

Forschungsgesuch Heinrichs

Einfluss von Sport auf die kognitive Leistung – Ein Vergleich von Exekutivfunktionen und Arbeitsgedächtnis zwischen Spitzensportlern und Nichtsportlern

Summary

Physical activity plays a key role in the control of neuroendocrine, autonomic, and behavioural responses to physical and psychosocial stress. However, little is known about how the level of physical activity modulates stress responsiveness. Here, we test whether different levels of physical activity are associated with different adrenal, cardiovascular, and psychological responses to psychosocial stress. In addition, competitiveness is assessed as a personality trait that possibly modulates the relationship between physical activity and stress reactivity. Eighteen elite sportsmen, 50 amateur sportsmen, and 24 untrained men were exposed to a standardized psychosocial laboratory stressor (Trier Social Stress Test). Repeated measures of salivary free cortisol, heart rate, and psychological responses to psychosocial stress were compared among the 3 study groups. Elite sportsmen exhibited significantly lower cortisol, heart rate, and state anxiety responses compared with untrained subjects. Amateur sportsmen showed a dissociation between sympathetic and hypothalamic-pituitary-adrenal responsiveness to stress, with significantly reduced heart rate responses but no difference in cortisol responses compared with untrained men. Different levels of competitiveness among groups did not mediate stress reactivity. Our results are in line with previous studies indicating reduced reactivity of the autonomic nervous system to psychosocial stress in trained individuals. More importantly, these findings imply a differential effect of the level of physical activity on different stress-related neurophysiological systems in response to psychosocial stress.