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The Effectiveness Of Mini-Action Games In Reducing Hyperactivity And Attention Deficit Behaviors Among Primary School Students

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Abstract

The purpose of this paper is to prepare miniature action games exercises to reduce hyperactivity and attention deficit behaviors among elementary school students. This study aimed to identify the impact of mini-action games on reducing hyperactivity and attention deficit behaviors among elementary school students. The experimental method, specifically a two-group equivalent group design, was used as it was deemed most suitable for the research problem. The research community consisted of 123 fourth-grade students at Al-Sudair Elementary School for Boys during the 2024-2025 academic year, divided into three sections (A, B, C, and D). A random sample of 31 students was selected from section C. These students were then randomly divided into two groups of 10 each: an experimental group and a control group. Ten students were selected for the pilot study, while one student was excluded due to absenteeism. This resulted in a sample size of 25.20% of the total research community. Mini-action games were developed after a comprehensive review of resources on mini -scale games and recreation to ensure the inclusion of appropriate exercises that could potentially reduce hyperactivity and attention deficit behaviors. To achieve this, the researcher identified the necessary needs for the exercises and determined the desired objectives of designing them. The most important conclusions reached were that the mini-action games helped reduce hyperactivity and attention deficit in elementary school students. The mini-action games prepared by the researcher were age-appropriate for elementary school students. Furthermore, there was a significant increase in students' participation in the mini-action games prepared by the researcher during physical education classes compared to regular lessons.

Keywords: Mini-Action Games, Hyperactivity, Deficit Behaviors, Primary School, Students.

Introduction

Sports have witnessed remarkable development, and this development was not accidental but rather based on the application of modern training principles and the diversification of teaching methods and learning approaches, given their importance

in developing learners' performance levels and stimulating their motivation and cognitive, physical, and skill-based needs. Childhood is the foundation of human life, as psychological and social integration depends on the life experiences an individual receives during childhood, both from their immediate environment (family) and their larger environment (society) in which they grow up. Hyperactivity is a widespread childhood disorder that is not limited to physical movements but extends to accompanying behavioral characteristics such as recklessness, impulsivity, excitability, difficulty concentrating, and easy distractibility. All of this leads to poor academic performance and other behavioral and social problems (Jamal Muhammad Saeed Al-Khatib. 1993).

Primary school plays a fundamental role in a child's life. It is not merely the first gateway through which a child enters the realms of knowledge, but rather the active instrument in developing their multifaceted personality. The school's role should not be limited to intellectual development alone; it must be coupled with physical education. The integration of the two achieves the right educational outcomes (Yu.Y. Zotov. 1989).

Physical education classes, with their accompanying games and physical activities, are a crucial factor in the physical and mental development of students. They harness students' natural drive for activity and guide it in the right direction. In addition to providing an outlet for their excess energy, physical education contributes to developing their physical and action skills, enhancing their theoretical knowledge, training them in discipline and teamwork, and fostering a sense of responsibility. This leads us to conclude that students described as hyperactive and attention-deficit are in greater need than others of the benefits that physical education offers.

This is where the importance of our research lies in preparing exercises with mini games in order to reduce hyperactivity and attention deficit behaviors among primary school students.

Recent years have witnessed significant advancements in the field of educational psychology, leading to the identification and identification of learning difficulties that result in academic failure among students exhibiting hyperactivity and difficulty concentrating (attention deficit), which in turn leads to low self-esteem. This condition was termed ADHD in the late 1970s. (ATTENTION – DEFICIT – HYPERRACTIVITY – DISORDER).

Students exhibiting signs of hyperactivity and attention deficit possess normal intelligence and cognitive abilities. However, their hyperactivity and difficulty concentrating prevent them from effectively utilizing information and stimuli from their surroundings. Consequently, their learning through traditional methods is often weak. They require support to help them manage their behavior; without such support, their academic performance and self-confidence will suffer. The researcher's work in the field of teaching physical education for more than 13 years, her supervision of students' application in primary and secondary schools, her discussion of students' research in undergraduate and graduate studies, and her awareness of the importance of the physical education lesson in building the student, made her start from the following question:

Does the physical education lesson and what it is based on in mini-action games practiced in an organized manner contribute to exhausting energy and absorbing excess movement and in treating hyperactivity in students who are described as such?
Research objective is to develop mini-action games to reduce hyperactivity and attention deficit behaviors among elementary school students. To identify the effect of mini-action games on reducing hyperactivity and attention deficit behaviors among elementary school students.

Research Hypothesis there is a positive effect of mini-action games on reducing hyperactivity and attention deficit behaviors among elementary school students.

Terminology

Mini games: These are simple games, easy to play, joyful, and fun, and they involve fair competition. They do not require complex action skills, and the rules governing them are simple, flexible, and straightforward (Ibrahim El-Sayed Hegab, 1999).
Attention Deficit Hyperactivity Disorder (ADHD): This is a behavioral disorder characterized by excessive action activity, a lack of attention span, and impulsivity (Ahmed Othman and Ajlan Tantawi. 1995). According to the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), it is defined as the child's inability to focus and maintain attention during activity, along with restlessness and excessive movement without calmness or relaxation, leading to impulsive reactions without prior thought (Sayed Ali and Faeqa Muhammad ,1999).

Research Methodology:

The researcher used the experimental method with a two-group equivalent experimental design, as it was suitable for the nature of the research problem to be solved.
The research community consisted of fourth-grade students at Al-Sudair Elementary School for Boys during the 2024-2025 academic year, totaling 123 students across three sections (A, B, C, and D). The research sample was selected randomly, with section (C) being chosen, comprising (31) students. These students were divided randomly into two groups: an experimental group and a control group, with (10) students in each group. Ten students were selected for the pilot study, and one student was excluded due to non-attendance. Thus, the percentage of the research sample was (25.20%) of the research community.

Homogeneity and Equivalence of the Research Samples:

Sample Homogeneity: To control for all variables affecting the accuracy of the research results, the researcher verified the homogeneity of the research sample in terms of height, weight, and age. Using the skewness coefficient, as shown in Table (1):
Table (1) shows variables (height, weight, age) and the skewness coefficient.

Variables	Measuring unit	M.	St.d	Mode	Skewness
Height	Cm	118.211	2.812	117.5	0.608
Mass	Kg	25.380	1.919	25.25	0.588
Age	Year	118.211	1.240	8.22	0.924

Table (1) shows that the skewness coefficient values are within (1), indicating the homogeneity of the research sample in these variables, meaning their normal distribution.

Sample Equivalence: The researcher established equivalence between the two research groups in hyperactivity and attention deficit using appropriate statistical analyses to determine the actual differences between the two groups, as shown in Table (2).

Table (2) shows the arithmetic means, standard deviations, calculated t-value, and significance of the differences in the research variables between the two research groups.

Variables	Measurement Unit	Control group		Experimental group		Calculate T value	Sig. Level	Sig. Type
		M.	St.d	M.	St.d			
Hyperactivity and Attention Deficit Hyperactivity Disorder (ADHD)	Degree	22.87	1.31	21.73	1.21	1.983	0.821	Insig.

* The tabulated t-value is 2.10 at 18 degrees of freedom and a significance level of 0.05.

From the previous table, the randomness of the differences between the control and experimental groups in psychological skills at the significance level of 0.05 and at 18 degrees of freedom is evident, as all error levels were greater than 0.05, indicating the equivalence of the two groups.

Measuring hyperactivity and attention deficit

After completing the identification of the research problem, and in order to choose the appropriate scale for diagnosing hyperactivity and attention deficit in parents, and after reviewing the specialized research and studies, I concluded that the (Conners) scale (see Appendix 1) is the most appropriate scale for parents to diagnose hyperactivity and attention deficit, due to its clarity of items and ease of answering them, and its comprehensiveness of all the symptoms that appear on the student in his

family environment, as well as its adoption by a number of Iraqi (Nadia Khalaf Najm,1999) and Arab researchers (Mahmoud Zayed Makawi, 1991).

Exploratory Experiment

On October 1, 2024, the researcher conducted a pilot study with twenty families randomly selected from the students of the chosen school during a parents' meeting held at 3:00 PM. The purpose of the pilot was to demonstrate how to complete the questionnaires and to ensure there was no ambiguity or confusion in the scale items. To prevent potential bias among teachers and parents, the researcher simply explained that the purpose of the scale was to provide a general assessment of student activity, without mentioning the actual research objectives.

The researcher emphasized the importance of completing all items and selecting the appropriate alternative that best describes the student's situation. She also stressed the confidentiality of the information and responses, which would be accessible only to the researcher. Scientific procedures for the Psychological Skills Scale:

Validity: Face validity was established by presenting the scale to a number of experts in sports psychology to obtain their opinions on its validity. After that, the scale forms were collected, and an agreement rate of 88% was found among the experts, which confirms the validity of the scale. (Researchers must obtain the agreement of 75% or more of the experts for this type of validity) (Benjamin Bloom et al, 1983).

Reliability: The researcher used the test-retest method. The scale was administered to a sample of three players from the research population. After fifteen days, the scale was administered again to the same players. Using a simple correlation coefficient between the first and second tests, the reliability coefficient was calculated, reaching a value of 0.812. This is a high value indicating the scale's reliability.

Diagnosis: On October 12, 2024, 123 ADHD scale forms were distributed to parents, to be completed and returned within one week. During the specified period, (123) forms were received. Upon review, (13) forms were disregarded due to incomplete information, leaving (110) forms. The researcher then corrected the forms, which consisted of (10) items with four answer choices: (never, rarely, often, always). Scores were assigned (0, 1, 2, 3). To obtain the total score for each student, the scores for all items were added together. (60) students, classified as having ADHD, were selected and divided into four sections as follows: (Section A: 11 students, Section B: 9 students, Section C: 21 students, Section D: 19 students).

Pre-test

After completing the procedures for preparing and finalizing the exercises, the researcher conducted the pre-test for both research groups on October 17, 2024, at 10:00 AM. The pre-test forms were distributed to the students' parents and returned the following day.

Developing Mini-Action Games

The researcher conducted a comprehensive review of resources related to mini-games and recreation to develop suitable and appropriate exercises that could help reduce hyperactivity and attention deficit behaviors. To achieve this, the researcher relied on the following identifying the necessary requirements for the exercises. Defining the desired objectives of the exercises. Developing programs and activities that would achieve the set objectives. Evaluating the Results Achieved.

Therefore, the researcher adopted a method of incorporating various mini games into the main lesson. The mini games program was characterized by its inclusion of exploratory, competitive, and social games, based on competition and a spirit of rivalry among peers. Social reinforcement, such as praise, applause, and verbal reinforcement, was also employed (see Appendix 2). The application of the mini games exercises to the experimental group began on October 20, 2024. The program was implemented for the experimental group over a period of eight weeks, with three sessions per week, each session lasting 40 minutes, of which 25 minutes were dedicated to the mini games.

Post-test

The researcher conducted the post-test using the same steps as the pre-test. This took place on December 20, 2024, at 3:00 PM, following the parents' meeting for the students.

Statistical Methods

The researcher used the SPSS statistical package to process the data. The following statistical methods were employed (Wadih Yassin and Hassan Muhammad. 1999): mean, Non-parametric samples t-test, Standard deviation, Parametric samples t-test.

Results

Presentation of Pre- and Post-Test Results for the Control Group

Table (4) Shows the means, standard deviations, and t-values for the pre- and post-tests of the hyperactivity and attention deficit variable for the control group

No.	Test	Pre-test		Post-test		Calculate T value	Sig. Level
		M.	St.d	M.	St.d		
1	Hyperactivity and Attention Deficit Hyperactivity Disorder (ADHD)	22.87	1.31	20.784	2.992	5.903	0.003

The critical t-value (2.26) at a significance level of (0.05) and with (9) degrees of freedom.

It is noted from Table (4) that the calculated value of (t) to determine the differences between the pre-test and post-test is greater than the tabulated value of (t) of (2.26) at a significance level of (0.05) and with a degree of freedom of (9), which indicates that there are statistically significant differences between the pre-test and post-test in favor of the post-test.

Presenting the results of the pre- and post-tests for the research variables of the experimental group

Table (5) Shows the means, standard deviations, and t-values for the pre-test and post-test for the hyperactivity and attention deficit variable in the experimental group.

No.	Test	Pre-test		Post-test		Calculate T value	Sig. Level
		M.	St.d	M.	St.d		
1	Hyperactivity and Attention Deficit Hyperactivity Disorder (ADHD)	21.73	1.21	17.67	3.112	9.064	0.000

The critical t-value (2.26) at a significance level of (0.05) and with (9) degrees of freedom.

As can be seen from Table (5), the calculated t-value for determining the differences between the pre-test and post-test for the experimental group is greater than the critical t-value of (2.26) at a significance level of (0.05) and with (9) degrees of freedom. This indicates a statistically significant difference between the pre-test and post-test, favoring the post-test.

Presentation of Post-Test Results for the Research Variables for the Experimental and Control Groups

Table (6) shows the arithmetic means, standard deviations, and t-value for the post-test for the hyperactivity and attention deficit variable for the experimental and control groups.

No.	Test	Control		Experimental		Calculate T value	Sig. Level
		M.	St.d	M.	St.d		
1	Hyperactivity and Attention Deficit Hyperactivity Disorder (ADHD)	20.784	2.992	17.67	3.112	11.98	0.000

* The critical t-value (2.10) at a significance level of (0.05) and with (18) degrees of freedom. As can be seen from Table (6), the calculated t-value for determining the differences between the post-test scores of the experimental and control groups is greater than the critical t-value of (2.10) at a significance level of (0.05) and with (18) degrees of freedom. This indicates a statistically significant difference between the two groups, favoring the experimental group.

Discussion

Tables (4, 5, 6) show a clear decrease in the hyperactivity and attention deficit variable in favor of the experimental group. The researcher attributes this superiority to the effect of the exercises with mini games, which gave the student the opportunity to invest what he learned in the form of action programs suitable to his abilities, inclinations, and personal desires. Confirm that the development of action skills is affected by many factors, including repetition, perception, comparison, mental abilities, as well as the factor of excitement, practice, and gradual progression of skills from easy to difficult (Wajih Mahjoub, Ahmed Al-Badri, 2002).

Mini-action games have proven that it is possible to direct family interactions to learn appropriate behavioral patterns, as the student and his parents have grasped how to behave in more appropriate ways through their understanding and comprehension, leading to acceptance of their cases and training them in ways of dealing in an appropriate educational manner. This is what some researchers have proven in that training parents through family counseling, using appropriate strategies for correct dealing, and appropriate reinforcement of students' positive behavior, is an effective method in reducing ADHD (Amira Taha Bakhsh. 2001).

The researcher attributes this development to mini-games, which helped students learn organization, follow instructions, self-control in situations requiring it, how to interact with others, develop discipline, and adhere to school rules and the associated homework. This indicates that mini-games focused on appropriate learning behaviors, which are rarely observed among these students. Their practice of free and structured play, implemented systematically based on educational principles, helped them understand and learn the benefits of organization, guiding movement in the right direction to achieve action coordination, protecting their bodies, satisfying their action needs, fostering a spirit of competition to win, enjoying calmness and psychological balance, overcoming disturbances, and experiencing joy and comfort.

This finding is reinforced by its consistency with the studies which confirmed that using more than one approach in treating hyperactivity and attention deficit disorder is more effective than using a single approach.(Hurlock Elizabeth P,1980)."Mini games increase an individual's inclination towards engaging in sports activities and work to improve their level of abilities" (Amr Abu Al-Majd and Gamal Ismail Al-Namki. 2001). In addition to the encouragement and motivation provided by the subject teacher, which played a positive and strong role in the regular repetition of the games, this was reflected positively on the level of performance. Therefore, reward is one of the important factors in stimulating motivation to learn, as it leads to the learner's

feeling of satisfaction and pleasure and increases the effort exerted to repeat successful responses.

Moreover, the repetition of mini games and the creative movements that they contain, such as jumps, spins, and leaps, and their great variety and repetition, helped learners to get rid of the pattern followed in thinking and exert effort to produce the greatest number of diverse responses and push the learner to search for original and unfamiliar responses. points to this by saying, Providing suitable opportunities and urging diligent work and not being bound by traditional lessons that weaken the spirit of creativity and early success in discovering creative abilities has great value in nurturing and developing those abilities (Ibrahim El-Sayed Hegab, 1999).

Conclusions

Mini-action games helped reduce hyperactivity and attention deficit in elementary school students. The mini-action games prepared by the researcher were age-appropriate for elementary school students. There was a significant increase in students' participation in the mini-action games prepared by the researcher during physical education classes compared to regular lessons.

Recommendations

Mini-action games should be used to address hyperactivity and attention deficit in students. Physical education classes should be given serious attention and not neglected, as they provide opportunities for all students, especially those with hyperactivity. The differences between students with hyperactivity and attention deficit and their peers should be considered, and they should not be neglected, ostracized, treated unprofessionally, or made to feel inferior to their classmates. Monitoring the effective role of educational guidance, and the seriousness of the work of educational counselors in paying attention to the follow-up of students with hyperactivity and attention deficit.

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Appendix (1)

Mini-Games Used in the Research

1. Guided Step Game

Objective: To improve focus and action control.

Method: A straight line is drawn on the floor, and students must walk along it step by step without stepping outside the line. The difficulty is increased by adding mini objects that must be avoided.

2. Stop-Move Game

Objective: To regulate action responses.

Method: The teacher gives the command "Move," and the student begins walking or jumping. When the teacher says "Stop," the student must stop immediately.

3. Quiet Ball Game

Objective: To develop hand-eye coordination.

Method: Students sit in a circle. A ball is passed quietly and silently. Whoever makes the ball fall is out of the circle.

4. Follow the Leader Game

Objective: To improve visual and action attention.

Method: The teacher chooses a leader who performs simple movements (such as raising a hand or clapping), and the rest of the students must imitate the movement exactly.

5. Specific Touch Game

Objective: To reinforce attention to tasks. Method: The teacher asks the students to touch a specific object in the classroom (such as the table, chair, or blackboard) within a short time.

6. Spooning Game

Objective: To improve fine action control.

Method: Each student is given a spoon and a mini ball (ping-pong ball). They must move the ball from one point to another without dropping it.

7. Color Jumping Game

Objective: To integrate action and cognitive skills.

Method: Colored squares are placed on the floor, and the teacher asks the students to jump only on a specific color.

8. Gentle Tug-of-War Game

Objective: To release energy in a controlled manner.

Method: Two students hold the ends of a rope and try to pull gently without pulling hard.

9. One-Leg Balancing Game

Objective: To strengthen muscle control.

Method: Students are asked to stand on one leg for as long as possible. The challenge can be increased by closing their eyes.

10. Traffic Light Game

Objective: To coordinate action activity with the traffic light. Method: The teacher says "green" (running), "yellow" (walking slowly), "red" (complete stop).

Appendix (2)

Example of a Mini-Games Application

Learning Unit: (1)

Date: 15/10/2024

Teaching Method: Mini-Action Games

Time: (45) minutes

Learning Objectives: Developing action skills and reducing hyperactivity

Pedagogical Objectives: Increasing student motivation

Unit Sections	Time (minutes)	Activities and kinetic skills	Production and Organization	Notes
Preparatory Section	10	Preparing the materials, taking attendance, and beginning the lesson. A set of exercises to prepare the body's muscles and joints. Educational guidelines		
Organizational Aspects	3			
General Warm-up	7			
Main Section	30	(5 min) Explanation and demonstration of mini-game number (1) by the subject teacher. (5 min) Explanation and demonstration of mini-game number (2) by the subject teacher.		
1- Educational Aspect	10			
2- Practical Aspect	20	(10 min) Playing Game 1. Upon hearing the teacher's signal, the students play Game 1. The game is repeated 3 times. (10 min) Playing Game 2. Upon hearing the teacher's signal, the students play Game 1. The game is repeated 3 times.		
3- final Section	5	Providing general relaxation and calming exercises for the body. Reinforcing improved performance in subsequent learning units, as well as rewarding the top-performing student. Providing educational, psychological, and guidance support. Returning the materials to their place and then instructing the students to leave.		