

The Effects of Team Sports on the Mental Health and Well-being of Children with ADHD

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Abstract

The following literature review examines the effects of team sports on the mental health and well-being of children with attention-deficit/ hyperactivity disorder (ADHD). This review pays specific attention to the aspects of socialization for children with ADHD as well as the benefits of team sports for children both with and without ADHD. The literature showed that the use of token economy can result in exceptional potential for children to demonstrate positive displays of teamwork and sportsmanship resulting in a sense of belonging. This review also highlights benefits to the mental health and well-being of children with ADHD as a result of physical activity and peer inclusion. The following literary review also highlights important milestones for the history of ADHD as well as some implications of the literature and suggestions for future research.

The Effects of Team Sports on the Mental Health and Well-being of Children with ADHD

Attention-deficit/ hyperactivity disorder, also known as ADHD, is one of the most prominent mental health conditions in Canadian children. Children normally begin to display characteristics associated with ADHD between the ages of three and five (Statistics Canada, 2017). It is also more common among boys (Statistics Canada, 2017). ADHD can take a toll on families and often causes a great deal of stress. Sometimes social cues are not so obvious to children with ADHD and they have a great deal of difficulty with school and social settings (Fabio, Castriciano & Rondanini, 2015). The most common characteristics of ADHD include impulsive behaviour, difficulty paying attention and hyperactive behaviour. Challenges faced by children with ADHD relating to inattention may include but are not limited to: difficulty focusing on instructions, organized activities or schoolwork as well as challenges with external distractions and forgetting or misplacing things. Characteristics of ADHD relating to hyperactivity may include but are not limited to: fidgeting, inability to sit quietly for long periods of time, interrupting conversations, and difficulty waiting for their turns (Statistics Canada, 2017). Although there are many struggles faced by families who have children with Attention-deficit/ hyperactivity disorder, there is extensive research on the topic and great strides have been made with the development of treatment programs.

In today's society sports are just one of many outlets for children to express their creativity, passion and energy. This paper will focus on sports which incorporate multiple players, teammates and interactions. The relationship between team sports and children with ADHD has great potential for benefits in areas of mental health and well-being. Accordingly, the

following paper will explore the topics of socialization for children with ADHD, the benefits of team sports for children with and without ADHD, the role of token economy, and peer attitudes and inclusion.

History

The establishment of a clear understanding of attention-deficit/ hyperactivity disorder has taken hundreds of years. It is important to understand the evolution of the disorder in order to consider that we can continue to make strides to improve the mental health and well-being of children who have it. The first scientific records of characteristics of ADHD were published in Europe by Sir Alexander Crichton in his three book collection titled *An inquiry into the nature and origin of mental derangement: Comprehending a concise system of the physiology and pathology of the human mind and a history of the passions and their effects* (Crichton, 1798). In chapter II of book II there is a focus on attention. Crichton (1798) concluded that people who suffer from inattention are often born that way, have issues focusing on one particular object or task and sometimes say they have the “fidgets” (p. 272). This conclusion over two hundred years ago was an impeccable start to the focus on ADHD which at the time was referred to as a “nervous disorder” (Crichton, 1798, p. 272). Following Crichton’s work, Heinrich Hoffmann published the children’s story “Fidgety Phil” in Germany in 1844 (Lange et al., 2010). The story was part of a collection Hoffmann had written as a gift to his young son after writing many stories and drawing many pictures to help calm children for medical exams (Lange et al., 2010). The English translation of Hoffmann’s (1848) “Fidgety Phil” from *Struwwelpeter* is as follows:

“Let me see if Philip can/ be a little gentleman;/ Let me see if he is able/ To sit still for once at table.”/ Thus spoke, in earnest tone,/ The father to his son;/ And the mother looked very grave/ To see Philip so misbehave. (p. 18)

And continues with:

See the naughty, restless child,/ Growing still more rude and wild ,/ Till his chair falls over quite./ Philip screams with all his might. (p. 19)

Similar to Crichton, Hoffmann seems to have a grasp on some of the characteristics of ADHD among children. Hoffmann (1848) touches on an inability to sit still for a long period of time however he also refers to Philip as “naughty”, “rude” and “wild” (p. 19). Referring to Philip as a naughty, rude and wild boy shows that at this time in history there still was not a proper understanding that a child cannot control these symptoms on their own.

In 1902 Sir George Frederic Still gave several lectures on the “defect of moral control” in children which he believed “calls urgently for scientific investigation” (Still, 2006, p. 126). Still may have been one of the first medical professionals to advocate for further study into the symptoms of modern day ADHD. Again, in 1932, two German doctors by the names of Franz Kramer and Hans Pollnow presented findings on a “Hyperkinetic Disease” which happened in children between ages three and five (Neumärker, 2005). The symptoms they described mirror those of the hyperactivity in ADHD which included the inability to sit still, motor impulses, and excessive climbing (Lange et al., 2010). Furthermore they made an advance when concluding that the presence of these symptoms results in difficulties in an education environment (Neumärker, 2005).

The first proper treatment of hyperactive behaviour was recorded by Charles Bradley in 1937. Thirty children in his study who were hospitalized for behavior conditions received Benzedrine (Bradley, 1937, p. 578). According to Bradley (1937) some of the children who received the drug had been displaying symptoms of current day ADHD and after receiving the drug they showed improvements in behavior and school performance (p. 578). Here we see another great stride for ADHD in history. In the years to follow researchers attempted to narrow down a title for what is now known as ADHD. Titles evolved from “Minimal Brain Damage” to “Minimal Brain Dysfunction” in the 1960s and then to “Hyperkinetic reaction of childhood” in the 1970s (Lange et al., 2010, p. 249-51). In the 1980s the American Psychiatric Association titled the disorder “Attention Deficit Disorder: with and without Hyperactivity” and finally in the mid-1990s they revised the name to “Attention Deficit Hyperactivity Disorder” (Lange et al., 2010, p. 252).

Attention-Deficit/ Hyperactivity Disorder and Socialization

Socialization is extremely important for mental health and well-being but is often more difficult for children with ADHD. Many factors should be kept in mind when it comes to socialization. Peers, environment and interest in the activity are all important factors that can affect a child’s socialization or participation in an activity. Children with ADHD have been reported by parents and teachers to have less friends and greater peer rejection than those without ADHD (Bagwell et al, 2001). Therefore the drive to socialize may not be as strong in these children. Encouraging children with ADHD to become more involved in extracurricular activity may help to improve their outlook on socialization and even form more friendships and prevent

peer rejection. Even though children with the disorder understand the appropriate social interactions they should engage in, many times they do not behave in those appropriate ways. Children with the disorder who do not enjoy socialization will most likely be affected negatively by team sports. If a child is put in a situation where they are uncomfortable they may not have any improvements on their mental health or well-being.

Medication also plays a role in the lives of many children with ADHD. O'Callaghan et al. (2003) explain that children with ADHD benefit from stimulant medication as it can reduce hyperactive behavior however it is less likely to directly reduce issues regarding socialization. It is important to consider that although stimulant medication may not directly reduce struggles with socialization, a reduction in hyperactivity may lead to improved interpersonal relationships. Social skills are often more likely to be positively influenced by a combination of stimulant medication and instructive programs and activities (O'Callaghan et al., 2003). More specifically, sports can be used as a method to train social skills for those who enjoy sports because they are pleasurable, rewarding and inclusive (O'Callaghan et al., 2003).

Benefits of Team Sports

Team sports have a multitude of benefits both for mental and physical health. Team sports help children to socialize and meet new people. Also, they help children learn how to compete in a fair and organized fashion. Similarly, sports help children understand it is okay to lose. Sports help to develop leadership qualities as well as sportsmanlike behavior. The American Alliance for Health, Physical Education, Recreation and Dance share that in order for sports to provide a positive outcome for children they must well organized, participation must be

encouraged, have meaning, and be integrated into other aspects of life (2013). Just as any other activity, the more you practice, the more likely you are to succeed. If children have a good understanding of the sport and are in appropriate physical condition to participate they are more likely to benefit (AAHPERD, 2013). A safe environment and a focus on the self-improvement of individuals as opposed to winning the game results in the want to continue involvement (AAHPERD, 2013). Furthermore, if a child is forced into playing a sport as opposed to choosing to get involved, they are less likely to benefit from it. Peter Clough and colleagues concluded that physical activity can increase positive affect, fulfill the need for competence and relatedness, and provide opportunities to experience intense emotions (2016).

The physical component of sports is also quite important. Sports help cardiovascular health. Janssen and LeBlanc found that regular physical activity can have highly beneficial outcomes on the health of children with regards to obesity and blood pressure (2010). Physical activity also plays a role in the prevention and management of diabetes (Warburton, Nicol, & Bredin, 2006). Also, more time spent playing sports may result in less time watching television or playing video games. Many sports also help children to get outside and enjoy fresh air as well as improving their sleep.

Effects on Children with ADHD who Participate in Team Sports

There are many aspects of team sports to consider when looking at the effects they will have on children with ADHD. Most importantly, team sports do in fact have the ability to improve the mental health and well-being of children with ADHD. Token economies have been found to help aid children with the disorder to compete in a sportsmanlike and attentive manner

(O'Callaghan et al., 2003). It is important to keep in mind however that sports are not for everyone, nor is working in a team or group environment. There are many positive effects on children with ADHD who participate in team sports. Token economy plays a major role in the development of attentive and sportsmanlike behaviour. There are also some negative effects on children with ADHD who participate in team sports but the research has shown that the positive effects outweigh the negative.

Positive Effects

Participation in team sports can be highly beneficial for the mental health and well-being of children with ADHD. It is a way to release energy and also an opportunity for children to bond with peers. Often times, team sports provide players with a sense of comradery. This bond that forms between teammates can lead to great friendships which in turn could help children with ADHD who at times struggle with feelings of isolation. Another positive effect that team sports can have on children with ADHD is its ability to serve as a pathway for channeling energy, aggression or frustration in a healthy way. One pilot study by Alan Smith and colleagues suggests that physical activity should be further explored as a management tool for children with ADHD (2013). Their study also found that there is great potential for physical activity to benefit social, cognitive, motor and behavior functions in children with ADHD or children who display some of the symptoms of ADHD. Kiluk, Weden, & Culotta's study on children with ADHD who participate in team sports found that both boys and girls ages 6-14 who participated in three or more sports actually had fewer symptoms of anxiety and depression than those who participated in less than three sports (2009). It seems for the most part that the more participation in sports for

those who enjoy them, the better. Some parents have reported that after their child plays sports outside then comes inside to do school work they are more focused (Mikami, Chong, Saporito, & Na, 2015). To contrast, on days when they did not take part in organized sports and watched television instead, they were more easily agitated (Mikami, Chong, Saporito, & Na, 2015). Therefore team sports can benefit children suffering from the disorder in both mind and body.

It is important for all children to feel like a part of some group, to feel a sense of belonging. Being a part of a sports team can give a child something to look forward to after school or on the weekends. Bustamante and colleagues explain how beneficial it is for children with ADHD to have routines, participate in both engaging activities and after-school programs (2016). They also conclude that after school sports programs help children with ADHD to form prosocial emotional bonds even in challenging situations (2016). Improved prosocial emotional bonds developed in sports programs can also help children in the classroom and other social areas of their lives. Furthermore, implementing behavior management activities into sports programs is suggested to maximize the benefits not only for children with ADHD but for all children (Bustamante et al., 2016).

Token Economy.

O'Callaghan and colleagues studied 4 children who had ADHD and monitored their social behavior while participating in a game of kickball (2003). A token system was used to promote sportsmanlike behavior and attentiveness. When a child encouraged or congratulated a teammate (sportsmanship) they were rewarded with a token. If a child was in the proper ready position when their turn came (attentiveness) they were again rewarded with a token. Tokens

could be exchanged for prizes. It was found that children with ADHD improved in both categories (2003). Therefore introducing a token system that improves attentiveness and sportsmanship for children with ADHD on sports teams may help with peer acceptance. Improved peer acceptance could further improve the emotional well-being of children with ADHD in a sports setting. In a similar study by Reitman and colleagues three children with ADHD engaged in a game of kickball and received tokens for attentiveness. Medication was a factor taken into account for this particular study. Certain days the children received a placebo and a token economy was used while other days there was no token economy and the children received a methylphenidate dose based on a previous classroom assessment. The researchers found that for both placebo days and medicated days, attentive behavior increased while disruptive behavior decreased. However, it was found that token economy was more successful in increasing attentive behavior than medication. The biggest improvements came from a combination of both medication and token economy (2001).

Negative Effects.

Although there are numerous positive effects that participation in team sports can have on children with ADHD, there are also some downfalls. Symptoms relating to inattention such as difficulty focusing on instructions and organized activity can lead children with ADHD to find sports more challenging. One study by Johnson and Rosén on boys with ADHD who played sports compared to boys who did not have ADHD who played sports found that those who did have the disorder were more aggressive than those who did not (2000). They also found that boys with ADHD were more aggressive when participating in team sports compared to

participating in individual sports (Johnson & Rosén, 2000). Focusing on the tasks that a sport entails such as playing a certain position while following a coach's instructions and simultaneously helping out your teammates can be quite demanding. A 2011 study by Kofler and colleagues on working memory deficits and social interactions of children with ADHD supports this idea. They demonstrated that children with the disorder focusing on short term goals can result in a lack of attention to social cues and things happening around them (Kofler et al, 2011). With all this in mind it is easy to see how some sports situations could lead to frustrating scenarios for children with ADHD. Furthermore, children with the disorder who are often distracted by external stimuli may face challenges with energetic, screaming fans or players on the benches of both home and visiting teams who are also cheering in a game situation. Therefore, although some children with ADHD are able to channel their energy into the task required and excel in team sports others find this type of environment extremely stressful. Just as it is for children without ADHD, not all children with the disorder will enjoy team sports either.

Perception

We know how important sports can be for the physical and mental health of all children as well as the benefits of team sports for children with ADHD however there are other factors to keep in mind. Peer attitudes and inclusion are a key factor in the participation of team sports. Feeling a sense of belonging is crucial when it comes to wanting to be involved (Andersen., 2011). In a recent study by Mikami, Chong, Saporito, & Na on parental perceptions of the effects of exercise on behavior in children and adolescents with ADHD, the perception of most parents was that physical activity such as participation in team sports was beneficial. They concluded

that children on medication who were also physically active were perceived by parents to be more focused and have improved behavioural symptoms compared to when they were not physically active (2015). Perception is a very broad umbrella. It could include the perceptions children with ADHD have towards sports or the perceptions parents have towards sports. For the purpose of highlighting the effects of team sports on the mental health and well-being of children with ADHD this review will take a closer look at peer attitudes and inclusion with relation to perception.

Peer Attitudes

A welcoming and inclusive environment is crucial for children with ADHD to want to participate in team sports. The attitudes of children without ADHD towards those who do have ADHD can be a challenge. Often times children are slow to accept others who may be a little different. The issues with socialization, following rules and interruptions faced by children with ADHD can lead to reluctant attitudes from peers who find it hard to understand their differences. The perspective of the child with ADHD is important as well. Self-perceived sports ability and self-perceived peer relations also effect team sport participation in children with ADHD (Gander et al., 2012). If a child with ADHD perceives themselves to lack skill in a particular sport or thinks a peer does not want them on the team they are likely to stop participating. It has been found that athletic competence relates to greater peer acceptance. Of course not all children are interested in sports but for the purpose of this paper sport settings are the focus.

Inclusion

If any child feels unwanted they will not enjoy sports. It is highly important for parents and coaches to work together in order to foster an inclusive environment for all children to be comfortable. Bustamante and colleagues stress how important it is for children with ADHD to receive attention from adults or coaches (2016). Furthermore, if coaches have experiences with the particular needs of children with ADHD the children are more likely to adapt and feel comfortable (AAHPERD, 2013). It is also important that there is no separation of teams. A child with ADHD or any other behavioural disorder should be given a fair opportunity to play with their peers. It would be immoral to deny a child the opportunity to participate in a team sport based on a false perception that may have been obtained elsewhere. Stigma plays a major role in sport participation for children with a behavioural disorder as well. Many people have developed a stigma towards children with ADHD because of their hyperactivity, these people have forgotten that every child has the right to participate.

Implications

A major implication of any research regarding attention-deficit/ hyperactivity disorder is the actual diagnosis of the condition. Dianna Mullet and Anne Rinn have concluded that 25%-50% of children diagnosed with ADHD have actually been misdiagnosed (2016). They explain that often times children display some characteristics similar to those of ADHD but not enough required for a full diagnosis. Children participating in studies regarding ADHD who have actually been misdiagnosed can lead to false conclusions (Mullet & Rinn, 2016). In addition to possible misdiagnosis, there are on average significantly fewer females diagnosed with ADHD

than males which makes it even harder to conduct a study on the topic (Johnson & Rosén, 2000). David Reitman and colleagues also found that there is a lack of research surrounding sports specific behavior interventions despite the vast benefits (2001). Many studies that do in fact look at children with ADHD who participate in team sports have extremely small sample sizes. This is because having children with ADHD participate in team sports to observe their behaviour has its complications. It is a very specific type study which requires children to have interest in sports. As was previously mentioned, if a child is forced to play sports they will not benefit as much as a child who wants to participate would. On top of that there are many sports that children play but in order to conduct a study it would make sense to pick one sport. So, if you narrow a study to children with ADHD who voluntarily participate in one particular sport it is easy to see how sample sizes would be so small. Another implication is that in today's society many sports have become very advanced when it comes to uniforms, equipment and registration fees. This means that sports could be becoming less and less accessible to children of lower income households. If health insurance companies could cover the costs of registration for children from these families who have ADHD and would be benefitted in mental health and well-being, great strides could be made in the face of ADHD. Other factors that complicate ADHD research in general are the additions of secondary mood disorders such as anxiety or depression (Kiluk, Weden, & Culotta, 2009). There are some several implications to consider when researching ADHD related studies however none of them outweigh the need for more research.

Future Research

With ADHD being one of the most prominent mental health conditions in Canadian children (Statistics Canada, 2017) there is no shortage of research on the disorder. However, there is a shortage of literature that is specific to children with ADHD and extra-curricular activity, especially team sports. O'Neill, Rajendran and Halperin highlight the importance of play therapy that involves peers as opposed to therapists because it could help with both social and neural development (2012). Many children do not react to medication in the way some therapists would like; similarly some parents do not like the idea of drug treatment for their children. Taking these facts into consideration, it could be beneficial for the implementation of both team sport participation and token economy for children with ADHD whose parents do not like the idea of medication. The current culture of today's society is heavily weighted on healthy lifestyles. With that in mind, more studies regarding physical activity in relation to the effects on behaviour are necessary to grasp its true potential. With more studies on the effects of team sports on the mental health and well-being of children with ADHD in the future, we could analyze which sports are more beneficial to children with ADHD. It may be that particular sports have more benefits based on the rules of the games and whether or not it is an aggressive sport. For example, hockey involves a lot of direct contact with other players and players are often taught the importance of aggression to gain control of the puck whereas a sport such as volleyball involves less aggression and teams play on separate sides of the net resulting in no real contact with opposing teams. With this in mind, there could be potential for studies comparing particular sports. There is a lot of potential for benefits from future research on children with ADHD who participate in team sports. Learning more about how sports help children with

ADHD could help therapists and families create a more rewarding lifestyle. There is great potential with regards to improving a child's mental health and well-being through team sports.

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