

The Acute Effects of Aerobic Exercise on Cognitive Flexibility and Task-Related Heart Rate Variability in Children With ADHD and Healthy Controls

Sebastian Ludyga, Markus Gerber, Manuel Mücke, Serge Brand, Peter Weber, Mark Brotzmann, Uwe Pühse

Journal of Attention Disorders, 2018

DOI: <https://doi.org/10.1177/1087054718757647>

Abstract

Objective:

To investigate cognitive flexibility and task-related heart rate variability following moderately intense aerobic exercise and after watching a video in both children with ADHD and healthy controls.

Method:

Using a cross-over design, participants completed cognitive assessments following exercise and a physically inactive control condition. Behavioral performance was assessed using the Alternate Uses task. Heart rate variability was recorded via electrocardiography during the cognitive task.

Results:

The statistical analysis revealed that in comparison with the control condition, both groups showed higher cognitive flexibility following aerobic exercise. Moreover, decreased low frequency and high frequency power was observed in the exercise condition.

Conclusion:

The findings suggest that exercise elicits similar benefits for cognitive flexibility in children with ADHD and healthy controls, partly due to an increase in arousal induced by parasympathetic withdrawal.