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Effects of Corporal Activities on Inattention and Impulsivity/ Hyperactivity during Non-formal Health Literacy Program

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Abstract

This study investigated how teenage impulsivity/ hyperactivity, and inattention were affected by corporal activities. It improved our comprehension of these symptoms of ADHD in light of Pakistan's increasing acknowledgment of psychological disorders as a prevalent co-occurring illness. The study emphasized the responsibilities that parents, neighbors, and the larger community played in the lives of teens with ADHD, focusing on their perceptions of sports and ADHD symptoms. Three participants, all WICA (Wasim International Cricket Academy) players in a weekend program that used non-formal education settings to test their hyperactivity/ impulsivity and inattention, were examined using qualitative, descriptive, and case study methodologies. In-depth interviews were used to gather data, with a focus on teenagers with ADHD who showed heightened levels of these symptoms. The results showed that leisure time activities considerably lessened the hyperactivity/ impulsivity and inattention symptoms in two out of three subjects. This study established a framework for further research and emphasized how critical it was to attend to the special requirements of teenagers with ADHD in the community.

Keywords: *Reduction in Inattention, Impulsivity, Hyperactivity, Case Studies, WICA Players, Corporal Activities, Weekend Program*

Introduction

ADHD had a wide-ranging impact on a person's life. This made it difficult to concentrate, complete tasks, and keep organized at school.

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Productivity and job completion declined at work (Barkley, 2020). In personal interactions, symptoms such as impulsivity and inattention could cause misunderstandings and conflict. Furthermore, ADHD-related issues might have a severe influence on self-esteem and emotional well-being (Thapar et al., 2011).

The fundamental symptoms of ADHD were classified into three groups. The first was inattention, which caused difficulty keeping focus, organizing work, and finishing assignments or activities. The next category was hyperactivity, defined by excessive movement, restlessness, and difficulty remaining in suitable conditions. Finally, impulsivity encompassed behaviors like acting without considering the implications, regularly interrupting people, and making snap judgments. To be diagnosed with ADHD, the symptoms must be persistent, present in several situations, and severely affect daily functioning (American Psychiatric Association, 2013; Beh-Pajooh et al., 2012).

One of the primary signs of attention deficit hyperactivity disorder (ADHD), especially in the mostly inattentive subtype, was inattention. It was typified by difficulties concentrating, planning tasks, and paying attention for lengthy periods, particularly while engaging in non-stimulating activities. Individuals with inattention frequently looked forgetful, easily distracted, and struggle with job completion (American Psychiatric Association, 2013). It could be difficult for people with ADHD to maintain attention on tasks or activities, especially ones that call for sustained mental effort. They could find it easy to miss instructions or discussions, which could result in repeated errors in professional or academic contexts (Barkley, 2014). The effects of inattention on performance in the workplace and in school were profound. Despite having normal or above-average intellect, children with ADHD, especially those of the inattentive type, frequently suffer academically because they were unable to focus for prolonged periods. This could result in underachievement. Similar difficulties arose for adults with ADHD in employment settings were maintaining focus and managing tasks were essential (Kofler et al., 2018).

Another important symptom of ADHD was impulsivity, which included acting without thinking, having trouble postponing pleasure, and participating in potentially harmful or unsuitable activities. A complex behavioral characteristic, impulsivity was defined as a propensity to act without giving actions enough thought or taking the consequences into account (APA, 2013; Beh-Pajooh et al., 2012). It was believed that deficiencies in the brain's dopaminergic system, which was essential for

controlling self-control, decision-making, and reward processing, were the neurological cause of impulsivity in ADHD (Barkley, 2014).

Impulsivity was a multifaceted feature that might be divided into several categories based on behavioral patterns, the propensity to act without thinking was known as motor impulsivity, and it was frequently characterized by impulsive motions or actions (Rubia, 2018). Making snap judgments without considering probable repercussions or other possibilities was cognitive impulsivity (Hamilton et al., 2015). Impatience or the impulse to move too quickly, frequently before obtaining enough knowledge, were signs of premature impulsivity, which was the inability to wait to act (Stevens et al., 2020). These kinds of impulsivity were important to several diseases, such as ADHD, in which people have trouble controlling their impulses, which caused problems in social and scholastic contexts. According to recent research, impulsivity was caused by abnormalities in brain circuits that impact decision-making and inhibitory control, especially those related to the prefrontal cortex and dopamine modulation (Voon et al., 2017).

Impulsivity in sports might result in making snap judgments, taking unwarranted risks, and having trouble exercising self-control. Playing physical sports, especially ones that call for patience and strategy, like cricket, can help people with ADHD become more adept at controlling their impulses. Self-regulation was facilitated by learning to wait one's turn or control one's energy during a game (Chang et al., 2014).

Another main symptom of attention deficit hyperactivity disorder (ADHD) was hyperactivity, which was typified by excessive movement, fidgeting, and an inability to remain still. Hyperactivity was the third symptom. It showed itself as an intense need to be active all the time, which could get in the way of everyday tasks and social relationships. Hyperactive children appeared to be always moving—running, climbing, or unable to sit still long enough to read or do other peaceful activities (APA, 2013).

Hyperactivity typically varied in its expression depending on age. Children with ADHD often exhibited physical restlessness, such as fidgeting or running around in inappropriate settings. These children might struggle to sit still in class or engage in focused activities for extended periods. Adults with ADHD, on the other hand, might not exhibit overt physical hyperactivity, but experience an internal sense of restlessness (Caye et al., 2019). They might also talk excessively, struggle with relaxation, or engage in impulsive decision-making (Faraone et al., 2021). Numerous research investigations have found that corporal activities can benefit children and adolescents diagnosed with ADHD. Smith et al.

(2019) did a meta-analysis of the effects of aerobic workouts on children with ADHD and found that regular corporal activity helps lower symptoms of inattention and impulsivity/ hyperactivity. Corporal activities boost dopamine and norepinephrine levels in the brain, which were frequently low in ADHD patients (Ratey and Hagerman, 2013). Sports that required attention, collaboration, and self-regulation, such as cricket, gave teenagers a positive outlet for their energy while helping them develop focus and impulse control abilities. The social atmosphere fostered by non-formal education sports activities promotes peer support. Social contacts with colleagues during corporal activities increased good behaviors and reduced feelings of isolation, which were widespread, and common in adolescents with ADHD (Hoza et al., 2015).

Non-formal education via athletics provided an atmosphere in which ADHD symptoms can be more successfully addressed. Pontifex et al. (2013) found that students who participated in structured corporal activities improved their cognitive control and behavior. Cricket's dynamic character, which combined corporal activity and mental attention, might assist teenagers regulate hyperactive and impulsive behaviors. Sports programs were both organized and flexible, allowing for a variety of learning methods and objectives. This adaptability was especially important for children with ADHD, who might require different methods of learning and skill development. In these programs, participants engaged in play, skill-building activities, and social interactions, which were essential components for promoting self-regulation—an area where many children with ADHD had substantial difficulty. (Bailey, 2006).

Non-formal education via athletics provided an atmosphere in which ADHD symptoms could be more successfully addressed. Pontifex et al. (2013) found that students who participated in structured corporal activities improved their cognitive control and behavior. The non-formal learning situations could also help to reduce stress, anxiety, and hyperactivity, all of which could increase ADHD symptoms. Traditional educational environments could impose harsh standards and evaluations on children with ADHD, leading to feelings of inadequacy and dissatisfaction (Gordon and Browne, 2014). Non-formal sports programs, on the other hand, prioritized personal development, teamwork, and fun, resulting in a more supportive environment in which children might thrive without the strain of official examinations. This supportive atmosphere promoted risk-taking and resilience, allowing youngsters to learn from their experiences without the fear of failure.

A comprehensive evaluation of the literature on the impact of regular corporal activity on the symptoms of attention deficit hyperactivity

disorder (ADHD) in children and adolescents was carried out by O'Connor & Morgan in 2021. It has been demonstrated that participating in organized corporal activities significantly enhances social relationships, cognitive control, and behavioral regulation. In particular, team sports and aerobic exercise improved executive functioning and lower impulsivity. In addition to standard therapies, corporal exercise should be a part of treatment regimens for ADHD, according to this article, which helped the affected persons achieve better overall results.

Hassmen et al. (2021) evaluated the effects of organized corporal activity on inattention and hyperactivity in children with attention deficit hyperactivity disorder (ADHD). They selected 100 youngsters aged 8 to 12 who had been diagnosed with ADHD and participated in a 12-week organized sports program. Before and after the intervention, parents and teachers conducted behavioral evaluations that measured levels of inattention and hyperactivity/ impulsivity using standardized ADHD rating scales. The results indicated that frequent engagement in sports considerably lowers inattention and hyperactivity. Children who participated in team sports demonstrated increased focus and concentration, as well as a decrease in impulsive behavior. The study showed that including corporal exercise in the daily routines of children with ADHD could be an effective strategy for alleviating these basic symptoms.

Team sports have been investigated by Kass & Pease (2020) as a potential treatment for ADHD symptoms, including impulsivity/ hyperactivity, and inattention. Eighty ADHD youngsters were split into two groups for this study: a control group that received no intervention and a group that participated in a 10-week team sports program. Using parent and teacher reports of ADHD symptoms at baseline, midpoint, and program completion, behavioral evaluations were carried out. According to the study, kids who played organized sports had far longer attention spans and exhibited fewer impulsive and hyperactive behaviors than kids who did not play sports. Team sports are organized, which helps kids stay focused and disciplined. This suggested that playing sports might be a beneficial therapy option for kids with ADHD.

Ferguson & Geis (2023) evaluated the relationship between playing sports and the main symptoms of ADHD, with a special emphasis on impulsivity/ hyperactivity, and inattention. A 14-week sports intervention program was implemented, and 120 youngsters between 9 and 14 were evaluated before and after. The Conner’s 3rd Edition Scale was used to assess ADHD symptoms, and qualitative interviews with parents and coaches were also held to provide information on behavioral

modifications. According to the study's findings, organized sports involvement offered a healthy way to blow off steam and significantly lower impulsive and hyperactive behavior. Furthermore, children with ADHD benefited from the social contacts that team sports provided by improving their attentional abilities and self-regulation.

The association between sports and other recreational activities and symptoms of impulsivity/ hyperactivity, and inattention in young people with attention deficit hyperactivity disorder (ADHD) had not received much attention in Pakistan. Furthermore, the nation's institution-based research on adolescents with ADHD lacked sufficient demographic information. Many students were unable to join sports teams due to socioeconomic barriers, which meant that the potential advantages of sports for those with ADHD symptoms had not been well investigated. As a result, there was a great demand for research in this field, and this study was anticipated to provide insightful information for further studies.

Objectives

The main objective of this study was to investigate the effects of corporal activities on inattention and impulsivity/ hyperactivity among players.

Significance

There was a growing awareness of impulsivity/ hyperactivity and inattention among adolescents involved in weekend programs, particularly among WICA players. This study aimed to investigate how these traits affect their experiences in non-formal educational settings. The research explored the link between impulsivity/ hyperactivity, and participation in sports, aiming to provide a more comprehensive understanding of how these traits influence adolescent behavior in recreational settings. Additionally, it gathered insights directly from the adolescents themselves, highlighting their perspectives on the obstacles they face and the successes they achieve during weekend activities. This study goes beyond merely identifying these traits by also addressing the unique needs of young individuals who exhibit them, emphasizing the importance of creating environments that support their overall development. Through this, it aimed to raise awareness about how non-formal educational settings, such as sports programs, can be adapted to better nurture these adolescents, promoting their personal growth, well-being, and success.

Methodology

This study used a mixed research method including a Quasi-experimental one-group pretest-posttest design as a quantitative method and case studies were used to focus on observing and measuring the effects of corporal activities on inattention and impulsivity within the same group of participants over time. Corporal activities included all the cricket activities, i.e., batting, balling, fielding, matches, etc. The experimental component involved administering pre-tests and post-tests to participants to measure changes in attention and impulsivity after engaging in structured corporal activities during the non-formal weekend health literacy program. The impact of corporal activities was explored by using posttest and qualitative observations and interviews.

Simultaneously, the case study component included qualitative observations, interviews, and participant reflections to explore individual experiences and perceptions of how the activities influence their behavior. Within the framework of ADHD, case studies were an invaluable resource for exploring the problem deeply, examining individual variations, evaluating the efficacy of therapies, and augmenting the wider corpus of information on the condition (Owens & Jackson, 2017).

Additionally, it was descriptive as it looked at how corporal activities affect children with ADHD who were already experiencing symptoms of hyperactivity/ impulsivity, and inattention.

Population

The population of the research being conducted was composed of WICA players who underwent testing for ADHD symptoms.

Sample

Screening was used to implement the technique of purposeful sampling. The instrument used in this study for screening was the Vanderbilt ADHD Parent Rating instrument (VADPRS). As part of the sampling process, WICA participants with low levels of impulsivity, hyperactivity, inattention, or a diagnosis of ADHD were excluded during the pretest. Three teenagers were selected randomly for the study.

Instrument

It was a psychometric assessment instrument for individuals intended to determine the extent of attention deficit hyperactivity disorder symptoms. This tool was created by Woolrich (1998) at the Oklahoma Health Sciences Centre in the US. Its five components: inattention, hyperactivity/ impulsivity, oppositional defiant disorder, conduct disorder, and anxiety/depression, were designed to better treat the common comorbid issues linked to ADHD. The scale was evaluated by specialists and professionals, and its dependability on Cronbach's alpha was 0.90 for all

of the subscales in several examinations. The Vanderbilt ADHD diagnostic parent rating scale consisted of 47 items.

Data Collection

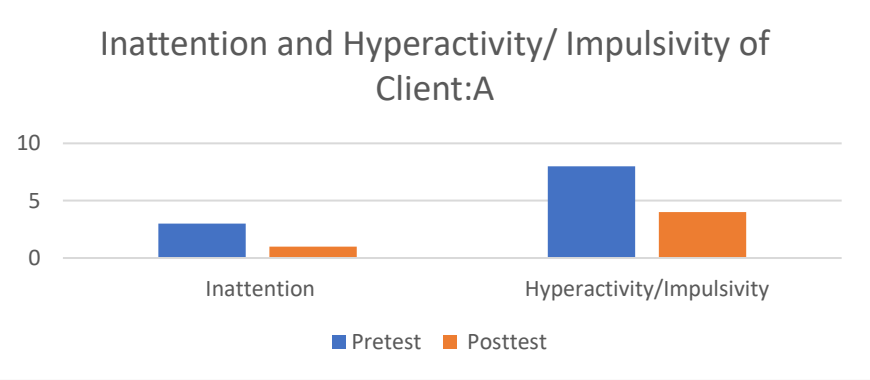
The researchers themselves gathered the data. Initially, for experiment conduction, researchers screened out the WICA participants who exhibited high levels of impulsivity/ hyperactivity, and inattention, as well as ADHD. Furthermore, it was also taken as a pretest. Second for case studies, researchers interviewed three teenagers with high levels of impulsivity/ hyperactivity and inattention who had been diagnosed with ADHD after 1.5 months of weekend health programs including corporal activity. Afterwards, again experimental, posttest was conducted to understand the difference that could be caused by the weekend program.

RESULTS

Pretest and Posttest Results of Client A

Figure 1.

Pretest and Posttest scores of Client A



The results revealed a significant decrease in the posttest scores of client A, indicating a reduction in the severity of problematic areas such as inattention and hyperactivity. This decline in scores suggested that participants demonstrated notable improvements in these behavioral domains following the intervention. Specifically, the lower posttest scores reflected an enhanced focus and reduced impulsivity or hyperactive tendencies, signaling that the corporal activities introduced during the non-formal weekend health literacy program had a positive impact as shown in above figure 1.

Case Study Report of Client A

This case study offered an in-depth exploration of Client A, a 14-year-old male from Rawalpindi, Pakistan, born in 2010. He weighed 78 kg and stood at 5.4 feet. He was part of the U-16 group at WICA. Client A was a high school student from an upper-middle-class joint family, the younger of two siblings. His father worked as an accountant abroad, while his mother was a homemaker. Client A, an average student, was proficient in both English and Urdu. His interests included watching TV and playing cricket, the latter of which he was particularly passionate about. With no earning history, he enjoyed a stable socio-economic status. His carefree personality was a notable trait, and he exhibited no signs of personal insecurities. Though he had no strong religious affiliation, he was actively involved in religious activities.

Client A maintained a healthy lifestyle, with a consistent sleep schedule of 8-9 hours a night. He had a healthy appetite and described his childhood as happy. There was no history of medical, psychiatric, or substance abuse concerns in his life or his family, nor did he have any history of injuries or current medications.

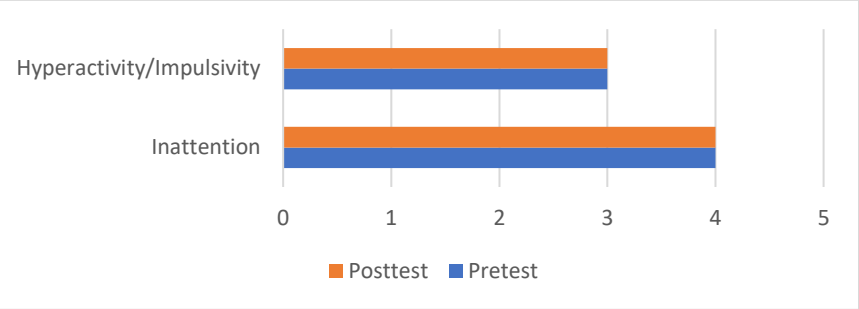
Socially, Client A interacted well with others and communicated effectively. He was confident, maintaining eye contact during conversations, and had a satisfactory rapport with people around him. He also showed a strong interest in video games. Despite his impulsivity/ hyperactivity symptoms, Client A was polite and had a positive reputation at the academy. However, he sometimes irritated family members and displayed oppositional behavior, particularly when stressed by academic pressure and a rigid school environment. He expressed a desire to leave his current schooling situation.

The coach commented on Client A's positive attitude, noting his strengths as a runner, fielder, and batsman. The Head Coach/Director of WICA also highlighted his cooperative nature, categorizing him as a batting all-rounder and acknowledging his technical skill in cricket. For the wellness of the client few suggestions were provided like he should consciously manage his impulsivity/ hyperactivity. He needed to develop a life plan, emphasizing the importance of his studies. He had to work on not becoming overconfident, aiming to excel in both academics and sports, while also focusing on his behavior and manners. A structured approach was needed to control his aggressive tendencies. Attention should be paid to his weight, avoiding junk food and adopting a balanced diet with fresh fruits, dairy products, and home-cooked meals. His sugar intake should be controlled to help manage hyperactivity. After implementing these

recommendations, Client A showed a reduction in impulsivity/ hyperactivity symptoms over six weeks.

Client B
Pretest and Post-test of Client B

Figure 2
Pretest and Posttest of Client B



Pretest and posttest results indicated no significant change in posttest scores, suggesting that the severity of issues related to inattention and hyperactivity remained largely the same as shown in figure 2. Despite the intervention, participants did not show notable improvements in these behavioral areas. The lack of variation in posttest scores reflected that focus, impulsivity, and hyperactive tendencies were not significantly affected by the corporal activities introduced during the non-formal weekend health literacy program.

Case Study Report of Client B

This case study offered a thorough examination of Client B, a 2012-born 10-year-old kid from Bahria Town, Pakistan. He played for the WICA Under-13 team. Client B, the oldest of three siblings, attended elementary school in a nuclear household belonging to the upper middle class. His mother stayed at home to care for the family, while his father was an officer at a television station. Client B's academic performance throughout his school history had been 50%, which was indicative of his issues with impulsivity/ hyperactivity, and inattention. Client B took a keen interest in his faith, participated in religious events with enthusiasm, and had grown to love cricket. His willingness to assist and work together was one of his most notable traits. He was 35 kg in weight and speaks Urdu and English well. His hobbies included watching TV and playing cricket. He had no prior work experience.

Client B maintained a healthy lifestyle, sleeping 8-10 hours a night with an average appetite. He had high energy levels and described his childhood as enjoyable. He had no medical, psychiatric, injury, or substance abuse history, nor was he currently taking any medication. Additionally, his family had no history of psychiatric, medical, or substance-related issues.

Client B interacted with others in a way that was usual for his age in terms of speech and social interactions—he made relationships quickly. His discourse was intelligible and unambiguous. He had severe impulsivity/ hyperactivity, made confident direct eye contact, and had no worries about his body image. He was an extrovert who frequently exhibited emotional outbursts.

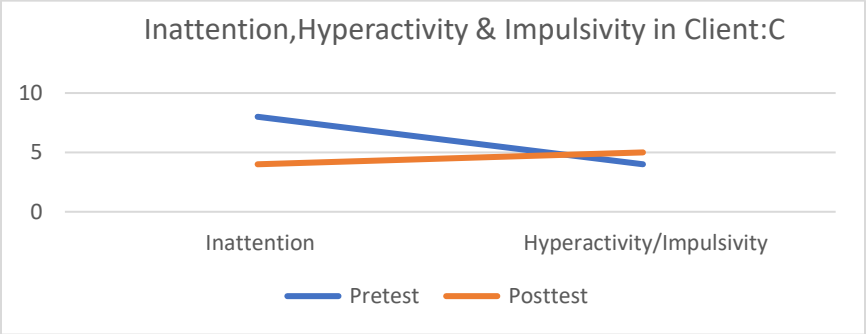
Client B had apparent signs of impulsivity/ hyperactivity, and inattention. He was well-known for being chatty and had a big social circle. The coach saw that he had trouble adhering to instructions and that he had inclinations toward hyperactivity. The WICA Head Coach/Director went on to talk about his forgetfulness and outgoing nature. For the wellness of the client few suggestions were recommended like he should practice breathing exercises frequently. He needs consistent guidance and counseling to address his challenges. To manage his forgetfulness and inattention, he should create and follow daily To-Do Lists (TDLs). After six weeks of following these suggestions, there was no noticeable reduction in Client B's inattention/ hyperactivity and impulsivity symptoms.

Client C

Pretest and Posttest Scores of Client C

Figure 3

Pretest and Posttest Scores of Client C



The findings revealed a significant drop in post-test scores, which suggested a reduction in the severity of problems with hyperactivity and inattention as shown in below figure 3. This decreases implied that following the intervention, individuals' behavior in these areas improved significantly. The improved attention and reduced impulsivity or hyperactive behaviors indicated by the lower posttest scores demonstrate the beneficial effects of the corporal activities included in the non-formal weekend health literacy program.

Case Study Report of Client: C

This case study provided a detailed analysis of Client C, a 17-year-old male from Rawalpindi, Pakistan, born in 2005. He was a member of WICA's Under-19 group. Client C was a high school student from a middle-class Kashmiri nuclear family, the youngest of four siblings. His father worked as a supervisor in the Middle East, while his mother was a headmistress. Academically, Client C performed well, demonstrating his dedication and competence. He was actively involved in religious activities and had a strong passion for cricket. A notable personality trait is his sensitivity and tendency toward anger. He weighed 55 kg and stood at 5'10". He was proficient in English, Urdu, and Kashmiri, and his primary hobby was playing cricket. He had no work experience.

Client C's lifestyle was less than ideal. He slept only 4 to 6 hours per day, which might contribute to his low energy levels, though he was active during cricket practice. He described his childhood as average and had a history of psychiatric issues related to anger management, including a past self-harming incident. However, he was not currently on any medication. There was no record of medical, psychiatric, or substance abuse history in his family.

Client C communicates quickly, as a result of his impulsivity/ hyperactivity. His social interactions were intense and can feel suffocating to others. He had no issues with body image, but he avoided direct eye contact due to shyness and formed emotional attachments easily.

Client C showed marked sensitivity, aggression, and symptoms of inattention, and hyperactivity/ impulsivity, which might stem from childhood bullying experiences. His sensitivity contributed to his inattention and hyperactivity, and his hesitance with eye contact reflected a lack of confidence. His short sleep cycle, ranging from 4 to 6 hours, could indicate sleep apnea or another sleep disorder. The coach had acknowledged Client C's good behavior and obedience, while also noting his inattention and lack of confidence. The Head Coach/Director at WICA praised his well-rounded game skills, positive demeanor, and sensitivity.

A few suggestions were offered to the client like to surround himself with positive, supportive people to help boost his confidence and emotional balance. Practice daily breathing exercises to manage impulsivity. Maintained his spiritual routine of regular prayer, which supported his mental strength. Engage in regular counseling and guidance sessions. After six weeks of following these recommendations, Client C's symptoms of inattention and impulsivity/ hyperactivity showed improvement by obvious reduction.

Conclusion

In conclusion, the study emphasized the important role that corporal activities play in mitigating impulsivity/ hyperactivity, and inattention symptoms in teenagers with ADHD, especially in informal learning and leisure environments. These three case studies highlighted the necessity for customized strategies by revealing differing reactions to certain treatments. Following six weeks of organized advice and activity-based treatments, two individuals showed significant improvements in their capacity to cope with their symptoms; however, one participant's symptoms remained largely unaltered, underscoring the complexity and heterogeneity of managing symptoms of ADHD.

The results implied that sports initiatives, like those provided by WICA, might be important venues for the behavioral and corporal growth of teenagers with ADHD. To guarantee long-term development, however, ongoing observation, tailored assistance, and modifications to intervention tactics are essential. The study also underlined how critical it was to provide supportive settings that not only help teenagers develop physically but also attend to their mental and psychological needs, promoting their overall mental health and personal development.

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