ($p < 0.05$) compared to the beginning of the school year. During this period, the women of the main group showed a persistent tendency to decrease the average scores characterizing the levels of situational anxiety, which indicates the activation of compensatory and adaptive mechanisms of the body aimed at overcoming emotional stress, under the influence of fitness and swimming. In particular, during the period of fitness classes in this group, the number of women with a high level of situational anxiety decreased. It is known that people who are “highly anxious” are more characterized by a tendency to worry, a weakening of attention. “Highly anxious” people tend to perceive a threat to their self-esteem and vital activity in a wide range of situations, especially when they relate to the assessment of their competence and prestige, which can affect a comfortable psycho-emotional state. The women themselves noted that they became less impulsive, less aggressive, were more often in high spirits, their vitality increased, it became easier to cope with professional duties and problems. According to the results of our study, it turned out that the teachers of the control group, compared with the main one, experienced a more difficult professional load for six months, affecting the central, cardiovascular and other systems. In addition, they noted deterioration on the part of the voice-speech (just speech) apparatus associated with intense speech load.

At the beginning of the academic year, the indicators of well-being, activity, mood of female teachers of both groups corresponded to the average level (Table 1).

After six months of professional activity, the teachers of the control group had a persistent

**Indicators of well-being, activity, mood (in points) of female-teachers
in the dynamics of the academic year ($\bar{X} \pm m$)**

Table 1

Indicators	Deadlines; groups	The beginning of the school year		In six months	
		CG (n = 20)	MG (n = 20)	CG (n = 20)	MG (n = 20)
Health		5.4 ± 0.3	5.5 ± 0.3	4.5 ± 0.2	5.0 ± 0.3*
Activity		5.5 ± 0.4	5.4 ± 0.4	4.3 ± 0.3	5.8 ± 0.5*
Mood		4.5 ± 0.3	4.6 ± 0.4	3.8 ± 0.2	5.5 ± 0.6**

Note. CG: the control group; MG: the main group; *: statistically different, $p < 0.05$; **: statistically different, $p < 0.01$.

tendency to worsen all three studied indicators of psychoemotional state. In particular, 30 % of teachers showed a low level of well-being; 30 % – activity; 25 % – mood. When assessing the state of health, the teachers of the control group more often noted disorders of the central nervous system: headaches, irritability, sleep disorders, dizziness and fatigue. There were episodes of increased blood pressure, shortness of breath when climbing stairs, swelling and pain in the legs and joints. From the digestive system – complaints of heartburn, heaviness and stomach pain.

The majority of teachers of the main group had a relatively stable psychoemotional state, indirectly registered by the WAM method, for six months of activity. Six months after the beginning of the school year, the teachers of the main group compared with the control group, the average values of well-being, activity and mood significantly exceeded, respectively, by 11.1 % ($p < 0.05$); 34.9 % ($p < 0.05$); 44.7 % ($p < 0.01$).

Consequently, under the influence of our proposed fitness training program with swimming and aerobic exercise, the teachers of the main group increased their psycho-emotional state during the six months of the school year, the stress resistance of their body, which presumably improved the functioning of the cardiovascular, endocrine, respiratory and other systems.

The study at the beginning of the academic year allowed us to establish that in the examined pedagogical groups, all the subjects were characterized to one degree or another by the presence of emotional burnout, no significant differences between the groups were revealed. Thus, teachers with a high level of burnout (exhaustion phase) among the teachers of the control and main groups were 7.5 % and 7.8 %, respectively, teachers with an average level of burnout (resistance phase) – 49.1 % and 48.7 %; the remaining teachers in the groups had a slight degree of emotional burnout (tension phase). The results of

the symptoms “Emotional deficit”, “Emotional detachment”, “Personal detachment” (depersonalization) became indicative. The subjects characterized their condition as a lack of desire and ability to help subjects of professional and pedagogical activity, lack of emotions in difficult pedagogical situations, unwillingness to carry out professional communication, lack of interest in work.

The results obtained during the repeated diagnosis after six months of professional activity indicate an increase in the number of teachers in the control group, who revealed phases of “exhaustion” (13.7 % of the total number of teachers in the group); “resistance” – 54.7 %. The results obtained make it possible to characterize the teachers of the control group with signs of emotional exhaustion as teachers who have a drop in overall energy tone, lack of feelings for both positive and negative circumstances, complete or partial loss of interest in the person – the subject of professional activity. After six months of fitness classes among the teachers of the main group, the number of those who had a “stress” phase of emotional burnout (49.5 % of the total number in the group) increased against the background of a slight increase in the number of teachers who are in the “exhaustion” stage (Table 2).

At the beginning of the school year, the teachers of the control group in the “tension” phase had the following distribution of symptoms by severity: a) experiencing traumatic circumstances – uncomplicated in 10 %; developing – 35 %; developed – 55 %; b) dissatisfaction with themselves – uncomplicated in 7 %; developing – 40 %; developed – 53 %, c) “trapped in a cage” – uncomposed in 60 %; folding – 30 %; formed – 10 %; d) anxiety and depression – uncomposed in 38 %; folding – 57 %; formed – 5 %. In the main group, the distribution of the severity of symptoms of this phase did not differ fundamentally. After six months of professional activity, against the background of an increase in the number of

Table 2

The number of female-teachers (%) belonging to a certain phase of “emotional burnout” in the dynamics of the academic year

Phase	Deadlines; groups	The beginning of the school year		In six months	
		CG (n = 20)	MG (n = 20)	CG (n = 20)	MG (n = 20)
Tension		43,4	43,5	31,6	49,5
Resistance		49,1	48,7	54,7	41,5
Exhaustion		7,5	7,8	13,7	9,0

Note. CG: the control group; MG: the main group.

women in the main group who are in the stage of “stress” of emotional burnout, the distribution of the severity of symptoms of this phase has not changed radically. In the control group of teachers, against the background of a decrease in the number of those who were assigned to this phase of emotional burnout as a result of testing, the number of existing symptoms of the phase increased. The leading symptoms of this phase of emotional burnout were dissatisfaction with themselves, anxiety and depression against the background of an increase in the number of points indicating their already established state.

At the beginning of the school year, the teachers of the control group in the “resistance” phase had the following distribution of symptoms by severity: a) inadequate selective emotional response – uncomplicated in 8 %; developing – 40 %; developed – 52 %; b) emotional and moral disorientation – uncomplicated in 7 %; developing – 38 %; established – 55 %, c) expansion of the sphere of saving emotions – uncomplicated in 50 %; emerging – 25 %; emerging – 25 %; d) reduction of professional responsibilities – uncomplicated in 31 %; emerging – 60 %; established – 9 %. In the main group, the distribution of the severity of symptoms of this phase did not differ fundamentally, with the exception of the symptom reduction of professional responsibilities (uncomplicated in 80 %; developing – 20 %). After six months of professional activity, against the background of a decrease in the number of women in the main group who are in the «resistance» stage of emotional burnout, the distribution of the severity of symptoms of this phase shifted slightly towards the established stage. In the control group of teachers, against the background of a slight increase in the number of those who were assigned to this phase of emotional burnout as a result of testing, the number of existing symptoms of the phase also increased. The leading symptoms of this phase of emotional burnout were inadequate selective emotional response and reduction of professional responsibilities against the background of an increase in the number of points indicating their already established state.

At the beginning of the school year, the teachers of the control group in the “exhaustion” phase had the following distribution of symptoms by severity: a) emotional deficit – uncomplicated in 11 %; developing – 45 %; developed – 44 %; b) emotional detachment – uncomplicated in 9 %; developing – 46 %; developed – 45 %, c) per-

sonal detachment (depersonalization) – uncomplicated in 65 %; developing – 25 %; developed – 10 %; d) psychosomatic and psychovegetative disorders – uncomplicated in 38 %; developing – 54 %; developed – 8 %. In the main group, the distribution of the severity of symptoms of this phase did not differ fundamentally, with the exception of the symptom of personal detachment (depersonalization) (uncomplicated in 85 %; developing – 10 %).

After six months of professional activity, against the background of a slight increase in the number of women in the main group who are in the stage of “exhaustion” of emotional burnout, the distribution of the severity of the symptom of this phase (emotional detachment) it has shifted towards the “established” stage. At the end of the study, the indicators of the “exhaustion” phases in the symptoms of “Emotional detachment” and “Emotional deficit” decreased in the main group. The respondents of the main group noted an increase in interest in communication, they became more interested in communicating with the subjects of professional activity, the emotional background increased, there was an increase in positive emotionality in solving professional tasks. Some changes occurred in the indicators of the “Psychosomatic and psychovegetative disorders” symptom complex: the majority of participants in the main group (69.6 %) noted an improvement in their physical and mental condition (body weight decreased, blood pressure normalized, discomfort in the joints decreased, mood stabilized, self-confidence appeared).

In the control group of teachers, against the background of a significant increase in the number of those who were assigned to this phase of emotional burnout as a result of testing, the number of existing symptoms of the phase also increased. The leading symptom of this phase of emotional burnout was personal detachment (depersonalization) against the background of an increase in the number of points indicating his already established condition.

Discussion. As is known, high emotional stress is a predisposing factor in the development of professional burnout syndrome among teachers. A teacher is one of the professions of the altruistic type, saturated with a large number of social contacts during the working day, having a high level of responsibility, obliging teachers to be in “shape” all the time. In addition, mature-age teachers with extensive experience lose out to young specialists in mobility, technical aware-

ness, possession of innovative teaching methods and techniques, etc. As a result, in order to maintain an appropriate image, a mature teacher must have internal resources, the “price” of adaptation to modern teaching conditions at school is often very high, which further increases the likelihood of burnout. Emotional burnout is a psychological defense mechanism developed by a person in the form of complete or partial exclusion of emotions in response to selected traumatic effects. This is an acquired functional stereotype of professional behavior that allows you to dose and economically spend human energy resources. This often negatively affects the performance of professional duties and relationships with colleagues.

The data obtained, in our opinion, indicate a positive effect on the body and its psychophysiological status of fitness classes, swimming for people experiencing emotional burnout, in particular, teachers of secondary schools. We believe that the changes we have identified in a number of indicators of the psychophysiological status of the body of teachers correlate with the existing professional burnout syndrome. Among them, physical inactivity, lack of the necessary amount of muscle activity; increased situational anxiety (especially in extroverted women); low indicators

of well-being, activity, mood, indicating increased excitement, manifestation of strong-willed qualities with elements of aggression against the background of continued activity

Based on the research of Yu.V. Vardanyan, A.A. Paramonov [14] and V.V. Sobol [11], a model for the prevention of professional burnout of female teachers was developed, including methodological, targeted, content-procedural, technological and effective blocks (Fig. 1).

The methodological block involves the development of methodological support for preventive work (preventive work program, diagnostic and self-diagnosis tools, Internet resources on this issue). The target block includes a focus on the prevention of professional burnout, the creation of favorable conditions for the restoration and replenishment of professional resources. The content-procedural block includes forms and methods of systematic preventive work, elimination of the negative consequences of professional burnout, a combination of personal psychological and pedagogical support with preventive and correctional work, work on professional reorientation to a non-pedagogical field of activity. The technological block implies organizational technologies that ensure an optimal work

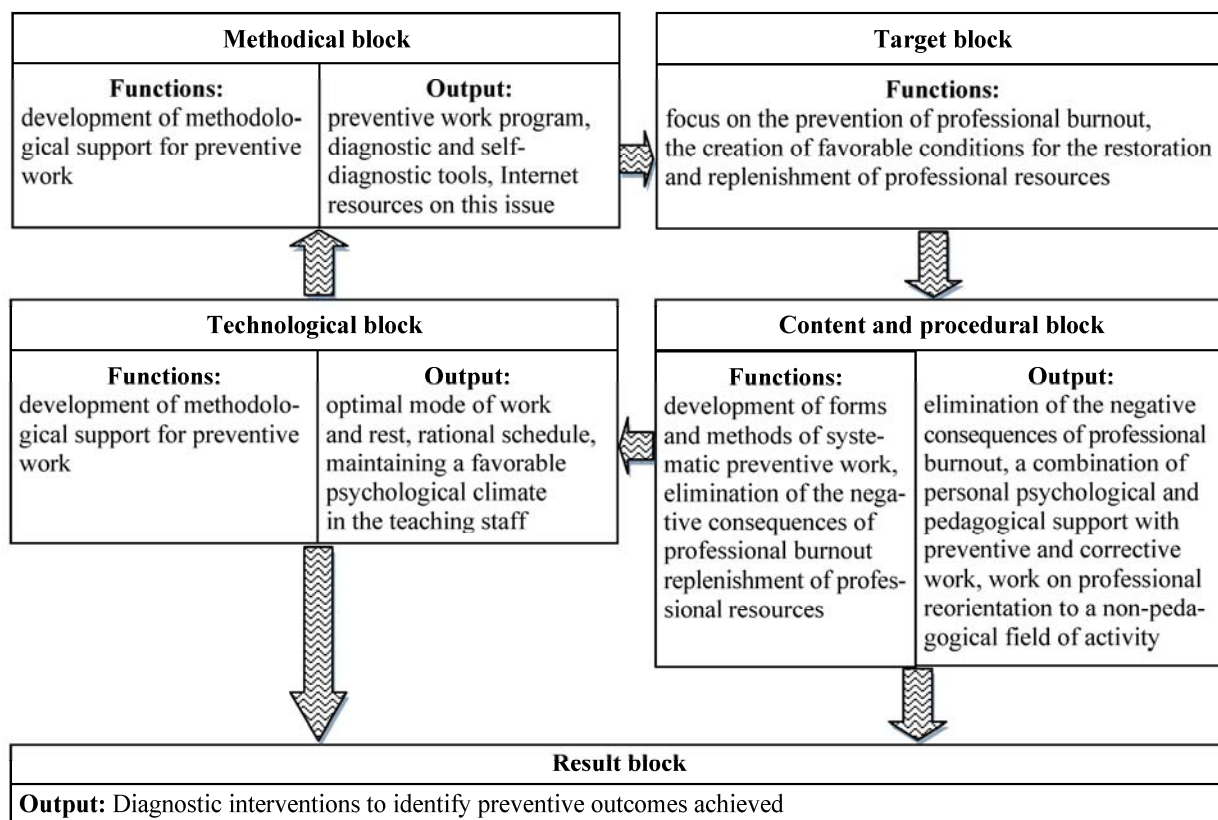


Fig. 1. Model of prevention of professional burnout of female teachers

and rest regime, a rational schedule, and the maintenance of a favorable psychological climate in the teaching staff. The effective block includes diagnostic measures aimed at identifying the achieved preventive results.

Conclusion. The study of the influence of physical activity by means of fitness on the psychophysiological status and the level of professional burnout of female teachers of mature age in the dynamics of the academic year led to the following conclusions:

1. Fitness, swimming and aerobic exercise during the six months of the school year contributed to a decrease in emotional tension and the level of situational anxiety among women teachers of mature age, stabilization of the mental state of the body (well-being, activity, mood).

2. The results of testing the level of emotional burnout after six months of professional activity indicate an increase in the number of teachers in the control group who revealed phases of “exhaustion” (13.7 % of the total number of teachers in the group); “resistance” – 54.7 %. Among the teachers of the main group, the number of those who have a phase of “stress” of emotional burnout has increased (49.5 % of the total number in the group) against the background of a slight increase in the number of teachers who are in the “exhaustion” stage.

3. Based on the results of the study, a model for the prevention of professional burnout of female teachers was developed, including methodological, targeted, content-procedural, technological and effective blocks.

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Contribution of the authors: the authors contributed equally to this article.

The authors declare no conflict of interests.

Вклад авторов: все авторы сделали эквивалентный вклад в подготовку публикации.

Авторы заявляют об отсутствии конфликта интересов.

The article was submitted 25.10.2023

Статья поступила в редакцию 25.10.2023