



**THE IMPACT OF PHYSICAL EDUCATION
MEANS ON PSYCHO-EMOTIONAL
STATE OF THE STUDENT AFFECTED
BY THE ANTI-TERRORIST OPERATION,
JOINED FORCES OPERATION**

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Annotation

The article explores the positive effects of physical education and sport classes on the physical, psycho-emotional health of the students affected by Anti-Terrorist Operation (ATO), Joined Forces Operation (JFO). The aim of the study was to determine the effects of Physical Education on improvement of psycho - emotional state of students affected by the ATO/JFO. Materials and instruments: The study involved 30 students affected by the ATO/JFO and now study in the higher educational institutions of Dnipro city. The study was conducted from 2018 till 2020. Psychological testing and assessments referred to self-reported emotional state according to Eysenck Personality Questionnaire; primary screening for post-traumatic stress disorder by O. Blinov; mental health according to the WAN method of assessing subjective Well-being, Activity, and Mood (WAD) and somatic symptoms according to a modified self-assessment questionnaire. Physical activity was measured by the method of quantitative express-evaluation (G. L. Apanasenko). Statistical analysis included mean deviation, standard deviation, and varying reliability in mean values (Student's t-test). Results: High-level anxiety decreased by 23%, high-level frustration decreased by 20%, high-level aggression decreased by 17% and severe rigidity decreased by 29%. By the end of the study, the student survivors had their PTSD symptoms reduced from 4-6 to 2-4. An increase in the students' well-being, activity, and mood was 24.5%, 24.5% and 25.5%, respectively. The number of students who had their physical fitness assessed as average, above average and superb has increased to 25%. About 90% of the students said that exercise helped them cope with stress and bad mood. Conclusions: the results confirm the positive impact of Physical Education of different types, intensity, and volume as part of the college course load requirements on emotional and mental health of the student survivors of the ATO/JFO and can be recommended for further implementation. The introduction of a differentiated approach to Physical Education has significantly improved emotional, mental, and physical health by relieving PTSD symptoms, mental and emotional conditions and improving the overall physical health of the student survivors of the ATO/JFO.

Keywords: students, the ATO/JFO, physical health, emotional state, psychological and physical state, physical education, physical exercises.

Анотація

У статті представлені позитивні зміни фізичного та психоемоційного стану студентів, які постраждали під час проведення антитерористичної операції, операції об'єднаних сил під впливом занять фізичною культурою і спортом. **Метою дослідження** було визначити вплив засобів фізичного виховання на покращення психоемоційного стану студентів, які постраждали під час проведення антитерористичної операції, операції об'єднаних сил. **Матеріали і методи:** у дослідженні брали участь 30 студентів, які постраждали під час проведення антитерористичної операції, операції об'єднаних сил, які навчаються в закладах вищої освіти міста Дніпра. Дослідження проводилося протягом 2018-2020 років. Психологічне тестування дозволило визна-

чити самооцінку психічних станів за методикою Г.Айзенка; первинний скринінг посттравматичного стресового розладу за опитувальником О.А.Блінова; психоемоційний стан за методикою САН та оцінка суб'єктивного самопочуття і наявності соматичних скарг за модифікованим опитувальником анкети самооцінки стану (АСС). Було визначено рівень фізичного здоров'я за допомогою методики Г.Апанасенка. Статистичний аналіз охоплював визначення середнього, середньоквадратичного відхилення, достовірності відмінностей середніх значень (t-критерій Стьюдента). **Результати:** Високий рівень тривожності зменшився на 23%, за шкалою фрустрації високий рівень зменшився на 20%, високий рівень агресивності зменшився на 17% та сильно виражена ригідність зменшилася на 29%. Наприкінці дослідження у студентів, які постраждали під час проведення антитерористичної операції, операції об'єднаних сил, наявність окремих ознак посттравматичного стресового розладу зменшилася від 4-6 до 2-4. Приріст показників самопочуття, активності та настрою у студентів склав 24,5%, 24,5% та 25,5% відповідно. Збільшилася кількість студентів до 25% з середнім, вище за середній та високим рівнями фізичного здоров'я. Близько 90% відзначили, що фізичне навантаження допомагає їм впоратися зі стресом та поганим настроєм. **Висновки:** отримані результати підтверджують позитивний вплив засобів фізичного виховання різної спрямованості, інтенсивності та об'єму в системі занять на психоемоційний стан студентів, які постраждали під час проведення антитерористичної операції, операції об'єднаних сил та дозволяє рекомендувати його до подальшого впровадження. Впровадження диференційованого підходу до занять фізичним вихованням дозволило значно покращити психічне за рахунок вираженого поліпшення ознак посттравматичних стресових розладів, психічних та емоційних станів та підвищення рівня фізичного здоров'я студентів, які постраждали під час проведення антитерористичної операції, операції об'єднаних сил.

Ключові слова: студенти, антитерористична операція, операції об'єднаних сил, фізичне здоров'я, емоційний стан, психофізичний стан, фізичне виховання, фізичні вправи.

Аннотація

В статье представлены положительные изменения физического и психоэмоционального состояния студентов, пострадавших во время проведения антитеррористической операции, операции объединенных сил под влиянием занятий физической культурой и спортом. **Целью исследования** было определить влияние средств физического воспитания на улучшение психоэмоционального состояния студентов, пострадавших во время проведения антитеррористической операции, операции объединенных сил. **Материалы и методы:** в исследовании принимали участие 30 студентов, пострадавших во время проведения антитеррористической операции, операции объединенных сил, которые учатся в заведениях высшего образования города Днепра. Исследование проводилось в течение 2018-2020 годов. Психологическое тестирование позволило определить самооценку психических состояний по методике Айзенка; первичный скрининг посттравматического стрессового расстройства по опроснику О.А.Блинова; психоэмоциональное состояние по методике САН и оценка субъективного самочувствия и наличия соматических жалоб по модифицированному опроснику анкеты самооценки состояния (АСС). Был определен уровень физического здоровья с помощью методики Г. Апанасенко. Статистический анализ охватывал определения среднего, средноквадратичного отклонения, достоверности различий средних значений (t-критерий Стьюдента). **Результаты:** Высокий уровень тревожности снизился на 23%, по шкале фрустрации высокий уровень уменьшился на 20%, высокий уровень агрессивности уменьшился на 17% и сильно выраженная ригидность уменьшилась на 29%. В конце исследования у студентов, пострадавших во время проведения антитеррористической операции, операции объединенных сил, наличие отдельных признаков посттравматического стрессового расстройства уменьшилась от 4-6 до 2-4. Прирост показателей самочувствия, активности и настроения у студентов составил 24,5%, 24,5% и 25,5% соответственно. Увеличилось количество студентов до 25% со средним, выше среднего и высоким уровнями физического здоровья. Около 90% отметили, что физическая нагрузка помогает им справиться со стрессом и плохим настроением. **Выводы:** полученные результаты подтверждают положительное влияние средств физического воспитания различной направленности, интенсивности и объема в системе занятий на психоэмоциональное состояние студентов, пострадавших во время проведения антитеррористической операции, операции объединенных сил и позволяет рекомендовать его к дальнейшему внедрению. Внедрение дифференцированного подхода к занятиям физическим воспитанием позволило значительно улучшить психическое за счет выраженного улучшения признаков посттравматических стрессовых расстройств, психических и эмоциональных состояний и уровня физического здоровья студентов, пострадавших во время проведения антитеррористической операции, операции объединенных сил.

Ключевые слова: студенты, антитеррористическая операция, операции объединенных сил, физическое здоровье, эмоциональное состояние, психофизическое состояние, физическое воспитание, физические упражнения.

1. Introduction.

The annexation of the Autonomous Republic of Crimea and armed conflict in eastern Ukraine, together with other global issues, affected many areas of Ukraine's daily life, including Physical Education and sports.

Military professionals and civilians are coming back to a peaceful life with emotional baggage, changed behavioral patterns, and different attitudes to social and political processes unfolding in the state. Significant changes in one's worldview and habits can be manifested in aggressive behaviors and difficult transitions back to civilian life [16, 17].

The armed conflict has introduced to national legislation a new category of persons that also includes young students.

However, as physical and emotional health are closely linked, students should be able to engage in personal development, know how to cheer themselves up, and do physical activities, improving their mood regardless of the circumstances [12].

Emotional health consists of many factors, including a sense of well-being, being physically active, and mood. Emotional health is the most important factor influencing the lives of the student survivors of the ATO/JFO, i.e. either they have a spike in energy or, quite the opposite, a sharp decrease and decline in vitality. Getting a higher education is challenging, intense, and requires great effort and stamina. Students' emotional health, sense of well-being, and energy level can affect their academic performance and vice versa [13].

Physical education in college for war survivors and lack of research determined the purpose of this study as selecting physical activity and workload according to students' psychological health and emotional state.

2. Literature Review.

As a result of military operations

in eastern Ukraine, Ukraine has seen an increase in the number of young people who survived the ATO/JFO, participated in hostilities, lost someone they loved, served under conditions of extreme stress, and experienced emotional and psychological trauma [23, 26].

There have been numerous challenges for participants and survivors of armed conflict during transition and adjustment to civilian life: problems with social relationships, increased aggression and violence, suicidal behavior, alcoholism, drug addiction, etc. [7]. Evidence shows that war casualties occur not on the battlefield but after hostilities are over due to suicide, fights, and alcohol and drug abuse [39]. Bruce H. Young, Independent Consultant with the California Disaster Mental Health Coalition (CDMHC) and a staff member of the National Center for Post-Traumatic Stress Disorder, released official statistics stating there are 22 veteran suicides each day in the US [42]. Analyzing international experience in military rehabilitation, the United States turns out to have established the most progressive system of recovery, rehabilitation and reintegration of injured service members, veterans and participants in armed conflicts as it is based on continuity of care. Military rehabilitation is a holistic set of medical, physical, psychological, social, and pedagogical measures aimed at restoring physical, emotional, and mental health, and performance and productivity.

Being conducted by trial and error rather than being grounded in scientific evidence, nationwide implementation of rehabilitation practices fail to meet existing requirements [6]. The current legislation has been unable to ensure comprehensive rehabilitation to students affected by military actions.

The studies [8] examined and substantiated theoretical and methodological foundations for rehabilitation activities for service members who participated in hostilities,

based on art therapy, gamification, psychotherapy workshops, and family therapy. However, the studies do not cover differentiated approaches to Physical Education of students who survived the ATO/JFO.

There is an obvious link between physical and mental health of students. Authors believe that students with a higher level of physical fitness are able to better adapt to new conditions at the early learning stage, which positively affects their well-being, mood, and academic performance [12, 13, 18, 27]. Physical Education is instrumental in shaping a healthy lifestyle and improving psychophysical and emotional health [23; 24].

The purpose of the study is to scientifically substantiate a differentiated approach to Physical Education, taking into account the student survivors' psychological health and emotional state and determine its effectiveness.

3. Method

3.1. Participants

The study had 30 participants who participated and survived the ATO/JFO and came to study to higher education establishments of Dnipro such as: Prydniprovsky State Academy of Physical Culture and Sports, Oles Honchar Dnipro National University, M. Glinka Dnipro Academy of Music, Dnipro State Medical Academy, V. Lazaryan Dnipro National University of Railway Transport, and National Technical University Dnipro Polytechnic. All the study participants gave written consent, voluntarily confirming their willingness to take part in the research.

Statistical analysis. Experimental data were processed using methods of mathematical statistics (descriptive statistics).

3.2. Study design

The study was conducted during 2018-2020 in higher education institutions in the city of Dnipro, Dnipropetrovsk region (Ukraine). A differentiated approach to Physical Education was introduced in

universities and colleges for student survivors to improve their mental, emotional, and physical health. The goal was to improve emotional and physical health through the marked improvement of PTSD symptoms, mental and emotional health, and improved physical fitness in students who survived the ATO/JFO.

The participants were divided into groups based on their self-report in a modified self-assessment questionnaire and teacher observations during PE classes. The teacher would select and assign physical activity based on the students' initial mental and emotional state and its shifts throughout PE class.

The students who came to PE class exhibiting violent or aggressive behavior, unmotivated negative attitudes, sudden disruptive behavior, a pessimistic view on what is happening, fits of anger, irritability, bad well-being and mood, and agitation, were offered, as the core part of PE class, moderate and vigorous physical activities (pulse and heart rate 140-160 beats per minute-1), to be performed by repeated exercise, interval training, and variable methods. Such physical activity is associated with decrease in irritability, anxiety and aggression and helps cope with violence, rudeness, anger, emotional detachment, superficial empathy, and miscommunication with peers.

Students who feel sick and exhibit a bad mood, fatigue and drowsiness, low activity, and apathy were offered, as the core part of PE class, slow- to moderate-intensity cardio exercises (pulse and heart rate 120-140 beats per minute-1) to be performed mainly by uniform and variable methods. This type of physical activity helped cope with increased vulnerability and sensitivity, an inclination to get wrapped up in themselves, alienation, isolation, fruitless daydreaming, and increasing communication difficulty. Short bouts of exercise calm your mind down, build resilience, and normalize your emotional state.

As a rule, the students would feel improvements in their mood and well-being immediately after exercise and remain steady for several hours.

Sports games and active games had positive psychological effect, allowing effective solution to both treatment and educational tasks: an improved ability to control, manage and use their emotions and feelings, both in PE classes and in daily life. Depending on their mental and emotional state, the students were offered different roles: forwards, defenders, goalkeepers, judges, or "bosses."

During each PE class, students would play psychotechnical games presented as "educational breaks" five- to ten-minute breaks at the end of a lesson.

Psychotechnical games improved concentration, attentional stability and distribution of attention, taught attention control, self-regulation and self-control, and helped concentrate and relax, and critical thinking.

Teaching Physical Education using psychotechnical games improved active mental processes, reduced emotional instability, and taught elements of psychotechnics.

We specifically focused on cultivating emotional regulation, necessary both in daily life and in PE class: breathing exercises, autogenic training and ideomotor training, narrative representations, special techniques of sound and facial expression reproduction. The students performed techniques of psycho-regulation together when doing physical exercises or during short breaks. The techniques were short in time (from 30 to 120 seconds).

The at-home workout regimen included exercise and breathing practice (6-10 exercises) as well as mental and narrative representations to achieve a positive emotional state. If at rest and when exercising you have a feeling of relaxation, physical and breathing exercises have positive effect on your body

and mind.

Sports events and competitions were held twice a month, engaging the students to participate both as organizers and contestants, depending on their current psycho-emotional state.

Health Passport had records of the assessment of the proposed method and feedback from students. Health Passport has 5 sections: general information, physical health, mental health, social status, and sports and health.

Health Passport aims at identifying adaptation challenges during studies, assessing physical, mental and social health that shapes a student's social portrait used for the correction of the PE content.

The process of Physical Education has the stages shaping physical, mental and social health of the student survivors of the ATO/JFO and adaptation to education during a school year.

Preparatory Stage (the first semester of the first year of studies) is predominantly aimed at health improvement and adaptation of students to the academic environment (sharp increase in workload, test-related anxiety and other stressors) and minimizing negative effects of mental, physical and emotional overload.

The second part of Preparatory Stage has a cumulative effect and is aimed at systematic variation of methods of PE to achieve long-term effects of exercise and mental and emotional health. The main stage of professional development and adaptation to the academic environment, increased professionalism and formative years of the professional personality development, higher level of professional capacity, mental, emotional, physical and functional readiness to educate and perform.

3.3. Data analysis

Study results were processed using the "Data Analysis" package of Microsoft Excel spreadsheets. Descriptive statistics (mean and standard deviation) were determined.

Table 1

Differentiation of Physical Education Means for Students Affected by the Anti-Terrorist Operation, Joined Forces Operation with Different Psychological and Emotional State

Type of exercise	Activity Purpose	
	Improving Mental and Emotional Health	Stabilizing (normalizing) Mental and Emotional Health
Freestyle swimming	4x50 m pulse and heart rate 120-130 beats per minute rest 1 min	8x25m pulse and heart rate 140-150 beats per minute rest 30 sec
Exercises to study swimming techniques in full coordination and by elements	100 m, 200 m, moderate tempo, free breathing, holding breath	4x25 m, 8x25 m, (25 m fast, 25 m slow), with acceleration, exhaling into water multiple times
Relay races, active games	Participants	Organizers and judges
Water polo	Forwards	Defenders and goalkeepers
Football, futsal, handball	Forwards	Defenders and goalkeepers
Volleyball, basketball	Forwards	Defenders
Track-and-field (running, walking)	400 m, 800 m, 1000 m, 2000 m (evenly, Slow and moderate intensity) pulse and heart rate 130-140 beats per minute	4x100 m, 2x200 m, 400 m, 8x100 m, 4x200 m, 2x400 m, 800 m, 1000 m, 2000m (fast-slow, fast, with acceleration) pulse and heart rate 150-170 beats per minute
Breathing exercise	“Breathing 4x4” “Slow Breathing Technique”	“Breathing 4x4” “Slow Breathing Technique”
Psychotechnical games	“A fly” “Hyper attention” “Executioner” “Lame monkey”	“Labyrinth” “Introscope” “Fingers” “Pulse”

The reliability of the differences in average values was estimated by the Student's t-test; the withdrawal was considered to be reliable at $p < 0.05$.

4. Results

Participation in military operations in eastern Ukraine is the cause of post-traumatic stress disorder (PTSD) in Ukrainian young people who were morally unprepared for hostilities [29].

Research found PTSD symptoms in the student survivors of the ATO/JFO. PTSD symptom severity was insignificant in 16.7%, moderate in 53.3%, and pronounced in 30% of the student survivors [4; 23]. PTSD symptoms observed in the student survivors included the following: sleep disturbance and depression symptoms, anxiety, aggression, unmotivated alertness, alcohol abuse,

flashbacks, guilt, outbursts, forgetfulness, impaired cognition and attention, feeling numb, hallucinatory experiences, and anger issues. The students reported intrusive flashbacks, sensitivity to noise (shouting, sudden clapping of hands, quiet steps), deterioration of memory and attention, depressed mood, and frustration.

After the experiment, the student survivors reported positive changes [11, 34]. The PTSD symptoms decreased by 10% at $p < 0.05$ for pronounced severity and by 17% at $p < 0.05$ for moderate severity, and increased by 23% at $p < 0.05$ for insignificant severity.

Here is a list of PTSD symptoms that the student survivors assessed 4 to 6 before the experiment and 2 to 4 after the experiment: emotional

tension, adaptation difficulty, anxiety, agitation, general emotional stress, low stress resistance, inability to self-organize, hypersensitivity, mood swings; tendency to worry and fear, unreasonable worry for insignificant details; irritability, low mood, health anxiety; isolation, social alienation; pickiness in choosing contacts [11, 34; 40].

Psychological testing and assessments, according to Eysenck Personality Questionnaire, of the student survivors allowed to draw the following conclusions: anxiety is low in 20% of the students who are characterized as calm, balanced, and tend to complete tasks; average or acceptable in 26.7% of the students who have varying comfort levels in social situations, depending on personality traits and life ex-

Table 2

Change of Indicators of Mental and Emotional Health of the Student Survivors Before and After the Experiment (WAN, units)

Indicator	Before the experiment	After the experiment	Increase, %	Reliability, p
EG (n=30)				
Well-being	3.7±0.5	4.9±0.6	24.5%	p<0.05
Activity	3.7±0.4	4.9±0.7	24.5%	p<0.05
Mood	3.2±0.5	4.3±0.6	25.5%	p<0.05

periences; high in 53.3% of the students who are characterized as tense and feeling anxious.

According to the Frustration Discomfort Scale, the following data were obtained: low – 23.4% – individuals are tolerant to failures, deal with setbacks successfully, persist at their goals, and have adequate self-esteem; average – 40% – have little patience for everyday situations and grow irritable or angry about everyday stressors; high – 36.6% – individuals are characterized by low self-esteem and giving up immediately when presented with a challenge or obstacle.

Based on the Aggression Scale, the data revealed that 23.4% of the students are not aggressive, restrained, and calm; 46.6% have an average level of aggression characterized by mood swings and attempts to restrain their aggression; 30% have a high level of aggression characterized by excessive aggression and violence to other people.

Analyzing the data on the Scale for Personality Rigidity, the following results were obtained: 16.6% of the students have no or low rigidity, which means easily switching between tasks and changing something in life; average rigidity found in 36.7% of the students indicates mood influence on their behavior; high rigidity in 59.7% of the students signal challenges in adapting to new conditions.

After the experiment, the student survivors reported positive changes [20]. High levels of anxiety decreased by 23% at p<0.05, high lev-

els of frustration decreased by 20% at p<0.05, high levels of aggression decreased by 17% at p<0.05, and severe rigidity decreased by 29 % at p<0.05.

Indicators of well-being, activity, and mood assessed the mental and emotional health of the student survivors. The obtained results are mostly low and average for this category of students. At the same time, there is a clear tendency for low result to increase and for average results to reduce throughout classes. This indicates the development of fatigue and worsening of mental and emotional health of the student survivors throughout the academic year.

According to the WAN method of assessing subjective Well-being, Activity, and Mood (WAD), self-reports throughout the academic year confirmed positive change in mental and emotional health in the student survivors (Table 2).

Thus, before the experiment, the student survivors had low indicators of well-being, activity and mood. After the experiment, there was a statistically significant improvement in mental and emotional health of this category of the students. The increase in well-being, activity and mood is 24.5%, 24.5%, and 25.5%, respectively, at p <0.05. Thus, the mental and emotional health of the student survivors has improved to a sufficient level as a result of PE activities with a differentiated approach.

We also determined the impact of our differentiated approach

on the physical health of the student survivors using the method of quantitative express-evaluation of somatic health developed by G.L. Apanasenko (Table 3.) [3]. Out of all the students studied, only 6.7% of young people had a high level of physical fitness, 16.7% above average, 16.7% average, 36.6% below average, and 23.3% of the studied students had low physical fitness.

The vast majority of the participants had below average and low physical fitness before the experiment.

After the experiment, there was a significant decrease in the number of students who had low and below average physical fitness and an increase in the number of students with average, above average and high physical fitness (Table 3).

It was interesting to see how the students started to break their bad habits after the experiment. The study found that 60% of the young people regularly consume alcohol, 36.6% – occasionally. After the experiment, the participants who had higher alcohol consumption reported reduction down to 30%. Instead, the number of young people who had higher alcohol consumption reported reduction down to 30%. Instead, the number of young people who smoke was much lower and decreased only by 10%. In particular, 16.7% and 10% of the students reported smoking regularly and sporadically. The obtained results on self-destructive behaviors were supported by other sources [1; 14] and can suggest a need for more active promoting and encouraging of healthy lifestyles among the younger generation, including colleges

Table 3

Express-Evaluation of the Student Survivors' Physical Fitness Before and After the Experiment

Physical Fitness	ЕГ(n=30)				Reliability, p
	Before the experiment		After the experiment		
	Number of students	%	Number of students	%	
Low	7	23.3	3	10.0	p<0.05
Below average	11	36.6	8	26.7	p<0.05
Average	5	16.7	9	30.0	p<0.05
Above average	5	16.7	7	23.3	p>0.05
High	2	6.7	3	10.0	p>0.05

and universities.

About 90% of the students said that exercise helped them cope with stress and bad mood.

Marked deterioration in the student survivors' health requires new, effective methods of Physical Education to help them improve their physical, mental, and emotional health and encourage a healthy lifestyle.

Physical activity and sports are external factors that positively affect mental health. Our research has shown that the student survivors who had lead an active lifestyle and exercised regularly have physiological benefits and more stable mental and emotional health than their peers who had lead a sedentary lifestyle. Exercise contributes to stress resistance, improved well-being, mood, stress relief, etc. Physical activity increases the production of endorphins, maintains vitality, reduces the likelihood of depression due to the consumption of stress chemicals that accumulate in the body, prevents mental disorders, and so on. High physical activity helps increase overall vitality, stress resistance, restorative mechanisms of autonomic nervous system, and reduce mental fatigue, anxiety, and bad mood [2].

Discussion

According to the Unified State Register of War Veterans, as of June 2020, there are almost 380,000 individuals who defended the indepen-

dence, sovereignty and territorial integrity of Ukraine and participated directly in the Anti-Terrorist Operation, ensuring its implementation; almost 4.800 deaths; and over 11,000 service members with the status of People with Disabilities in War [19]. The status of "direct participation in hostilities" is not a guarantee of adequate social protection, as is evidenced by rights violation for this category of people by employers, public transport carriers, and other institutions and organizations.

Domestic and international experience reveals that issues in social protection have a negatively effect on the mental and emotional health of veterans and combatants, which reduces their resistance to stress, leads to an exacerbation of PTSD symptoms and maladaptive behaviors. Many ATO/JFO participants are not professional soldiers and have no idea how to deal with stress.

Marked deterioration in the student survivors' health requires new, effective methods of Physical Education to help them improve their physical, mental, and emotional health and encourage a healthy lifestyle.

Many authors believe that students who have higher level of physical fitness are better adapted to new conditions associated with the new academic setting, which has a positive effect on their well-being, mental state, and academic perfor-

mance [12, 13, 18, 23, 24]. There is an obvious link between students' physical fitness and mental and emotional health. PE is considered one of the ways of encouraging a healthy lifestyle and improving students' psychophysical and emotional state [27].

We have developed and implemented a differentiated approach to Physical Education, taking into account the psycho-emotional state of the student survivors. The psychophysical and emotional state of the students determines the intensity, volume, and direction of physical exercises, different rest intervals, and a selection of psychotechnical games and psycho-emotional regulation techniques.

The positive effect of the proposed approach lies not only in the fact that it affected physiological adaptation (health and fitness), but it also intensified socio-psychological adaptation by involving students in collective activities (games and interactivity, participation in sport events and physical activities), improved their psychophysical and emotional health (adaptive and communicative skills, neuropsychological stability), and increased their activity and efficiency in studies.

By effectively applying a differentiated approach to Physical Education and factoring in the students' mental and emotional health, the following factors were singled out:

- organizational and pedagogi-

cal factors related to introduction of innovative technologies in Physical Education, analysis and use of information, general improvement of mood (by finding PE methods contributing to this); inclusion of the student survivors in physical and health activities;

- psychological and pedagogical factors related to encouraging students to engage into sports and explore the world, using an individual approach and differentiation to PE; teaching self-observing skills of one's physical and emotional state and ability to analyze cause-and-effect relationships to avoid hardship or overload that contribute to one's deterioration of mental health; development of emotional and behavioral self-control (self-management skills); tolerance to failures; retrieving hidden traumatic memories and emotions in the process of Physical

Education;

- social and pedagogical factors related to positive attitudes in teachers and students towards the introduction of innovative technologies in Physical Education alongside a differentiated approach and socio-pedagogical education.

The study has expanded the idea of the effectiveness of a differentiated approach to Physical Education of the student survivors to improve their mental, emotional, and physical health.

Conclusion

Engaging the student survivors in Physical Education with a differentiated approach made it possible to significantly adjust their mental, emotional, and physical health (level of fitness, adaptive and communicative skills, and neuropsychological stability), increase their physical and mental activity and academic

performance. High anxiety dropped by 23%, high frustration decreased by 20%, high levels of aggression decreased by 17%, and severe rigidity decreased by 29%.

By the end of the study, the student survivors saw their PTSD symptoms lessen from 4-6 to 2-4 and indicators of well-being, activity and mood increase by 24.5%, 24.5%, and 25.5%, respectively. There is also an increase up to 25% for average, above average and high levels of physical fitness of the students. About 90% of the students said that exercise helps them cope with stress and bad mood.

This indicates the effectiveness of engaging the student survivors in Physical Education with a differentiated approach and allows educators to recommend it for further implementation.

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