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Brain activity and HRV changes after an eight-week mindfulness meditation

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Introduction: Stress is one of the most common health problems in the European Union. It contributes to the deterioration in health, i.e. cardiovascular, psychosomatic, and musculoskeletal disorders. It is also linked to mental health problems, including depression and anxiety, and leads to reduced cognitive performance. One of the methods of overcoming stress is mindfulness meditation (or MBSR, Mindfulness-Based Stress Reduction). Many studies reveal that MBSR is helpful in the treatment of somatic diseases, as well as anxiety disorders, depression, and chronic pain. Regular practicing mindfulness meditation causes improvement in social functioning and quality of life as well decrease in the level of perceived stress and physical symptoms of stress. Stress could be observed in brain functioning e.g. electrical activity. Stress manifests itself in an increase in high beta activity and frontal alpha asymmetry. On the contrary, practicing meditation causes an increase in the alpha and theta bands and an increase in left hemisphere activity, and also an improvement in HRV. The project aims at assessing changes in brain functioning measured by EEG and in HRV after 8-week mindfulness meditation (or MBSR).

Methods: Forty people participated in the study in 2 measurements at an 8-week interval. Twenty people were qualified for the group participating in the MBSR and twenty for the control group. Inclusion criteria for the study were: subjective high level of stress, no subjective cognitive impairment, no history of severe head injuries, chronic diseases, psychiatric and neurological diseases. Measurements before and after the MBSR (and after 8 weeks in the control group) included: the level