



Fund “Nauka” Project № 21004 Resume – Competition-Based Session 2021:

“Evaluation of the potential therapeutic benefits of biofeedback training as a method for reducing stress and improving the mental health of international medical students”

Project leader: Prof. Margarita Stefanova Velikova, MD, PhD

Aim: Evaluation of the potential therapeutic benefits of biofeedback training as a method of reducing stress and improving the mental health of international medical students.

Objectives:

1. To investigate the psychological state of international medical students via psychometric tests.
2. Examination of the effect of biofeedback training on the psychophysiological reaction of the body when put under stress.
3. Analysis of the relationship between the psychological state and the stress-reactivity of the organism.

Respondents: The study will include at least 60 international medical students from the Medical University of Varna, selected from the online questionnaire they have filled out. According to the survey data, a group of students with high levels of stress, anxiety, or depression will participate in a training program using the method of biological feedback (BF), and their reactivity to stress will be compared with that of the control group.

Methods: A biological feedback sensor system (GP8 Amp) will be used to perform a training program to enable students to influence the body’s physiological activity. Physiological parameters (cardiac variability, body temperature, and others) will be recorded before and after applying a stress test in laboratory conditions. The levels of stress-induced biomarkers in saliva (cortisol and IgA) will be studied, which will serve to objectively evaluate the effectiveness of the training in influencing the mental health and stress reactivity of the subjects. In order to interpret the findings, correlations will be sought between the recorded indices and the outcomes of the psychometric tests for stress, anxiety, and depression. Adequately selected statistical methods will provide the analysis of the results.

Expected results: Data will be provided about the individual psychophysiological cost of the medical education of international students from MU-Varna as well as for the factors affecting salivary IgA and cortisol levels. Biofeedback training is a modern psychophysiological method with established beneficial effects on stress, anxiety, psychosomatic disorders, etc. With a positive effect of the training biofeedback program, the method can be recommended and applied to help students (and their teachers) deal with the stressful challenges of medical education.

The obtained results demonstrated favorable changes in psychological outcomes, including reductions in perceived stress, anxiety, and depressive symptoms among the participants who completed the training program. Positive changes were also observed in physiological parameters related to heart rate variability, suggesting improved autonomic regulation and enhanced stress resilience. The laboratory findings regarding cortisol and IgA provided additional objective information about the biochemical component of the stress response.

The project contributed to the development of the scientific field of applied psychophysiology, biofeedback training, and mental health support in medical students. The findings have both theoretical and practical significance and may serve as a basis for future prevention and stress-management programs in university settings. As a result of the project, scientific publications, presentations at national and international forums, and a dissertation thesis.