
**ATTENTION DEFICIT
DISORDER
AND HYPERACTIVITY
FROM INTERDISCIPLINARY
PERSPECTIVE**

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Attention deficit disorder and hyperactivity from interdisciplinary perspective

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Introduction

Attention deficit and hyperactivity disorder (ADHD) is a diagnostic category used to identify individuals with clinically significant problems of inattention and/or hyperactivity and impulsivity. ADHD can manifest as an impairment in cognitive functions, perceptual and motor skill functions, emotional regulation, and social adaptation (Bragdon & Gamon, 2006). ADHD can present as various behaviors affected by factors such as age, environment (school, home, playground), and even motivation (doing interesting activities versus boring, monotonous ones) (Editorial Board of the Royal College of Psychiatrists in London, 2017). The symptoms of ADHD tend to occur more in the school environment. They make it very difficult for the children to conform to the requirements of formal education. When at school children are required to pay close attention and suppress any impulsivity and hyperactivity. As Brock, Jimerson and Hansen (2009) have stressed school-based intervention programs are extremely important. As they point out, although medication-based treatments for ADHD are partially effective, psychosocial interventions often form part of within - school treatment plans. Experimental interventions for attention deficit and hyperactivity disorder based on cognitive or metacognitive programs are described in the academic literature. There has also been experimental testing of noncognitive interventions. The most frequent type of noncognitive interaction for individuals with ADHD involves different types of sports. Research into the effects of sport on children with attention deficit and hyperactivity disorder has shown improvements in both the cognitive and affective areas. As Lullo and Van Puymbroeck (2006) have stated sports activities can improve quality of life in children with ADHD. Research findings have indicated improvements in motor skills, and a higher level of physical activity can have a positive effect on executive and cognitive functions in children with ADHD. Experimental testing of exercise-based interventions has investigated the duration, intensity, and physical exertion as well as the degree of cognitive difficulty in-

involved in the physical activity. Sibley and Etnier (2003) have pointed out that any kind of physical activity can ultimately benefit cognitive performance, and not just in individuals with attention deficit and hyperactivity disorder.

This book is an output of VEGA grant project 1/0691/16 Experimental testing of the effect of sports activity on cognitive and executive functioning in pupils with ADHD. It comprises five thematically related chapters. The first four are concerned with an interdisciplinary analysis of attention deficit and hyperactivity disorder. The aim of the first chapter in the book is to set out the conceptual background of attention deficit and hyperactivity disorder (ADHD), give a theoretical definition of the term, and highlight the differences between ADHD and other similar disorders with which it is often confused. It also covers the identification and diagnosis of ADHD and the various forms of treatment and intervention. The intention is to set out the theoretical framework underpinning the remaining parts of the book, which look specifically at ADHD in the context of executive functioning.

The aim of the second chapter is to analyze the theoretical contexts documenting a systematic approach to determining the specific nature of motor skills and motor learning in children with attention deficit and hyperactivity disorder. Analyzing a range of different methodological approaches we identify the specific nature of motor ability and how it manifests in children with ADHD. We then give a detailed analysis of the principles and determinants of development in all areas of motor skills in the ontogenesis of children with ADHD, who have limited proprioceptive and movement planning, bilateral integration, and psychomotor adaptation.

The third chapter is an analysis of research approaches for identifying the effects of physical activity on the cognitive domains of young school-age children with ADHD. The emphasis is on analyzing differences in the direct and long-term effects of physical activity on cognitive performance. Attention is also given to describing the effect of some specific forms of physical activity and their potential therapeutic effects on children with ADHD.

The fourth chapter is concerned with the theoretical basis of the research conducted as part of the VEGA project and provides an overview of research that has consistently found deficits in executive functioning in individuals with ADHD (Pennington and Ozonoff, 1996; Shallice et al., 2002). Specific deficits in the level of executive functioning are more frequently recorded in children with ADHD than children without ADHD (Barkley, 2004; Willcutt, Doyle, Nigg, Faraone and Pennington, 2005). Considering ADHD to be an impairment in self-regulation (and the associated processes of executive functioning), and agreeing with Barkley's theory (2014, 2012), we accept a model which explains ADHD as an impairment in the individual's self-regulation processes. Brown (2008) and Shoemaker et al. (2011) have stated that ADD/ADHD is essentially a cognitive deficit and a developmental disorder in executive functioning. They found that alongside the typical primary symptoms, children with ADHD also frequently exhibit a deficit in executive functioning. This chapter provides more detail on the concept of executive functioning.

In the final and fifth chapter of the book we analyze the findings of experimental research on the effect sport, in this case six-ball, has on the functioning of individuals with attention deficit and hyperactivity disorder. The research draws on existing knowledge on correcting the symptoms of attention deficit. The research intervention involved a particular type of sport called six-ball. Six-ball is a new type of sport in Slovakia that has been developed and perfected over the last 13 years. It was conceived by Juraj Skrip, a qualified trainer and wrestler who represented Czechoslovakia and is now principal of P.O. Hviezdoslav Primary School in Snina. The research involved experimentally testing the effect of playing six-ball on the executive functioning of pupils with attention deficit and hyperactivity disorder. We also tested the effect an intensive short-term sports activity with a cognitive dimension had on the motor skills of 9–10-year-old pupils.

The results of the quasi-experiment showed that this intensive sport has the potential to correct the deficits associated with ADHD.

Introduction

Our interdisciplinary approach to describing and analyzing the symptoms associated with attention deficit and hyperactivity disorder has enabled us to explore and describe ADHD from within a referential framework that embraces education science, psychology, and sports science.

The authors