

## **Basketball Games and Early Childhood Motoric Development: Systematic Literature Review**

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### **Abstract**

*This study aims to examine literature that focuses on research on early childhood basketball learning and motor development. Using the search term "basketball game and children's motor development", two databases (Scopus and Google Scholar) were selected to select journal articles. To achieve the measurement objectives, the collected literature is examined using the Critical Appraisal table, then a comparison of the measurement results is carried out. Basketball games and children's motoric development are discussed in 17 literatures. The results of several journals revealed several significant things, including the fact that playing basketball improves students' motor skills by increasing movement speed, accuracy, and strength in static and dynamic spaces, as well as game performance. Basketball players compete at various levels of competition. In addition, children who previously experienced delays in these movements at the level of fitness, behavior, knowledge and basic skills, which include agility, balance and coordination, were greatly influenced by the basic movements and basic skills of mini basketball. Basketball also has many benefits for your health and happiness. It is considered an easy game to play because of the satisfying psychosocial interactions. generate profits that last into adulthood.*

**Keywords: Games, Basketball, Motor Development, Early Childhood**

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## **INTRODUCTION**

A child between the ages of 0 and 6 years is considered an early childhood (Suryaningrum et al., 2016). Early age is a crucial period to stimulate child development. Early brain development occurs very quickly, which is why this period is known as the golden age or golden age. According to neurological research, children's brains develop at a rate of 50% during the first four years of life, 80% by the time they are eight years old, and 100% by the time they are 18 years old (Ariani et al., 2022). This stage, which is formative and very valuable, is when the child's cognitive, physical-motor, linguistic, and psychosocial aspects grow the fastest. In line with this, (Santrock, 2011) emphasizes that children go through a crucial developmental stage at a young age, where they need a certain type of stimulation. Children receive the right stimulation at these special moments because they will never come again. Furthermore (Hidayati & Irmawati, 2019) children's nerve cells will naturally degenerate if they are not stimulated. This corresponds to the guiding principle of the brain's neurons, which is that you have to use it or you will lose it.

Physical motor development is an important component of development in infancy (Musfiroh, 2014). Children's motor skills grow and develop along with their motor development. The various movement activities and types of play that children engage in will allow adults to see how well a child's physical and motor skills are developing. According to (Morrison, 2012) For social expectations and cognitive abilities, motor skills are very important. Children can be stimulated to aid in their development, and children who are stimulated are also more likely to reach developmental milestones successfully. Children can learn through play in early childhood education, which is a fantastic way to stimulate them (Huliyah, 2016). Before starting primary school, young children receive early childhood education. Children's potential and intelligence can grow by being given the right stimulation

from an early age. Therefore, the child's further development is influenced by early experiences. Opinion (Putri & Kurniawan, 2020) about UU Number 20 year 2003 chapter 1 in early childhood education it is explained as a coaching effort for children from birth to the age of six which is carried out through the provision of educational stimuli to support physical and spiritual growth and development so that children are ready to enter further education.

Opinion (Farida, 2016) children's physical and motor development affects their growth and development. Because of their unique characteristics, such as high curiosity and desire to try new things, children are able to carry out motor-physical exercises through coordinated movements (Loebach & Cox, 2020). This ability is made possible by a supportive environment that helps provide this stimulus. According to (Fitriani, 2018), Motoric development, especially in the early years of life, will be more optimal if the environment in which the child develops supports the child's right to be free to move. Outdoor activities may be the best choice because they can stimulate muscle development. Room maximization can be used as a strategy to create unlimited space for children to run, jump and move their whole bodies in various ways when they participate in indoor activities. Children's physical, motor and social-emotional development can be significantly assisted by play (Theobald et al., 2015). Games that involve a lot of physical activity, such as running, jumping, throwing, catching and hitting the ball on target, train children's focus or thinking, are played outside, and encourage children to socialize with other people including basketball games that have been modified to suit their needs children between the ages of five and six. Basketball is a team sport with a heavy emphasis on the quantitative components of performance, including strength, stamina, top-level speed, and technical and tactical elements (Guimarães et al., 2019);(Altavilla & Raiola, 2019);(Altavilla et al., 2013); (Altavilla & Raiola, 2014); (Altavilla & Raiola, 2015). This is also strengthened oleh (Sitepu, 2018) who argue that playing basketball will encourage children to move more, will increase their ability to move simply, and is good for their health. Fun experience for children can also be obtained by playing basketball. According to (Claire E et al., 2012) There are two types of motor development, namely gross motor and fine motor. Basic locomotor, nonlocomotor, and manipulative movements such as throwing, catching, and kicking are all considered part of gross motor skills (Raiola, 2017); (Gaetano, 2012); (D'elia et al., 2018). As explained by (Sher, 2009) Sports or even simple tasks like jumping forward are examples of gross motor activities that require coordination. Any type of sport or simple task such as jumping is an example of gross motor activity, which requires coordination. explained by (Decaprio, 2013) Gross motor skills are body movements that involve large muscles or most of the body's muscles, and affect all parts of the body.

Fine motor skills, on the other hand, are activities such as cutting and writing that utilize the small muscles in the hands and wrists (Gallahue, 2012). As a result of coordinated activity between the nervous system, muscles, brain, and spinal cord, (Saripudin, 2019) argues that the development of controlling body movements is closely related to the development of motor skills. As a result of constant movement, children who are able to master gross motor movements will have better physical health. The independence and self-confidence of children is affected by this. Children are more receptive to social interaction because they can balance their movements and activities with those of their peers. According to (Astuti, 2016) Children who get the opportunity to practice and be properly stimulated in developing their gross motor skills will undoubtedly have better dexterity compared to children who do not get both of these things. The relationship between stimulus and response is established when children are taught how to master certain movements. connections are formed as a result of training or the child's learning process.

Children can develop their gross motor skills by playing. Children learn about themselves and their environment through play by exploring and analyzing the things they see,

hear, and feel. Significant improvements in cognitive, physical, social, and emotional development have been associated with play. According to (Kusuma & Abdullah, 2021) who also noted that it is very important for young children to engage in physical activity. According to research from (Yus, 2011) learning is most successful in early childhood education when it uses a concrete, game-oriented approach. In (Wondal et al., 2020) states that playing is a process of problem solving and flexible thinking. According to (Bangun, 2019) Humans have realized that playing is fun and a very useful activity. Play activities for children are very important to help them adjust to the environment in which they live, even though when they were small playing was often done on an instinctive impulse without realizing why. (Matakupan, 1995). The physical and mental development of children because childhood is a crucial period for improving and coordinating the fundamental movements that support their motor skills.

One area of child development that needs to be encouraged is their motor skills. Children's stimulation comes from their environment, from things outside themselves. Rewarding children with stimulation can also serve this purpose. One of the key elements in the process of child development is stimulation. Children who receive directed and routine stimulation will grow and develop faster (Soetjningsih, 2012). In providing stimulation, parents or teachers must pay attention to the needs and stages of child development. This is something else to keep in mind. Children's motor development is important and urgent because it will affect their development in the future. Because a child's gross motor skills will affect daily activities, it is very important for someone to have strong gross motor skillst (Putri et al., 2021). Well-developed gross motor skills provide many benefits, namely giving children the ability to be able to master movements that are classified as movements that are difficult for other people to do (Humaedi et al., 2021).

Children's gross motor skills can be improved through a training process. Teachers can create various stimulation programs to improve these abilities. (Papalia & Feldman, 2010) suggested that it was the opportunity factor and the stimulus received by the child that caused the difference in motor skills between one child and another. Children who get the opportunity to practice and the right stimulation will certainly have better dexterity than children who do not have both of these things. This is in accordance with the proposed theory of behaviorism (Margaretha, 2020) stimulus-response relationship exists when a person receives a stimulus and then responds in a certain way. The underlying premise for learning basic motor movements is this. Stimulus-response connections are made when a child learns certain movements. The formation of a stimulus-response link that does not occur automatically is understood as a process of connection. Every connection that occurs is the result of the training or learning process of each individual. Motor bond refers to the relationship between a physical stimulus and response (Mahmud, 2019).

## **RESEARCH METHODS**

Scientific studies that focus on one subject are this research (literature review). A literature review will provide a broad overview of how a particular topic has developed. A researcher can identify theories or methods, develop theories or methods, and find gaps between theory and its application to a particular field of study through the use of a literature review (Rowley & Slack, 2004); (Alcelik et al., 2012). Conducting a literature review is tantamount to carrying out activities: 1) collecting data / information, 2) evaluating data, theory, information or research results, and 3) analyzing the results of published research

articles or others related to research questions that have been prepared previously. Literature Review is a research design by collecting data sources related to a topic (Lester et al., 2017).

Secondary data is used to complete this research information. Data that has been modified without the researcher's direct observation is known as secondary data. Instead, data is collected from the findings of previous research. Books and articles on basketball games and early childhood motor development are intended to use primary scientific reports as a secondary data source. This research tool utilizes technology in particular (Scopus and Google Scholar). The documentation method was used in this study to collect data. The documentation method is a way of collecting data by reading literature to obtain data related to the formulation of the problem (Arikunto, 2010). To provide answers to the problems that have been raised, data was collected from various literature and combined into one document. Research articles that meet the requirements are then collected, and a summary of the journal is made with the name of the researcher, year of publication of the journal, research design, objectives, instruments (such as measuring instruments), and a summary of findings. The summary of research journals is entered into a table and arranged alphabetically by journal, year of publication, and other criteria according to the format described above. Read and consider carefully the full text and abstract of the journal to provide further analysis. The summary of the journal is then analyzed for the contents contained in the research objectives and research results/findings. The analytical method used is journal content analysis.

## RESULT AND DISCUSSION

Literature analysis was conducted to understand how basketball helps children's motor skills grow. The critical assessment table is used to analyze the literature collected to meet the measurement objectives, and then a comparison of the measurement results is carried out. Ten different academic journals have written about early childhood motor development in the game of basketball. The review process is carried out on selected scientific articles based on keywords in (Scopus and Google Scholar) such as early childhood motor development and basketball games for early childhood, then these articles are analyzed using critical appraisal to see the core of the journal, review to find similarities and journal differences. Table of critical analysis of 17 journals can be seen below.

**Table 1. Journal Critical Analysis**

| No | Journal Author (Year) and Title                                                                                                       | Core Journal                                                                                                                                                                        | Study Results                                                                                                                                                                    | Similarities and differences                                                                                                                                                                                                                                  |
|----|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | (Afrouzeh et al., 2020)<br>Effect of Modified Equipment on The Acquisition of Motoric Task Performance Among Children of Low and High | Children's motor task learning. is a dimension of various challenges that must be overcome in order to improve task mastery. Acquisition of well-aligned complex motor tasks can be | The results of this study suggest that customizing learning experiences can benefit children's learning of motor skills in the long term, regardless of working memory capacity. | Equation: both discuss the benefits of playing basketball for children.<br>Difference: there is hands-on learning, where participants are tested for their performance in a basketball free throw test beforehand distributed randomly using a paired design. |

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|   | Working Memory Capacity: A Basketball-Based Experimental Study.                                                                | facilitated by enhancing equipment modifications unique student qualities.                                                                                                                                                   |                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                     |
| 2 | (Fotrousi et al., 2012) The compensatory impact of mini-basketball skills on the progress of fundamental movements in children | Investigating the impact of mini-basketball skill compensation on fundamental progress movement in children                                                                                                                  | Study shows that the basic skills of mini basketball have a considerable impact on the development of basic movements in children, who previously experienced delays in the movement | Equation: both discuss the benefits of playing basketball for children.<br>Difference: there is direct learning.                                                                                                                                                                                                                                                    |
| 3 | (Montella et al., 2019) Development of motor skills applied to basketball in the developmental age                             | Specific exercises are aimed at developing and consolidating These basic motor patterns then lead to increased performance in the sport of basketball which is not only athletic but also technical and tactical components. | This research helps to use the test administrative method for monitoring the correlation between training activities and performance.                                                | Equation: both discuss the benefits of playing basketball for children.<br>Difference: there is direct learning. This is done every two months taking into account the evolutionary phase of the athletes, their height and weight were monitored, in some cases there was an increase and then there is a decrease, while for others there is a constant increase. |
| 4 | (Tymoshenko et al., 2022) Developing Female Students' Motor Skills and Improving Basketball Playing Techniques by Means of     | Use of technical equipment to develop accuracy of ballistic movements, spatial-dynamic sensitivity during ball throws and rebounds, as well as qualities of speed and power                                                  | Experimental testing of the technology using exercise machines designed for the development of motor skills of girls' basketball students confirmed its effectiveness in             | Equation: both discuss the benefits of playing basketball for children.<br>Difference: there is direct learning. This was done with EG female students playing basketball in the conditions of a group physical education training session using                                                                                                                    |

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|   | Special Exercise Machines                                                                                                                                      | to improve jumping movements, application of quick breakthroughs, strong and long passes in basketball.                                                                                     | terms of increasing movement accuracy, spatial and dynamic speed and strength, as well as playing performance of basketball players at various levels of competition.      | the developed exercise machine, and CG female students engaging in basketball games according to the traditional program without using the developed exercise machine and having basic basketball techniques.                                                                                                                   |
| 5 | (George et al., 2016) Impact of Nintendo Wii Games on Physical Literacy in Children: Motor Skills, Physical Fitness, Activity Behaviors, and Knowledge         | Physical literacy is a fundamental level of fitness, behavior, knowledge and movement skills (agility, balance, and coordination) a child must confidently participate in physical activity | The results show it is significant improvement in gross motor development of children in terms of aiming and dexterity                                                     | Equation: both discuss the benefits of playing basketball for children.<br>Difference: there is direct learning. This was done. For six weeks the children played one of the four pre-selected AVGs (minimum 20 minutes, twice per week). Pre and post measures of motivation, enjoyment, and physical literacy were completed. |
| 6 | (Da et al., 2017) Improved children's motor learning of the basketball free shooting pattern by associating subjective error estimation and extrinsic feedback | Discusses the interaction between subjective error estimation and extrinsic feedback frequency in learning basketball free shooting patterns by children .                                  | The results demonstrate the benefits of estimating subjective error in relation to high-frequency extrinsic feedback in children's motor learning of motor sport patterns. | Equation: both discuss the benefits of playing basketball for children.<br>Difference: there is direct learning. This was done in 10 to 12 year olds assigned to 1 of 4 groups combining subjective estimation error and relative frequency of extrinsic feedback (33% × 100%)                                                  |
| 7 | (Abswoude et al., 2021) Behavioural Scienc Implicit motor learning in primary school children: A                                                               | To assess the current state of evidence and the methodological quality of studies of implicit and explicit motor learning in                                                                | Shows that implicit methods are as effective as explicit methods in improving FMS and sport skills.                                                                        | Equation: both discuss how to improve and develop children's Motor Skills<br>Difference: More focus on testing methods in learning.                                                                                                                                                                                             |

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|    | systematic review                                                                                                                      | developing children and children with developmental disorders.                                                                                                              |                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                  |
| 8  | (Bayazit, 2015)<br>The effects of basketball basic skills training on gross motor skills development of female children                | To determine the effect of basic basketball skills training on the development of children's gross motor skills                                                             | According to the data obtained in this study, basic basketball skills training has a positive effect on children's gross motor development                                                                                   | Equation: both discuss the benefits of playing basketball for children.<br>Difference: there is direct learning by doing locomotor, manipulative and balance exercises on the Basic Basketball Skills Test lasting 90 minutes a day, 2 days a week for 12 weeks. |
| 9  | (Moroianu & Dumitru, 2013)<br>The Influence of the Sporting Game (Basketball) on the General Education of Children Aged 9–11           | The main influence on the personality and behavior of children aged 9-11 years through sports game practice.                                                                | The game of basketball leaves a special imprint on the personality and will of children who are more efficient through initiative, cooperation and shared actions and goals.                                                 | Equation: both discuss the benefits of playing basketball for children.<br>Difference: More intensively discusses the influence of games on children's personality                                                                                               |
| 10 | (Newell & Rovegno, 2021)<br>Teaching Children's Motor Skills for Team Games Through Guided Discovery: How Constraints Enhance Learning | To examine the role of instructional strategies as constraints in a discovery learning framework for teaching open skill team ball games to elementary school-age children. | In this context of open skills and primary school age, generality and specificity are both necessary and complementary in the expression of the influence of tasks, skills, and practices on learning and motor performance. | Equation: both discuss children's motor performance.<br>Difference: no specific discussion of basketball.                                                                                                                                                        |
| 11 | (Wang et al., 2022)<br>The Effect of Physical Exercise on Fundamental Movement                                                         | Provide methods for solving the problem of how to organize physical exercise and what types of physical exercise programs                                                   | Those who use existing school sports facilities (eg, football, basketball) or even no sports equipment (in                                                                                                                   | Equation: both discuss children's motor skills<br>Difference: There is no discussion of the game of basketball in detail.<br>However, it is more dominant to discuss the                                                                                         |

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|    | Skills and Physical Fitness among Preschool Children: Study Protocol for a Cluster-Randomized Controlled Trial       | can better improve FMS and PF in preschool children.”                                                                                                                    | rhythm activities) to arouse children's interest in learning and practice motor skills and increase their PF level, without burdening parents and teacher too much.                                                                                                            | effectiveness of programs to improve FMS and PF in preschool children                                                                                                                         |
| 12 | (DiFiori et al., 2018) The NBA and Youth Basketball: Recommendations for Promoting a Healthy and Positive Experience | Participation in sport offers both short and long term physical and psychosocial benefits for children and youth.                                                        | Basketball, both competitive and recreational, is a sport that has many positive attributes with regard to health and well-being. Because of the positive psychosocial interaction, it is considered a fun game to play. Thus providing benefits that continue into adulthood. | Similarities: both discuss the game of basketball and its benefits.<br>Differences: focus on expressing the benefits of playing basketball as a whole. Ranging from health to social aspects. |
| 13 | (Lazarraga, 2023) Learning by analogy in young basketball players                                                    | To analyze whether learning by analogy produces effects on motor performance and actions .                                                                               | Learning by analogy places a lower load on working memory resources, due to a reduction in the volume of verbal information being processed.                                                                                                                                   | Similarities: both discuss the game of basketball and its benefits<br>Differences: focus on expressing the benefits of learning using analogies in basketball games on motor performance      |
| 14 | (C. Lola & C. Tzetzis, 2021) The Development of Motor and Perceptual Skills in Young Athletes                        | The role of a trainer in realizing interesting learning and exercises for young athletes so that they are always motivated to practice which in the end is successful in | It was concluded that external focus of attention has different effects at different stages of learning, or at different skill levels, whereas task complexity moderates this                                                                                                  | Equation: both discuss motor movement skills<br>Difference: There is no discussion of basketball in detail.                                                                                   |



|    |                                                                                                                                         | improving their movement skills                                                                                                                       | effect.                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                              |
|----|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15 | (Eskandarnejad et al., 2015)<br>The Effect of Basketball Training on ADHD Children's Learning Skills                                    | Effects of teaching 12 sessions of basketball passing skills on children's passing learning skills                                                    | Research result showed that there was a significant difference between the pretest and posttest scores ( $p \leq 0$ ). investigate the benefits of combining mental and physical training in learning complex motor skills in basketball. | Similarities: both discuss motor movement skills and the game of basketball<br>Difference: combines mental and physical training in learning Motor skills in basketball                                                                                                                                                                                      |
| 16 | (Dapp et al., 2021) Physical activity and motor skills in children: A differentiated approach                                           | P the importance of optimally encouraging motor skill proficiency                                                                                     | In conclusion, regularly engaging in structured PA is a promising way to improve motor skills and support long-term motor development .                                                                                                   | Equation: both discuss motor movement skills<br>Difference: There is no discussion of basketball in detail.                                                                                                                                                                                                                                                  |
| 17 | (Supriyadi, 2021) Mini Basketball Game Model To Improve Social Skill, Motoric Skill, And Physical Fitness Of Elementary School Students | A valid, practical, and effective basketball game model for improving social skills, motor skills, and physical fitness of elementary school students | It can be said that the game "Mini Basketball" helps elementary school students develop social skills, motor skills, and physical fitness .                                                                                               | Equation: both discuss the benefits of playing basketball for children.<br>Difference: there is a discussion that contains infrastructure, game rules and refereeing, as well as the following stages of activity: 1) Value transformation, 2) Playing with games model addition, 3) Mini basketball game, 4) Self-assessment, 5) Action review and rewards. |

Based on the review above, the objectives and results of the research were developed and divided into two groups, including the following: The effectiveness and improvement of basketball playing skills on gross motor skills of children aged 5-6 years: In the first group, there were three articles discussing about the effectiveness of modified basketball games on

motor skills of early childhood (Reswari, 2021), gross motor skills through a modified game of basketball (Pradaya et al., 2020), and the development of gross motor basketball game guidebooks for early childhood (Pratiwi & Maulidiah, 2022). The first article aims to determine the effectiveness of modified basketball games on gross motor skills of early childhood and the results of his research show a) The importance of a planned and structured program requires a child's movement learning that is able to facilitate and stimulate children's basic movement skills and is able to provide fun, participation and satisfaction for children, (b) The positive impact of the effectiveness of modified basketball games, children's gross motor skills will increase and develop, because this game uses techniques of throwing, catching, walking, running, and jumping which are the basic movements of children. The second article aims to find out the results of increasing children's gross motor skills through playing basketball modifications in early childhood and the results of the research show a) Implementation of modified basketball games, namely children feel happy and look very enthusiastic following directions from the teacher and b) The positive response given The environment for children is able to give positive perceptions to children so that children want to do directed physical activity with confidence. The third article aims to describe product development in the form of a basketball game guidebook for gross motor skills of early childhood and the results of the research show a) The implemented guidebook is proven to be useful for teachers in the process of gross motor learning, and b) Children seem to move more actively , the child's agility increased from the first day of treatment and the child felt happy when playing basketball.

Improving gross motor skills of early childhood through basketball games in group B2: In the second group, there are two articles discussing modified basketball games on gross abilities of early childhood in group B2 (Wati, 2014), and improving children's gross motor skills through basketball games in group B2 (Ernawati et al., 2021). The first article aims to find out whether there is an effect of modification of basketball games on the gross motor skills of group B2 before and after being given modifications, and the results of his research show that there is an increase in basketball games through modified games with increased ability to catch the ball, carry (dribble), and enter the ball. into the rings. The second article aims to improve the gross motor skills of group B2 children through playing basketball, and the results of his research show that basketball can improve the gross motor skills of group B children. This is indicated by an increase in tiptoe walking, the ability to jump on two feet, the ability to throw a ball well, the ability to catch the ball, and the ability to put the ball into the basket.

The purpose of this article is to improve the motor skills of young children in playing basketball in the learning process in Indonesia. This research is only based on articles published in Indonesia. This article review is based on five categories, namely (i) Author and year, (ii) Method and type of research, (iii) Content (content), (iv) Research objectives, and (v) Research results. The country category is not shown because this article only takes and focuses on several countries. The discussion in this article is divided into two groups, namely the effectiveness and improvement of the ability of playing basketball on gross motor skills of early childhood and improving gross motor skills of early childhood through playing basketball in group B2. From the explanation above, it can be seen that increasing the ability to play basketball through early childhood motor skills shows a significant increase in the way children learn so that there is a need for a planned and structured program that requires a child's movement learning that is able to facilitate and stimulate children's basic movement skills and able to provide pleasure, participation and satisfaction for children.

## CONCLUSION

Given that the process of early childhood motor development through playing basketball has been explained in several significant ways in the research above, it can be concluded that students' motor skills through playing basketball confirm their effectiveness in terms of increasing movement accuracy, speed, and spatial strength and dynamic, as well as the performance of basketball players in competitions at various levels. In addition, the basic movements and abilities of mini basketball have a significant impact on the development of basic movements in children who previously experienced movement delays at the level of fitness, behavior, knowledge and basic skills, which include agility, balance and coordination.

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