Association of Exercise with Inhibitory Control and Prefrontal Brain Activity Under Acute Psychosocial Stress

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Psychosocial stress has negative effects on cognition in adolescents. The aim of this study was to investigate whether physical exercise can buffer such effects on inhibitory control and associated cortical brain areas. Forty-two male high school students aged 16-20 years and with either low or high exercise levels performed a Stroop task under stress-free conditions and after the Trier Social Stress Test (TSST). Oxygenation of the dorsolateral prefrontal cortex (DLPFC) was measured with functional near-infrared spectroscopy. For inhibitory control, there was no significant primary effect of condition (; F; (1,40) = 1.09,; p; = 303.,; ηpš; = 0.027) and no significant condition Œ group interaction (; F; (1,40) = 2.40,; p; = 0.129,; ηpš; = 0.057). For DLPFC oxygenation, a significant primary effect of condition was observed (; F; (1,38) = 6.10,; p; = 0.018,; ηpš; = 0.138). However, the condition Œ group interaction (; F; (1,38) = 0.05,; p; = 0.823,; ηpš; = 0.001) remained not significant. Adolescents' exercise level was not associated with inhibitory control before and after stress. An impact of stress on a neurocognitive level was observed.
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