

Biological and Psychological Responses to Physical and Sports Activity Lab

the Impact of Physical Activity Program on Improving the Performance of Schoolchildren: A Case Study of Children with Attention Deficit Hyperactivity Disorder (ADHD) in Primary Schools in Biskra.

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Abstract

This study addresses the problem of attention deficit hyperactivity disorder (ADHD) and its negative impact on the performance and social behavior of schoolchildren. It questions the role of a physical activity program in improving focus and reducing impulsive behaviors in these children. The study aimed to evaluate the impact of physical activities on improving focus and behavior, offering practical strategies for teachers and parents, and raising community awareness about the importance of early intervention to address these disorders. The research used a quasi-experimental method, where the sample of 20 subjects was divided into two equal groups (experimental and control) with pre- and post-measurements. A scale for attention deficit and hyperactivity was also used. The results showed a significant improvement in focus and a decrease in hyperactive behavior in children who participated in the physical activity program, leading to better academic performance and positive social behavior. The study recommends including the physical activity program in primary school curricula in Biskra, developing sports programs that combine physical exercises with mental focus, and providing teachers with guidelines on how to use these activities to improve the behaviors of children with the studied disorders in primary schools.

Keywords: Physical Activity Program, Attention Deficit, Hyperactivity, Primary School Children, Biskra.

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Introduction

Childhood is a sensitive period in human life when many psychological, social, and physical aspects develop. One of the major challenges faced by children during this stage is attention deficit hyperactivity disorder (ADHD), which is considered one of the most common behavioral disorders worldwide. This disorder affects children's ability to focus and pay attention, which can lead to a decline in their educational performance, especially in primary school, along with difficulties in social interaction.

In recent years, research has highlighted the role of physical activity programs as an effective strategy to improve the condition of these children, particularly those attending primary school. Physical activities are not just a means of entertainment but a powerful tool to enhance physical and psychological growth. Through engaging in physical activities, children can improve their focus and attention abilities, reduce impulsive behaviors, and increase their self-confidence.

Therefore, focusing on physical activity programs as part of the treatment plan for children with Attention Deficit Hyperactivity Disorder represents an important step toward achieving tangible improvements in their quality of life. By incorporating these activities into the daily routine, parents and teachers can play a pivotal role in supporting children and helping them overcome the challenges they face, opening new opportunities for success and growth.

Research Problem:

Attention Deficit Hyperactivity Disorder is one of the most common disorders among children, negatively affecting their daily performance and social behavior. Children suffering from this disorder face significant challenges in focusing and paying attention, which leads to a decline in their academic level and difficulties in interacting with peers. With the growing concern about how to deal with these disorders, the role of physical activity programs emerges as an effective solution to improve their academic performance. Based on the above, the following main question can be raised:

Can a physical activity program make the required difference in the lives of schoolchildren with Attention Deficit Hyperactivity Disorder in primary school classrooms?

In this regard, several sub-questions arise, which serve as key solutions to the research problem, summarized as follows:

- How does regular participation in a physical activity program affect the improvement of focus and behavior in children with ADHD?
- What mechanisms help enhance self-discipline and reduce impulsive behaviors through physical activities?

These questions are central to understanding the relationship between physical activities and their impact on schoolchildren suffering from these disorders, necessitating a comprehensive study to clarify the effectiveness of physical activity programs in improving the quality of life of these children and achieving positive results in their academic and social performance.

Study Hypotheses:

Three hypotheses were formulated, as follows:

- There are statistically significant differences at the 0.05 level between the experimental group and the control group in the degree of attention deficit and hyperactive behavior at the pre-measurement stage.
- There are statistically significant differences at the 0.05 level between the experimental group and the control group in the degree of attention deficit and hyperactive behavior at the post-measurement stage.
- There are statistically significant differences at the 0.05 level between the experimental group in the degree of attention deficit and hyperactive behavior between the pre- and post-measurements.

Importance of the Study:

The importance of studying the impact of physical activity programs on schoolchildren with Attention Deficit Hyperactivity Disorder (ADHD) lies in the following:

- Shedding light on how a physical activity program can improve the quality of life for children with ADHD by enhancing focus and attention, which can improve academic and social performance.
- Providing practical strategies by focusing on physical activities as a means to deal with behavioral and cognitive challenges, which can be used by teachers and parents to guide children with ADHD while providing a suitable environment for their growth and development.
- Raising community awareness about Attention Deficit Hyperactivity Disorder, helping society understand the nature of these disorders and the needs of children suffering from them, which contributes to generating more support from individuals and institutions to assist children with ADHD in their lives.
- Highlighting how physical activities can improve the mental health of children with ADHD, as physical activity is linked to improving mood and reducing feelings of anxiety and stress.

Study Objectives:

The Goals of This Study

The goals of this study are highlighted as a link between the theoretical and practical aspects, showing how physical activities can play a vital role in supporting children with Attention Deficit Hyperactivity Disorder (ADHD), contributing to positive outcomes on multiple levels, which can be outlined as follows:

- Supporting scientific research, as the study contributes to enhancing the field of scientific research in physical education, providing data and results that may be useful in developing new educational and therapeutic programs aimed at supporting children with ADHD, enriching scientific research from the perspective of this field.

- Developing curricula through the study's results, which incorporate physical activities more, making it easier to integrate children with disorders into a positive and inclusive educational environment.
- Evaluating the impact of physical activities by analyzing the effect of regular physical activity practice on the level of focus and attention in children with ADHD.
- Identifying the key elements in physical activity programs that lead to positive results in the behaviors of children with disorders and their levels of focus.
- Encouraging collaboration between schools, parents, and sports coaches to develop comprehensive programs that support children with disorders and contribute to improving their academic and behavioral outcomes.
- Providing recommendations to the educational authorities about expanding the inclusion of physical activity programs in curricula, making it easier to deal with children with ADHD.
- Providing a better educational environment by offering contributions of physical activities in creating a more interactive and stimulating learning environment, making learning easier and enhancing children's participation in classroom activities.

Theoretical Background:

The development of a physical activity program is considered a key to the health of schoolchildren, as it works to enhance the development of their abilities in a healthy manner. One can imagine children's bodies as small seeds that need care, nutrition, and activity to flourish and turn into strong trees. When a child runs, jumps, or rides a bike, they are not just playing; they are training their heart to become stronger, building muscles to have a healthy body, and engaging their mind to increase their focus and learning ability. A physical activity program can be defined as the ability to perform a wide range of actions or motor skills, including good coordination between various physical movements. These motor skills involve a variety of activities such as running, jumping, and climbing, which are essential for developing strength, flexibility, and endurance. Additionally, these motor skills include handling objects, such as throwing, catching, and kicking. These skills rely on the ability to control the body in an integrated manner, facilitating interaction with the surrounding environment. For example, the skill of throwing requires precise coordination between the arm movement, body balance, and vision skills, while catching requires coordination between hand movements and the ability to judge distance and direction. Based on the above, a physical activity program can be defined as an organized educational approach that aims to develop basic skills through interactive physical activities regularly performed to enhance balance and awareness in order to achieve comprehensive growth both physically and socially. A physical activity program is an effective tool for addressing disorders such as hyperactivity and attention deficit in schoolchildren, as it provides a stimulating environment that supports focus, reduces impulsivity, and enhances self-control.

On the other hand, Attention Deficit Hyperactivity Disorder (ADHD) represents a neurological disorder characterized by persistent patterns of inattention, hyperactivity, and impulsivity that negatively affect daily performance and growth. This disorder typically appears in childhood and may persist into adulthood. Children with ADHD face difficulties focusing and encounter challenges in organizing tasks and following through, leading to easy distraction. Moreover, they exhibit excessive movement and impulsive behaviors, such as talking excessively or interrupting others. These symptoms can significantly impact academic performance, social relationships, and self-esteem. Diagnosing ADHD requires a thorough evaluation according to specific criteria, and management strategies often include behavioral therapies, educational support, and medication in some cases. Generally, ADHD presents a challenge that requires comprehensive support to effectively address the needs of individuals affected by it. In this context, ADHD can be defined as a common neurological disorder in schoolchildren who show symptoms of poor attention and excessive activity, as well as impulsiveness, which significantly impacts their educational and social performance. These disorders, with their diverse symptoms, are diagnosed by observing individual differences, ensuring the promotion of optimal treatment opportunities.

The design of a physical activity program aims to enhance the quality of support for individuals with profound and multiple intellectual disabilities by integrating physical activities into their daily routines within the school environment. The program aims to ensure the systematic and goal-oriented inclusion of physical activities within the educational support framework, contributing to the improvement of basic motor skills such as balance, coordination, and strength, and enhancing the individuals' ability to interact better with their surrounding environment. The program also encourages social interaction among student children through group activities, boosting communication skills and fostering positive social relationships. Furthermore, physical activities provide opportunities for self-expression and reduce stress levels, improving health and psychological well-being.

Multifaceted motor skills are essential not only for performing sports activities but also for daily life, as they help enhance an individual's ability to adapt to various situations, boost self-confidence, and develop social skills through interaction with others in group activities. Therefore, developing these skills is crucial, especially for children, as it contributes to their overall growth and helps them realize their physical and social potential. On the other hand, many children with disorders live in the "screen age," where video games and social media draw them away from traditional physical play. While most children spend a long time sitting without movement, their bodies lack the activity required for their bones to grow properly and their muscles to become stronger. In fact, more than 85% of children and adolescents around the world do not meet the recommended daily physical activity minimum of at least 60 minutes. This is like a tree that does not receive enough heat and moisture to grow. In this context, the child

grows but not in the best way possible. When a child engages in physical activity, their body releases happiness hormones, such as endorphins, which help them feel happy and at ease and reduce feelings of anxiety and stress. These activities also improve their relationships with peers, as they learn cooperation, communication, and respect for others, making them more socially adaptable. Therefore, it is important to turn physical activity into a fun experience, not just an obligation to be done, by encouraging children to join sports teams, participate in outdoor activities with family, or even turn daily activities like walking into exciting adventures. In this way, physical activity can become a part of their daily lives, giving them the strength and energy needed to face life's challenges with confidence and happiness. Disorders that appear in children, such as hyperactivity and attention deficit, learning difficulties, and behavioral problems, act as obstacles at various stages of children's daily lives. These disorders can have profound effects on their future lives if not addressed in a timely manner. These disorders may affect children's performance, especially schoolchildren, their ability to communicate socially, and their self-confidence and self-esteem. Here, the importance of early intervention appears, which can make a significant difference in the lives of children, especially those in primary school.

Early intervention helps recognize the problem at its early stages, then provide the appropriate support, whether through psychological treatment, behavioral training, or educational assistance. These early measures help reduce the effects of the problem and prevent it from worsening, offering the child a better opportunity for healthy growth and development. Children who receive this early support are usually able to overcome obstacles and develop the necessary skills for success in life.

The registration of ADHD cases varies significantly based on factors such as geography, age group, and diagnostic criteria used. Global estimates indicate that ADHD affects about 5% to 10% of children and adolescents. A review of these systematic analyses focused particularly on the Middle East and North Africa, although the prevalence may vary due to unique cultural, social, and environmental influences.

Additionally, parents, teachers, and society in general bear a significant responsibility in detecting the early signs of these disorders and paying attention to them. Awareness of the importance of early intervention contributes to providing a supportive environment for the child, enabling them to reach their full potential and enjoy a life filled with achievements and opportunities.

The implementation of motor activities in school schedules is crucial for enhancing motor skills and focus in children. Motor activity programs, such as movement games and physical exercises, are recommended to promote continuous learning and motor efficiency. These activities should be diverse and enjoyable to maintain children's interest and participation. In the same context, previous research indicates that integrating physical activities with cognitive tasks, such as

mathematics, can be effective in improving children's intellectual and physical abilities. Additionally, small group activities are preferred because they provide a supportive environment and enhance social interaction, significantly improving motor skills compared to individual free activities. Therefore, educational schools should increase the opportunities for success of their enrolled children, especially those with Attention Deficit Hyperactivity Disorder (ADHD), by providing specialized educational materials and motor activities designed to meet their individual needs. The curriculum should be flexible, with educational content adapted to the students' levels of understanding, which requires the use of diverse teaching methods, including educational games and modern technologies to enhance interaction. Furthermore, appropriate motor activities should be incorporated into the school schedule, such as sports games, to enhance focus and control over impulses. This requires providing a safe and supportive environment that allows children to participate freely, boosting their self-confidence and desire to learn. Parents should also be encouraged to actively participate in school activities to support the development of their children's skills.

Steps for Designing a Motor Activity Program for Children with ADHD

A motor activity program tailored for children with Attention Deficit Hyperactivity Disorder (ADHD) in elementary schools can be integrated to enhance both educational and social benefits for children in an inclusive school environment. The program consists of four main steps, ensuring a methodological and practical approach to achieving the set objectives. These steps are summarized as follows:

1. **Assessment and Identification:** This step involves conducting a comprehensive assessment of each child with ADHD to understand their individual needs. Behaviors related to focus, impulse control, and physical activity levels are analyzed. This assessment helps identify the motor skills that need improvement and which activities may be more engaging for the children.

2. **Setting Objectives:** Based on the assessment results, clear objectives are set for each child, such as improving concentration levels, enhancing impulse control, and increasing participation in group activities. These objectives must be specific, measurable, and achievable, making it easier to track progress and achieve the desired results.

3. **Implementing Activities:** Motor activities are integrated into the school timetable, such as movement games, physical exercises, and interactive activities that encourage participation. The activities should be varied and enjoyable, helping children improve their motor skills and increase focus through physical activity. Organizing motor activities in small groups is preferred to provide a more supportive environment and enhance social interaction.

4. **Evaluation and Adaptation:** The children's progress is regularly reviewed through periodic evaluations. This allows for assessing the achievement of the goals and adjusting the activities as needed to ensure they meet the children's needs. This ongoing evaluation helps improve responses to children's requirements, ensuring that the benefits of motor activities are achieved.

Benefits of the Program for Children with ADHD

The motor activity program for children with ADHD provides a range of benefits that contribute to improving their educational experience. Regular physical activity helps enhance concentration and attention by allowing children to manage their energy effectively, positively affecting their performance at school. The program also helps reduce impulsive behaviors by enhancing the children's ability to control their actions, as they learn strategies to think before acting. Additionally, motor activities provide a rich social environment that encourages children to interact with their peers, helping them develop communication and collaboration skills. Furthermore, the program promotes increased physical activity, which boosts physical health and reduces levels of anxiety and stress. Thanks to these benefits, the program can significantly contribute to improving the mental health of children with ADHD, supporting their natural development and enhancing their academic and social success.

Practical Application: A specialized motor activity program was designed, including various group activities linked to maintaining focus, physical balance, and muscle strengthening through motor control. The program was implemented with two sessions per week over a month and a half, ensuring that each session lasted 30 minutes.

Proposed Therapeutic Program: The program aims to alleviate the symptoms of ADHD in elementary school children, focusing on improving undesirable behaviors and transforming them into positive, acceptable behaviors. This program complements previous research in this field and relies on modern educational strategies that help reduce distractions and enhance children's focus. Among the key techniques used in the program are cooperative play, which encourages social interaction and enhances communication and concentration skills, and modeling, which presents positive behavioral examples for children to imitate. The program also relies on repetition to help children solidify the desired behaviors, and it includes positive reinforcement (verbal encouragement and praise) to motivate children to continue the correct behaviors.

The program includes a variety of activities and educational games specifically tailored for children with ADHD, ranging from group to individual games. It also includes sports activities aimed at channeling excess energy in a healthy and effective manner. The program was implemented with two sessions per week for six weeks, during the return from the winter holiday in 2024, with each session lasting 30 minutes. This program contributes to enhancing children's ability to focus, improving their behavior in the classroom, boosting their academic achievement, and fostering positive social relationships with peers, ultimately supporting teachers and parents in providing effective care for their children.

Study Methodology: The study followed a quasi-experimental methodology using a design with two groups: one experimental and one control, as this design is suitable for the variables of the current study. The pre- and post-measurement method was used for both groups to achieve the study's objective, which is to assess the impact of the motor activity program on children with

ADHD in a sample of elementary school students. The study included a motor activity program as the independent variable, comprising group activities aimed at maintaining focus, balance, and muscle strengthening through motor control, while ADHD was the dependent variable.

Study Tools: To achieve the objectives of the study, which aimed to assess the impact of the motor activity program on children with ADHD in a sample of elementary school students, the Conners' Rating Scale was used, which is one of the key tools for measuring behavioral disorders in elementary school children, especially in the school environment, from the perspective of teachers. This scale, consisting of 29 items distributed across the subscales of inattention, hyperactivity, and aggression, has the ability to assess various aspects of behavior such as excessive activity, inattention, and impulsiveness, helping teachers and specialists understand and identify behavioral problems in children accurately. The scale is distributed as follows:

- Items 1 to 9: Represent inattention.
- Items 10 to 18: Represent excessive hyperactivity.
- Items 19 to 28: Represent aggressive behavior.

Study Population and Sample: The study population consisted of elementary school students aged 6-12, enrolled at the Raïs Abdelmajid and Mokdami Abdelkader Primary Schools in Biskra. The sample included children with ADHD enrolled at these schools, aged between 6 and 12 years. The total number of participants was 20 children, divided equally into two groups: 10 children in the experimental group and 10 children in the control group. Efforts were made to ensure the groups were homogeneous in terms of academic level, age, and gender. The following table illustrates the distribution of the study sample according to personal variables:

Table 01: Personal Data of the Study Sample

Variable	Categories	Frequency	Percentage (%)
Gender	Male	13	65
	Female	07	35
Age	From 06 to 09	16	80
	From 10 to 12	04	20
Primary School	Raïs Abdelmajid	10	50
	Moukademi Abdelkader	10	50

Source: Prepared by the researchers.

Data were processed and analyzed using the SPSS29 program, with the following statistical methods:

- t-test
- Wilcoxon Test

The scale's validity was verified by comparing responses from children with Attention Deficit Hyperactivity Disorder (ADHD) to those of normal children based on various behaviors observed over a specific time period. The consistency reached 83%, which indicates an acceptable level of validity. The reliability coefficient was found to be 0.80, and the reliability coefficient calculated using the "Spearman-Brown" formula was 0.85, indicating high reliability, which supports the use of this scale as a trusted tool for the study.

Hypothesis Testing:

• Testing the first hypothesis: This hypothesis states that "There are statistically significant differences at the 0.05 level between the experimental group and the control group in the degree of attention deficit and hyperactivity when conducting the pre-test." This hypothesis was tested using the appropriate statistical methods, and the results of the pre-test for attention deficit and hyperactivity were as follows:

Table No. (02): Averages and Standard Deviations for the Experimental and Control Groups in the Pre-Test for Attention Deficit and Hyperactivity

Measure	Group	Mean	Standard Deviation	Minimum Value	Maximum Value
Pre-test	Experimental	19.2	3.852	14	24
	Control	18.7	3.523	13	23

Source: Prepared by the researchers based on SPSS outputs.

From the above table, it is clear that the mean for the experimental group was 19.2, while the mean for the control group was 18.7 in the pre-test. The standard deviation for the experimental group was 3.852 and for the control group was 3.523, which are very close values. Therefore, it can be concluded that there are no significant differences between the means of the experimental and control groups after conducting the pre-test for attention deficit and hyperactivity in the students. To confirm this result, independent t-tests were used, and the following table presents the results:

Table No. (03): Independent t-test Results for the Pre-Test of Attention Deficit and Hyperactivity

Pre-test	t-test	df	Result
Attention deficit & Hyperactivity	1.28	24	Not statistically significant

Source: Prepared by the researchers based on SPSS outputs.

From the results in Table No. (4), it appears that the value of T is -2.28 with degrees of freedom equal to 6.58, and the Sig value is greater than the significance level (0.05), indicating that there are no statistically significant differences between the experimental and control groups in the pre-test. Based on these results, the first hypothesis is accepted, which states that "There are statistically significant differences at the 0.05 level between the experimental group and the control group in the degree of attention deficit and hyperactivity when conducting the pre-test."

• Testing the second hypothesis: This hypothesis states that "There are statistically significant differences at the 0.05 level between the experimental group and the control group in the degree of attention deficit and hyperactivity when conducting the post-test." This hypothesis was tested using the appropriate statistical methods, and the results of the post-test for attention deficit and hyperactivity were as follows:

Table No. (04): Averages and Standard Deviations for the Experimental and Control Groups in the Post-Test for Attention Deficit and Hyperactivity

Measure	Group	Mean	Standard Deviation	Minimum Value	Maximum Value
Post-test	Experimental	13.60	2.962	10	18
	Control	18.50	3.622	12	23

Source: Prepared by the researchers based on SPSS outputs.

After calculating the mean and standard deviations for the scores of children in the experimental and control groups in the post-test for attention deficit and hyperactivity, it was found that the mean for the experimental group in the post-test was 13.60 with a standard deviation of 2.962, while the mean for the control group was 18.50 with a standard deviation of 3.622, which indicates considerable differences. This suggests that the intervention applied to the experimental group contributed to reducing attention deficit and hyperactivity compared to the control group. The lower standard deviation in the experimental group reflects less variability in their scores, indicating that the effect was more homogeneous. To confirm the significance of these differences, an independent t-test was performed, and the results are presented in Table No. (05) below.

Table No. (05): Independent t-test Results for the Post-Test of Attention Deficit and Hyperactivity

Post-test	t-test	Sig	df	Result
Attention deficit & hyperactivity			Statistically	

Post-test	-test		ig	df	esult
Hyperactivity	4.785	.00	.254	significant	

Source: Prepared by the researchers based on SPSS outputs.

From the results presented in Table No. (5), it appears that the value of T is -4.785 with degrees of freedom equal to 5.254, and the Sig value is 0.00, which is less than the significance level (0.05), indicating that there are statistically significant differences between the experimental and control groups in the post-test, in favor of the experimental group. Based on these results, the second hypothesis is accepted, which states that "There are statistically significant differences at the 0.05 level between the experimental group and the control group in the degree of attention deficit and hyperactivity when conducting the post-test."

- Testing the third hypothesis: This hypothesis states that "There are statistically significant differences at the 0.05 level between the experimental group in the degree of attention deficit and hyperactivity between the pre-test and post-test." To answer this hypothesis, the means and standard deviations for the scores of children in the experimental group were calculated for both the pre-test and post-test for attention deficit and hyperactivity. The following table presents the results, showing apparent differences between the average scores of the experimental group in the pre-test compared to the post-test.

Table No. (06): Attention Deficit and Hyperactivity Scores for the Experimental Group Before and After the Treatment Program

Measure	Pre-test	Post-test
Attention deficit & Hyperactivity	Mean: 19.20	Mean: 13.60
	SD: 3.852	SD: 2.962
	Min: 14	Min: 10
	Max: 24	Max: 18

Source: Prepared by the researchers based on SPSS outputs.

The results in Table No. (06) show that there are differences between the pre-test and post-test for attention deficit and hyperactivity in the experimental group, with the mean for the pre-test being 19.20 with a standard deviation of 3.852, while the mean for the post-test decreased to 13.60 with a standard deviation of 2.962. This decrease represents a significant improvement in the children's behavior after the treatment program was applied, with lower levels of hyperactivity and attention deficit, as well as more consistency among the children, as indicated by the reduced standard deviation. The Wilcoxon Test confirmed that these differences are statistically significant

in favor of the post-test, indicating the effectiveness of the treatment program in achieving the desired goals of reducing hyperactivity and improving attention deficit.

Table No. (07): Wilcoxon Test Results for the Experimental Group in the Pre-Test and Post-Test

Measure	Pre-test & Post-test		M ean Rank	T otal Rank		ig.	Result
Attention deficit & Hyperactivity	Negative ranks	0	9.5	95	2.850	.004	Statistically significant
	Positive ranks		10.5	21			

Source: Prepared by the researchers based on SPSS outputs.

It is clear from Table No. (07) above that there are statistically significant differences at the 0.05 significance level between the pre-test and post-test scores of the children in the experimental group on the Attention Deficit Hyperactivity Disorder (ADHD) scale. The analysis performed using the Wilcoxon test revealed a statistically significant difference between the pre-test and post-test measurements for the children in the experimental group. The negative Z value (-2.850) indicates that the post-test scores were lower than the pre-test scores, which suggests an improvement in hyperactivity and attention deficit after applying the therapeutic program. Additionally, the significance level (0.004) is lower than 0.05, confirming that the differences between the two measurements are statistically significant, reflecting the effectiveness of the therapeutic program in improving the children's condition by reducing these disorders.

- Discussion of Results: The results obtained in this study are an important indicator of the impact of the proposed therapeutic program in improving attention deficit and hyperactivity disorders among schoolchildren. In this context, the differences discovered between the pre-test and post-test measurements serve as a primary indicator of the effectiveness of this therapeutic intervention, allowing for an in-depth analysis of the results based on the three hypotheses that were tested.

- First Hypothesis: The first hypothesis related to the existence of differences between the experimental and control groups in the pre-test did not reveal any statistically significant differences between the two groups. The mean scores were very close to each other (19.2 for the experimental group and 18.7 for the control group), and the standard deviations were also close (3.852 and 3.523), indicating that both groups had similar levels of attention deficit and hyperactivity before the therapeutic program was applied. The independent sample T-test supported this conclusion, with a T value of (-1.28) and a significance level of (0.24), which is greater than the 0.05 threshold, reinforcing the hypothesis that there are no statistical differences

between the two groups at the pre-test. This suggests that the samples were homogeneous at the outset, which enhances the credibility of the subsequent interpretation of the post-test results.

- **Second Hypothesis:** The second hypothesis related to the existence of differences between the experimental and control groups in the post-test revealed clear statistically significant differences in favor of the experimental group. The post-test results showed that the mean score for the experimental group (13.60) was significantly lower than the mean score for the control group (18.50), and the standard deviation for the experimental group was also lower (2.962) compared to the control group (3.622). These differences indicate that the therapeutic intervention contributed to improving attention deficit and hyperactivity levels in the children of the experimental group. Additionally, the results of the independent sample T-test confirmed these differences, with a T value of (-4.785) and a significance level of (0.00) which is lower than 0.05, reinforcing the significance of the differences in favor of the experimental group. From this, it can be concluded that the therapeutic intervention produced positive results, significantly reducing attention deficit and hyperactivity disorders in the experimental group compared to the control group.

- **Third Hypothesis:** The third hypothesis related to the existence of differences between the pre-test and post-test scores within the experimental group showed a noticeable improvement in the level of attention deficit and hyperactivity. In the pre-test, the mean score was 19.20, which decreased to 13.60 in the post-test, with a significant reduction in the standard deviation from 3.852 to 2.962, reflecting a notable improvement and greater consistency in the scores of the individuals in the group. This indicates that the therapeutic program resulted in a positive change in the level of disorders among the children. The Wilcoxon test confirmed this result, showing a Z value of (-2.850) and a significance level of (0.004), which indicates statistically significant differences between the pre-test and post-test, in favor of the post-test, thus confirming the effectiveness of the therapeutic program in reducing the disorders and achieving improvement among children with attention deficit and hyperactivity.

These results suggest that the therapeutic program implemented in the two elementary schools, Raies Abdel Majid and Moughdimi Abdelkader in Biskra, had a positive and effective impact on improving attention deficit and hyperactivity levels among children in the experimental group. It was found that the improvement in the post-test was not due to random changes but rather the effect of the targeted therapy, reflecting the program's effectiveness in addressing these disorders. Although there were no differences in the pre-test between the two groups, the significant differences in the post-test confirm that the therapeutic program played a crucial role in improving the health and educational outcomes of the schoolchildren. This underscores the importance of early therapeutic interventions in addressing attention deficit and hyperactivity disorders in elementary school children, a result consistent with the study by Pontifex et al., titled *"Effect of Physical Activity on Attention and Hyperactivity in School Children,"* which focused on the impact of regular physical activities on children with Attention Deficit Hyperactivity Disorder

(ADHD). The study found that children who participated in a 12-week physical activity program showed significant improvement in attention and a reduction in hyperactive behaviors compared to the control group that did not participate in regular physical activities, which help reduce ADHD symptoms and improve academic performance. The results also support the findings of Chang et al., 2012, in their study titled *"Impact of Motor Activities on Children's Attention and Hyperactivity in School Settings,"* where a motor activity program was applied to a group of elementary school children over 10 weeks to improve motor coordination and attention. The results showed that the children who participated in the program showed significant improvement in attention levels, with a decrease in hyperactivity, highlighting the importance of using motor activities as part of educational programs.

- **Conclusion:** The results of this study demonstrated the effectiveness of the therapeutic motor program in improving the behavior of children with Attention Deficit Hyperactivity Disorder (ADHD). The experimental group showed noticeable improvement after regularly applying the motor program, emphasizing the vital role of the therapeutic program in alleviating the severity of the disorder and its consequences. The appropriate motor methods contributed to transforming chaotic behavior into effective and more acceptable behavior, allowing teachers to better manage class sessions and interact positively with the children's needs, which led to an improvement in the academic achievement of these children and strengthened their relationships with their peers.

On the other hand, integrating a specially designed motor activity program for children with ADHD in elementary schools created an inclusive and supportive educational environment that enhanced physical and social growth for schoolchildren. The results showed that children who participated in this program experienced significant improvements in their ability to focus and pay attention, with a marked reduction in excessive motor behaviors, contributing to an increase in their academic performance due to the improvement in their ability to focus in the school environment. Additionally, regular physical activity helped organize their behavior and enhance their social interactions, which emphasizes the importance of such programs in supporting children's potential and preparing them for comprehensive and balanced growth.

- **Recommendations:**

1. Integrating the proposed physical activities into the school curricula in elementary schools in Biskra, especially for children with attention deficit and hyperactivity disorder (ADHD).

2. Developing comprehensive sports programs that include physical exercises to improve mental focus for children with hyperactivity and attention deficit.

3. Providing guidance for teachers on how to incorporate motor activities in classrooms to improve the behavior of children with behavioral disorders.

4. Strengthening collaboration between teachers and parents to ensure the effective implementation of the program at both home and school.

5.Regularly monitoring the program's impact and adjusting it based on the results achieved in improving the children's behavior and academic performance.

6.Ensuring the continuation of psychological and emotional support for children to encourage their active participation in motor and educational activities.

7.Offering regular training opportunities for teachers on how to use physical activities as a tool to stimulate attention and reduce hyperactivity across all classrooms.

8.Providing awareness campaigns and guidance for parents on how to deal effectively with children with attention deficit and hyperactivity disorder (ADHD).

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