

MOTOR COMPETENCIES OF KINDERGARTEN CHILDREN**Dalia Rahim Ait****Asst.Prof. Dr.Sajlaa Faiq Hashem**

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Abstract:

The current research aimed to identify motor competency and the significance of differences in motor competency based on gender (males, females) and age variable for kindergarten children. To achieve the objectives of the current research, the researchers constructed a motor competency test, which was administered to a sample of 150 male and female kindergarten children. The sample was selected using simple random sampling for the academic year (2022-2023). Discriminative power and face validity were extracted, and the reliability of the research tool was confirmed through test-retest and Cronbach's alpha methods, resulting in a stability coefficient of 0.75 for the motor competency test.

The final version of the motor competency test comprised nine items. After confirming the validity and reliability of the research tool and applying it to the sample, followed by data collection and statistical processing, the current research arrived at the following conclusions:

The participants of the current research sample of kindergarten children exhibit motor competency in general. Regarding the gender variable (males, females), there is no significant relationship between gender and motor competency for kindergarten children. However, the age variable showed a difference in motor competency, favoring the age range of 66 to 72 months. Based on these results, the researchers provided recommendations and suggestions as outlined in Chapter Four.

Keywords: Motor Competency, Kindergarten Child.**Chapter One:****1.0 Introduction**

The child is the foundation, as early childhood is a critical formative stage in an individual's life. During this period, the initial seeds of personality are sown, and the child forms a clear and sound understanding of themselves and their society (Ash-Shawak & Thajeel, 2016: 1986). The preschool stage (kindergarten) is a fundamental phase in the educational process, acting as a bridge between home and school. It serves as an extension of environmental education, marking the beginning of the educational ladder. In both cases, it is a crucial stage in a child's life, constructing fundamental aspects of their personality and future (Nimah, 2009: 111).

1.1 The statement of the problem;

The pre-school age is characterized by a thirst for learning various skills. During this period, children enjoy repetitive actions without getting bored, leaning towards adventurous activities. In this phase, children have full control over performing basic motor skills. Engaging in sports activities enables a child to interact with their surroundings, utilizing their various senses as

the primary stimuli to receive and respond to various stimuli such as tools, peers, play areas, time, distance, height, obstacles, and other movement-related stimuli. Adequate motor performance requires the coordination of the muscular system and its connection with the central nervous system. This emphasizes the need to focus on both cognitive (intelligence) and motor skills to foster confidence and creativity and enable children to develop their mental and physical potential (Abdulrahman, 2015: 20).

Through learning, growth, and development, a child evolves. Therefore, it was essential to emphasize the role of the educational process, especially with pre-school children (Abdulrahman, 2015: 21).

When attempting a motor skill for the first time, an individual often feels their movements are inconsistent and their limbs are not subject to proper guidance and control. The movement appears to consist of multiple disjointed actions without a coherent link between them. However, with repeated practice and the assistance of various cues, the individual eventually reaches a point where they can successfully perform the new motor skill for the first time, despite its initial primitiveness and associated errors. This breakthrough moment is crucial, as it allows the individual to experience and comprehend movement as a whole (Hussein & Al-Sayed, 2006: 202). Motor skills between the ages of three and six become the central activity of a child's life. Through movement, a child learns to adapt to life's conditions, achieving tasks with minimal time and effort, high precision, efficiency, and gaining self-confidence. They become prepared for the future (Afaf Abdul Kareem, 1995).

From the aforementioned, the current research problem can be summarized by addressing the following question:

-Does the kindergarten child possess motor competency?

1.2 Significance of the Research:

The early years of a child's life leave a lasting impact on their personality, influencing them throughout their life. Children are susceptible to being influenced by their surroundings, making their upbringing a matter of great importance and care (Abbas & Salem, 2016: 437). The childhood phase is significant in shaping an individual's personality. The experiences a person gains during childhood play a crucial role in defining their character. Positive and pleasant experiences during this period lead to a well-adjusted individual who can adapt to themselves and their society. Conversely, painful experiences can leave detrimental effects on their personality. Childhood experiences embed deep roots in an individual's personality, as they are still malleable and can be shaped (At-Tai & Thajeel, 2020: 52).

Physical education programs for kindergarten have become a foundation for practical engagement in various activities, aiming to find positive solutions for motor challenges. Hence, the importance of motor activities in improving muscle capabilities that contribute to body balance becomes evident. These activities help develop fundamental movements such as walking and running. It is crucial to explore alternative methods that allow children more opportunities to acquire experiences related to motor activities, thereby positively impacting their mental and sensory-motor capabilities (Abdulrahman, 2015: 21). Educational games

allow children to manifest their self-perception and family representation. Additionally, these games can mirror their feelings towards others while playing.

Therefore, it's crucial to allocate sufficient time and space for children to engage in play. This way, they can freely express themselves without adhering strictly to rules and order, enabling them to release their emotions without reservation (Montessori, as cited in Abdulrahman, 2015: 22). The child's motor development relies on their physical growth. This developmental phase is characterized by instability, continuous activity, intense responsiveness, diversity, and an increase in sensory-motor harmony. This harmony aids in acquiring new skills, leading to the consensus among most psychologists that the period between ages four and six is filled with continuous motor activity, mainly seen in play, which occupies most of the child's time without fatigue or boredom (Abdulrahim, 2003: 34). The parenting approaches used to fulfill the child's various needs and family upbringing methods contribute to their behavioral practices. Other factors include economic and social conditions, companionship, and more, not forgetting the role of kindergarten (Redam, 2010: 424).

The primary and direct aim of physical education is to achieve fitness and motor competency. This aspect of physical fitness pertains to performance, function, and motor competency. It encompasses factors like speed, coordination, agility, strength, and balance. Moreover, physical education helps children acquire a variety of knowledge and experiences that benefit other aspects of growth. If properly taught, physical education contributes to achieving its objectives, resulting in successful outcomes (Abdulrahim, 2003: 34).

1.3 Research Objectives:

The research aims to:

1. Identify the motor competency among kindergarten children.
2. Examine the motor competency among kindergarten children based on the age variable.
3. Investigate the motor competency among kindergarten children based on the gender variable.

1.4 Research Scope: The research focuses on government kindergartens in Baghdad province, including Al-Karkh (First, Second, Third) and Al-Rusafa (First, Second, Third) for the academic year (2022-2023).

1.5 Defining Research Terminology:

Firstly, Motor Competency:

-According to Clark JE (2002): It is the child's ability to perform a motor activity or skill purposefully, skillfully, and with motor coordination between muscles while controlling them (Clark JE, 2002: 164).

-According to Al-Dulaimi (2011): It is the child's or learner's ability to employ their body mechanics to perform a specific motor task to the degree that enables them to achieve a goal or specific task, exhibiting control, coordination, and awareness of their capabilities and potential, whether it's a specific motor task or a set of motor tasks (Al-Dulaimi, 2010: 10).

-The theoretical definition adopted by the researchers: The researchers embraced Clark JE's (2002) theoretical definition of the concept of motor competency.

-The operational definition by the researchers: The total score a child obtains by answering the items in the motor competency test prepared for this purpose.

Secondly, Kindergarten Child:

-Defined by the Ministry of Education (2005): "They are children accepted in kindergartens who have turned (4) years of age at the beginning of the academic year and will turn (6) years of age by December 31st of the calendar year" (Ministry of Education, 2005: 8).

Chapter Two:

2.The Theoretical Framework

2.1Motor Competency: Motor development plays a crucial role in the overall health of children and is also linked to cognitive and social aspects. The concept of motor development is defined as motor competency, reflecting a high level of performance in a wide range of motor skills along with fundamental processes such as coordination, control, movement quality, and coordination (Bardid et al., 2018: 7). Various terms have been used in the literature, such as fundamental motor skills, motor ability, motor competency, motor performance, and motor coordination, all falling under the umbrella of motor competency. Literature indicates that motor competency is associated with positive health outcomes, including participation in physical activity, perceived physical competence, physical fitness, and weight status.

2.2Defining Children's Motor Competency:

Motor development involves studying the changes that occur in humans (throughout their lives) in terms of growth, development, and motor behavior (performance). Defining and measuring this competency provides an opportunity to recognize, document, and interpret these changes, as well as establish developmental trajectories for individuals throughout different life stages. This evaluation of development can be categorized into three forms: growth, development, and motor behavior, each with its own specific measurements, tests, and tools.

2.3Evaluation of these indicators takes two forms:

A. Qualitative Evaluation: Done by assessing the performance process, where evaluations are made for each component of movement or each part of the body during movement. This type of evaluation is used in gymnastics, ice skating, and dance.

B. Quantitative Evaluation: Done by calculating various indicators using measurement and testing tools. This type of evaluation is used to measure speed, agility, coordination, and reaction time.

Note: Some tests can be both qualitative and quantitative at the same time. For instance, running can be qualitatively observed (performance observation), and quantitatively measured by calculating speed, agility, endurance, and coordination, in addition to measuring reaction time and response.

2.4Motor Competence Theory:

The theory of evolutionary borrowing for (Clark), Various terms and expressions are used to describe motor competence, such as motor fitness, motor skill, motor ability, and motor perceptual competence, all of which refer to "voluntary movement" involving muscular coordination in carrying out purposeful activities. Despite differing opinions and ongoing debates about their definitions, "physical fitness" and "motor fitness" are closely related to physical education and motor education, as they are central goals in physical education programs. According to Hara and Clark, both concepts are intertwined with physical education and motor education, making the concept of motor competence broader and more comprehensive than that of physical fitness.

It's known that the management of motor processes occurs in specific areas of the brain, just as processes like reading and writing are controlled by the brain in the same neural region. When a child possesses motor competence, it indicates good neural development, reflecting on other aspects and serving as an indicator. Thus, a child with motor competence is better suited for educational processes, while children lacking motor competence may struggle to achieve skills in areas like reading and writing.

In Clark's theory of evolutionary borrowing, motor development is compared to mountain climbing. Similar to human motor development, this process takes years, is sequential and cumulative, heavily influenced by the climber's skills and personal traits. It's also non-linear; human motor development progresses like mountain climbing, sometimes facing declines followed by progress later in life. Achieving higher levels of motor competence can be compared to climbing higher levels of the mountain.

Reaching higher levels of motor development is an ongoing interaction between the climber's skills (the individual) and the mountain (constantly changing environmental conditions on the mountain as we progress through life). Reaching the mountain's summit can be seen as the ultimate attainment of motor competence and high motor ability.

In summary, the mountain depicts "continuous, cumulative, and progressive adaptation" that we observe in our motor evolution as we navigate through life (Clark and Metcalfe, 2002).

The ascent of the mountain includes passing through six periods of human motor development:

1_ the reflexive period.

2_ Pre-acclimation pperiod.

3_ Basic patterns period.

4_ The context period.

5_ skill period.

Each period contributes to acquiring the necessary skills for the next period. In addition, the time spent in each developmental period varies for each individual while greatly dependent on factors such as the amount of experience or instruction, the quality of education, and the individual's inherent traits (such as height, strength, and agility).

Development is a function of adaptation throughout life as we learn to integrate our personal structural and functional characteristics with our environment.

Describing the basic patterns of the period, Clark and Metcalfe then stated, through similar concepts, that basic movements begin during infancy, but will continue throughout childhood for most children. As in all periods of the mountain of motor development, many factors influence the rate and breadth of motor skill acquisition. For example, some children may have ample opportunity to experience a wide variety of movements and some may enjoy the luxury of a high-quality education complete with appropriate amounts and types of practice. Others may have limited opportunity to participate in such activities, making the climb up a mountain more challenging.

This period of development includes basic motor skills, such as walking, running, jumping, jumping, etc., and basic object control skills which Clark and Metcalf (2002) subdivide into control of body movements (such as throwing, kicking) and object control (such as catching, catching) . Both types of movement require increased levels of interaction between the environment and the child.

All of these abilities are a function of the skills developed in the earlier periods of ascending up the mountain (growth and progression in the development of motor skills).

This development period also includes fine motor manipulation i.e. fine motor skills including cutting with scissors, handwriting, drawing, eating (eg, using spoons or chopsticks), or playing specific musical instruments (playing the piano or guitar).

Here again, achievement in this area is greatly influenced by previous experiences and achievements on the 'mountain', in the reflective and previously adjusted periods. The period of fundamental patterns is essential and establishes the foundation for future movement endeavours. Hence, the skill developed at this point in the trek up the mountain may be considered 'base camp', to which the performer may want or need to return from time to time (Clark and Metcalfe, 2002 55).

Chapter Three:

Research Methodology and Procedures

First: Research Methodology: The current research is based on the descriptive methodology to describe and analyze the studied phenomenon. The descriptive methodology is one of the scientific research methods that focuses on studying the phenomenon as it is, aiming to provide a precise quantitative and qualitative description of it. Quantitative description provides numerical values to clarify the magnitude and degree of correlation with other phenomena, while qualitative description highlights the characteristics of the phenomenon (Khatatneh, 2012: 39).

Second: Research Procedures

1. Research Population: The research population included the children of government kindergartens (preparatory stage) in Baghdad governorate for the academic year (2022-2023), totaling (21,480) children distributed among government kindergartens in the Directorate Generals of Education in Baghdad (Karkh First, Second, Third) and Rusafa (First, Second, Third).

2. Research Sample: The research sample consisted of (150) boys and girls from kindergarten children. They were selected using simple random sampling for the statistical analysis phase.

The final application sample included (150) children selected randomly to apply the research tools.

3. Research Tools: To achieve the research objectives, the researchers developed a "Motor Competence Test" tailored to the research sample and possessing good psychometric properties.

-Motor Competence Test: The researchers followed the following steps in constructing the test:

A. Item Formulation : After reviewing literature, theories, and previous studies related to motor competence, the researchers formulated the preliminary version of the test with (10) items. The test consists of two sections: the first section measures body movement control (e.g., walking), and the second section measures object control (e.g., throwing). The test's response alternatives are "performs" and "does not perform," scored as (1, 0).

B. Instruction Clarity: The clarity of test items and instructions was verified by administering the test on a random sample of (50) children from kindergartens. The instructions and items were found to be clear and easily understandable

4. Validity: Validity indicates whether the test measures what it was designed to measure. For validity, the researchers followed these steps:

A. Face Validity: The researchers ensured that the test was aligned with the research objectives. They reviewed the item formulation for clarity and precision (Mohajan, 2007: 73). This type of validity was verified by presenting the preliminary version of the test to a panel of experts who confirmed the suitability of the items for measuring motor competence. Expert suggestions led to adding a specified time for performing certain skills without modifying the items. This step gained 100% agreement from the experts.

5. Statistical Analysis of Items: Analyzing the test items statistically is a crucial stage in its construction, as it helps identify items that effectively measure the intended content. Statistical analysis aims to assess the item's discriminatory power and its correlation with the total score.

-Discriminatory Power and Item Difficulty: Discriminatory power, also known as the discrimination index, is one of the psychometric characteristics of items. It reveals an item's ability to differentiate between individuals based on their psychological measurement (Davis, 1962: 97). Table (1) illustrates this.

Table (1)
Discriminatory power, the method of the two extreme groups to test the motor efficiency

Sig.	Power discriminatory	The answer of lower group (One) 27%	The answer of the upper group (One) 27%	number paragraph
Sig.	0.56	0	23	1
Sig.	0.34	27	41	2
Sig.	0.46	22	41	3
Sig.	0.54	17	39	4
Sig.	0.37	20	35	5
Sig.	0.44	20	38	6
Non-Sig.	0.02	39	40	7
Sig.	0.78	6	38	8
Sig.	0.37	26	41	9
Sig.	0.73	8	38	10

The paragraph that gets a score of (0.30) or higher is a (distinguished) function according to the (Ebel) criterion, which means that all paragraphs are distinguished except for paragraph (7).

- The relationship of the paragraph score with the total score: it is intended to find the correlation coefficient between the individual's performance according to each paragraph of the scale and his performance on the entire scale. Becerel (dotted dot), to find the correlation between the score of the paragraph and the total score of the test, and the researcher used a statistical analysis sample of (150) children from government kindergartens, and the paragraph is considered valid by comparing it with the tabular value of (0.16) at the level (0.05).) and a degree of freedom (148), and Table (2) illustrates this.

Table (2)
Coefficients of correlation of motor efficiency vertebrae with total score

Sig.	correlation coefficient	Paragraph	Sig.	correlation coefficient	Paragraph
Sig.	0.47	6	Sig.	0.49	1
I fell into discrimination		7	Sig.	0.38	2
Sig.	0.63	8	Sig.	0.41	3
Sig.	0.44	9	Sig.	0.47	4
Sig.	0.53	10	Sig.	0.38	5

All values in the two tables above are correlated with the total score statistically significant, being higher than the tabular correlation value of (0.16) at level (0.05) and degrees of freedom (148), except for paragraph (7).

- The relationship of the field degree to the total degree and the field to the field to test the motor competence: The relationships of the sub-domains with the total score of the scale and the correlations of the fields with each other are basic measurements of homogeneity because they help in determining the field of behavior to be measured (Anastasi, 1976, 155). This was achieved by finding the correlation between the scores of the sample members within each domain of the test and the total score of the test, as well as the relationship of the domains with each other, depending on the scores of the sample members as a whole.) at a level (0.05) and a degree of freedom (148), and Table (3) shows this.

Table (3)
The relationship of the field to the field and the field to the total degree

motor efficiency	control of the thing	Body movement control	the field
0.67	0.17	1	Body movement control
0.84	1	--	control of the thing

- Exploratory factor analysis for the motor efficiency test: The value of the (Kayser-Meyer-Olen) test is (0.96) compared to (0.50) cut-off score, which is higher than the cut-off score, which indicates that the size of the research sample is suitable for factor analysis. .

Table(4)
Factor matrix for motor aptitude test

The second factor	The first factor	Paragraph sequence in the test	T
	0.48	1	1
-0.53	0.76	2	2
-0.49	0.76	3	3
	0.41	4	4
0.44		5	5
0.47		6	6

0.46	0.30	8	7
0.60	0.31	9	8
0.55	0.34	10	9
1.83	2.10		underlying root
20.33	23.36		Explained discrepancy

From the table above, it is clear that the result of the exploratory factor analysis produced two factors for testing the motor efficiency, and this confirms the validity of its construction, and that these two factors explain the amount of (43,69) of the total variation, and that the first factor represents the field (control of body movement) on which paragraphs (1) were saturated -2-3-4) As for the second factor, it represents (object control), and paragraphs (5-6-8-9-10) were saturated with it. Thus, the number of test items reached (9) items in its final form.

Consistency: It refers to the consistency of the scores obtained by individuals over a period of time, or through an equivalent form of the test, or across the test items, and stability is a necessary condition for judging the validity of the test for use and the reliability of its results (Khattab, 2004: 538).

In order to find the stability of the motor efficiency test, the following methods were used

- **Kweder-Richardson method:** It is an equation designed to treat the homogeneity of the test, as the heterogeneity of the test items constitutes one of the sources of measurement error, because it affects its stability.

The application of this equation requires the following:

- 1- The nature of the answer should be of the type of binary answer, ie (yes, no) or (true or false) (agree, disagree).
- 2- The test items should be of equal difficulty.
- 3- That the number of questions left out is not large (Al-Naimi, 2014: 249).

The Kweder-Richardson equation (20) was used to test the motor efficiency as it is discontinuous binary, and to extract the stability, all (150) forms of the research sample were approved, and the stability coefficient for the motor efficiency test was (0.75).

- **The final version of the motor aptitude test:** The test in its final form consists of (9) items, alternatives (lead, not lead) and weights are (1, 0). The highest score for the test is (9) and the lowest score for the test is (zero) with a hypothetical mean (4.5). The test has good validity and reliability.

Chapter Four Presentation and interpretation of results

First: View the results:

Objective (1): Measuring the motor efficiency of the research sample.

To achieve this goal, the two researchers applied the motor efficiency measure to the research sample of (150), and it became clear that their average score on the scale was (6.16) degrees, with a standard deviation of (1.71) degrees, and by comparing this average with the hypothetical average * of the scale, which is (4.5) degree, and by using the t-test for one sample, it was found that there is a statistically significant difference at the level of (0.05) between the arithmetic and hypothetical means, in favor of the arithmetic, as the calculated t-value reached (11.86), which is higher than the tabular t-value of (1.96) with degrees of freedom (149), and Table (5) shows this.

* The hypothetical average of the motor efficiency scale was extracted by adding the weights of the two scale alternatives and dividing them by their number (2), then multiplying the result by the number of scale paragraphs (9).

Table (5)

The t-test for the difference between the sample mean and the hypothetical mean of the motor efficiency scale

Significance	Degrees of freedom	tabular t-value	The tabulated outlier	The hypothetical average	Standard deviation	The arithmetic mean	The number of sample members
Sig.	149	1.96	11,86	4,5	1,71	6,16	150

The result in Table (5) indicates that the research sample has a high level of motor efficiency, and the researcher explains that the child has the ability to move according to the various directions that are given to him depending on his knowledge of the parts of his body that help him imagine movement, and move in a good rhythm while controlling the muscles of his body Through the performance of basic skills such as hopscotch, jumping and throwing, and the motor efficiency enjoyed by the children of the research sample is due to their proper awareness and the development of their motor abilities through the environment provided by those in charge of caring for the child, pushing and encouraging them to perform their motor duties with repetition, accuracy, strength and flow.

This is confirmed by the theory of maturity, which gives the training and experiences that the child goes through a role in acquiring motor skills. As for (Adams), who assumed the existence of the sensory-perceptual effect in his closed-circuit theory, where the response is stored in memory until it is recalled to it, and this effect develops through practice and repetition (Ahmed et al., 2022: 147).

Objective (2): Know the significance of the difference in motor efficiency according to the gender variable (male, female).

To achieve this goal, the t-test was used for two independent samples to identify differences in motor efficiency according to the gender variable (male, female). Table (6) shows this:

Table (6)

The t-test for two independent samples to identify the differences in motor efficiency according to the gender variable (male, female)

Sig.	Tabular Present ation	Calculat ed Tabulati on	Standard deviation	average	the num ber	Type	the samp le
Non -Sig.	1.96	1.29	1.67	6.35	72	male	150
			1.75	5.99	78	Female	

It appears from Table (6) that there is no difference in motor efficiency according to the gender variable (male, female), because the calculated t-value is less than the tabular t-value of (1.96) at the level of (0.05) and the degree of freedom (148).

The researchers justified this by the fact that there is no relationship between the gender variable (males and females) on the motor efficiency of kindergarten children. Clark's theory and maturity theory indicated that children follow the same sequence in their motor development and their control over the lower and peripheral parts of the body and basic control skills in things (Clark and Metcalfe, 2002 Al-Rimawi _ 2014).

Objective (3): To know the significance of the difference in motor efficiency according to the variable of age.

To achieve this goal, the t-test was used for two independent samples to identify the differences in motor efficiency according to the variable of age. Table (7) shows this:

Table (7)

The t-test for two independent samples to identify the differences in motor efficiency according to the variable of age

Sig.	Tabular Present ation	Calculat ed Tabulati on	standard deviation	average	the num ber	the age	the samp le
Sig.	1.96	3.34	1.79	5.66	67	60-65 Month	150
			1.55	6.57	83	66-72 Month	

From Table (7), it becomes evident that there is a difference in motor efficiency based on the age variable, in favor of the (66-72 months) range. This is because the calculated tabulated value is higher than the critical tabulated value of (1.96) at a significance level of (0.05) and degrees of freedom (148).

The results in Table (7) demonstrate that motor efficiency varies statistically according to the age variable, favoring the age range of (66-72) months. The researcher attributes this to the fact that motor performance is of higher quality as the child advances in age, regardless of gender. Motor skills develop and increase as the child grows older.

Secondly, the conclusions:

1. Motor efficiency is an important characteristic in kindergarten children.
2. There is a good level of motor efficiency in kindergarten children.
3. There is no statistically significant difference in self-confidence levels between male and female kindergarten children.
4. There is a difference in motor efficiency based on the age variable, in favor of the (66-72 months) range.

Thirdly, recommendations:

1. Enhance parental involvement by creating guidance programs for families to educate them about proper methods of interacting with their children, aiming to enhance children's motor efficiency.
2. Direct media towards increasing programs that emphasize child care.

Fourthly, proposals:

Continuing from the current research results and building upon them, the researcher proposes a set of suggestions:

1. Conduct a similar study on samples from other educational stages.
2. Carry out a study linking self-confidence with other variables (mental health, psychological well-being).
3. Conduct a comparative study on self-confidence among children in government and private kindergartens.

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