

# THE PSYCHOLOGICAL RECOVERY PROGRAM OF UKRAINIAN MILITARY PERSONNEL AFTER COMPLETING COMBAT MISSIONS IN THE RUSSIAN-UKRAINIAN WAR

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## ABSTRACT

*Objectives.* With the start of the Russian-Ukrainian war, the Ukrainian military personnel is experiencing combat stress. Manifestations of acute stress reactions and post-traumatic stress symptoms require psychological assistance and recovery of the soldiers' personal resources. This study aims to develop a psychological recovery program "Invincibility Program" for Ukrainian military personnel after performing combat missions to relieve the effects of chronic combat stress and to evaluate its effectiveness.

*Sample and settings.* 1090 Ukrainian military personnel took part in the study, which had combat experience after February 24, 2022.

*Hypothesis.* The psychological recovery program will help to reduce the effects of combat stress on military personnel.

*Statistical analyses.* The statistical analysis of the study results was carried out using the program SPSS 20.0.

*Results.* The activities of the program led to an improvement in the mental state and positively significant changes in the well-being of the participants, the mobilization of psychological resources, and an increase in the resistance of soldiers to combat stress. A high level of subjective usefulness of the program was revealed.

*Limitations.* This study was limited by not having an active comparison condition and by not having a longitudinal follow-up.

*key words:*

posttraumatic stress,  
psychological recovery program,  
combatants,  
combat missions,  
Russian-Ukrainian War

## INTRODUCTION

On February 24, 2022, the armed forces of the Russian Federation invaded Ukraine and large-scale hostilities began, in which hundreds of thousands of military personnel from both sides took part. Combat injuries received by Ukrainian servicemen are accompanied by particular severity, multiplicity, and combined defeat (Shvets et al., 2022). This is due to the enemy's use in hostilities of many types of modern weapons: ballistic missiles, unmanned aerial vehicles, artillery shells, mines, multiple-launch rocket systems, firearms, etc. Also, almost all military personnel participating in hostilities combat stress manifested in the form of acute stress reactions (ASRs), affective and anxiety disorders, maladaptation, addictive and delinquent behaviour, and suicidal manifestations (Kolesnichenko et al., 2021; Shvets et al., 2021). Deployment may result in psychiatric casualties that are either the result of inadequate coping with the stressors of deployment or ASRs caused by the trauma of battle, that is, combat stress reactions (Gaylord, 2006). These negative consequences of combat stress require the provision of psychological first aid to military personnel (Prykhodko et al.,

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2021) and psychological recovery of personality resources (Kokun et al., 2020; Sayer et al., 2009).

Combat stress can have immediate, long-term, and deferred mental effects (Solomon, 2020). At first, signs of combat stress are not subjectively felt as a disease, without disturbing the adaptation and resilience of military personnel to combat conditions (Inoue et al., 2022; Prykhodko et al., 2020). While most soldiers can adequately cope with these stressors, others become so overwhelmed by combat stress that their psychological defenses become exhausted, causing psychological breakdown (Solomon, 2020). Subsequently, these changes in some military personnel can be transformed into a delayed response to a stressful event of a threatening or catastrophic nature, which can later cause more severe stress (Campbell & Nobel, 2009). Such mental changes are grouped under the category of “post-traumatic stress disorder” (PTSD) studied by many researchers (eg, Adler & Castro, 2013; Gates et al., 2012; Murphy & Busuttill, 2015; Steenkamp & Litz, 2013; Wieland et al., 2010).

During the battle, soldiers not only face ongoing danger while in the active field of duty; they also witness the injury and death of their fellow soldiers, commanders, and enemies as well as innocent civilians (Adler & Gutierrez, 2022). They struggle with loneliness, isolation, forced separation from their loved ones, and lack of their physical needs met regarding food, drink, and sleep (Solomon, 2020). Added to the enormous stress is the unpredictability of modern warfare, including the risk of weapons of mass destruction and asymmetric combat operations, making it difficult to predict where and when the next attack might occur (Prykhodko et al., 2022).

Research conducted after military conflicts has shown that deployment stressors and exposure to combat result in considerable risks of mental health problems, including PTSD, depression, substance abuse, impairment in social functioning and in the ability to work, and the increased use of healthcare services (Gaylord, 2006; Hoge et al., 2008; Kolesnichenko et al., 2021; Seal et al., 2007). Gaylord (2006) concludes that although protective and mediating factors are in place, 11% to 17% of combat veterans are at risk for mental disorders in 3 to 4 months after return from combat duty. Seal et al. (2007) found that out of 103,788 US veterans, 25,658 (25%) received mental health diagnosis(es); 56% of whom had two or more distinct mental health diagnoses. Therefore, mental health issues must be addressed before and during deployment to ensure optimum individual and unit functioning, as well as to prevent chronic mental illness and disability in the future (Gaylord, 2006; Griffith, 2019; Seal et al., 2007).

Ukrainian researchers also confirmed that as a result of the negative impact of combat stress, military personnel (25% of officers and 33% of contract service members) showed there was an insufficient level of stress reactivity, social and personal adaptation to the conditions of combat operations (Kokun et al., 2023; Prykhodko et al., 2020), and about 90% of military personnel need comprehensive medical and psychological rehabilitation (Shvets et al., 2021).

Hypothesis: the activities of the psychological recovery program will help to stop the effects of combat stress on military personnel.

In psychology, rehabilitation is understood as a comprehensive recovery of human activity, which has social, legal, medical, psychological, professional, and pedagogical aspects (Prykhodko, 2018). The main goal of rehabilitation is the complete recovery of mental and physical health, working capacity, and adaptability of a person in a social environment. Psychological recovery and rehabilitation of military personnel after participation in deployments and combat operations are one of the priority problems addressed by many scientists and practitioners in the mental health field of military personnel (Bricknell, 2021; Gates et al., 2012; Hoge et al., 2008; Inoue et al.,

2022; Jones et al., 2003; Murphy & Busuttil, 2015). For its implementation, various programs are being developed aimed at increasing resilience-enhancing and reducing the impact of combat stress on military personnel before deployment, during combat missions, and after they are completed (Castro & Adler, 2011; Cozza et al., 2013; Doody et al., 2021; Knobloch et al., 2019; McInerney et al., 2022; Steenkamp & Litz, 2013; Svetlitzky et al., 2020).

In our opinion, programs for the psychological recovery and rehabilitation of military personnel are more effectively implemented in the Armed Forces of the United States, Great Britain, and Israel; other countries are developing similar activities based on these programs (Besemann, 2011; Friedemann-Sánchez et al., 2008; Prykhodko, 2018). So, in the US Armed Forces, there is a program for combat and operational stress control (COSC) in military personnel (United States Government US Army, 2006). COSC is a coordinated program for the prevention of and actions taken by the military leadership to prevent, identify, and manage adverse combat and operational stress reactions in units. The goal of the COSC program is to preserve the mission effectiveness and warfighting capabilities of military personnel and mitigate the adverse physical and psychological consequences of exposure to severe stress (Doody et al., 2021). The main focus of COSC is to enhance the psychological health of military personnel, to include strength-building strategies and application of psychological principles in mission performance, and address the prevention and management of stress before deployment and stress reactions during and after deployment (Maglione et al., 2022). The target population of these programs was US service members who participated in an intervention designed to address combat or operational stress in a deployed, operational, or field setting (Cooper et al., 2021; Knobloch et al., 2019).

Trauma Risk Management (TRiM) is a peer-support program that aims to promote help-seeking military personnel in the aftermath of traumatic events, developed by the UK Royal Navy (Jones et al., 2003). This program reflects a peer-led, occupational mental health support process that aims to identify and assist U.K. military personnel with persistent mental ill health related to potentially traumatic events (Greenberg et al., 2010, 2011; Jones et al., 2017). TRiM seeks to modify attitudes about PTSD, stress, and help-seeking and trains military personnel to identify at-risk individuals and refer them for early intervention (Gould et al., 2007). The use of TRiM may assist in increasing the psychological resilience of military personnel through the facilitation of social support; this may have particular utility during operational deployments (Frappell-Cooke et al., 2010).

The Israeli Defense Forces have extensive experience in the psychological recovery of military personnel (Solomon, 2020). For this purpose, combat fitness retraining units have been created, which include psychiatrists, social workers, clinical psychologists, combat training, and sports instructors. An essential condition in implementing the psychological recovery program for military personnel is the participation of specialists with combat experience, which allows you to establish more trusting relationships in carrying out this work (Solomon, 2020). Also, the Israel Defense Forces developed YaHaLOM training to teach service members how to manage ASRs in team members (Svetlitzky et al., 2020) and then adapted into ICOVER by the U.S. Army. YaHaLOM is a novel, rapid, peer-based intervention specifically designed for use amid a high-stress event.

Therefore, this study aimed to develop a psychological recovery program for Ukrainian military personnel after performing combat missions in the Russian-Ukrainian War to relieve the effects of chronic combat stress on military personnel and to evaluate the effectiveness of this program.

## “INVINCIBILITY PROGRAM”

After the start of the war and three months of intense hostilities, Ukrainian military personnel began to experience acute stress reactions, more often showing signs of distress and adjustment disorders, depression, demoralization, post-traumatic stress, and suicidal behavior. Therefore, the Command of the Operational Group of Troops “Kharkiv” created the rehabilitation center. The rehabilitation center was located 30–40 km far from the combat zone. The psychological recovery project for military personnel after being in combat conditions began in June 2022 and continues to this day based on the sanatorium in the Kharkiv region. The psychological recovery program for military personnel was specially developed for its practical implementation: we named it the “Invincibility Program.” The duration of stay of the program participants in the rehabilitation center was seven days. Initially, the program was implemented by two experienced military psychologists (the primary authors of this program), who worked with a group of 30 military personnel. After minor adjustments to the program, the number of participants gradually increased, and now five military and two civilian psychologists are involved, working with 60–80 persons of military personnel. All participants are divided into 4–5 groups for group psychotherapy and psycho-correction (10–15 people in a group with 1–2 psychologists). Group activities were held in the morning, and individual consultations were held in the afternoon. Psychologists were constantly with their participants for the entire duration of the program. Two weeks later there was a rotation of civilian psychologists, and a month later military psychologists; the head of the program and his deputy worked with the military incessantly. The total number of military personnel involved since the beginning of the psychological recovery program has amounted to more than 3 000 people.

To reduce the impact of combat stress on combatants, strengthen mental health and mobilize their psychological resources, improve adaptation and resilience, and promptly return to combat activities, the authors of the manuscript developed the psychological recovery program for military personnel after participating in hostilities. The main objectives of the “Invincibility Program” for military personnel are: 1) minimizing the impact of prolonged combat stress; 2) strengthening mental health, restoring the level of psychological safety of a serviceman’s personality (PSSP), and maintaining the effectiveness of professional activities; 3) prevention of mental disorders, including manifestations of suicidal behavior, and addictions; 4) mobilization of personality psychological resources for overcoming the consequences of contusions, wounds, injuries, relieving pain; 5) psychological correction of violations of the moral and communicative, motivational and volitional, value and behavioral spheres of the personality; 6) training in self-regulation techniques to normalize a person’s physical and mental reactions to extreme situations (relieving tension, anxiety, aggressiveness, controlling addictive behavior, training in self-motivation techniques); 7) improving the constructive skills of social interaction in the military team; 8) monitoring the psychological state of military personnel.

To carry out the psychological recovery of servicemen after the performance of combat missions, testimonies were formulated in which it was established that the combatants experienced events that went beyond the limits of ordinary human experience that could injure the psyche of any healthy person. These inclusive criteria and indications for the selection of military personnel were: 1) ASRs in the form of motor and mental disorders (aggressive behavior, disorientation, nervous trembling, hallucinations, delirium, hysteria, constant crying, stupor, apathy, panic), requiring psychological first aid and subsequent outpatient or inpatient treatment; 2) prolonged states of psycho-emotional stress (constant anxiety, repeated in a dream, in conversations

with colleagues, suicidal thoughts); various sleep disorders that worsen well-being, and performance and require psychotherapy; 3) an increase in irritability, unmotivated aggression, conflict, and decrease in behavioral, and cognitive functions, leading to a violation of combat activity, in which a critical attitude towards the mental state is not maintained; 4) vegetative disorders after minor psycho-emotional stress (cardiac arrhythmias, fluctuations in blood pressure, chills or fever, dizziness attacks, frequent headaches, nausea, lack of air, fainting, etc.); 5) a critical decrease in the PSSP, anxious, pessimistic, depressive, or other negative mental reactions and conditions detected during psychodiagnostic; 6) stable preservation of asthenic symptoms (constant fatigue, cognitive decline, inattention, physical and mental lethargy, unproductive activity); 7) progressive isolation, the desire for loneliness, limiting the circle of communication with colleagues, a decrease in interest in life; 8) unmotivated and unusual for a serviceman increased activity during the performance of combat missions or after their completion, combined with an unstable mood; 9) signs of increasing distress, manifested in a decrease in the quality and volume of tasks performed, including daily duties, with a general desire to fulfill the assigned tasks; 10) long-term pain syndromes after traumas, wounds without signs of development of organic changes in the places of injuries. Military personnel with mental disorders, determined by psychiatrists (according to ICD-10), should not be sent to a rehabilitation center, but examined and treated in specialized psychiatric departments.

The main activities included in the “Invincibility Program” were carried out in a group form and consisted of three sections (Table 1).

*Table 1* The main activities of the “Invincibility Program”

Section	Main activities of the program
I. Psychological	1. Psychodiagnostics (monitoring of the individual psychological characteristics of the personality of servicemen before and after passing through the program).
	2. Psychoeducation (mini-lectures about combat stress, ASRs and PTSD, possible consequences of mental trauma).
	3. Psychological training of PSSP recovery program for participants.
	4. Practical exercises on teaching self-regulation techniques: bio-suggestive therapy (relieving tension, anxiety, anger, aggressiveness); art therapy (neuro-graphic); control of addictive behavior; training in self-motivation techniques, etc.
	5. Individual consultations of military personnel, carried out regardless of the activities of the main program.
II. Medical	1. Recovery of the musculoskeletal system (healthy walking, exercise therapy, swimming pool, hydro-massage, massage, sauna).
	2. Recovery of the cardiovascular and nervous system (laser-therapy, electro-sleep).
	3. Recovery of the respiratory systems (speleo/therapy (salt room), aromatherapy).
III. Social	1. Holding cultural events (concerts of famous performers, excursions, etc.).
	2. Meetings with the families of military personnel participating in the program.
	3. Conducting rallying events between various units of the Ukrainian Defense Forces (thematic evenings, sports games, table tennis competitions, billiards, barbecue party, etc.).

The basis for the creation of the “Invincibility Program” was psychological training for the development of PSSP. The training of the psychological rehabilitation program

for participants in the anti-terrorist operation in the East of Ukraine was developed and passed the relevant practical testing. The goal of the training was to restore PSSP for a harmonious combination of a sense of personal security, the ability to develop, and self-realization. The structure and content of the activities and techniques used in the training are detailed in the article (Prykhodko, 2018). The psychological recovery program for military personnel after participating in hostilities is presented in Table 2.

*Table 2* The structure and content of the psychological recovery program for military personnel for group work

Days	Group work activities
Day 1	<p>1. Introductory conversation (0.5 hours). Purpose: determination of the individual situation of development, the state of well-being, the formation of conscious participation in psychological activities, identification with a social group, and awareness of one's own characteristics.</p> <p>2. Psychological diagnostics (0.5 hours). The use of the "The Mississippi Scale", "Disadaptation Express Questionnaire", "Express Diagnostics of Psychological Safety of a Serviceman's Personality Questionnaire", and "Assessment of Negative Mental Reactions and Conditions in Military Personnel Questionnaire". Purpose: to determine the psychological state of military personnel.</p> <p>3. Mini-lecture on combat stress, and possible consequences of mental trauma (0.5 hours). Purpose: to provide a general understanding of combat stress, the impact on the psyche and the possible consequences of mental trauma, signs of ASRs and PTSD, and the possibility of psycho-corrective intervention.</p> <p>4. Relaxation techniques and bio-suggestion: "Grounding", "Happy Place" (0.5 hours), and "Morpheus" technique for sleep correction (0.5 hours). Purpose: teaching techniques to overcome combat stress and mental trauma.</p>
Day 2	<p>1. The PSSP recovery training (session 1, work with the "Inner comfort" block, 1 hour). Purpose: correction of ASRs and negative mental conditions that arise during the committing of hostilities, improve sleep, and increase the value of life.</p> <p>2. Self-regulation, relaxation, and bio-suggestion session: training in breathing techniques, self-motivation techniques (0.5 hours), and the "Morpheus" technique for sleep correction (0.5 hours). Purpose: teaching techniques to overcome stress and mental trauma.</p>
Day 3	<p>1. The PSSP recovery training (session 2, work with the "Value and meaning of life" block, 1.5 hours). Purpose: discussion of life achievements, the meaning of life, overcoming the difficulties of military service, and problems of combat activity.</p> <p>2. Bio-suggestion session: "Morpheus" technique for sleep correction (0.5 hours). Purpose: teaching techniques to overcome stress and mental trauma.</p>
Day 4	<p>1. The PSSP recovery training (session 3, work with the "Motivational and volitional" block, 1 hour). Purpose: formation of flexibility in achieving goals, redistribution of psychological resources for higher priority goals, training in the use of productive coping strategies.</p> <p>2. Self-regulation and bio-suggestion session: work with losses, grief (0.5 hours), and the "Morpheus" technique for sleep correction (0.5 hours). Purpose: teaching techniques to overcome stress and mental trauma.</p>
Day 5	<p>1. The PSSP recovery training (session 4, work with the "Moral and communicative" block, 1.5 hours). Purpose: Formation of positive group interaction in the military team, teaching techniques for overcoming conflicts.</p> <p>2. Self-regulation and bio-suggestion session: work with alcohol, drug addictions (0.5 hours), and the "Morpheus" technique for sleep correction (0.5 hours). Purpose: teaching techniques to overcome stress and mental trauma.</p>

Day 6	<p>1. Neuro-graphic (1.5 hours) The purpose of neurography drawing is to depict unconscious fears, anxiety, persuasion, tension, and life experience. The limitations that block the development of the personality rise to the level of consciousness, where they can be turned into ideas that can give a positive result.</p> <p>2. Self-regulation and bio-suggestion session: work with losses, grief (0.5 hours), and the “Morpheus” technique for sleep correction (0.5 hours). Purpose: teaching techniques to overcome stress and mental trauma.</p>
Day 7	<p>1. Psychological diagnostics (0.5 hours). The use of the “Resilience to Combat Mental Trauma Questionnaire”, “Assessment of Negative Mental Reactions and Conditions in Military Personnel Questionnaire”, and “Feedback Questionnaire”.</p> <p>2. PSSP recovery training (final session, group “drawing” of future prospects, and life path, 1 hour). Purpose: actualization of plans for the future life, the formation of a positive attitude towards life, family, and professional activities.</p> <p>3. Self-regulation session: breathing techniques, self-motivation techniques (0.5 hours). Purpose: teaching techniques to overcome stress and psychological trauma.</p>

Participants of the “Invincibility Program” were allowed to live with their families and family members (wives, children) could participate in all activities of the psychological recovery program. Only about 30% of participants took advantage of this option: most of the families became forced refugees and left Ukraine or lived far from the rehabilitation center.

## METHOD

### Respondents

Ukrainian Defense Forces military personnel (N = 1090 males, between 20 and 59 years of age, M = 35.84, SD = 6.49) participated in the study. All combatants participated in the Russian-Ukrainian war and had combat experience after February 24, 2022 (6-10 months), (M = 8.75, SD = 2.58). Combatants were referred to the rehabilitation center from combat positions based on a list of indications for psychological recovery. In addition to psychological problems, more than half of the program participants had various physical injuries: shrapnel and gunshot wounds, fractures, barotraumas, contusions, and other injuries. After completing the “Invincibility Program”, all servicemen are returned to the combat zone to continue combat missions. According to military specialties, there were infantrymen, attack aircraft, scouts, snipers, tankers, artillerymen, and other military specialists. Participants were randomly selected for the study.

All procedures met the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. All participants consented to use their data in this research.

### Instruments

Psychological diagnostics to determine the severity of the impact of combat stress on combatants were carried out after arrival at the rehabilitation center. At the beginning of the program, the tests were used: the “Mississippi Scale”, “Disadaptation Express Questionnaire” (DEQ), “Express Diagnostics of Psychological Safety of a Serviceman’s Personality Questionnaire” (EDPSSPQ), “Assessment of Negative Mental Reactions and Conditions in Military Personnel Questionnaire” (ANMRCMPQ). At the end of the program, the tests were used: the “Resilience to Combat Mental Trauma Questionnaire” (RCMTQ), and “Feedback Questionnaire” (FQ). Psychodiagnostics of servicemen using the ANMRCMPQ were carried out twice: after they arrived at the rehabilitation center and end of the psychological recovery program.

The “Mississippi Scale” (Keane et al., 1988) was used to diagnose PTSD in military personnel on missions in the war zone, adapted into Ukrainian (Kolesnichenko et al., 2020, pp. 283-286). The scale consists of 35 statements, the answers to which were given on a 5-point Likert scale. The 11 statements of the first subscale describe the symptoms of the “intrusion” group when the traumatic event is constantly repeated in the experience in one (or more) ways. 11 statements of the second subscale describe the symptoms of the “avoidance” group when there is a constant avoidance of stimuli associated with trauma, blocking of emotional reactions, and numbness, which was not observed before the trauma. The 8 items of the third subscale describe the symptoms of “excitability” when persistent symptoms of arousal increase that were not observed before the injury. The 5 remaining statements describe symptoms associated with guilt and suicidal tendencies. Despite the grouping of statements into four subscales, one general indicator was calculated taking into account the conversion of the answer into a score for direct and inverse statements, reflecting the severity of PTSD symptoms (range from 35 to 175 points, where 35–80 points is a variant of the norm; 81–114 points indicated symptoms of PTSD; 115–175 points: signs of PTSD, a psychiatric examination and inpatient examination were recommended).

The “Disadaptation Express Questionnaire” is an abbreviated modified version of the Multilevel Personality Questionnaire “Adaptation” (author A. Maklakov), adapted into Ukrainian (Kolesnichenko et al., 2020, p. 310-314). The DEQ made it possible to identify signs of a violation of the adaptability of the personality of a serviceman: violation of the regulatory function of the emotional-volitional sphere and self-esteem; lack of prospects for continuing life and the ability to overcome life’s difficulties (probability of committing suicidal attempts); loss of moral convictions, the likelihood of committing addictive and delinquent acts; loss of communicative potential (comradely support, reduced ability to accept the help of one’s team). The DEQ consists of 45 statements included in 5 subscales: “Sincerity,” “Violation of behavioral regulation,” “Probability of committing suicide attempts,” “Violation of moral normativity,” and “Loss of communicative potential.” Each positive response was worth 1 point, and negative 0 points. The overall DEQ scale was calculated as the sum of scores on 4 scales (values of the “Sincerity” scale were not included). The results of the overall DEQ scale were evaluated as follows: 1–10 points: high adaptation to combat operations, sufficient tolerance to adverse mental and physical stress, including under conditions of severe combat stress; 11–14 points: average adaptation, unstable level of performance, especially in combat conditions; 15 points or more: low adaptation (distress and adjustment disorders) that does not meet the requirements for a serviceman in combat conditions.

The “Express Diagnostics of Psychological Safety of a Serviceman’s Personality Questionnaire” made it possible to determine the level of psychological safety of a serviceman’s personality (PSSP) and predict his ability to perform tasks in combat (extreme) conditions (Kolesnichenko et al., 2020, pp. 273-275). The PSSP is a dynamic construct that reflects the degree of a person’s mental safety, and the ability of a soldier to consistently and effectively perform combat missions in extreme conditions (Prykhodko, 2022). The EDPSSPQ consists of 28 statements, the answers to which were given on a 7-point Likert scale, included in 4 scales. The “Moral and communicative” scale reflects interpersonal tolerance, flexible controllability, and openness to new relationships, the ability to help each other. The “Motivational and volitional” scale reflects the developed ability to set goals and achieve results; action planning and flexibility in their correction and means of achievement. The “Value and meaning of life” scale reflects the meaningfulness of life, which allows, if necessary, to find



an additional psychological resource to overcome a traumatic situation. The “Inner comfort” scale reflects the search for psychological comfort, safety, and well-being, the absence of anxiety, self-confidence, and the desire for a high quality of life. The overall PSSP scale was calculated as the sum of scores on 4 scales, taking into account the conversion of the answer into a score for direct and inverse statements. The results of the overall PSSP scale were evaluated as follows: 140–168 points: a high level of PSSP, safety, and personal resilience to negative influences (combat stress); 100–139 points: the average level of PSSP reflected the possibility of transition to the first or second state under the influence of external or internal factors; 0–99 points: low level of PSSP, high probability of mental disorders, a tendency to disruption in the functioning of the personality, manifested in violations of behavior and activity.

The “Assessment of Negative Mental Reactions and Conditions in Military Personnel Questionnaire” (ANMRCMPQ) was developed to determine the psychological state of military personnel and its dynamics (Appendix A). Self-assessment of the psychological state of the participants was carried out on a 10-point Likert scale, where 0 = the state is not expressed at all, and 10 = is expressed to the maximum extent. The results of self-assessment of the psychological state were evaluated separately for each feature as follows: 1–3 points: the state is not expressed; 4–6 points: the condition is expressed moderately; 7–10 points: the condition is expressed at a high level, and it is necessary to conduct an individual consultation.

The “Resilience to Combat Mental Trauma Questionnaire” (RCMTQ) was used for psychodiagnostic participants upon completion of the program. RCMTQ is the modified Combat Experiences Scale (CES) (Guyker et al., 2013), adapted into Ukrainian (Kolesnichenko et al., 2020, p. 286-294). CES is a 33-item measure that assesses deployment-related experiences. RCMTQ is a 45-item measure combined into 3 scales, answered on a 6-point Likert scale that assesses resilience to combat mental trauma based on combat experience gained. “The expectation from participating in hostilities scale” made it possible to assess the professional potential of servicemen in possible combat situations: their assessment as potentially (non)removable; expected mental (feeling of safety), psycho-physiological (somatic well-being) and social consequences of participation in hostilities; the ability to use the experience of their professional group and own experience. “The overcoming a stressful situation scale” made it possible to assess the mechanisms for overcoming stressful (combat) situations: to assess the role of anxiety, search activity, defense mechanisms (definition of the priority of problem-oriented and emotionally-oriented coping), behavior (hierarchies of the relations system, purposefulness and awareness of professional actions, responsibility), the role and importance of supporting the military team. The scale “Realization of the acquired combat experience” made it possible to assess the ability to process the acquired combat experience: to realize, accept, and determine its place in one’s life path and the ability to apply it in the future adequately. The overall indicator of resilience to combat mental trauma (RCMT) was calculated as the sum of points on 3 scales, taking into account the conversion of the answer into a score for direct and inverse statements. The obtained results of the RCMT indicator were evaluated as follows: 193–225 points: a high level of RCMT, even with a significant complication of the combat situation, such servicemen are able to cooperate and provide assistance to colleagues; to process, assimilate one’s own experience and adopt the experience of comrades; will be able to maintain focus, efficiency, and control over their mental state; 144–192 points: the average level of RCMT reflected a reduced ability to provide support to colleagues; do not always maintain the effectiveness of their activities and control over their mental state; 0–143 points: low level of RCMT reflected psy-

chological unpreparedness to participate in hostilities; rapid exhaustion, irritability, inability to interact, and to assist colleagues.

The “Feedback Questionnaire” (FQ) was developed to receive feedback from the participants on the activities carried out upon their completion and evaluate their effectiveness (Appendix B). The FQ consisted of 10 questions, which were answered by the participants of the program and assessed on a 10-point Likert scale the need for its implementation, the content, the work of the staff, as well as the impact of the activities on physical and mental health.

For the data presented basic descriptive statistics were used (arithmetical mean *M*, standard deviation *SD*). The statistical analysis of the study results was carried out using the program SPSS 20.0.

## RESULTS

Upon arrival at the rehabilitation center, results of primary psychodiagnostic showed that 39.17% of participants had severe symptoms of PTSD and 13.56% had signs of PTSD according to the “Mississippi Scale”. The use of the EDPSSPQ revealed that 22.78% of military personnel had a low level of PSSP: the decrease in the overall indicator of PSSP was mostly due to the “Inner comfort” scale, which reflected a decrease in the sense of safety, well-being, and the self-doubt. The use of the DEQ revealed that 26.40% of the participants had signs of distress and adjustment disorders: 17.39% had behavioral regulation disorders, 12.09% had a violation of the moral sphere, 13.25% had a decrease in communicative potential, and 7.18% identified the likelihood of committing suicide attempts.

The use of RCMTQ revealed that 22.35% of military personnel had high rates of resilience to combat mental trauma, 40.59% average and 37.06% low rates at the end of the psychological recovery program. Participants with low scores for resilience to combat mental trauma needed longer-term psychological rehabilitation programs or additional examinations. This information was communicated to the units’ military psychologists that referred these soldiers.

The majority of military personnel showed an improvement in general well-being, a decrease in irritability, anxiety, aggressiveness, and other negative reactions and conditions after the measures taken by the psychological recovery program. The use of ANMRCMPQ revealed a positive trend in the psychological state of the participants: a decrease in all indicators was noted in 78%; 89% of the participants had a decrease in more than half indicators (Figure 1).

Upon completion of the psychological recovery program, the “Feedback Questionnaire” was used to obtain feedback from the participants and evaluate the effectiveness of the activities carried out; the results obtained are shown in Figure 2.

## DISCUSSION

The main goal of the psychological recovery program for Ukrainian military personnel after participating in active hostilities (“Invincibility Program”) was to relieve the effects of chronic combat stress on military personnel. This program is part of the psychological support system for the combat activities of the Ukrainian Defense Forces military personnel. The “Invincibility Program” differs from the psychological decompression programs conducted for Ukrainian military personnel during the anti-terrorist operation from 2014 to 02/24/2022. The main goal of psychological decompression programs is the psychological recovery, stabilization, and switching of military personnel after performing combat missions before returning to everyday

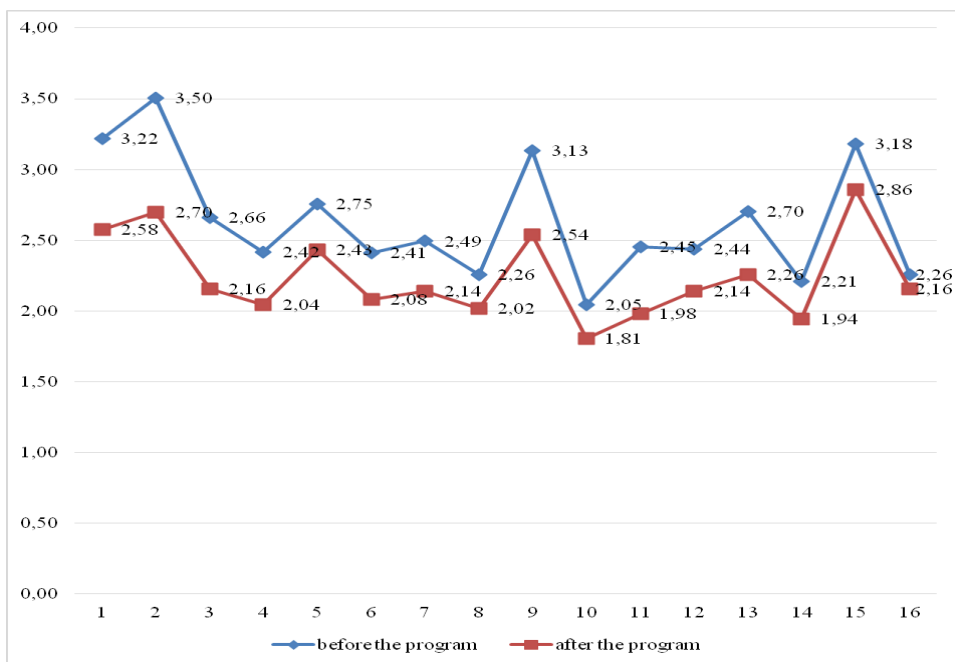
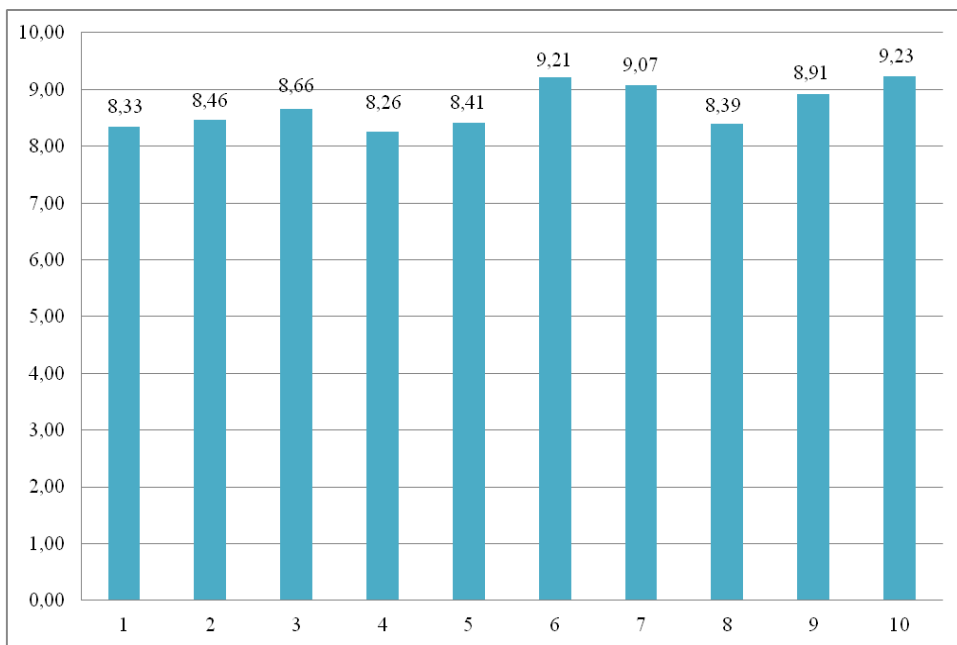


Figure 1 Dynamics of the servicemen's psychological state before and after undergoing a psychological recovery program

Points: 1) irritability; 2) anxiety; 3) aggressiveness; 4) anger; 5) inattention; 6) diffidence; 7) emptiness; 8) lack of will; 9) excitement; 10) guilt; 11) powerlessness; 12) unfocused; 13) reluctance to communicate; 14) distrust of colleagues; 15) distrust of commanders; 16) inability to perform combat missions.

peaceful life after the rotation of units. Now, after completing the "Invincibility Program", all servicemen are returning to the combat zone to continue combat missions.

A similar program was implemented by the US Armed Forces during its deployment to Afghanistan and has been in use since 2009 (Gates et al., 2012). The "Restoration Freedom" program was designed to help US Armed Forces and coalition forces train and strengthen their coping skills for 3 to 5 days. The "Restoration Freedom" program was a component of larger programs: the Defense Health Program and Psychological Health Program (Gates et al., 2012). The goal of this and similar programs was to provide military personnel with the opportunity to develop and strengthen mechanisms for coping with the psychological problems associated with serving in the combat zone, as well as for their quick return to combat activities (Cooper et al., 2021). The primary beneficiaries of the program were US military personnel with post-traumatic stress symptoms (Gates et al., 2012). The program included the satisfaction of basic needs, daily physical training exercises; psychoeducation (Maglione et al., 2022). The main themes of psychoeducation in the "Restoration Freedom" program were similar to those in our "Invincibility Program." These topics are: relaxation, sleep hygiene; overcoming depression, and grief loss; formation of positive thinking and goal setting; communication, problem-solving; resilience to stress; relationship support; managing anger and stress during combat operations; awareness of PTSD. Also in this program, as in ours, sufficient time was planned for rest, normalization of sleep, and solving one's problems.



*Figure 2* Evaluation of psychological recovery activities by program participants

Points: 1) How necessary and important was the psychological recovery program for you?; 2) Are you satisfied with the activities of the medical block?; 3) Are you satisfied with the activities of the psychological block?; 4) What is the saturation of the medical and psychological activities carried out?; 5) How consistent and logical was the program?; 6) Would you recommend these events to your friends?; 7) Assess the impact of medical and psychological interventions on your physical and mental health; 8) Did you feel comfortable during your stay in this institution?; 9) Are you satisfied with the activities of medical workers?; 10) Are you satisfied with the activities of psychologists?

Unlike the “Restoration Freedom” program, our program did not use full-fledged physical training. This was because U.S. military personnel and coalition forces deployed in Afghanistan and Iraq had the opportunity to rotate units: two months of preparation for deployment, two months of direct participation in hostilities, and two months of recovery and psychological decompression (Besemann, 2011; Wells et al., 2011). We believe that after a long stay of Ukrainian Defense Forces military personnel in combat conditions (more than 6 months), it is necessary to pay more attention to the problems of physical and mental health. To reduce the impact of combat stress on the psyche of soldiers, it is advisable to carry out physical training using physical therapy exercises, especially affecting the spine and back muscles. This is due to the fact that Ukrainian servicemen during the hostilities are in combat positions for a long time, wear bulletproof vests, and carry a lot of weapons, ammunition, etc.

We also used recommendations for developing psychological recovery programs for military personnel after participating in the deployment of researchers from the UK and Israel (Gould et al., 2007; Jones et al., 2003; Solomon, 2020) in the “Invincibility Program”. In the practical part of our program, we used video materials and psychological techniques to overcome combat stress used in TRiM programs (Greenberg et al., 2010, 2011; Jones et al., 2017), as well as YaHaLOM training to teach service members how to manage ASRs in team members (Svetlitzky et al., 2020) and ICOVER by the U.S. Army.

The conducted group sessions set the direction of personal development, actualized the need for changes, and contributed to the awareness of the existence of problems and the need for help to overcome them. Individual consultations, held outside of group sessions, were sent to deeply work on more personal issues that program participants, for various reasons, could not present for group discussion. The use of drawing techniques (art therapy) and self-hypnosis (bio-suggestive therapy), which are unusual for the activities of military personnel, was explained to the participants as a means of quickly developing new forms of behavior and forming views on solving problems, bypassing acquired, established habits. Self-regulation techniques to reduce combat stress were used for situations of mild and moderate trauma.

In general, to increase the psychological resilience of military personnel and overcome the consequences of combat stress, programs developed by specialists from different countries there was a wide range of therapeutic modalities used, including cognitive behavioral therapy (CBT) informed programs, biofeedback based programs, stress-management programs, mindfulness and relaxation programs, neuropsychological-based programs, and psychoeducational-informed programs (Doody et al., 2021). However, given the diversity of intervention designs and theoretical orientations used (which included stress-management, neuropsychological, and psychoeducational programs), Doody et al. (2021) cannot definitively state the efficacy of pre-deployment programs in reducing symptoms of post-traumatic stress and PTSD.

We have confirmed our hypothesis and are convinced that the “Invincibility Program” implemented by us is effective and necessary for military personnel after a long stay (more than six months) in combat conditions according to the following criteria. First, we revealed a positive trend in the psychological state: a decrease in all 16 indicators in 78% of program participants; 89% of the participants showed a decrease in more than half of the indicators (irritability, anxiety, aggressiveness, anger, self-doubt, emptiness, guilt, unwillingness to communicate, inability to perform combat missions). Secondly, the absolute majority of program participants (96%) noted the need and importance of its implementation, and the positive impact of the medical and psychological measures taken on their physical and mental health: the range of assessments varied from 8.33 to 9.07 on a 10-point Likert scale. This indicates a high level of positive subjective usefulness (participants rated the psychological recovery program as very helpful or helpful). Similar data on a high level of positive subjective usefulness and effectiveness programs have also been found in other studies (Jones et al., 2017; Knobloch et al., 2019; Svetlitzky et al., 2020).

## Limitations

Of course, our study has some limitations. First, female military personnel was not included in this study because, over the entire period of the program, less than 0.5% of female combatants participated. Secondly, the possibility of increasing the duration of the developed program was not studied, since the program was initially limited to seven days only. This was due to the fact that: (a) doubling the duration of the program, for example, to 14 days, would reduce the number of psychological recovery participants; (b) after a two-week program (more than 20 participants completed the entire period), these soldiers significantly decreased their resilience to combat mental trauma, which required additional measures to increase it; (c) when calculating the duration of the program, we relied on the experience of American colleagues, for example, “Restoration Freedom” program for 3 to 5 days (Gates et al., 2012). However, some participants noted the positive effect of the activities on their physical and mental health and suggested increasing the duration of the program to 14 or more

days. Thirdly, it was impossible to study the further fate of program participants with symptoms of post-traumatic stress, a high level of maladjustment, and low rates of resilience to combat mental trauma, who needed longer psychological recovery programs or additional examinations. Finally, the current study was limited by not having an active comparison condition and by not having a longitudinal follow-up. Future studies should address this gap and assess the impact of the “Invincibility Program” on Ukrainian military personnel during and after the end of the Russo-Ukrainian War.

## CONCLUSIONS

This research addressed the critical need to reduce the negative effects of chronic combat stress on Ukrainian military personnel through the creation and practical implementation of a psychological recovery program. The developed seven-day “Invincibility Program” was implemented in the rehabilitation center located next to the war zone, where more than 2,000 military personnel underwent psychological recovery. The servicemen were sent to the rehabilitation center based on a list of indications for psychological recovery. The activities of the program led to an improvement in the mental state and positively significant changes in the well-being of the participants, the mobilization of psychological resources, and an increase in the resilience of military personnel to combat stress. After completing the program, there were positive dynamics of negative mental reactions and states of the participants: a decrease in all indicators was noted in 78%; a decrease in more than half of the indicators (irritability, anxiety, aggressiveness, anger, self-doubt, emptiness, guilt, unwillingness to communicate, inability to perform combat missions) was reported in 89% of the participants. On the whole, 63% of the participants at the end of the program were found to be resilient to combat mental trauma in the face of future challenging circumstances. A high level of subjective usefulness of the program was revealed (96% noted its necessity and importance).

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APPENDIX A

Table A1 The “Assessment of Negative Mental Reactions and Conditions in Military Personnel Questionnaire”

Instruction: “Dear program participants! Assess your psychological state at the moment on a 10-point scale, where 0 is a completely unexpressed phenomenon, and 10 is a very pronounced phenomenon. Thank you for your cooperation!”												
Mental reactions and states	Assessment											
Irritability	0	1	2	3	4	5	6	7	8	9	10	
Anxiety	0	1	2	3	4	5	6	7	8	9	10	
Aggressiveness	0	1	2	3	4	5	6	7	8	9	10	
Anger	0	1	2	3	4	5	6	7	8	9	10	
Inattention	0	1	2	3	4	5	6	7	8	9	10	
Diffidence	0	1	2	3	4	5	6	7	8	9	10	
Emptiness	0	1	2	3	4	5	6	7	8	9	10	
Lack of will	0	1	2	3	4	5	6	7	8	9	10	
Excitement	0	1	2	3	4	5	6	7	8	9	10	
Guilt	0	1	2	3	4	5	6	7	8	9	10	
Powerlessness	0	1	2	3	4	5	6	7	8	9	10	
Unfocused	0	1	2	3	4	5	6	7	8	9	10	
Reluctance to communicate	0	1	2	3	4	5	6	7	8	9	10	
Distrust of colleagues	0	1	2	3	4	5	6	7	8	9	10	
Distrust of commanders	0	1	2	3	4	5	6	7	8	9	10	
Inability to perform combat missions	0	1	2	3	4	5	6	7	8	9	10	

## APPENDIX B

Table B1 The “Feedback Questionnaire”

Instruction: “Dear program participants! Answer the questionnaire: your assessments will help to make further work more effective. All your wishes will be taken into account when adjusting the program for its further use. Thank you for your cooperation!”		
№	Questions	Rating scale
1	How necessary and important was the psychological recovery program for you?	1 2 3 4 5 6 7 8 9 10
2	Are you satisfied with the activities of the medical block?	1 2 3 4 5 6 7 8 9 10
3	Are you satisfied with the activities of the psychological block?	1 2 3 4 5 6 7 8 9 10
4	What is the saturation of the medical and psychological activities carried out?	1 2 3 4 5 6 7 8 9 10
5	How consistent and logical was the program?	1 2 3 4 5 6 7 8 9 10
6	Would you recommend these events to your comrades?	1 2 3 4 5 6 7 8 9 10
7	Assess the impact of the medical and psychological interventions on your physical and mental health?	1 2 3 4 5 6 7 8 9 10
8	Did you feel comfortable during your stay in this institution?	1 2 3 4 5 6 7 8 9 10
9	Are you satisfied with the work of medical workers?	1 2 3 4 5 6 7 8 9 10
10	Are you satisfied with the work of psychologists?	1 2 3 4 5 6 7 8 9 10
Your wishes for improving the work of medical workers and psychologists, as well as the content of the program activities _____		