



Universität
Basel

Research Project

Memory and correlates of physical activity and chronic stress (MEMOCAST)

Project funded by own resources

Project title Memory and correlates of physical activity and chronic stress (MEMOCAST)

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High degrees of chronic stress have been shown to have deleterious effects on physical and mental health variables and to be associated with decreases in academic achievement in young adults. While effects of acute stress on neurocognitive functioning have been examined, documentation on effects of prolonged stress exposure on the human brain is scarce. While there is growing evidence on behavioural impairments of memory performance, underlying neurophysiological mechanisms are still insufficiently explored.

Physical activity, stress, and stress-related impairments on psychosocial health are one of the core research fields investigated at the division of Sport Science of the Department of Sport, Exercise and Health at University of Basel. The MEMOCAST study seeks to investigate the potential of physical activity and exercise in protecting memory-related brain structures and functions of the chronically stressed brain. The overall goal of the study is the examination of the influence of chronic stress on different aspects of memory as well as the potential moderating roles of physical fitness and activity on this association. Additionally, the activity of the central and autonomous nervous system are investigated as potential mechanisms underlying changes in memory performance.

The MEMOCAST study comprises data of a one-year longitudinal non-interventional study investigating the complex interplay between chronic stress, neurocognitive correlates of memory and physical activity in young healthy adults. The study protocol combines laboratory stationed assessment of chronic stress, memory performance and cardiorespiratory fitness. Additionally, event-related potentials recorded via electroencephalography and the assessment of pupil dilation via eye tracking complemented by online questionnaires as well as forty-eight-hour electrocardiography and a seven-day accelerometry assessment using EcgMove as assessed.

The results will contribute to further insights on the potential of physical activity and exercise in protecting memory-related brain structures and functions of the chronically stressed brain.

Keywords chronic stress, fitness, physical activity, cognition, memory, neurophysiology

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