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Original article

Sport is an important part in the integration of the child with ADHD in society or is ADHD an opening to great performance in sport?

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Abstract

Aim. The aim of this paper is to reveal the most efficient sports for persons with ADHD (Attention Deficit Hyperactivity Disorder), if there is individual sport or team sport and to present that there are so many great athletes with this affliction.

What are those sports that can create real wonders in the lives of children with ADHD? Or does sport create the optimal manifestation framework for future successes in high-performance sport?

Conclusion. A subsequent study could also provide an estimated number of high-performance athletes with ADHD, who have achieved results worldwide.

Key words: children, ADHD, sports, performances.

Introduction

“ADHD is a pervasive, persistent, and perplexing disorder. It occurs in 3–5 percent of children, more often boys than girls, and in all cultures” (<https://chadd.org/adhd-weekly/whats-up-with-athletes-and-adhd>). This percent it seems to be higher in children who practice any sport for reasons that recently Doug Hyun Han MD, PhD, of Chung Ang University Hospital from South Korea has discovered: “The prevalence of ADHD in student athletes and elite athletes may be 7%–8%” (Hyun et al., 2019).

Thus, a percent of 8,4 from professional baseball players with ADHD had received exemptions from medications. Although stimulant pharmacotherapy continues to be for many children, teenagers and adults the most effective single treatment.

ADHD is chronic, continuing into adolescence and adulthood. Is one of the most extensively studied psychological dysfunctions, the increasing sophistication of research methods developed to study ADHD engage not only to enhance knowledge about this disorder but also to advance the field of developmental psychopathology more generally.

It was considered exclusively a childhood disorder, but children with ADHD will become adolescents and adults with ADHD. While childhood symptoms (especially hyperactivity) decline as a function of age, functional impairments increase in adolescence. Academic, social, and family domains are the most impaired domains of functioning. Oppositional defiant disorder, mood disorder, and substance use disorders are common psychiatric comorbidities and many underlying issues are remaining to be resolved. Treatments for adolescent ADHD include medication and psychosocial interventions. And for adults further studies must be done the impact of symptom expression and

examining risk and protective factors in relationship to prevention or ameliorating of ADHD as well as related functional impairments.

Numerous studies have been conducted based on the relationship between medication and sports activity, which has led to the general opinion that participants affected by ADHD, who follow a drug treatment behave in the same way as athletes unaffected by this condition.

There are no studies that reveal the results of sport performances in elite athletes in any sport.

Although this affliction is a medical problem, in sports activity it seems that it can bring real impulses in obtaining exceptional successes.

Many of the elite in the field of sports, which have had a long history in both major world competitions, namely World Championships and Olympic Games and have also achieved numerous outstanding performances, setting records and accumulating medals, are related to the ADHD.

Children with ADHD are encouraged to participate in sports as a way to manage ADHD symptoms. „A group of researchers is asking if ADHD is more common in athletes than previously thought. It might even be that ADHD gives elite athletes a slight edge because of symptoms such as preservation or hyperfocus.” (<https://chadd.org/adhd-weekly/whats-up-with-athletes-and-adhd>).

Sport is the best activity for anyone, but for some children, and especially for children with ADHD, it can be the road to life, personal and professional success.

But what sport it is the most appropriate for each person and what sport is the most recommended?

As it is known, ADHD drugs are of two types: stimulant and non-stimulant. “Stimulant medications inhibit reuptake of specific neurotransmitters,

particularly dopamine and norepinephrine. By increasing levels of these neurotransmitters in the brain, stimulant medications temporarily improve focus and other cognitive functions” (Glaser P., Gerhardt G., Norvillitis, 2012). „Stimulants are typically the first option in treating ADHD. Non-stimulants are commonly prescribed to patients when stimulants are ineffective or they experience negative side effects”. (Medical Information, <http://www.healthline.com/health/adhd/medication-list#Overview1>).

„Since ADHD is common in the general population, health care providers caring for athletes should be aware of how treatments, including medications, can affect an athlete’s exercise performance” (https://www.physio-pedia.com/The_influence_of_ADHD_medication_on_physiologic_processes_and_exercise). „Since most medications for ADHD are stimulant based, they have common side effects. The American Medical Society for Sports Medicine addresses their concerns about these side effects in a position statement” (Putukian et al., 2011) „Frequent monitoring should take place to avoid progression of negative side effects” (https://www.physio-pedia.com/The_influence_of_ADHD_medication_on_physiologic_processes_and_exercise). „It should also be noted that stimulant medications are banned by the World Anti-Doping Agency and the International Olympic Committee due to their possible performance enhancing capabilities” (Putukian et al., 2011).

It is known that athletes are abusing stimulants for improved performance and most medications for ADHD are stimulant based the concerns are on:

- the cardiovascular system the following effects: increases the resting, submaximal, and peak heart rates of users, increases blood pressure (Mahon A, Stephens B, Cole A, 2008, Awudu G, Besag F., 2014, Vitiello B., 2008) and lower perceived exertion (Mahon A, Stephens B, Cole A, 2008, Roelands et al., 2008) and the possible risk of abuse;
- decreased appetite which leads to difficult weight maintenance, (Putukian et al., 2011);
- the increased risk of heat injury as stimulants increase core temperature and often mask signs of fatigue.

There are some opinions that swimming and diving were highly recommended for children with ADHD and learning disabilities that affect organization, spatial awareness and difficulty with game concepts and strategies. Swimming’s focus on individual competition likely helps.

„Water relaxes the brain and restarts it. The hydrostatic pressure, which is the pressure on the body and the head, gently massages the head when we move in the water. When we concentrate and think for a long

time the brain heats up. The water has an amazing ability to relax and cool down the head and create a sort of restart within a short period of time. In addition, rolling in the water creates a movement of the brain, getting out of balance and finding new balance. The movement of the head through the water, the hydrostatic pressure that changes according to the depth of the water and the diving and flipping in the water can make a child who completely lost his attention to restart and forget that he was on the edge. Slowly the amount of interim play diminishes, and the child focuses on one task for a longer period of time than he used to – twice or even five times as long.” (<http://www.swim-west.com/advantages-swimming-children-with-adhd/>).

Certain sports and especially individual sports seem to be the best way to integrate into the community outside of therapies and drug treatment. It seems that sometimes sports can even substitute for drug treatment.

Starting from the question of whether sport is part of the long-term treatment of children with ADHD, I got to read about Michael Phelps. Of American origin, the high-performance swimmer holds 28 Olympic medals, of which 23 are gold and he has been diagnosed with ADHD.

This diagnostic is „one of the sources of his drive to win comes from an unlikely source: his ADHD” (<https://www.understood.org/en/learning-thinking-differences/personal-stories/famous-people/celebrity-spotlight-how-michael-phelps-adhd-helped-him-make-olympic-history>).

Michael Phelps „was lucky in that he was so talented physically that he was already on the path to success at age eleven (which is when he no longer needed the drugs). It is just as well since stimulants are banned on the international competitive level in all sports” (Diller, 2008).

“The story of Olympic gold medalist Michael Phelps illustrates how swimming can help. Michael was diagnosed with ADHD as a child. he stopped taking medication and used swimming to help find focus” (<http://texasswimacademy.com/swimming-and-children-with-adhd/>).

He coped with ADHD. Swimming provided a practice schedule that helped him develop time management skills, as well as valuable parameters. The pool itself helped him. Even if Michael’s mind was all over the place, he could focus on going up and down the pool. Water itself has a calming, soothing effect.

Although about this condition „academics regularly pronounce that ADHD is a life-long disorder” (<https://www.understood.org/en/learning-thinking-differences/personal-stories/famous-people/celebrity-spotlight-how-michael-phelps-adhd-helped-him-make-olympic-history>) it can be kept under control by engaging in sports activities. But

what kind of sports are most suitable for children and adolescents with this condition?

Is any sport a sport that helps in this condition?

Statements have been made that individual sports are more appropriate for children with ADHD to practice.

„From my years of experience treating children with ADHD, I know that they do better with individual oriented sports like swimming or track (even tennis) compared to team sports like baseball (that's death for an ADHD with all the waiting around in the outfield) or even soccer.” (Diller, 2008). But evidence shows that people with ADHD have excelled in many sports. For example, Andres Torres, Pete Rose and Shane Victorino played baseball in the Major League, Terry Bradshaw was a football player. And Jason Kidd, Michael Jordan and Shaquille O'Neal - basketball Stars and NBA players.

Swimming, as well as athletics, practiced in a continuous effort, offers the possibility of a constant energy consumption during training.

“Water stimulates the perceivers through which information is obtained (water acts as a perceptual stimulant), such as the skin, the vestibular system and the visual and auditory systems” (Campion M. R., 2000). The skin reacts to different temperatures and sensations (provided by the temperature and turbulence of the water caused by the waves created by the participants, the bottom of the pool and the walls), the vestibular system to the water turbulence, the eyes to the constantly changing water surface and the ears to increased diving pressure. Thus, sensory stimulation is provided by water as part of the therapeutic process for certain people.

Researches suggests that kids who exercise regularly experience gains in brain function and cognitive performance. “Most sports can be excellent for children with ADHD. Sports are a terrific way to channel the energy that kids with ADHD have. They can also help with learning how to function as part of a team as well as learning discipline and reaching goals outside of a classroom setting”, Danelle Fisher, Dr., chair of pediatrics at Providence Saint John's in Santa Monica, California (<https://health.usnews.com/wellness/family/articles/2017-07-03/why-playing-team-sports-is-good-for-kids-with-adhd>).

Sports help with symptoms like hyperactivity and inattention.

The water is an amazing dimension for kids with ADHD – the quiet in they are not told what to do, the breathing that improves to create some form of meditation, the ability to let out the stress and frustration of someone who's being scolded all the time, the ability to be successful, and more. Swimming provides an ideal balance; it allows children to compete as individuals, while still being part of a larger team.

According to some specialists in the field children with ADHD can find team sports more frustrating than focusing. Sports like baseball or basketball are challenging due to the amount of rules to memorize and the distraction of emotional triggers. But this doesn't mean they can't benefit from organized sports and some athletes with exceptional results proved otherwise, excelling in team sports.

Individual sport for children can offer a number of social and behavioral benefits, but it's not always easy for children with ADHD to get involved. For many children with ADHD, the most formidable opponents on the playing field are themselves, because structure, order and lack of distraction are the means to succeed in sport. These aspects are the problem in the classroom that may get magnified on the playing field. But it is known that „physical movement improved working speed and social behavioral problems, and reduced hyperactivity” (Majorek, Tüchelmann and Heusser, 2004).

Studies also have determined that swimming exercise „ameliorated ADHD-induced short-term memory impairment. The results of the present study demonstrated that swimming exercise improved the symptoms of ADHD” (Ko et al., 2013).

„Additionally, ADHD frequently co-occurs with learning disabilities that affect organization, spatial awareness, and game concepts and strategies” (Attitude Magazine).

Another factor that tangle sports success for kids with ADHD is trouble following guidance, children with attention deficit are impatient and do not have the ability to follow the coach's instructions.

“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. Common symptoms of ADHD may enhance athletic performance. Some athletes with ADHD naturally excel in baseball and basketball, which involve quick movements and reactive decision-making, due to these athletes' inherent impulsivity. Many children with ADHD were reported to 'hyperfocus' (highly focus) on their own enjoyable activities without being distracted by regular life activities” (Hyun et al., 2019).

“Dr. Han notes that many athletes face stigma and bias when seeking treatment for ADHD symptoms. He also suggests that some athletes should consider nonstimulant medication options as part of treatment if their sporting organization won't allow the use of stimulants in treatment plans. The management of ADHD in elite athletes may have important effects on safety and performance. Clinical collaboration with team physicians and athletic trainers are crucial to reduce safety concerns and to ensure the athlete does not violate antidoping rules. The focus of management should be on long-term outcomes for elite athletes in

sport and life” (<https://chadd.org/adhd-weekly/whats-up-with-athletes-and-adhd>).

Impulsivity is another factor because of which kids with ADHD frequently react before thinking. They operate faster on instinct than using tactics and rules that are part of the team sport. Another difficulty is when they has to stay in line, waiting their turn.

Involvement in team sports such as football, basketball, handball, American football, rugby, etc. involves constant attention to the actions and placement of teammates constantly.

Lack of concentration in baseball or handball that require moderate attention during longer periods of time in which they not fully stimulate in the game are particularly challenging. For this reason maintaining focus and acute awareness is challenging for any child. For kids with ADHD, it's almost impossible.

Basketball may be even worse, because the children have to learn the rules, anticipate moves, and strategize. These are exactly the things people with ADHD don't do well. Basketball requires the player to exercise several skills at one time, such as jumping, passing, dribbling and running.

Children with ADHD do better when they get individual attention. That's why they're more likely to succeed with individual sports such as swimming and diving, wrestling, martial arts, and tennis.

Another sport suitable for children with ADHD is martial arts, that are all about control. To learn to control your body. The movements are smooth. There is an element of meditation (self-control) in taekwondo. Rituals are good for children with ADHD because they create acceptance mechanisms, develop and use rituals in their lives.

Another appropriate sport for children with ADHD is running because has no physical contact with other children, and there is little to no downtime.

The sports that are based on opportunities for distraction, level of physical contact, frustration factor, complexity of rules/ strategies, and use of gross motor skills are swimming, martial arts, tennis, track/cross-country running and gymnastics.

Caitlyn Jenner and Carl Lewis, are two of the most famous athletes of all time, they grew up with ADHD.

Athlete Michelle Carter found it difficult to read and spell. Her talent for athletics motivated her enough to do well enough in school and to be able to continue to compete. In Rio in 2016, he won an Olympic gold medal.

Justin Gatlin, American sprinter who competed in the 60 meters, 100 meters and 200 meters, is a 5-time Olympic medalist and a 12-time medalist at the World Championships. Diagnosed with this condition in the first grade, Gatlin would never say that ADHD, in itself, detained him. On the contrary, he says his condition fueled his attachment to athletics. He made the statement that he has been running for a long time, he had problems concentrating, but sports races helped him to concentrate.

Gymnastics, like running, is a sport in which attention is oriented on each individual. Simone Biles, a well-known American gymnast, suffers from this condition.

Physical exertion during sports activities is also an alternative method to medication for ADHD.

Figure skater, participant in the 2018 Olympic Games in Pyeongchang, South Korea, Gabrielle Daleman was assaulted due to the learning disability that caused her reading and writing problems. But he managed to excel in other fields, such as math, gymnastics and ice skating. Like her, Madison Hubbell, her partner on the ice, also found her passion for skating as an effect of ADHD. He amazed the skating world by winning the US National Championship in 2018. He struggled with ADHD as a child, but woke up on the ice.

A number 1 judo player in the UK, Ashley McKenzie, as well as another renowned Olympian, gymnast Louis Smith, who helped win the first British medal in the men's gymnastics team, both have attention deficit hyperactivity disorder (ADHD).

Adam Kreek, a Canadian rower, won the gold medal at the 2002, 2003 and 2007 at World Championships and gold at the 2008 Olympics with the men's eight team. He said anyone with ADHD can train their minds to channel their "incredible" energy. In addition to a good diet and family support, he considered that "rowing is a way out to control my ADHD."

Cammi Granato, Olympic gold and silver medalist, a women's hockey made the statement "My success in sports forced me to deal with ADHD. Cammi Granato has scored more goals than any other player in US women's hockey history. She led her team to a gold medal at the 1998 Winter Olympics in Nagano and a silver medal at the 2002 Winter Olympics in Salt Lake City.

Greg LeMond has ADHD and said that "A lot of athletes have it. I'm kind of a guy who needs to be doing something to learn it. When I got into cycling, I would say that the sport itself took a fog off my brain. I was able to absorb stuff I read. It changed my life."

Matthew Morgan, won at wrestling, was twice TNA World Tag Team Champion.

Scott Eyre, a Major League Baseball pitcher, come forward about his condition and serve to inspire others.

Ann Bancroft, the first woman to ski across Greenland and reach the North Pole by dogsled, polar explorer and Terry Bradshaw, former Pittsburgh Steelers quarterback and football analyst was inducted into the National Football League's Hall of Fame are another examples of athletes with ADHD who have succeeded.

Conclusions

Sports and athletic activities are known to help increase neurotransmitters in the brain. That increase can help reduce ADHD symptoms for a short time for

the person. Regular exercise and activity can increase the amount of time a person experiences an improvement in symptoms, including an increased ability to pay attention, to stay on task, and reduced impulsiveness. It can also improve sleep quality, which can help reduce symptoms during the day. All these are reasons for which many of children and teenagers choose to start, at the recommendation of the therapist, to practice a sport they feel appropriate for them. Thus, after obtaining positive results, they continue to struggle for performances.

„For the athlete, practicing the skills needed for the sport or activity also carries benefits into other areas of daily life. Skills such as returning to the task and cooperating with teammates help the player off the field, and accomplishments increase self-esteem and confidence” (<https://chadd.org/adhd-weekly/whats-up-with-athletes-and-adhd>).

Participating in sports can have many benefits. There are kids with ADHD that don't do well in the classroom because they are trouble in concentrates on their schoolwork. For a students who feels like is a constantly struggling in class, doing well in sports can prompt positive feedback, which is “intoxicating” – “They will throw themselves into their sport if they are hearing a lot of positive feedback. Who wouldn't?” Diaz Yamalis, clinical assistant professor in the department of child and adolescent psychiatry at NYU Langone Medical Center, in New York City. (<https://health.usnews.com/wellness/family/articles/2017-07-03/why-playing-team-sports-is-good-for-kids-with-adhd>).

For parents of kids and adolescents with ADHD who are considering playing sports, experts recommend that they find the right sport for each: „It's important to find a sport that allows kids to feel successful and keeps them mentally engaged. The brain is like a heat-seeking missile. It needs sensory input. Any sport where you're waiting for things to happen, that's slow-paced, that is not the type of sport a kid with ADHD would be drawn to” Diaz Y (<https://health.usnews.com/wellness/family/articles/2017-07-03/why-playing-team-sports-is-good-for-kids-with-adhd>).

Some team sports, such as basketball, or individual sports, like swimming, have little downtime for players while they're competing. Other sports, like baseball or softball, have downtime built in even for players on the field, because only the pitcher and catcher are involved in every pitch; meanwhile, their teammates stand in the field trying to be prepared if the ball is hit their way. That can be dangerous. For example, the mind of a child with ADHD who's playing an outfield position in baseball may wander, “then here comes the ball, and it can smack you in the face if you're not paying attention,” Diaz Yamalis (Health organization, 2017).

So, in conclusion, a subsequent study could also provide an estimated number of high-performance

athletes with ADHD, who have achieved results worldwide.

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