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Brain Programming Anti-Depression Protocol: Outcomes of a Multicohort Psychophysiological Intervention

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Abstract

Background. Depressive disorders are among the leading causes of disability worldwide. Following the COVID-19 pandemic in 2020, the global prevalence of depression and anxiety disorders increased by 25%, and according to the World Health Organization, approximately 332 million people (around 4% of the world's population) currently live with depression. The increasing prevalence of depressive disorders highlights the need for the development and scientific evaluation of novel and effective psychotherapeutic interventions.

Objective. To evaluate the effectiveness of the Brain Programming Anti-Depression Protocol (BPAD Protocol), developed on the basis of the Hypothesis of Fundamental Psychological Needs as a Mechanism of Mental and Physiological Self-Regulation, in reducing depressive and anxiety symptoms and improving psychological well-being.

Materials and Methods. The study was based on the analysis of data from 2,500 participants who completed the Brain Programming Anti-Depression Protocol across 14 consecutive cohorts conducted between 2021 and 2026. The protocol represents an original psychophysiological self-regulation model based on the Hypothesis of Fundamental Psychological Needs as a Mechanism of Mental and Physiological Self-Regulation. According to this hypothesis, the sequential fulfillment of fundamental psychological needs through emotional regulation, the development of positive affect, enhancement of self-efficacy, and activation of personal resources initiates interconnected processes of mental and physiological self-regulation. Unlike approaches primarily focused on cognitive restructuring, the protocol proposes that sustained reduction of depressive symptoms is achieved through the gradual restoration of emotional regulation, cultivation of positive affect, development of self-efficacy, activation of internal personal resources, and consolidation of a new adaptive emotional-cognitive state. The intervention consisted of six consecutive stages: emotional stabilization, establishment of a positive emotional background, enhancement of self-efficacy, recognition of personal resources, strengthening of the resource state, and consolidation of the new emotional response pattern. Program effectiveness was evaluated before and after the intervention using the validated psychometric instruments GAD-7, PHQ-2, PHQ-9, CES-D, and WHO-5. In addition, one month after program completion, participants completed a standardized follow-up questionnaire assessing perceived psycho-emotional changes, clarity of life purpose and professional direction, and changes in socioeconomic outcomes.

Results. Psychometric assessment demonstrated significant improvements in psychological well-being following completion of the program. According to the WHO-5 scale, subjective vitality increased by 55.9%, inner calmness by 71.2%, energy levels by 66.4%, interest in daily



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activities by 85.9%, and the feeling of waking up refreshed by 91.3%. Simultaneously, substantial reductions in depressive symptoms were observed: suicidal ideation decreased by 96.0%, depressed mood by 86.5%, loss of interest in usual activities by 75.0%, crying episodes by 75.3%, appetite disturbances by 71.4%, and feelings of hopelessness by 67.3%. Anxiety scores measured with the GAD-7 also showed marked improvement, reflecting reduced psychological tension, excessive worry, and difficulties in emotional regulation.

At the one-month follow-up, 71.0% of participants ($n = 1,775$) reported improvements in psycho-emotional well-being, 73.4% ($n = 1,835$) reported greater clarity regarding their life purpose, professional direction, or personal goals, and 61.6% ($n = 1,540$) reported an increase in income. These findings indicate not only a reduction in emotional distress but also positive changes in perceived personal fulfillment and social functioning.

Conclusions. The findings demonstrate the effectiveness of the Brain Programming Anti-Depression Protocol, developed on the basis of the Hypothesis of Fundamental Psychological Needs as a Mechanism of Mental and Physiological Self-Regulation, in reducing depressive and anxiety symptoms while improving psychological well-being, self-efficacy, and the activation of personal resources. The combination of positive outcomes documented by validated psychometric instruments and participant follow-up reports suggests that the proposed protocol represents a promising psychophysiological approach for the correction of depressive symptoms.

Keywords: depression; psychophysiological self-regulation; Brain Programming Anti-Depression Protocol (BPAD Protocol); fundamental psychological needs; psychological well-being; anxiety