PAYING ATTENTION TO PUPILS WITH ADHD
A guide for teaching assistants

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Attention Deficit Hyperactivity Disorder (ADHD) is a neurobiological disorder associated with symptoms of persistent inattention, hyperactivity and impulsivity which can have an influence on personal, academic, familial and societal functioning (ADHD Institute, 2016). Believed to be the most common behavioural disorder in the UK (National Health Service, 2014), it is thought that ADHD currently affects 3.62 per cent of boys and 0.85 per cent of girls aged between 5-15 years (The UK ADHD Partnership, 2013). Therefore, boys are nearly four times more likely to have ADHD than girls, demonstrating a greater need to focus on boys within the school physical education (PE) environment. McCarthy et al. (2012) stated that the annual prevalence of 6-12 year old boys who were pharmaco logically treated for ADHD increased from 8.15 (per 1,000) in 2003 to 15.32 (per 1,000) in 2008. Further evidence by Holden et al. (2013) noted an increase in diagnosis for ADHD in 6-17 year old children from 192 to 506 per 100,000 between 1998 and 2007.

Holden et al. (2013) revealed that 65 per cent of people with ADHD possessed one or more other co-morbidities, such as dyslexia, developmental coordination disorder, and conduct and oppositional defiant disorders. Current treatments for ADHD mainly consist of pharmacological interventions and behaviourally-based psychosocial treatments. Methylphenidate is the most common drug used, however 20 per cent of children develop side effects such as sleep problems and mood disturbances (Kiluk et al., 2009). Psychosocial treatments typically consist of school and parent-based management training and cognitive behavioural therapy. All of these interventions have been shown to be effective in reducing inattention, hyperactivity and impulsivity characteristics, yet results are short-lived (Berwid and Halperin, 2012). Interestingly, there is a growing body of evidence that considers the use of exercise as a treatment.

Educational teaching assistants (ETAs) who work with children with ADHD, most commonly on a one-to-one basis during curriculum time, are the primary focus of this article, and more specifically those who support pupils within PE lessons. In order to facilitate inclusion ETAs need to fully understand the condition, its effects on the child, and possible strategies to help reduce the severity of symptoms during PE. It is vital that pupils with ADHD have the necessary support in place to enable a positive learning experience. Coates and Vicker man (2008, p.169) noted the thoughts of PE teachers which indicated that the presence of ETAs who were inexperienced in the subject area was more of a hindrance than a help. The PE teachers also suggested that ETAs’ lack of specific PE training led to lack of confidence, resulting in ADHD pupils receiving a poorer PE experience. However, their presence allowed PE teachers to focus on the “lesson and other children in it”.

Children with ADHD are thought to have a smaller brain volume. Carmona et al. (2005) noted an average brain volume reduction of 5.4 per cent when compared to children without ADHD. This neurobiological disorder is also associated with an imbalance of norepinephrine and dopamine, which are neurotransmitters found in the brain. Wigal et al. (2013) found an increased level of dopamine in children with ADHD as a result of exercise, leading to enhanced focus and attention, and consequently facilitating learning. The same study also suggested that exercise increased levels of norepinephrine, thus improving executive operations, reducing distractibility, and enhancing memory, all of which assist in learning. Robinson et al. (2011) suggested that exercise and physical activity can alter dopamine and norepinephrine transmission, therefore reducing the severity of ADHD symptoms.

Due to the reduction in brain volume and differing brain activity levels, ADHD is associated with a number of cognitive deficits. Physical activity can alter a child’s brain structure and function and, as a consequence, improve the efficiency of information processing, executive control and memory (Tomporowski, 2016). An exploratory study by Verret et al. (2012) found that long-term physical activity positively influenced strength and motor skills, in addition to behaviour and cognitive functions. Similarly, Neudecker et al. (2015) discovered that higher rates of physical activity improved cognitive performance. This suggests a positive outcome on academic performance if physical activity is performed regularly. ETAs could utilise small-scale physical activity within the classroom to enhance the child’s attention and improve engagement in lessons.

Children with ADHD may find it difficult to perform complex motor skills that children without ADHD find relatively easy because approximately 50 per cent of children with ADHD have developmental coordination disorder (DCD) (Bishop and Block, 2012). This delay in motor skill development leads to the avoidance of practice during both PE and physical activity. This highlights the need for ETAs to promote simple motor skills during PE lessons, making them specific to each pupil’s skill level, subsequently improving inclusivity and self-efficacy. Breaking down skills into bite-
size chunks could facilitate success. Hoza and Smith (2015) promoted the use of aerobic physical activity to reduce the risk of poor motor skills and lower fitness levels in children with ADHD. Evidence provided by Lufi and Parish-Plass (2011) and Barkley et al. (2014) stated that physical skills and athletic ability are highly valued when forming relationships and being accepted by peers. Therefore there is a need for regular practice in developing basic motor skills by children with ADHD in order to reduce or prevent social isolation, and help improve their confidence in sport and physical activity.

Psychiatric and behavioural co-morbidities are widely associated with ADHD. Jarrett et al. (2016) provided evidence that 25 per cent of children with ADHD possessed anxiety disorders, while 50 per cent presented symptoms of oppositional defiant disorder (ODD) and conduct disorder (CD). These disorders can negatively affect participation in sports through low self-esteem and difficulty following and accepting rules. Additionally, participation in team sports exacerbated levels of aggression, emotional reactivity and disqualification (Johnson and Rosen, 2000). Contradictory evidence by Kiluk et al. (2009) showed that parents reported anxiety and depressive symptoms when their child played three or more sports – the types of activities performed were not provided.

ADHD is also associated with impulsivity, anger and childhood aggression (Becker et al., 2012). Becker et al. (2012) also found that when ADHD and anxiety were combined, this produced the highest levels of aggression due to compounding impairment of inhibitory control. Such behaviours during any type of physical activity may present a heightened risk to the child and other pupils, and a greater chance of removal from the situation. Symptoms of anxiousness during childhood have been seen to exacerbate disruptive behaviours, leading to diagnoses of disruptive behaviour disorders, in turn exacerbating anxiety symptoms (Bubier and Drabick, 2009). This vicious circle needs to be addressed during physical activity as sessions of higher stress may induce emotional outbursts associated with aggression. Therefore ETAs should facilitate sessions that induce minimal stress, and focus on simple motor skills to prevent anxious and aggressive behaviours. Anger and aggression can result in children's inability to cope in sports and physical activity with peers, with the long-term consequence being social isolation and peer-rejection (O’Callaghan et al., 2003).

Participation in sport for the general population has resulted in marked improvements in social behaviours, such as sportsmanlike and attentive behaviours, when implementing a reward. Studies by Stark et al. (2011) and van Meel et al. (2011) found increased brain activation when pupils and students with ADHD were given a monetary reward. ETAs could adapt this system by rewarding positive social behaviours with tokens; pupils could exchange these to ‘purchase’ treats. Adopting this strategy may help to alleviate negative behaviours and help develop friendships with peers when participating in PE.

Children with ADHD are also at a greater risk of developing depression, with co-morbid depression found in 20-30 per cent of ADHD cases (Ushijima et al., 2012). Humphreys et al. (2013) provided evidence that children with ADHD fare worse academically and socially. They reported that failure in both these areas contributed to depression. A growing body of evidence suggests that physical exercise can reduce the symptoms of depression. Schuch et al. (2011) undertook a systematic review that supported exercise as a treatment to improve the physical and psychological quality of life in depressed individuals. With this in mind, exercise should be performed regularly by children with ADHD who are at greater risk of depression. More specifically, Perraton et al. (2010) suggested that aerobic exercise lasting more than 30 minutes aided the reduction of depressive symptoms; however, the studies considered within the review focused on adults.
Disturbed sleep is also commonly reported in children with ADHD as well as a greater difficulty in falling asleep and increased tiredness upon waking (Hoban, 2000). Persistent sleep loss can cause or exacerbate learning, emotional and behavioural problems for children with ADHD (Montgomery and Wiggs, 2015, Hansen et al., 2014) and all of these can negatively affect participation in PE and physical activity. Medication, such as Methylenidate, commonly prescribed for ADHD, may also affect sleep patterns. This can make participation in physical activity more difficult due to low energy levels. ETAs should avoid long, tiring physical activity sessions to prevent the exacerbation of behavioural and emotional problems. Archer et al. (2012) identified that short exercise bouts of 5–15 minutes reduced both hyperactivity and behavioural disturbances. Additional evidence from Tatsumi et al. (2015) demonstrated that morning and afternoon physical activity improved the sleep quality of children with developmental disorders.

Children with ADHD may also find it difficult to integrate and cope with some sports and team games, due to high levels of aggression, anxiety and negative behaviours, such as defiance and emotional outbursts. Highly competitive games may exacerbate negative behaviours and mood, so participation in these activities should be attempted with close supervision. Games that are less competitive may, however, help pupils with ADHD to develop positive relationships with peers.

A considerable amount of research is necessary to determine the most effective exercise strategies (for example intensity, frequency and duration) to help manage symptoms of ADHD. Current evidence suggests the application of simple skill sessions that are easily mastered will help prevent a reduction in confidence. Short bouts of exercise are also recommended (5–10 minutes) especially when the pupils possess irregular sleeping patterns as a co-morbidity. Aerobic-type sessions possibly reduce severity of ADHD and depressive symptoms, thus improving behaviour, learning and self-confidence. The inclusion of reward schemes to enhance positive symptoms, thus improving behaviour, reduce severity of ADHD and depressive bouts of exercise are also recommended to prevent a reduction in confidence. Short exercise sessions to prevent the exacerbation of hyperactivity and behavioural disorders. The roles of various categories, reactive aggression, and shared risk processes. Clinical Psychology Review, 29(4), 650-669. DOI: 10.1016/j.cpr.2007.08.005


Hoz, B. and Smith, A.L. 2015. Is aerobic physical activity a viable management strategy for ADHD? The ADHD Report, 23(2), 1-5. DOI: 10.1251/sal2015.23.2.7


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