

Publication

Exercise as neuroenhancer in children with ADHD: cognitive and behavioral effects

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Varying levels of inattention, impulsivity and hyperactivity characterize children and adolescents with attention-deficit hyperactivity disorder (ADHD). These symptoms are accompanied by deficits in different cognitive domains, which in turn have a negative impact on educational achievement. Commonly, pharmacological treatments and behavioral therapy are used to normalize cognition and social behavior in ADHD. Interestingly, exercise in healthy children has been found to elicit neurobiological effects similar to neuro-enhancing pharmacological treatment in ADHD, but without serious adverse effects. Although evidence for exercise benefits in children and adolescents with ADHD is scarce, the number of studies investigating effects of acute and chronic physical activity on cognitive and behavioral outcomes is steadily growing. After presenting neurophysiological evidence for the differences between children and adolescents with ADHD and their healthy peers, the chapter reviews the impact of exercise interventions on cognitive functioning and ADHD-related behavior. Attention will be paid to neurobiological mechanisms underlying exercise effects on cognitive performance. After reviewing the literature, the authors discuss whether or not evidence on the dose-response-relationship is sufficient to recommend a systematic implementation of exercise interventions.

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