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BENEFITS OF BREATH-BODY-MIND FOR MILITARY PERSONNEL, VETERANS AND HEALTHCARE WORKERS

This article introduces an innovative program to bridge the gap between the high demand for psychological services and the limited number of healthcare professionals during war. Combat-related stress and trauma are difficult to treat with conventional methods alone. Mind-body programs, specifically Breath-Body-Mind (BBM), activate multiple healing pathways to mitigate autonomic dysregulation and neurophysiological dysfunction caused by extreme stress.

BBM is an evidence-based, safe, and adaptable intervention that is easy to learn. It has been effectively used worldwide during wars and mass disasters. BBM can be integrated into individual or group therapy, both in-person and online, for civilians, military personnel, and medics. Potential benefits include improved battlefield survival, faster recovery from trauma, and better long-term re-integration into civilian life.

Key words: military; combat stress; breath practices; post-traumatic stress; autonomic balance; mind-body; veterans.

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ПЕРЕВАГИ ДИХАННЯ-ТІЛА-РОЗУМУ ДЛЯ ВІЙСЬКОВОСЛУЖБОВЦІВ, ВЕТЕРАНІВ І МЕДИЧНИХ ПРАЦІВНИКІВ

У цій статті представлено інноваційну програму, яка допоможе подолати розрив між великою кількістю військовослужбовців, які потребують психологічної допомоги, та обмеженою кількістю медичних працівників, доступних під час війни. Стрес і травми, пов'язані з бойовими діями, особливо під час тривалого збройного конфлікту, коли солдати повинні повернутися на поле бою, незважаючи на численні травми, важко лікувати навіть за наявності традиційних методів лікування.

Нові методи, такі як програми «розум-тіло», які активують численні шляхи зцілення, можуть пом'якшити або звернути назад вегетативну дисрегуляцію та інші нейрофізіологічні дисфункції, пов'язані з екстремальним стресом і травмою. «Дихання-Тіло-Розум» («Breath-Body-Mind» – BBM) – це науково обґрунтоване, дихально-

орієнтоване, багатокомпонентне втручання, розроблене для швидкого досягнення ефективності, легкого у вивченні та практиці, безпечного та адаптованого для людей з важкими фізичними та психічними захворюваннями. Воно успішно використовується в багатьох країнах під час і після терористичних атак, воєн та інших масових катастроф. Крім того, методи ВВМ можуть бути інтегровані як доповнення до інших методів лікування, що надаються як індивідуальна або групова терапія (для груп до 500 учасників) особисто або онлайн для дітей та дорослих – цивільних осіб, рятувальників, військовослужбовців та медичних працівників.

Потенційні переваги методу ВВМ включають покращення виживання військовослужбовців на полі бою, відновлення після фізичних та психологічних ран війни та довгострокову реінтеграцію в цивільне життя. Для повної інтеграції навчання ВВМ у військову діяльність з метою покращення виживання, відновлення, реабілітації та благополуччя необхідні якісніші, масштабніші дослідження серед військового населення.

Ключові слова: військові; бойовий стрес; дихальні практики; посттравматичний стрес; вегетативний баланс; взаємодія розуму та тіла; ветерани.

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Problem statement in general form

When left untreated, the physical and psychological wounds of war result in immeasurable suffering as well as long-term social, economic, and health care costs. More effective and efficient treatments for the physical and psychological burdens of military service are needed to sustain and fortify the armed forces, to help heal the many who are injured, and to enable successful reintegration into civilian life, including fulfilling relationships with their families. Prolonged conflicts, such as the current intensified Russo-Ukrainian War, increase the gap between the treatment needs of large numbers of wounded warriors and the available healthcare services. Consequently, interest has been growing in alternative approaches, particularly breath-focused mind-body practices that have shown promise for reducing symptoms in veterans with mental health conditions [21]. Beyond being solely taught in individual therapy sessions, such methods can be taught to very large groups and with supervised assistants, either in-person or online. Most mental healthcare professionals are trained to provide individual treatment. They may not be as comfortable doing group therapy and they may have a natural reluctance to do so. Nevertheless, it is necessary to learn group methods.

Analysis of recent research or publications

The ability to scale up effective interventions is critical in war and other mass disasters, for it is the only way that a limited number of professionally trained healthcare providers will ever be able to serve millions of trauma-affected people [14; 6] Furthermore, those responsible for treating the injured – physicians, psychologists, medics, and other therapists – are also subjected to stress, trauma, exhaustion, and burn-out leading to depression, somatic symptoms, anxiety, and post-traumatic stress. A systematic review of effective methods to reduce the psychological impact of working on the front lines of public health emergencies found that mind-body interventions had the most evidence for improving quality of life among frontline workers [19].

Immediate needs during military service include strength, endurance, mental focus, situational awareness, and resilience to stress during long periods of immobilization, cold, life-threatening conditions, sleep deprivation, isolation, combat, and physical discomfort. Short-term needs are for relief of emotional dysregulation (anxiety, depression, post-traumatic stress, insomnia), pain, disconnection, and moral injury, as well as recovery from physical injuries and head trauma. Long-term needs are to reduce ongoing psychological distress, emotional numbing or dysregulation, disconnection, inflammation, pain, substance abuse and combat-related physical illnesses.

Although a substantial body of evidence supports the clinical benefits of breath practices in a wide range of stress-related mental health disorders, the number of studies in veterans is limited and of mixed quality [2-6]. Furthermore, many studies consider any breath rate that is less than 10 cpm to be 'slow.' As a result, few studies reduce the respiratory rate enough (5-6 breath cycles per minute, cpm) to optimize heart rate variability (HRV), an indicator of autonomic function, especially for soldiers who are taller than 6 feet, the height at which even slower rates (3–4 cpm) are needed [22]. Moreover, most studies give minimal instructions for pacing the breath and for breathing in a relaxed way with a slow, natural air flow rate. Breathing in a tense or forceful manner can lead to increased, rather than decreased, sympathetic activity. More studies are needed with larger samples, more rigorous methodology, and greater attention to best methods for teaching breath practices.

We will briefly review the neurophysiological mechanism believed to contribute to the rapid, widespread effects of breath practices on emotional regulation, stress response, pain, cognitive function, and social relationships. Next, Breath-Body-Mind™ (BBM), an innovative, mind-body program will be discussed as an example of an evidence-based, breath-focused, multi-

component intervention that has been used for 20 years for relief of stress- and trauma-related symptoms among first responders, healthcare workers, military personnel, and survivors of mass disasters, including the 2001 World Trade Center attacks, Gulf Horizon oil spill, COVID pandemic, war in South Sudan, Uganda, Boco Haram kidnapping, Ukraine, Middle East, and post-genocide Rwanda.[3; 9-11]

The purpose of this article is to present an innovative program to help bridge the gap between the large number of military personnel in need of psychological services and the limited number of healthcare professionals available during war.

Presentation of the main research material with full justification of the obtained scientific results

Voluntary Regulated Breathing Practices (VRBPs) – Neurophysiology

Interest in the neurophysiological effects of voluntarily regulated breathing practices (VRBPs) is rapidly growing [21; 2; 6; 8] Basically, changing the pattern of breathing through specific breath practices, changes the afferent messages going from the body (e.g., interoceptive messages through the vagal nerves) to the brain's main regulatory networks. The effects of increasing parasympathetic activity are multiple and include [18; 20]:

- Increased parasympathetic nervous system influence on stress reactivity, emotion regulation, perception, attention and cognitive functions.
- Reduced over activity of sympathetic nervous system.
- Decreased pain and inflammation [11].
- Decreased blood pressure [16].
- Decreased defensive reactions and overreactions.
- Activation of Social engagement systems, improved ability to feel connected and to relate to others.
- Increased respiratory entrainment of brain electrical rhythms with greater synchronization, amplitude, and smooth alpha waves in areas of the brain involved in interoception, emotion processing and emotion regulation [14].

Paced breathing requires controlling the respiratory rate, airflow rate, and the relative length of four phases of the breath cycle: inhalation, transition, exhalation, transition. For teaching groups, BBM begins with gentle Qigong movements enhanced by synchronization with paced breathing. Breathing coordinated with joint mobility exercise also reduces pain and stiffness. For military classes, Kung-fu slapping increases alertness, awareness and body hardening. Following a brief muscle relaxation, the

primary breath form begins—Coherent (or resonant) Breathing, wherein the lengths of inhalation and exhalation are equal with smooth transitions (no pauses) between. Coherent Breathing at 4 to 6 breath cycles per minute (cpm) has been shown to strengthen and balance the stress response system, induce a state of calm alertness, and optimize oxygenation with minimal energy expenditure [2]. An audio track, for example, bell tones, is used to pace the breathing. The most commonly used respiratory rate in BBM basic training is 5 cpm. For individuals who are over 6 feet tall, slower rates (3.0-4.0 cpm) are optimal. These rates optimize sympathetic-parasympathetic balance, Heart Rate Variability (HRV), oxygenation, chemoreception, and baroreflex sensitivity (BRS) [2; 3; 7; 21]. Higher HRV (measure of the rate of change of the heart rate during inhalation and exhalation) is an indicator of autonomic balance, cardiovascular health, flexibility, and longevity. Baroreflex Sensitivity (BRS) is a measure of the heart's capacity to efficiently alter and regulate blood pressure in accord with changing requirements. A high degree of BRS is a good marker of cardiac health.

BBM uses repeating sequences of movement, voluntarily regulated breathing practices, mental focus, visualization, and relaxation techniques that correct fundamental physiological dysfunctions that underlie both psychological and physical disorders, thereby reducing symptoms in both domains**.** Although BBM uses a variety of breath techniques, the predominant method is Coherent Breathing (see description below). The techniques are easy to learn. They have proven to be safe even in individuals with psychological vulnerabilities and severe medical conditions. Overall, the practices are safe, though adaptations may be necessary for individuals with respiratory problems or other conditions.

Breath-Body-Mind Potential Benefits for Military Personnel

Breath-Body-Mind™ (BBM) can help to relieve the effects of immediate combat stressors (e.g., life threat, worry, pain, exhaustion, sleep deprivation, cold, immobilization, physical demands, separation from family) and enhances survival by increasing attention, situational awareness, and energy reserves. It can also benefit recovery from physical and psychological injuries, and can support long-term psychological and physical health, adaptation to civilian life, positive relationships, and productivity [6; 9].

Over the past 25 years, Brown and Gerbarg developed the BBM program by combining and honing the VRBPs they found to be the most rapidly effective and that could be easily adapted for individuals with serious psychological or physical injuries. They selected techniques that are the least likely to provoke adverse reactions such as panic attacks, flashbacks, or agitation. In addition, these techniques can also be performed with eyes open anywhere at any time without interrupting normal activities. In clinical

practice, Gerbarg and Brown have effectively integrated or supervised the integration of these breath techniques with other treatment modalities, including crisis intervention, short-term and long-term psychotherapy, somatic therapies, cognitive therapies, group therapy, narrative sharing, and psychoanalysis. For example, the integration of a BBM program into a community-based social healing model for trauma-affected adults in post-genocide Rwanda was described in detail in a protocol for a cluster-randomized controlled study [15]. Gerbarg and Brown have provided BBM programs and teacher training in person and online to groups ranging from 10 up to 500 participants. Beyond the benefits of individual treatment, they note additional healing effects from group practice. Engaging in Coherent Breathing could enhance performance of military duties. A study of 172 military healthcare providers found that the most helpful and consistently practiced mind-body intervention was deep breathing [1].

Evidence indicates that BBM techniques can have the following benefits:

- Increase physical and psychological stress resilience and well-being.
- Prevent and rapidly reduce symptoms of combat and service-related stress.
- Reduce sleep problems, anxiety, worry, over reactivity, irritability, and agitation.
- Provide quick, practical methods for emotion self-regulation that reduce rage reactions, panic, and suicidal thoughts
- Reduce symptoms and enhance recovery from sexual trauma.
- Relieve pain without medication.
- Improve attention, mental focus, and situational awareness.
- Improve cardio-respiratory function, high altitude endurance, tolerance of hypoxia
- Reduce blood pressure.
- Reduce stress and burnout in health care providers.
- Restore the ability to experience meaningful connectedness, bonding and closeness with family and friends.

Conclusions

Breath-based mind-body programs have the potential to augment treatments for the reduction of acute combat-related stress, short-term recovery, long-term rehabilitation and return to civilian life. Breath-Body-Mind is an example of an evidence-based, carefully sequenced, rapidly effective, low risk intervention, requiring no medication or supplies, that could be scaled up with trained community extenders and online practice

sessions, thus helping to bridge the gap between mental health care needs and professional providers, particularly during prolonged mass disasters such as the ongoing war in Ukraine.

Further research is needed with more rigorous methodology, larger studies, and longer follow-up in military populations to more fully understand the benefits and adaptations of breath-based practices and their integration with other treatment modalities to optimize outcomes.

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