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Influence of comprehensive physical and psychological rehabilitation on the emotional state and coping strategies of students in crisis situations

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ABSTRACT

Aim: To examine the impact of a comprehensive physical and psychological rehabilitation program on students' emotional well-being, coping strategies and physical endurance in crisis situations following a full-scale invasion of Ukraine.

Materials and Methods: The standardized psychodiagnostic tests were used in the study. The sample of respondents consisted of 812 students within the age range of 18-22 years old; 46,9 % of respondents (n=381) were males, 53,1 % of respondents (n=431) were females. 226 (27,8 %) students were considered as internally displaced persons (IDPs) because of hostilities. 126 students took part in the full range of physical and psychological rehabilitation activities, aiming at the stress reduction and mood improvement.

Results: The study revealed that female students demonstrated higher levels of psychological well-being as compared to male students. In addition, differences were found in the use of coping strategies. Students from the unoccupied territories more often used active problem solving, while seeking social support was more common among IDPs. IDPs also more commonly used emotional regulation and avoidance. The comprehensive rehabilitation program favoured the increase in all aspects of subjective well-being levels, including psychological well-being, physical health and relationships.

Conclusions: Significant improvements in the emotional state of the participants were revealed, in particular, a decrease in the level of stress and anxiety, an increase in the use of adaptive coping strategies. The rehabilitation program also showed a positive impact on the physical endurance of students.

KEY WORDS: coping strategy, psychological health, comprehensive rehabilitation

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INTRODUCTION

Stress is an important issue for study, as it affects human health and behavior. Human professional activity in society is characterized by a significant influence of stress factors and the occurrence of stressful situations [1, 2]. This requires a reaction to ongoing events, and personality traits such as stress resistance are realized, ensuring the experience and overcoming of stressors. This is reflected in resilient behavior and is adapted accordingly in professional activity. Personal activity, including that related to the details of professional tasks, has its own special strategies and courses of action, known as coping strategies, which are closely related to the issue of psychological protection from stress and stressors [3]. Modern psychology views "experience" and "stress" as interconnected processes. Coping is the mechanism through which individuals handle life challenges, facilitating adaptation to their social environment and responses to stressors. Psychological defense is mostly unconscious, but individuals can consciously counteract stress.

AIM

The aim of the study was to examine the impact of a comprehensive physical and psychological rehabilitation program on students' emotional well-being, coping strategies,

and physical endurance in crisis situations following a full-scale invasion of Ukraine.

MATERIALS AND METHODS

Psychodiagnostic methods that are standardized, valid, and tested have been selected for a comprehensive study [4]:

- I. Theoretical analysis of scientific material related to the research problem.
- II. Empirical research method:
 1. The Mental Health Continuum Short Form Questionnaire by Keyes (adapted by E.L. Nosenko, A.H. Chetveryk-Burchak) [4].
 2. The modified bbc subjective well-being scale (BBC-SWB) (P. Pontin, M. Schwannauer, S. Tai, & M. Kinderman) [5].
 3. The John Amirkhan Coping Strategies Indicators technique measures how individuals cope with psychological stress [6].
 4. Test E. Haim "Evaluation of Coping Strategies" is another method aimed at diagnosing coping strategies, which focuses on learning to respond to stressful situations [7].

Both techniques are used to study respondents in different groups, such as experimental and control groups, to find out what coping strategies are prevalent in these groups.

III. Quantitative and qualitative methods of processing: statistical analysis, elements of content analysis, meaningful interpretation of results. Statistical analysis was performed by the use of applied computer programs for universal processing of tabular data Microsoft Excel and a package of statistical analysis SPSS 12.0 for Windows. Quantitative data were presented as mean (M) \pm standard deviation (SD) and 95 % confidence interval (CI). Qualitative data were presented as absolute and relative (%) frequency. Quantitative data between two independent samples was compared by the use of unpaired Student's T-test; between more than two independent samples – by the use of ANOVA with the following Tukey's HSD test for *post hoc* comparisons; and between dependent samples – by the use of paired Student's T-test. Qualitative data between the independent samples was compared by the use of a χ^2 test. A p-value $<0,05$ was considered statistically significant (considering the correction for multiple comparisons). The validity of the results and the reliability of the conclusions of the study depend on a set of empirical methods corresponding to the subject, objectives and hypotheses of the representative and large-scale study.

RESEARCH MATERIALS

The sample of respondents consisted of 812 students of the National University «Yuri Kondratyuk Poltava Polytechnic» studying in different specialties, the age range of respondents was from 18 to 22 years old; 46,9 % of respondents (n=381) were males, 53,1 % of respondents (n=431) were females, which ensured gender equality in the distribution of the sample of respondents and made it possible to consider the sample representative. Some of the students (n=226) are internally displaced persons (IDPs) from regions where hostilities are taking place. The survey was conducted anonymously, through a Google form, ensuring the principle of confidentiality of psychological research.

The concept of stress, introduced by Hans Selye, emphasized the role of external stressors [8]. R. Lazarus argued that a person's ability to cope with stress is more crucial than the stress itself. Rehabilitation specialists address stress at the intersection of medicine and psychology, with coping behavior helping balance external demands and internal resources. Research links coping to psychological defenses involving automatic or conscious responses to stress [9, 10]. The main difference is that defense mechanisms are subconscious, while coping strategies require awareness and can be applied in therapy under specific conditions [10, 11].

Coping strategies are interpreted as conscious methods of psychological regulation, active behavior strategies aimed at changing the situation and satisfying important needs. Psychological defense consists of unconscious passive mechanisms that reduce discomfort but may become maladaptive. Researchers view it as an innate self-defense process, enabling automatic adaptation through subconscious information processing [11-13]. Studies show that overcoming challenges shapes personality, but lasting psychological well-being requires conscious

efforts to transform both external circumstances and inner structures. A holistic approach to psychological trauma helps identify patterns and mechanisms of adaptation, allowing individuals to integrate stress into their experience without distortion. This study examines factors influencing coping strategies, categorized as internal (psychophysiological, neurodynamic, and personality traits) and external (situational and environmental stressors). The study focused on the concepts of "extreme environment" and "extreme situation."

In accordance with the stated goal, the following stages of research were conducted:

Stage 1 – defining health-related quality of life, self-esteem as a resource for the appropriateness of individual behavior [4, 5].

Stage 2 – studying the coping strategies of the respondents [6, 7]. Identifying and explaining the details of the formation of coping strategies at different stages of personality development.

Stage 3 – identification of the relationship between coping strategies and personal characteristics and subjective assessment of the quality of life related to health in respondents of the experimental group.

ETHICS

The study was conducted in accordance with the recommendations of the Ethics Committees for Biomedical Research, Ukrainian Health Legislation and the Declaration of Helsinki of 2000, European Community Directive 86/609 On Human Participation in Biomedical Research. Conducting the research does not contradict the norms of Ukrainian legislation and meets the requirements of the Law of Ukraine «On Scientific and Scientific-Technical Activities» dated November 26, 2015 No. 848-VIII.

RESULTS

The results of the Mental Health Stability Short Form Questionnaire were as follows (max score = 5) (Fig. 1). The average indicators for each aspect of mental health in the table are on the verge of «above average», but one can notice slightly higher results for the level of psychological well-being, which is associated with the adaptability of young people, subjective assessment of their psychological state and satisfaction with personal quality of life.

Students of all age groups demonstrate indicators of all aspects of mental health within the same numerical limits, which may be associated with the physiological and psychological characteristics of this age category, namely the formation of self-awareness, the development of willpower, the formation of one's own worldview as a holistic system of views, knowledge, and beliefs, the desire to assert one's independence and originality, and a significant restructuring of the emotional sphere.

The gender characteristics of the studied aspects of mental health are presented in Table 1.

As shown in Table 2, boys have lower mental health indicators than girls, particularly hedonic well-being, social well-being (numerically, but non-significantly) and psychological well-being, as compared to girls.

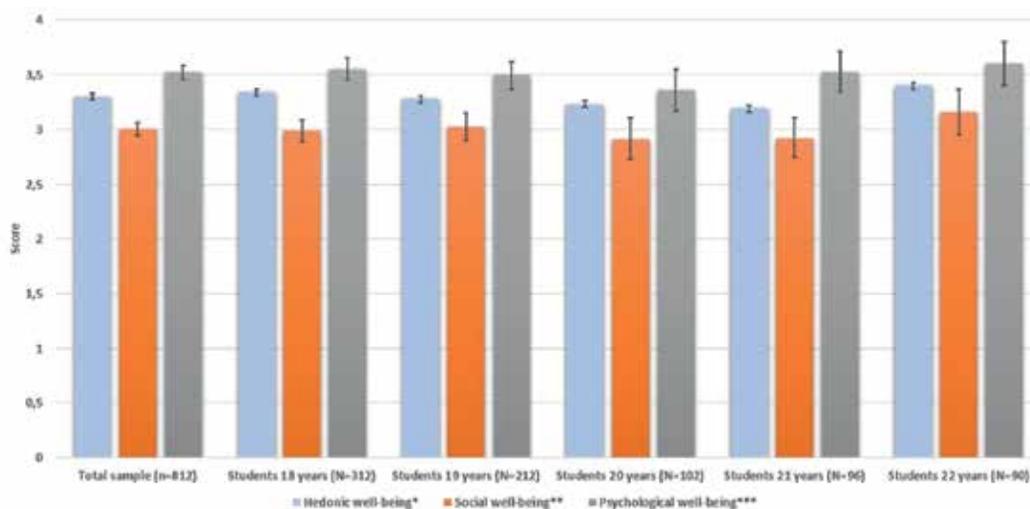


Fig. 1. The results of the Mental Health Stability Short Form Questionnaire in the total sample and different age subsamples of students. Data presented as M ± 95 % CI. Between age groups: * – p=0,595; ** – p=0,368; *** – p=0,357.

Table 1. Gender characteristics in mental health assessment

Mental health indicator	Males n=381	Females n=431	p
Hedonic well-being, score	3,19 ± 1,060	3,39 ± 1,067	0,006
Social well-being, score	2,95 ± 0,930	3,04 ± 0,923	0,136
Psychological well-being, score	3,43 ± 0,926	3,59 ± 0,905	0,010

Table 2. Results of the study based on the method of the Modified BBC Subjective Well-being Scale in the whole sample of students (n=812)

Subscales and Overall Subjective Well-Being Score	Standard numerical values proposed by the authors of the questionnaire			Obtained results n=812
	Low level	Medium level	High level	
Psychological well-being, score	12-39	40-47	48-60	41,11 ± 9,694 95 % CI [40,44-41,77]
Physical health, score	7-20	21-25	26-35	22,70 ± 6,458 95 % CI [22,25-23,14]
Relationships, score	5-16	17-20	21-25	17,99 ± 4,659 95 % CI [17,67-18,31]
Subjective well-being, score	24-76	77-91	92-120	81,79 ± 18,957 95 % CI [80,48-83,10]

The results of the study were analyzed using the Modified BBC Subjective Well-being Scale (Table 2).

As can be seen in Table 2, all the results correspond to the average medium level of well-being, but are borderline to low. Comparing the results by age distribution, there are no significant differences between the studied groups (Fig. 2).

The data from Table 3 suggest the certain differences between males and females regarding the the Modified BBC Subjective Well-being Scale scores. Particularly, the girls demonstrate the higher values of psychological well-being, physical health and relationships scores, as well as

the overall subjective well-being score, in contrast to boys. These differences can be explained by the peculiarity of age development and gender differences, manifestations of resilience and ways of overcoming stressful situations.

The second stage of the study was to determine the coping strategies of the respondents (coping strategy indicator by John Amirkhan, test by Erich Haim [9, 10]) (Table 4).

Table 4 compares the use of coping strategies among students from the unoccupied territories and IDPs. The results show significant differences between these groups.

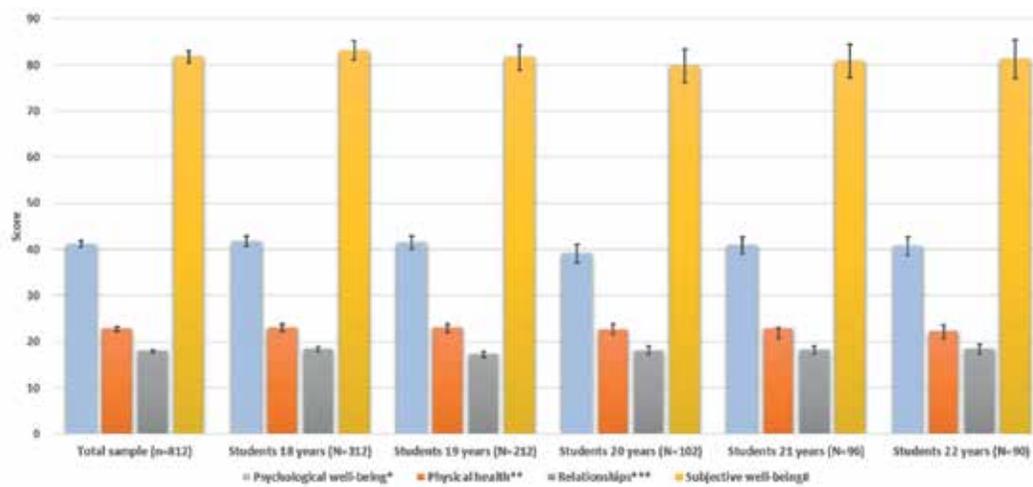


Fig. 2. The results of the Modified BBC Subjective Well-being Scale in the total sample and different age subsamples of students. Data presented as M ± 95 % CI. Between age groups: * – p=0,164; ** – p=0,511; *** – p=0,097; † – p=0,565.

Table 3. Gender characteristics of the Modified BBC Subjective Well-being Scale scores

Subscales and Overall Subjective Well-Being Score	Males n=381	Females n=431	p
Psychological well-being, score	40,32 ± 9,619	41,80 ± 9,718	0,029
Physical health, score	22,05 ± 6,372	23,27 ± 6,486	0,007
Relationships, score	17,60 ± 4,640	18,33 ± 4,654	0,024
Subjective well-being, score	79,96 ± 18,707	83,41 ± 19,051	0,010

Table 4. The coping strategies among the students from unoccupied and occupied territories

Coping strategy	Students from unoccupied territories N=586	Students from occupied territories (IDPs) N=226	p
Active problem solving, n (%)	293 (50,0)	59 (26,1)	<0,001
Social support, n (%)	293 (50,0)	158 (69,9)	<0,001
Emotional regulation, n (%)	234 (39,9)	113 (50,0)	0,009
Avoidance, n (%)	196 (33,5)	136 (60,2)	<0,001

Active problem solving is more commonly used by students from the unoccupied territories (50,0% vs. 26,1%; p<0,001), while seeking social support is more common among IDPs (69,9% vs. 50,0%; p<0,001). IDPs also more commonly use emotional regulation (50,0% vs. 39,9%; p = 0,009) and avoidance (60,2% vs. 33,5%; p<0,001).

Table 5 provides an explanation of the main coping strategies used by students from both groups. Students from the unoccupied territories are characterized by active problem solving in academic and social situations, seeking support in the group, among teachers and family, emotional regulation through interpersonal contacts and moderate avoidance of stressful situations. In contrast, IDPs are dominated by the desire to solve problems related to adaptation to new living conditions, they more often seek social support, use emotional regulation strategies aimed

at preserving the familiar environment, and may resort to avoidance to reduce emotional discomfort.

Based on the diagnostic results, risk areas for the health of students were identified, especially with IDPs, since such students demonstrated lower assessments of mental health aspects. In particular, a psychosocial support program was developed aimed at reducing stress, increasing self-esteem and supporting the mental health of students, a program of comprehensive physical and psychological rehabilitation of students during the full-scale invasion of Ukraine. The program was based on an integrated approach and relied on general scientific principles of consistency and objectivity [17, 18]. Among the aspects of improving the level of mental health, both physical rehabilitation and the development of psychological health and social connections were taken into account. Psychological trainings

Table 5. Explanation of coping strategy

Group	Active problem solving	Social support	Emotional regulation	Avoidance
Students from unoccupied territories	Finding solutions in learning and social situations, active problem solving.	Use support from groupmates, teachers, and family to overcome problems.	Emotional regulation strategies through interpersonal contacts and social support.	Moderate avoidance of stressful situations such as academic stress or conflicts.
IDPs from occupied territories	The desire to solve problems related to adaptation and new life realities.	High level of seeking support from family, friends and social organizations.	Strategies for emotional regulation through maintaining the environment, adapting to changes.	Possible avoidance due to a desire to avoid emotional trauma or stress associated with moving.

Table 6. The repeated results of the Modified BBC Subjective Well-Being Scale (n=126)

Subscales and Overall Subjective Well-Being Score	Standard numerical values proposed by the authors of the questionnaire			Primary results	Repeated results	P
	Low level	Medium level	High level			
Psychological well-being, score	12-39	40-47	48-60	35,87 ± 8,686 95 % CI [34,33-37,40]	41,99 ± 5,693 95 % CI [40,99-43,00]	<0,001
Physical health, score	7-20	21-25	26-35	18,55 ± 4,952 95 % CI [17,68-19,42]	21,08 ± 5,179 95 % CI [20,17-21,99]	<0,001
Relationships, score	5-16	17-20	21-25	15,71 ± 4,697 95 % CI [14,89-16,54]	19,53 ± 2,884 95 % CI [19,02-20,04]	<0,001
Subjective well-being, score	24-76	77-91	92-120	70,13 ± 15,469 95 % CI [67,40-72,85]	76,27 ± 17,038 95 % CI [73,27-79,27]	<0,001

and workshops are used to reduce stress and improve emotional regulation through meditation, relaxation and art therapy. Relaxation and breathing techniques are important for reducing physiological symptoms of stress, such as tachycardia and muscle tension [19, 20].

Integration of physical and psychological renewal methods was achieved through multidisciplinary classes combining physical training and psychological classes to reduce stress and improve mood. The interaction of participants in groups was implemented on the principle of «peer-to-peer». 318 first-year students of the National University «Yuri Kondratyuk Poltava Polytechnic» took part in the stress resistance development trainings. Classes were held in May-June 2024 at the Student Hub of the University, 126 students took part in the full range of rehabilitation activities. The training sessions were followed by a control psychodiagnostic study of the level of mental health, which showed positive dynamics.

Analyzing the results of the study using the Modified BBC Subjective Well-being Scale, repeated results were obtained, which are presented in Table 6.

According to the obtained results, we observed an increase in all aspects of subjective well-being levels after completing the training sessions, which might indicate the effectiveness of the comprehensive rehabilitation program, and could be generally contributed to the resilience of the student youth and a high level of personal effectiveness in difficult life conditions.

DISCUSSION

Physical rehabilitation included aerobic exercise to reduce stress and anxiety, and yoga to improve physical fitness, reduce body tension, and increase flexibility [11, 17]. Strength training was also provided to maintain physical fitness and reduce loss of fitness. Outdoor group activities, such as hikes and team games, were organized to promote social interaction and restore physical activity. Physical health support included massage and therapy to relieve muscle tension, and consultation with a nutritionist to maintain a healthy diet that increased physical endurance [9, 18, 20].

The results of the study showed that the students' physical and psychological well-being improved significantly after

completing the comprehensive rehabilitation program. The findings indicate that rehabilitation programs have a positive effect on students' emotional responses, especially in reducing stress and anxiety levels and developing more adaptive coping strategies.

Special attention should be paid to the use of coping strategies among students of different groups. According to the data obtained, students from the unoccupied territories used active problem solving more often, which indicates their tendency to a rational approach to overcoming difficulties. They turned to social support, which emphasizes the importance of interpersonal interaction in the adaptation process. At the same time, students who were forced to leave their homes resorted to social support much more often, which reflects their need to restore a sense of security through interaction with relatives, friends and public organizations.

Additionally, a greater use of emotional regulation strategies was observed among IDPs, which is likely related to the need to adapt to new living conditions. Their emotional regulation methods included maintaining social ties, psychological adaptation, and forming new habits that helped stabilize their emotional state. At the same time, a significant proportion of this group showed a tendency to avoid problematic situations, which may be explained by psychological fatigue, the need to reduce emotional stress, and a desire to avoid repeated traumatic experiences.

Moreover, the analysis did not reveal statistically significant age differences among the studied groups. This indicates that the effectiveness of the rehabilitation program was not dependent on the students' age characteristics but

was equally effective across different age categories. The results obtained confirm the universality of the proposed approach to physical and psychological rehabilitation, making it applicable to a wide range of students regardless of age. Thus, it can be concluded that the comprehensive rehabilitation program has a positive effect on students' psycho-emotional state and physical health, promotes the development of adaptive coping strategies, and facilitates the process of social integration.

CONCLUSIONS

The results of the study confirm the high efficiency of the comprehensive program of physical and psychological rehabilitation of students during the full-scale invasion of Ukraine. The use of maladaptive behavior patterns has become more frequent.

The rehabilitation programs also showed a positive effect on the physical endurance of students, which indicates the importance of combining physical and psychological approaches in rehabilitation activities. Particular attention should be paid to the fact that the improvement was observed precisely in crisis situations that have a great impact on the psychophysiological state of young people.

The data highlights the importance of rehabilitation programs in educational institutions, especially for students, displaced persons, or those in difficult situations. These programs restore emotional balance, improve physical health, and help young people develop resilience to overcome modern challenges. A comprehensive rehabilitation program can thus become a key support system for students in crisis, enhancing their self-healing abilities and overall well-being.

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CONFLICT OF INTEREST

The Authors declare no conflict of interest

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