

The impact of a coordinated teaching activities approach on the development of certain fundamental motor skills in preschool children (ages 4-5)

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Received: 12/04/2024; Accepted: 08/08/2024; Published: 21/09/2024

Abstract:

The study aimed to examine the impact of using a coordinated teaching approach on the development of certain fundamental motor skills in preschool children aged 4-5 years in the city of Ouargla. The study assessed motor skills through tests such as hopping, broad jumping, catching, throwing, and static balance. The researcher employed the experimental method due to its suitability for the study's objectives, using a design with both a control and an experimental group. The sample consisted of 60 children (boys and girls). The researcher used the following statistical treatments: Pearson correlation coefficient, arithmetic mean, standard deviation, percentages, and the T-test. The study results revealed statistically significant differences between the two groups across all variables, with the experimental group showing more favorable outcomes. This positive effect on certain aspects of motor development is attributed to the use of coordinated teaching activities. The researcher recommends implementing this method in kindergarten programs.

Keywords: Coordinated teaching approach, fundamental motor skills, preschool child (4-5 years).

Introduction:

Childhood is one of the most important stages in an individual's life, as it is the period during which the foundation is laid for the child's well-rounded and healthy personality, which will later manifest in various aspects of their future—physically, cognitively, skillfully, emotionally, and affectively. At this stage, the child possesses immense energy, requiring constant and active movement. Engaging in educational physical activities is a rich field for satisfying a child's need for movement, as motor activity serves as a bridge between their thinking and any actions they perform. The preschool stage (ages 4-5) is marked by continuous physical activity, with the child's movements characterized by excessive effort, involving numerous muscles in most of their actions. The child often transitions from one activity to another, finding it difficult to maintain focus on a single task.

From an anatomical perspective, the abundance and variety of joints in the human body clearly indicate that the body is designed for movement, and that movement is essential for maintaining health and acquiring physical fitness. Fundamental movements are the backbone of advanced movements in all their forms and types, and they constitute the child's motor wealth at this stage. Moreover, they form the foundation for various sports skills in physical educational activities, making the development of fundamental movements in children (ages 4-5) a key step in acquiring advanced motor skills related to various physical and educational sports activities at higher levels.

The practice of teaching motor skills through coordinated activities aims to develop children's physical and motor competencies and improve their skills. Coordinated activities often contribute to building a healthy body with flexibility and fitness, which makes the body more responsive to movement and to the child's physical needs. These activities also enhance motor-muscle coordination in physical activity and a range of motor skills, developing these physical aspects through scientifically studied and coordinated activities.

The growing attention to child development is evident in the increasing number of early childhood centers, in response to social and economic changes. These institutions and colleges are encouraged to conduct scientific research on preschool children and their education, as this has a significant impact on shaping the child's personality and developing their abilities, which will leave lasting effects in their later stages of growth. The education of preschool children has been influenced by the ideas of several philosophers and

educators, such as Jean-Jacques Rousseau, Pestalozzi, Montessori, and Jean Piaget, who contributed to child-rearing theories (Dalal, 2006, p. 3).

The early years of a child's life are of utmost importance, as educators and professionals in the field of education can observe the profound impact these years have on the emerging generation. Educators believe that many psychological and emotional disorders later in life can be traced back to neglect or ignorance during the child's early years. This awareness has prompted experts to focus on this phase of childhood, recognizing its importance for the community, leading to the establishment of institutions dedicated to nurturing children before they enter school, particularly before the age of six.

It has been reported that during activities, children's participation positively affects their fundamental motor skills, raising their body awareness and movement abilities (running, jumping, catching, throwing, and balancing) and their physical capacities (flexibility, strength, and endurance). Additionally, these activities enhance socialization, as one of the most effective methods for improving muscle groups during lessons involving games and physical activities is teaching through coordination. Holman and Huttery defined coordination as the harmony between the central nervous system and the musculoskeletal system for targeted movement. According to Galilo (1986), coordination refers to the skill of integrating various motor systems combined with different sensations, while the body creates an efficient series of movements.

Study Problem:

The problem of this study lies in the development of certain fundamental motor skills and the focus on the physical development of the child using all available methods and supportive approaches, including the appropriate teaching method. This has become a topic of interest for modern scholars due to its close connection with human development. Such attention requires a comprehensive preparation starting from childhood and continuing through the subsequent stages, particularly in physical and motor development.

Despite the importance of developing children's motor skills from an early age through methods and approaches tailored to their varying abilities to build a broad and effective foundation, physical education lessons in kindergartens fail to meet the goals of physical and sports education for children's development. These lessons are still taught using outdated traditional methods (which lack effectiveness in some educational processes), with restricted exercises that follow predetermined formations, such as jogging around a field followed by walking and a few jumps, then a series of physical exercises primarily performed from a standing position. This often leads to boredom and frustration for the child, sometimes causing them to avoid participation, resulting in underutilization of their immense physical energy. This presents a problem that requires study, addressing the needs of children from all perspectives and focusing on early childhood and school sports programs that align with their physical, mental, and psychological capabilities, with continuous encouragement.

This should be done within a scientifically studied and directed program aimed at teaching and developing their abilities in various sports activities, using modern teaching methods that include competitive and coordinated exercises that are engaging and varied to suit the child's interests, and to prevent boredom and fatigue. This is especially important in the preparatory section, which serves as the gateway for developing a solid foundation in physical education. It fosters teamwork and cooperation among children through simplified games and varied exercises that align with their cognitive and skill levels, paving the way for more complex exercises (Khuli et al., 1998). Moreover, engaging exercises and games in the preparatory section, as a purposeful method for teaching and developing fundamental motor skills, have been shown to be effective. As confirmed by Khuli and Mustafa Altincuk (2016), selecting well-designed and directed programs that focus on intentional motor tasks for children, using a coordinated approach and activities, is crucial.

The question posed is: **Does the use of coordinated teaching activities impact the development of certain fundamental motor skills in kindergarten children (ages 4-5) in the city of Ouargla?**

3- Importance of the Study:

The significance of the current study lies in the importance of its subject matter. Understanding the impact of coordinated teaching activities on the development of certain fundamental motor skills offers a new approach to designing programs and curricula for managing kindergartens in Algeria. This knowledge can aid supervisors and those responsible for this segment of society in preparing a well-rounded generation that is balanced in terms of cognitive, skillful, motor, and social development, ultimately becoming future leaders of the nation.

4- Objectives of the Study:

- To identify the extent of the impact of coordinated teaching activities on developing certain fundamental motor skills in kindergarten children aged 4-5 years in the city of Ouargla.
- To determine the values of some fundamental motor skills in kindergarten children aged 4-5 years in the city of Ouargla.

5- Hypotheses of the Study:

- There is a statistically significant effect of coordinated teaching activities on the development of certain fundamental motor skills in kindergarten children (ages 4-5) within the experimental group.
- There are statistically significant differences between the experimental and control groups in the impact of coordinated teaching activities on developing certain fundamental motor skills in kindergarten children (ages 4-5), favoring the experimental group.

6- Operational Definitions of the Study Concepts:

- **Coordinated Teaching Approach:** An activity carried out fluently, quickly, and positively according to the purpose of learning and developing sports skills, aimed at achieving a certain level of maturity.
- **Fundamental Motor Skills:** The researcher defines this as the changes occurring in a child's motor behavior through directed practice of fundamental skills and movements such as running, jumping, catching, throwing, and balancing.

7- Related Previous Studies:

- **Wang (2003)** conducted a study aimed at identifying the impact of a motor innovation program for kindergarten children. This study was conducted in South Dakota, USA, at a children's center, involving a sample of 60 children who participated in the experiment. The program was held twice a week for 30 minutes each time, with children aged between 3-5 years. They were divided into experimental and control groups. The study results showed statistically significant differences between the two groups in creative motor performance, favoring the experimental group.
- **Salahat (2004)** conducted a study aimed at identifying the effect of organized physical activity on the development of fine and gross motor skills in kindergarten children. This study took place in Jordan, with a sample of 52 kindergarten children, divided into experimental and control groups (26 boys and girls in each group). The study found statistically significant differences between pre- and post-tests, favoring the post-test in all skills.
- **Mustafa Altinkuk (2016)** conducted a study to analyze the impact of a 12-week coordinated movement education program on the development of fundamental motor skills in preschool children. A total of 78 preschool students were involved in the study, with 38 in the experimental group and 40 in the control group, after receiving consent from their families. During the study period, an experimental research model with a "pre-test-post-test control group" design was used. To assess the impact of the coordinated movement education program on the children, tests for speed, agility, long jump, tennis ball throwing, running speed, flexibility, vertical jump, coordination, and motor performance were conducted. Statistical analysis was performed using the "independent T-test" to identify differences between the experimental and control groups, while the "paired samples T-test" was used to assess differences within the experimental group. The results showed no significant differences between the pre-test values of the groups or within the control group. However, statistically significant differences were found between the post-test values of the groups, as well as between the pre- and post-test values of the experimental group, favoring the experimental group. Based on these results, it can be concluded that the coordinated movement education program planned for long-term practices, which enhance children's activities during the sessions, enables preschool children to develop their fundamental movements and progress to the next stage of education, while ensuring their motor and psychological development.

7-1- Commentary on Previous Related Studies:

The review of previous related studies shows that they have not sufficiently addressed various aspects of children's needs, despite global attention to early childhood as a critical and foundational stage in life. This stage has a significant impact on nurturing and guiding talents. Some studies have used unstandardized programs, and often sports teachers are not specialists, continuing to use traditional teaching methods. Furthermore, there are insufficient facilities and playgrounds, which sometimes do not meet children's needs or help to develop their talents. The repeated use of the same games, especially in the preparatory section of lessons, leads to boredom and disengagement, thereby undermining the foundational activities and basic games.

Given the importance of these issues and the lack of diverse research, tools, and methods in physical education lessons especially in field and track games, which form the basis for other sports this study stands out. It uses a set of group games that develop basic movements in children as well as other skills that can benefit them in everyday life, such as cooperation, respect for others, self-confidence, and self-esteem. This study also emphasizes the important role of the teacher in encouraging children and helping them improve their teamwork and motor performance. Moreover, this study aims to teach basic motor skills to children in a systematic and organized way through games accompanied by music, which helps develop their fundamental motor skills and guides them in choosing the right sport for the future.

8- Procedures and Tools:

8-1- Study Methodology:

The researcher used the experimental method, which is appropriate for the nature and objectives of the study, with a design involving equivalent experimental and control groups.

8-2- Study Sample:

The study sample consisted of 60 boys and girls from the An-Nargis and As-Sawsan kindergartens in the city of Ouargla during the 2022/2023 academic year. They were divided into two groups: 30 children for the experimental group (18 boys and 12 girls) and 30 children for the control group (16 boys and 14 girls). The children were randomly assigned to the two groups.

8-3- Basic Motor Skills Tests Used in the Study:

- **Day 1:** 20-meter sprint test (in seconds), measuring the skill of running over a distance of 20 meters.
- **Day 2:** Standing broad jump test, measuring the skill of forward jumping.
- **Day 3:** Catching test, measuring the skill of catching a ball inside a square.
- **Day 4:** Tennis ball throwing test (in meters), measuring the skill of throwing for the longest distance.
- **Day 5:** Static balance test, measured in seconds, ending when any part of the body touches the ground.

8-4- Psychometric Properties of the Data Collection Tool:

• **Test Validity:**

The content validity of the tests was established by presenting them to five experts with PhDs and professional expertise in the field to gather their opinions. The feedback was considered, and necessary adjustments were made.

• **Test Reliability:**

The reliability of the tests was determined using the test-retest method on a sample of 10 children from the study population but outside the main sample. The test was re-administered 12 days after the first administration, as shown in Table 1.

9- Presentation of Results and Discussion of the First Hypothesis:

9-1-1- Table 1 presents the results of the Pearson correlation coefficient between the first and second administrations of the motor skill tests used in the study.

Variables	Unit of Measurement	First Application		Second Application		Pearson Correlation Coefficient
		Arithmetic mean	Standard Deviation	Arithmetic mean	Standard Deviation	
Running	Seconds	6.62	0.84	6.65	0.60	0.947
Jumping	Meters	77.67	21.78	76.77	22.27	0.989
Catching	Number of Catches	13.44	4.68	12.50	5.18	0.845
Throwing	Meters	5.70	1.72	5.80	1.68	0.980
Static Balance	Seconds	6.70	1.82	5.90	1.95	0.990

The tabular value of $r = 0.811 = (\alpha \geq 0.05)$

9-1-2- Table No. (2) shows the arithmetic mean, standard deviation, and calculated t-value between the two groups (experimental and control) for the skill tests used in the study.

Variable	Group	Arithmetic Mean	Standard Deviation	t-value	Significance Level
Running	Experimental	7.15	0.87	1.79	0.069
Control	Officer	6.65	0.46		
Jumping	Experimental	82.20	8.32	1.85	0.092
Control	Officer	76.67	12.78		
Catching	Experimental	8.40	4.36	1.74	0.105
Control	Officer	12.44	5.12		
Throwing	Experimental	5.03	1.51	1.57	0.073
Control	Officer	5.70	1.72		
Static Balance	Experimental	7.50	1.92	1.77	0.085
Control	Officer	6.70	1.82		

The tabular value of $t = 2.048 = (\alpha \geq 0.05)$.

Table No. (2) shows the arithmetic mean, standard deviation, and the calculated t-value between the two groups (experimental and control) for the tests of running, jumping, catching, throwing, and static balance in the pre-measurement. All these values were less than the tabular t-value of 2.048 at a significance level of 0.05 or less, which indicates no statistically significant differences between the two groups in the indicated variables.

Table No. (3) shows the arithmetic mean, standard deviation, and the calculated t-value between the pre and post measurements for the experimental group members on the skill tests used in the study.

Variable	Measurement	Arithmetic Mean	Standard Deviation	t-value	Significance Level
Running	Pre	7.15	0.87	4.98	0.069
	Post	5.65	0.56		
Jumping	Pre	82.20	8.32	5.85	0.092
	Post	98.67	13.78		
Catching	Pre	8.40	4.36	7.03	0.105
	Post	14.44	3.12		
Throwing	Pre	5.03	1.51	7.51	0.073
	Post	6.70	1.22		
Static Balance	Pre	7.50	1.92	7.64	0.085
	Post	9.70	1.62		

The tabular t-value at a significance level of 0.05 is 2.045.

Discussion of the First Hypothesis:

There is a statistically significant effect of coordinated teaching method activities on the development of some fundamental motor skills among kindergarten children (ages 4-5) in the experimental group.

To test this hypothesis, arithmetic means, standard deviations, and t-values were used to examine the significance of differences between pre-performance and post-performance levels for the experimental group members. Table No. (3) shows the arithmetic means, standard deviations, and calculated t-values between the pre and post measurements for the experimental group members in the running, jumping, catching, throwing, and static balance tests. The table indicates statistically significant differences between the pre and post-test results, in favor of the post-test for the experimental group.

The researcher attributes this result to the effectiveness of the skill tests in the coordinated teaching method activities and the clarity of its elements and content for the participating children. The simplicity of the method, presented in a way that fits the characteristics and interests of this age group, as well as the inclusion of scientifically based planned games, contributed to the development of fundamental motor skills in a playful, fun, and team-oriented setting. This was reflected in the way the children played together.

This result aligns with findings from Weng (2003) and Hamouda and Mustafa Altinkok (2016), which suggested that educational programs positively impact the development of motor performance in children. Additionally, the inclusion of group games increased children's interaction with each other during performance, which positively influenced their interest in the games and, consequently, their level of motor performance.

9-2-Presentation of Results and Discussion of the Second Hypothesis:

Table No. (4) shows the arithmetic means, standard deviations, and calculated t-values between the pre and post measurements for the control group members in the skill tests used in the study.

Variable	Measurement	Arithmetic Mean	Standard Deviation	t-value	Significance Level
Running	Pre	6.68	0.45	1.23	0.239
	Post	7.00	0.90		
Jumping	Pre	75.60	11.98	1.49	0.158
	Post	76.30	11.84		
Catching	Pre	11.00	4.96	2.04	0.060
	Post	10.07	3.89		
Throwing	Pre	4.83	0.86	0.77	0.453
	Post	4.96	0.70		
Static Balance	Pre	5.86	0.86	1.95	0.071
	Post	5,94	0,87		

The tabular t-value at a significance level of 0.05 is 2.045.

9 -2-2-Table No. (5) shows the arithmetic means, standard deviations, and calculated t-values between the experimental and control groups on the skill tests used in the study.

Variable	Group	Arithmetic Mean	Standard Deviation	t-value	Significance Level
Running	Experimental	5.65	0.56	3.79	0.000
	Control	7.00	0.90		
Jumping	Experimental	98.67	13.78	4.85	0.000
	Control	76.30	11.84		
Catching	Experimental	14.44	3.12	7.74	0.000
	Control	10.07	3.89		
Throwing	Experimental	6.70	1.22	6.57	0.000
	Control	4.96	0.70		
Static Balance	Experimental	9.70	1.62	5.77	0.000
	Control	5.94	0.87		

Discussion of the Second Hypothesis:

There are statistically significant differences in the effects of coordinated teaching method activities on the development of fundamental motor skills in kindergarten children (ages 4-5) between the experimental and control groups, in favor of the experimental group.

To test the hypothesis, arithmetic means, standard deviations, and t-values were used to determine the significance of differences between the pre- and post-performance levels of the experimental and control groups. Table No. (5) shows the arithmetic means, standard deviations, and calculated t-values between the two groups (experimental and control) in the post-test measurements for running, jumping, catching, throwing, and static balance tests. As shown, there are statistically significant differences between the experimental and control groups, in favor of the experimental group.

The researcher attributes this result to the application of coordinated teaching method activities and the use of scientifically based skill tests, which contributed to developing motor skills, leading to greater improvements in the experimental group compared to the control group. Group play also encouraged children to exert more effort, which positively impacted their performance. This finding aligns with Salahat's (2004) study, which demonstrated improved motor skills in the experimental group across all variables.

However, it contrasts with Mustafa Altinkok's (2016) findings, which showed no significant differences between the groups in some variables such as running and jumping.

Conclusion:

- Coordinated teaching method activities positively influenced the development of some fundamental motor skills in children aged 4-5 years.
- The improvement rates for fundamental motor skills were higher in the experimental group than in the control group across all skills.
- This study determined the values of certain fundamental motor skills for kindergarten children aged 4-5 years.
- The proposed coordinated teaching method activities for this age group should include diverse games, songs, and long-term music to motivate them towards higher levels of physical performance.

Recommendations:

- Implement the proposed educational program due to its positive impact on improving fundamental motor skills in children aged 4-5 years.
- Encourage scientific and experimental research in the field of motor skills in kindergarten.
- Develop similar and advanced programs to be applied to older grades in primary education.
- Increase the use of group games and coordinated activities, as they positively contribute to children's ability to interact with one another, reflecting on their educational experiences in motor skills sessions and other aspects of their lives in general.

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