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How Can Attention Deficit Hyperactivity Disorder Affect Sport Performance?

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Abstract: Attention deficit hyperactivity disorder (ADHD) affects 1 to 10% of children, and is characterized by a persistent pattern of inattention and/or hyperactivity and impulsivity. Research has indicated that individuals with attention deficit hyperactivity disorder actually may give elite athletes a slight edge because of symptoms such as preservation or hyperfocus. Exercise is a plausible treatment for behavioral symptoms and cognitive performance of persons with ADHD. Athletes with ADHD exhibit increased risk-taking behavior, and this is hypothesized to lead to an increased risk of sports injury. As with social skills training, participation in sports improves social deficits and also elevates mood and motivation level. Children and adults who have recently been diagnosed with this condition need to learn social cues and how to trust peers, adhere to rules, and effectively participate in structured activities.

1. Introduction

Attention deficit hyperactivity disorder (ADHD) affects 1 to 10% of children, and is characterized by a persistent pattern of inattention and/or hyperactivity and impulsivity (Hickey & Fricker, 2012). Research has indicated that individuals with attention deficit hyperactivity disorder actually may give elite athletes a slight edge because of symptoms such as preservation or hyperfocus (Han, McDuff, Thompson, Hitchcock, Reardon, & Hainline, 2019). Research has shown in recent years that ADHD may be more common in elite athletes than in the general population, since children with ADHD may be drawn to sport due to the positive reinforcing and attentional activating effects of physical activity (Han, et al., 2019). In the classroom, ADHD has a much different effect – usually less positive for the affected student. When it comes to learning skills that general education teaches, ADHD tends to be more prevalent. Those with ADHD might experience forms of bullying because of their disability and often take great offense making them less motivated to learn.

2. Attention Deficit Hyperactivity Disorder

Attention deficit hyperactivity disorder is characterized by developmentally inappropriate levels of inattention and/or hyperactivity that result in numerous impairments in academic, social, and occupational domains. Although ADHD is typically characterized as being a disorder of children,

ADHD is also prevalent in adults. Approximately 2 to 8% of college students exhibit clinical symptoms of ADHD. College students with ADHD symptoms are at greater risk of behavioral problems and psychological difficulties such as depression and anxiety. Though there is not an absolute cure for ADHD, there are several options to manage the disorder. Medication is often an important part of treatment for a child with ADHD. The two main types of ADHD medications are stimulants and non-stimulants. Central nervous system (CNS) stimulants are the most commonly prescribed class of ADHD drugs. These drugs work by increasing the amounts of the brain chemicals called dopamine and norepinephrine which improves the person's concentration and helps them focus better. The commonly used stimulant medications for ADHD are amphetamine-based stimulants (Adderall, Dexedrine, Dextrostat), dextromethamphetamine (Desoxyn), dextromethylphenidate (Focalin), methylphenidate (Concerta, Daytrana, Metadate, Ritalin). Nonstimulant medications work by increasing levels of norepinephrine in the individual's brain, which helps with attention and memory. The commonly used non-stimulant medications for ADHD are atomoxetine (Strattera) and antidepressants like nortriptyline (Pamelor).

Exercise is also a plausible treatment for behavioral symptoms and cognitive performance of persons with ADHD (Gapin, Labban, Bohall, Wooten, & Chang, 2015). Specifically, acute exercise of moderate intensity for at least 30 minutes has been associated with improved cognitive functions across multiple cognitive domains including basic information processing, inhibition, and the planning aspects of executive functions. According to Dr. George Pujalte, a sports medicine specialist at the Mayo Clinic in Jacksonville, Florida, ADHD might actually have positive effects on sports performance. Sports that require reactive decision-making and quick movements could benefit, he said. For instance, the phenomenon of "hyperfocusing" may allow athletes to block out distractions. Attention deficit hyperactivity disorder can also affect athletes in a negative way. Athletes with ADHD exhibit increased risk-taking behavior, and this is hypothesized to lead to an increased risk of sports injury. Symptoms of a concussion, such as difficulty focusing and impaired memory, may be masked or compounded by ADHD symptoms and may worsen in athletes with ADHD compared with those without. Computerized testing used to determine if an athlete can return to sport after injury may be ill-suited to athletes with ADHD due to its repetitive nature.

3. Tips for Managing and Facilitating Sport

First, we must understand what must be done or what is already being done to help manage the cognitive disability known as ADHD. The age and gender of the individual, as well as the severity of the symptoms, play a key role in determining how to facilitate sport or physical activity so that the individual can progress through skill levels (van den Hoofdakker, Nauta, Veen-Mulders, Sytema, Emmelkamp, Minderaa, & Hoekstra, 2010). Medications are one form of managing ADHD. This is done by affecting dopamine, these medications also have the tendency to increase the heart rate and blood pressure, which is a consideration when prescribing these medications to athletes with ADHD (Hamilton, Rosenthal, Hulpke-Wette, Graham, & Sergeant, 2012).

As with social skills training, participation in sports improves social deficits and also elevates mood and motivation level (Azrin, Ehle, & Beaumont, 2006; Pennington, 2017). Children and adults who have recently been diagnosed with this condition need to learn social cues and how to trust peers, adhere to rules, and effectively participate in structured activities. This also leads to improved relationships with peers, which ultimately improves team dynamics (Archer, & Kostrzewa, 2012).

4. Conclusion

The impact of ADHD and the effects of participation in athletic activities share a complex relationship. Participation in sports demands attentiveness, organizational skills and conforming to a structure. Additionally, exercise and high-stress environments can exacerbate potential side effects of stimulants used to treat ADHD. Athletes with ADHD should be monitored by knowledgeable practitioners with an awareness of the side effects of prescribed medications and their relevance to physical activity, as well as knowledge of the regulatory guidelines of an athlete's chosen sport. Extensive research is still required on the implications ADHD may have in specific sports, and on possible advantages of medication use.

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