



Chapter I. THEORETICAL AND PEDAGOGICAL PROBLEMS OF MODERN EDUCATION

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PEDAGOGICAL FOUNDATIONS OF PHYSICAL EDUCATION OF STUDENTS IN OVERCOMING THE CONSEQUENCES OF HEALTH PROBLEMS DUE TO WAR TRAUMAS

Abstract. The relevance of the study is due to the need to determine the most effective means and methods of physical education, which should fully contribute to the fulfillment of the social order of the state and society to preserve and strengthen the health of student youth during their education, along with ensuring the proper level of their psychophysical condition. Aim of the research was to identify the pedagogical foundations for ensuring the effectiveness of physical education for higher education students after mild blast traumatic brain injury (TBI). A complex of general scientific theoretical methods was used in the implementation of the study: analysis, synthesis, systematization and generalization. Results: it was found that the goals and objectives of physical education of higher education students in conditions of prolonged martial law aim to improve their physical and psychological health. It was established that the main goal of physical education in the presence of mild blast TBI is to restore the function of damaged organs and systems of the whole organism and normalize the psychological state of higher education students. It was found that the most optimal way to achieve the educational goals of physical education is to determine the pedagogical foundations, the practical implementation of which ensures the solution of the tasks set, aimed at restoring the health of higher education students after mild blast TBI. A well-founded choice, construction and application of content elements, methods and organizational forms of implementing the pedagogical process of physical education to achieve didactic goals involves the detailing of pedagogical conditions. The pedagogical conditions identified as optimal are: the focus of the content of classes on the development of motor activity of higher education students after mild blast TBI; methodological support of physical education of higher education students after mild blast TBI; the formation of knowledge in the prevention of negative trends in the health of mild blast TBI consequences by means and methods of physical culture. The directions of pedagogical approaches in the implementation of physical education of students after mild blast TBI are outlined: educational and methodological support, arrangement for correctional and developmental and rehabilitation classes; professional staffing, adaptation of educational programs taking into account the needs of a certain contingent of higher education students.

Keywords: physical education, students, health preservation, war trauma.

ПЕДАГОГІЧНІ ОСНОВИ ФІЗИЧНОГО ВИХОВАННЯ ЗДОБУВАЧІВ ВИЩОЇ ОСВІТИ В ПОДОЛАННІ НАСЛІДКІВ ПОРУШЕНЬ У СТАНІ ЗДОРОВ'Я ВНАСЛІДОК ВОЄННИХ ТРАВМ

Анотація. Актуальність дослідження зумовлена потребою у визначенні найбільш ефективних засобів і методів фізичного виховання, яке повною мірою має сприяти виконанню соціального замовлення держави і суспільства на збереження та зміцнення здоров'я студентської молоді під час здобуття освіти, поряд із забезпеченням належного рівня їхньої психофізичного стану. Мета дослідження полягала у виокремленні педагогічних основ забезпечення ефективності фізичного виховання здобувачів вищої освіти після вибухової легкої черепно-мозкової травми (ЧМТ). У



реалізації дослідження використано комплекс загальнонаукових теоретичних методів: аналізу, синтезу, систематизації та узагальнення. Результати: з'ясовано, що цілі та завдання фізичного виховання здобувачів вищої освіти за умов тривалого воєнного стану скеровані на поліпшення стану їхнього фізичного та психологічного здоров'я. Головною метою фізичного виховання в разі наявності вибухової легкої ЧМТ є відновлення функції ушкоджених органів і систем усього організму та нормалізація психологічного стану здобувачів вищої освіти. Найоптимальніший шлях досягнення освітніх цілей фізичного виховання полягає у визначенні педагогічних основ, практична реалізація яких забезпечує розв'язання поставлених завдань, скерованих на відновлення стану здоров'я здобувачів вищої освіти після вибухової легкої ЧМТ. Обґрунтований вибір, конструювання й застосування елементів змісту, методів та організаційних форм реалізації педагогічного процесу фізичного виховання для досягнення дидактичних цілей передбачає деталізацію педагогічних умов. Виокремлено педагогічні умови, які визначено як оптимальні: спрямованість змісту занять на розвиток рухової активності здобувачів вищої освіти після вибухової легкої ЧМТ; методичний супровід фізичного виховання здобувачів вищої освіти після вибухової легкої ЧМТ; сформованості знань у питаннях превенції негативних тенденцій у стані здоров'я наслідків вибухової легкої ЧМТ засобами і методами фізичної культури. Окреслено напрями педагогічних підходів у реалізації фізичного виховання студентів після вибухової легкої ЧМТ: навчально-методичне забезпечення, облаштування для корекційно-розвиткових і реабілітаційних занять; фахове кадрове забезпечення, адаптація навчальних програм з урахуванням потреб визначеного контингенту здобувачів вищої освіти.

Ключові слова: фізичне виховання, здобувачі вищої освіти, здоров'язбереження, воєнна травма.

Formulation of the problem. The russian-ukrainian war has been going on for ten years. Every year, the number of students who have been injured as a result of hostilities on the territory of our country is growing (Dyuzhikova, Balokha, & Chepeliuk, 2022; Boyko, Kozlova, & Sharafutdinova, 2023).

The most common problem of wars in the last century is concussion or mild blast traumatic brain injury (TBI), which anyone can get now, not only in the combat zone, but also living in places far from the front line (Fulk, & Nirider, 2014). Now, with the full-scale war with russia, this phenomenon has taken on an unprecedented character and has no complete analogues among other wars (Dzyak, Mizyakina, Shulga, & Suk, 2023). Many military and civilian personnel have been exposed to blast waves affecting the brain as a result of the widespread use of the latest high-energy weapons.

According to statistics, mild blast TBI accounts for about 50% of all cases of war injuries (Chernenko, 2022), which is of crucial importance for public health. Due to the high prevalence of this type of injury and its long-term health consequences, blast mild TBI has been called a «marker of war» and a «silent epidemic of invisible wounds» (Ng, & Lee, 2019).

During the period of active hostilities since russia's full-scale invasion of Ukraine, one of the most pressing issues in higher education has been the restoration of the health of students who have suffered war-related injuries. The task of preserving the health of students and improving their performance in higher education institutions in the field of physical education/

Given the steady increase in the number of students with mild blast TBI, it is important during a full-scale war to find opportunities for physical education in the process of correcting the damaged functions of students' bodies as a result of mild blast TBI.

Analysis of recent research and publications. Research on the effects of mild blast TBI on the body in general and on the central nervous system in particular is currently the focus of scientific research. It has been noted (Ghandour, Abou-Abbass, Al-Hajj, & et al., 2022; Fulk, & Nirider, 2014; Ng, & Lee, 2019) that there are specific differences in the severity of the injury and the impact on functioning and health between mild blast TBI caused by an explosive wave and that caused by artillery fire.

Certain differences resulting from damage caused by a blow, sports injuries, or a traffic accident have been studied (Fulk, & Nirider, 2014). As noted (Dzyak, Mizyakina, Shulga, & Suk, 2023), shock waves often have a significant but invisible impact on the brain, which is further characterized by pathological effects on the body's functional state. Despite this, it has been proven (Ghandour, Abou-Abbass, Al-Hajj, & et al., 2022; Chernenko, 2022; Mysyura, 2023) that timely rehabilitation helps to avoid consequences in the future.

Currently, this issue has been organically integrated into the PE educational process, given that physical activity is a prerequisite for the development of brain neuroplasticity, which affects the functioning of the cardiorespiratory system, oxygen saturation of the brain, coordination, motor skills, etc., and the restoration of damaged body functions in general (Blavt, & Gurtova, 2024; Mytchyk, Tarasyuk, & Moroz, 2023).

Research (Blavt, Kozibroda, & Rozhko, 2021; Gurtova, & Nezhoda, 2023) has investigated the place and role of PE as a means of improving the quality of life of students after injuries: movement not only promotes physical health, it is vital for the proper functioning of the brain. In scientific research (Ovcharenko, 2022; Myroshnichenko, & Yevtushenko, 2023), physical activity is positioned as a powerful tool for restoring brain function based on new neural connections.

It is emphasized (Babajanyan, Semal, Beseda, Farionov, & Kurii, 2023) that the health of students is one of the pressing issues in modern education. It has been determined (Boyko, Kozlova, & Sharafutdinova, 2023) that the leading task of the education system in conditions of martial law is to preserve and strengthen the health and improve the physical fitness of Ukrainian students. On the other hand, it is believed (Mysyura, 2023; Blavt, & Gurtova, 2024) that the use of physical education and health measures after mild blast TBI is a fundamental step in returning to normal life. At the same time, researchers (Blavt, 2023; Myroshnichenko, & Yevtushenko, 2023) believe that physical education continues to be one of the determining factors in the comprehensive development of the individual.



It has been determined (Gurtova, & Nezhoda, 2023; Babajanyan, Semal, Beseda, Farionov, & Kurii, 2023) that in conditions of martial law, physical education is primarily aimed at creating conditions for preserving the health of students. In fact, physical education is now a reliable opportunity for students after mild blast TBI to access health-promoting physical exercises, learn about physical movement, and engage in physical activity (Ovcharenko, 2022; Dyuzhikova, Balokha, & Chepeliuk, 2022).

However, it must be noted that there is currently a certain limitation of scientifically based, effectively coordinated, and strategically planned physical education programs aimed at achieving high positive results in solving the problems of health preservation of students after mild blast TBI. In this regard, we note that there is a contradiction between the objective need to modernize the organization, content, and methods of physical education in the educational process of higher education students after mild blast TBI and the subjective state of solving the problem under study, and therefore differs from the necessary ability of this pedagogical process to ensure the successful solution of physical education tasks. It has been determined that a prominent place in this process is compliance with the requirements of the time (Blavt, 2023). Here, we note the almost complete absence of research and recommendations on this, and therefore the urgent need to solve this problem.

Thus, taking into account the consequences of Russian armed aggression on the territory of Ukraine, which is an increase in students after mild blast TBI, and given the need to provide them with quality physical education, this problem requires additional attention from the professional community. That is why the search for the most effective means and methods of physical education should fully contribute to the fulfillment of the social order of the state and society to preserve and strengthen the health of students during their education, along with ensuring an adequate level of their psychophysical condition, is a very important direction of scientific research.

AIM OF THE RESEARCH

was to identify the pedagogical foundations for ensuring the effectiveness of physical education for higher education students after mild blast traumatic brain injury (TBI).

RESEARCH METHODS

The research is based on the use of a set of general scientific theoretical methods: theoretical analysis, systematization, comparison of different views on the investigated problem, generalization of data from scientific, methodological, and special literature.

RESEARCH RESULTS

First of all, we must note that due to changes in the external situation in the country, the educational process in higher education has undergone a significant transformation (Dyuzhikova, Balokha, & Chepeliuk, 2022). The organizational forms of the educational process have been transformed due to the need to ensure the safety of the educational process first and foremost (Dyuzhikova, Balokha, & Chepeliuk, 2022). Accordingly, the goals and objectives of physical education for students in conditions of prolonged martial law are aimed at improving their physical and psychological health. There is no doubt that the theory, methods, and practices of physical culture to counter the challenges of the current martial law situation must be adapted to modern requirements. Therefore, we agree (Mytchyk, Tarasyuk, & Moroz, 2023) that martial law has necessitated the optimization of the structure and content of physical education in higher education institutions.

We support the ideas (Gurtova, & Nezhoda, 2023; Babajanyan, Semal, Beseda, Farionov, & Kurii, 2023) that the current state of development of the specified content of physical education in higher education institutions for students who have suffered trauma as a result of the war is different from what is necessary at the present stage, and that research is sporadic and fragmentary. This necessitates further research in this area. At the same time, as researched (Boyko, Kozlova, & Sharafutdinova, 2023), the creation of a new generation of educational materials that meet modern requirements and challenges in the context of global changes and European integration processes, particularly in higher education, is an important lever for the implementation of modern narratives.

Since there is virtually no experience of physical education for students after mild blast TBI in higher education institutions in Ukraine, the development of this area to address the issues of physical and psychological rehabilitation of such students involves creating conditions for the restoration of functions lost as a result of injuries and improving the health of students after mild blast TBI.

Therefore, our research is aimed at solving an applied scientific problem related to the elimination of health disorders in students who have suffered war-related injuries while studying at a higher education institution. At the same time, the research population includes not only military personnel who were directly involved in combat operations, but also students from areas where such operations took place and continue to this day. We also note that we consider the guidelines for solving this problem from the perspective of domestic pedagogical science regarding the organization of the educational process in higher education, but with an emphasis on taking into account the determinants of the condition after mild blast TBI in the use of forms, means, and methods of physical education.

We agree with the opinion of experts (Mysyura, 2023; Myroshnichenko, & Yevtushenko, 2023) that currently, the main goal of physical education in the case of injuries is to restore the function of damaged organs and systems of the whole body and normalize the psychological state. Therefore, at present, the tasks that physical education in higher education is «dictated» by the situation in the country and society are, in the most generalized form, general strengthening.

We specify that physical education for students after mild blast TBI is aimed at eliminating functional disorders in health caused by trauma. In terms of content, we believe that the development (modernization) of innovative pedagogical



practices is fundamental. First of all, this applies to classes, which are the main form of physical education in higher education institutions and are compulsory for all students as part of the academic discipline.

There are several types of physical education classes: introductory, final, learning new material, reviewing what has been learned, developmental, control, and combined. At the same time, it is noted (Prystupa, Muzyka, Kryshtanovych, Matviiv, & Ilkiv, 2022) that there is still no universal classification of classes, but now, regardless of the type of classes for students after mild blast TBI, they should be exclusively health-oriented.

As for the functional abilities of students after mild blast TBI, which need to be expanded during physical education classes, they are related to the functioning of certain body systems and the stage of recovery after trauma. The consequences of explosions include both purely physical damage and psychological trauma. Physical injuries are considered to be fractures, respiratory disorders, damage to soft tissues and internal organs, internal and external blood loss with shock, burns, and sensory disorders (especially hearing and vision). Therefore, it is important to study the functioning of students' cardiovascular, respiratory, and nervous systems after mild blast TBI. At the same time, it is necessary to constantly monitor the functioning of these body systems and their response to stress.

At the same time, the consequences of mild blast TBI can develop and manifest themselves over the years. The absence of specific disorders immediately after the injury does not guarantee the absence of manifestations in the future. The consequences of changes that the brain undergoes during trauma can manifest themselves in various ways. In addition, mild blast TBI does not always lead to obvious motor disorders. It is important to note (Ng, & Lee, 2019) that in the absence of motor disorders, cognitive and behavioral disorders may occur.

Certain scientific sources (Blavt, Kozibroda, & Rozhko, 2021; Gurtova, & Nezhoda, 2023) emphasize the impact of physical education on motor and mental spheres. Therefore, we believe that the use of appropriate pedagogical approaches ensures the effective integration of students after mild blast TBI into typical physical education classes.

We have found that the most optimal way to implement new educational tasks in pedagogy is to define a set of specific rules, the use of which ensures the solution of the tasks set. A well-founded choice, construction, and application of content elements, methods, and organizational forms of implementation of a specific pedagogical process to achieve didactic goals requires detailing pedagogical conditions.

Despite the fact that «condition» is a general scientific concept (Lytvyn, 2018), in the pedagogical aspect, they are characterized as a set of resources that ensures a purposeful pedagogical process. It has been noted (Myroshnichenko, & Yevtushenko, 2023) that the influence of conditions can accelerate or slow down this process, as well as affect its dynamics and final results. On the other hand, pedagogical conditions are a form of pedagogical activity (Blavt, & Gurtova, 2024).

We are inclined to accept as valid in our scientific research the statement (Lytvyn, 2018) according to which the pedagogical conditions for the implementation of the pedagogical process are considered as a set of objective opportunities that ensure the successful completion of the tasks set.

The pedagogical conditions for the implementation of physical education for higher education students after mild blast TBI, in the context of our study, are defined as a system that ensures a holistic process, the effectiveness of its organization, and optimal functioning. Therefore, we have identified the following pedagogical conditions as optimal:

- Focusing the content of classes on the development of students' motor activity after mild blast TBI, taking into account the established limiting factors determined by the consequences of the injury. The fulfillment of this condition requires adherence to methodological principles: a differentiated approach, accessibility, and individualization. The implementation was ensured by the use of approaches to the formation of physical activity content that were as consistent as possible with the nature of the damage caused by mild blast TBI, taking into account the characteristics of functional disorders, optimization of the content of physical activity means, and their dosage.
- Methodological support of physical education of students after mild blast TBI in the process of such classes. This condition directs the teacher to use forms, means, and methods of physical education aimed at achieving a restorative and general strengthening effect. Such methodological support involves constant pedagogical control of the psychophysiological parameters of the functional state of students' bodies after mild blast TBI. Pedagogical control ensures the design, prediction, and accurate reproduction of pedagogical processes that guarantee a high level of physical education for students after mild blast TBI. The implementation of control functions consists of a sequence of targeted management actions in the following cycle: analysis – planning – implementation of proposals – measurement of results – analysis.
- The formation of knowledge on the prevention of negative trends in health as a result of mild blast TBI through the means and methods of physical culture. The condition provided for the formation of an internal type of motivation for systematic physical culture activities to ensure an adequate level of physical activity among students during their studies. Strengthening motivation first requires identifying the motives that need to be actualized, as they are decisive in the formation of internal motivation. This is achieved by creating the most favorable conditions for satisfying basic psychological needs, which, given the challenges of martial law and the trauma experienced, primarily involve overcoming symptoms of anxiety, depression, panic attacks, etc.

The results of an empirical study support the final condition, according to which it was found that the level of motivation to engage in physical culture among students of higher education institutions has significantly decreased since the



beginning of the war. There is no doubt (Boyko, Kozlova, & Sharafutdinova, 2023) that the events that have been taking place in our country since the full-scale invasion by the Russian Federation are a factor in this situation. In connection with the latter, we note that it remains important to develop pedagogical and technological tools that improve the transfer and reception of necessary educational information by students.

When it comes to students after a mild blast TBI, it is important to consider the psychological consequences of trauma against the backdrop of constant stress, post-traumatic stress disorder. The war continues, so there is no period of complete recovery from the psychosomatic effects of trauma.

Therefore, the formation of knowledge in the field of physical culture is a factor that largely determines the participation of students after mild blast TBI in systematic physical education and health activities. This occurs indirectly and is caused by a significant increase in the likelihood of systematic use of physical activity in everyday life when knowledge related to various aspects of physical culture development is available. This involves leading a healthy lifestyle, engaging in various forms of independent physical activity, and using it in everyday life as a means of active recreation and improving health by eliminating the effects of injury.

In connection with the latter, we emphasize the place and importance of independent physical activity for improving somatic health after injuries. Physical activity should be considered an important adjunct to rehabilitation and is important for students after mild blast TBI. In this sense, it is important to provide timely knowledge about the benefits of physical activity after mild blast TBI, which, as stated (Boyko, Kozlova, & Sharafutdinova, 2023), promotes motivation to increase physical activity, reduces anxiety about one's own physical health, and promotes understanding of the forms of physical activity that may be most suitable for independent use.

Here, it is worth considering the WHO recommendations (Prystupa, Muzyka, Kryshchanovych, Matviiv, & Ilkiv, 2022) regarding modern practices, which state that some activity is better than none. Therefore, we agree with the opinion (Gurtova, & Nezhoda, 2023; Mytchyk, Tarasyuk, & Moroz, 2023) that independent physical exercise should be a mandatory part of a healthy lifestyle for students, since compulsory physical education classes cannot fully influence the improvement of their psychosomatic condition.

Independent physical activity is considered (Dyuzhikova, Balokha, & Chepeliuk, 2022) as a means of eliminating deficiencies in students' motor activity, promoting more active assimilation of the curriculum, and improving physical fitness and health.

There is no doubt that independent physical activity creates the opportunity to implement the rehabilitation process on an ongoing basis through physical culture and recreational activities. Students organize and conduct such activities independently at a convenient time outside of class in an optimal amount. They are planned for students by teachers, but are not mandatory. Here, it is worth following the recommendations (Myroshnichenko, & Yevtushenko, 2023) regarding the necessary 20 minutes of low- and moderate-intensity aerobic physical activity at least 3–5 times a week, along with strength, flexibility, and balance training.

The implementation of specific pedagogical conditions in the process of physical education of students after mild blast TBI, by involving them in a healthy lifestyle, ensures the development of basic motor skills, improves self-esteem, ensures physical independence, reduces complications associated with deviations in the health status of students after mild blast TBI, and enables them to successfully realize themselves in a normal academic environment.

At the same time, certain pedagogical conditions are subjective in nature and ensure the continuity and consistency of the effective implementation of the health-oriented approach to physical education classes for students after mild blast TBI. In turn, their implementation is the basis for individual corrective pedagogical influences to achieve the effectiveness of this process.

In general, systematic physical education classes contribute to improving the quality of life of students after mild blast TBI. Considering that such students naturally have a reduced level of physical activity due to injury, attention should be paid to overcoming obstacles to systematic physical activity.

Thus, summarizing the data of the scientific research, the directions of pedagogical approaches in the implementation of PE for students after mild blast TBI are outlined. They consist of:

- providing special technical and educational-methodological means of training, in accordance with the characteristics of the acquired injury;
- equipment for corrective, developmental, and rehabilitation classes;
- staffing: improving the professional competence of teachers;
- developing educational programs that take into account the needs of a specific group of students.

CONCLUSIONS AND PROSPECTS OF FURTHER RESEARCH

Today, Ukraine has become the epicenter of extreme situations, where not only military personnel but also civilians have been suffering from Russian terrorist attacks for a long time. Therefore, in the context of global military operations, both the military and the civilian population are equally at risk of military injuries. As a result, higher education institutions are seeing a high percentage of students with mild blast TBI, which is a major challenge for higher education institutions today. Given the current developments, this trend is likely to continue.

Ensuring the quality of education in the difficult conditions of prolonged martial law, the comprehensive development of students, and their psychological and physical health have been priority tasks for the Ministry of Education and Science since the beginning of Russia's full-scale aggression in Ukraine. Physical education in higher education is now of paramount



importance, as it is the most important structure that lays the foundations for health in the process of obtaining an education.

Under martial law, physical education is primarily aimed at creating conditions for preserving students' health, along with restoring the body's functional capacity after mild blast TBI, which is accompanied by a significant disruption of vital functions. The rational selection, design, and application of content elements, methods, and organizational forms of the PE pedagogical process to achieve didactic goals requires detailed pedagogical conditions. Therefore, based on the results of the study, pedagogical conditions that are defined as optimal have been identified: the focus of the content of classes on the development of students' motor activity after mild blast TBI; methodological support for the physical education of students after mild blast TBI; the formation of knowledge on the prevention of negative trends in health as a result of mild blast TBI by means and methods of physical culture.

As a result, it was established that the effectiveness of physical education classes in higher education institutions for students after mild blast TBI is determined by the state of solving the tasks that society sets for this academic subject and the psychosomatic health of the population of Ukraine, where the most difficult and lengthy stage is the restoration of health after injuries sustained as a result of war.

We see prospects for further scientific research in the development of pedagogical technology for PE students after mild blast TBI.

REFERENCES

- Babajanyan, V. V., Semal, N. V., Beseda, N. A., Farionov, V. M., & Kurii, O. V. (2023). The current state of physical education of students in higher education institutions during the war in Ukraine. *Science and technology today*, 2(16), 167-176. [https://doi.org/10.52058/2786-6025-2023-2\(16\)-167-176](https://doi.org/10.52058/2786-6025-2023-2(16)-167-176)
- Blavt, O. (2023). Formation of an inclusive model of physical education for students with disabilities who are war veterans in higher education institutions. *Mountain school of Ukrainian Carpaty*, 28, 5-10. <https://doi.org/10.15330/msuc.2023.28.5-10>
- Blavt, O., & Gurtova, T. (2024). Physical Education in the Restoration of Damaged Functions in Students After Mild blast TBI Complicated By Acuborotrauma. *Journal of Learning Theory and Methodology*, 5(2), 56-63. <https://doi.org/10.17309/jltm.2024.5.2.02>
- Blavt, O., Kozibroda, L., & Rozhko, E. (2021). Generation pedagogical fundamentals the formation of an inclusive educational environment in higher education by means of physical education. *Mountain school of Ukrainian Carpaty*, 25, 63-68. <https://doi.org/10.15330/msuc.2021.25.63-68>
- Boyko, G., Kozlova, T., & Sharafutdinova, S. (2023). Study of motivation for physical education classes under martial law. *Scientific journal of Mykhailo Dragomanov Ukrainian State University*, 1(159), 12-14. [https://doi.org/10.31392/NPU-nc.series15.2023.1\(159\).02](https://doi.org/10.31392/NPU-nc.series15.2023.1(159).02)
- Gurtova, T., & Nezhdoda, S. (2023). Pedagogical fundamentals correction of the mental health of higher education students in the process of physical education under the conditions of martial state. *Education. Innovation. Practice*, 11(4), 20-25. <https://doi.org/10.31110/2616-650X-vol11i4-003>
- Dyuzhikova, T., Balokha, A., & Chepeliuk, A. (2022). Peculiarities of the organization of the educational process in higher education institutions in the conditions of war. *Perspectives and innovations of science*, 11(16), 58-66. [https://doi.org/10.52058/2786-4952-2022-11\(16\)-58-66](https://doi.org/10.52058/2786-4952-2022-11(16)-58-66)
- Dzyak, L.A., Mizyakina, K.V., Shulga, O.O., & Suk, B.M. (2023). Protection of the brain with post-traumatic combat injuries. *Medical newspaper «Health of Ukraine of the 21st Century»*, 5-6, 541-542. https://health-ua.com/multimedia/userfiles/files/2023/ZU_5-6_2023/ZU_5-6_2023_32-33.pdf [in Ukrainian].
- Fulk, G.D., & Nirider, C.D. (2014). Traumatic brain injury. In: O'Sullivan S. B., Schmitz T. J., Fulk G. D., editors: *Physical rehabilitation*. 6th edition, Philadelphia: FA Davis Co.
- Chernenko, I. I. (2022). Peculiarities of rehabilitation of patients after combat craniocerebral trauma. *Psychiatry, neurology and medical psychology*, 20, 19-24. <https://doi.org/10.26565/2312-5675-2022-20-03> [in Ukrainian].
- Ng, S.Y., & Lee, A.Y.W. (2019). Traumatic Brain Injuries: Pathophysiology and Potential Therapeutic Targets. *Front Cell Neurosci*, 27(13), 528. <https://doi.org/10.3389/fncel.2019.00528>
- Methodological principles of the concept of "pedagogical conditions": practice. manual. – 2nd ed., add. and processing. Lviv: LDUBZHD, 2018. 88 p. Lytvyn, Andriy Viktorovych
- Mytchyk, O. P., Tarasyuk, V. Y., & Moroz, M. S. (2023). Physical education of students in conditions of restriction of motor activity. *Academic studies. Series «Pedagogy»*, 1, 110-115.
- Mysyura, V. B. (2023). Restoration of mobility in joints in persons after brain contusion by means of physical culture and sports. *Rehabilitation and Recreation*, 14, 269-276. <https://doi.org/10.32782/2522-1795.2023.14.32>
- Myroshnichenko, V. O., & Yevtushenko, I. M. (2023). Pedagogical conditions of motivation of students of agrarian institutions of higher education for physical education in the conditions of martial law. *Scientific Journal of National Pedagogical Dragomanov University Series 15 Scientific and pedagogical problems of physical culture (physical culture and sports)*, 11 (171), 128-133. [https://doi.org/10.31392/UDU-nc.series15.2023.11\(171\).26](https://doi.org/10.31392/UDU-nc.series15.2023.11(171).26)
- Ovcharenko, O. Yu. (2022). Formation of stress resistance of students in war conditions. *Education of Ukraine under martial law: management, digitalization. European integration aspects*, 239.
- Prystupa, Y., Muzyka, F., Kryshchanovych, S., Matviiv, V., & Ilkiv, O. (2022). The main pedagogical aspects of the formation of professional competence of students of physical culture. *Revista Tempos e Espaços em Educação*, 15(34), e16974. <http://dx.doi.org/10.20952/revtee.v15i34.16974>
- Ghandour, H.Z., Abou-Abbass, H., Al-Hajj, S., & et al. (2022). Traumatic brain injury patient characteristics and outcomes in Lebanon: a multicenter retrospective cohort study. *Journal of Global Health Reports*, 6, e 2022006. <https://doi.org/10.29392/001c.32364>

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