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ANALYSIS OF GROSS MOTOR SKILLS IN EARLY CHILDHOOD THROUGH EDUCATIONAL LEARNING

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ABSTRACT

Gross motor skills are essential to develop from an early age as they support children's coordination, health, and overall development. Proper stimulation through play and educational learning effectively enhances motor abilities and prevents developmental delays. This study aims to analyze and explain the effectiveness of educational learning in optimally developing gross motor skills in early childhood. The research used a qualitative case study method with data collection techniques including interviews, observations, and documentation, while data validity was ensured through triangulation. The results show that the "Senam Sehat Anak Indonesia" activity trains the ability to lift hands and feet, move the head flexibly, and stretch the body. Prayer (Sholat) develops hand, head, and body movements, as well as muscle strength to support body weight. Ablution (Wudhu') strengthens the back and hands through the act of opening taps and washing the body. Activities like beading, letter sequencing, and coloring improve balance, hand endurance, and finger-wrist flexibility through coordinated movements. Conclusion: Educational learning can stimulate various forms of gross motor skills in early childhood.

Keywords*: Gross Motor Skills, Early Childhood, Learning, Educational*

A. INTRODUCTION

Gross motor movement refers to the ability that involves overall body coordination and requires more energy due to the use of large muscles in its execution (Desiana & Khan, 2022). Gross motor skills are important to develop in early childhood education because they are equally essential as other developmental aspects and require the active role of educators in training and supporting them within early childhood education institutions (Ningrum et al., 2023). Children's gross motor aspects need attention due to the increasing rates of obesity in early childhood, caused by a lack of physical activity, thus requiring activities that optimally stimulate children's movements (Multahada et al., 2022).

Children must receive appropriate stimulation in every developmental aspect, particularly gross motor skills such as walking, running, and throwing, as disruptions in these areas can affect other developmental domains and the achievement of developmental tasks (Mahmud, 2018). Gross motor stimulation influences physical education, with research showing the importance of targeted and quality stimulation through physical education or other activities to enhance children's motor development (Zulnadila et al., 2024). The development of children's gross motor skills aims to train body movement, improve coordination and control, and support physical abilities and the formation of healthy lifestyle habits (Dianti & Nursafitri, 2024).

Play activities involving physical movement are crucial for early childhood as they support motor development, promote health, and serve as a foundation for more complex physical activities in the future (Agustina et al., 2022). Since birth, gross motor delays can be caused by accidents, limited play opportunities, being carried too often, overindulgence, or lack of focus during foot-dominant activities (Awaliyah, 2022). The socio-ecological correlation of fundamental motor skills (FMS) in early childhood is multidimensional and complex, varying based on skill type and factors related to the child, family, and environment; longitudinal studies are needed to better understand the direction of these relationships (Zeng et al., 2019).

Children's gross motor skills in shuttle run and ball bounce games have improved; in the first cycle, the average achievement was only 41%, which did not meet the success indicator of 75%, but in the second cycle, it increased to 87% and met the success criteria (Atiq et al., 2021). Game-based learning models are suitable for early childhood education institutions as they can stimulate gross motor skills through jump training while providing meaningful learning experiences (Widayati et al., 2023). Gross motor skills in early childhood can also be enhanced through rubber rope jumping games, with indicators such as balance, body strength, and agility during play (Suirah et al., 2024).

Research by Farida and Yanti (2023) shows that the use of educational play tools such as stringing beads is effective in improving children's coordination and fine motor skills, as structured physical activities have been proven to support optimal motor development in early childhood (Farida & Yanti, 2023). Furthermore, research by Candra and colleagues (2023) indicates that physical education plays a vital role in developing gross motor skills in early childhood and also significantly impacts cognitive, social, and emotional development in a holistic and balanced manner (Candra et al., 2023). Additionally, research by Septiani and colleagues (2019) reveals that art creativity effectively enhances gross motor development in children aged 5–6 years, shown by a 21.94% increase from the initial score of 61.15% after interventions (Septiani et al., 2019).

Based on the aforementioned studies, this research aims to fill the gap by specifically analyzing various forms of gross motor skills in educational learning

and broadening the approach to be more holistic and integrated, thereby providing useful insights for proper learning planning in early childhood education. The purpose of this research is to analyze forms of gross motor skills in early childhood educational learning and to explain the effectiveness of educational approaches in optimally developing gross motor abilities.

This research is expected to provide practical contributions for early childhood educators in understanding the various forms of gross motor development through educational learning. As a result, teachers can design more targeted, enjoyable, and developmentally appropriate learning activities. This study also encourages the use of educational approaches to enhance children's physical development. The research outcomes will be in the form of a descriptive overview and mapping of relevant gross motor skill forms as a practical guide for planning learning activities within early childhood education settings.

B. RESEARCH METHOD

This study, titled *Analysis of Gross Motor Skills in Early Childhood through Educational Learning at Kelompok Bermain Nur Masithah*, employs a qualitative method using a case study approach to analyze gross motor forms in-depth. The research was conducted at Kelompok Bermain Nur Masithah through observation, interviews, and documentation, as outlined in the table below:

Table 1. Research Grid

Educational Learning	Interview	Observation	Documentation
Indonesian Children's Health Exercise	What kinds of exercise movements do the children usually perform? Are they enthusiastic during the session?	Observing hand, foot, and head movements during exercise.	Photos and videos of educational learning
Prayer (Sholat)	How do the children respond when invited to pray? Can they follow the movements correctly?	Observing bowing, prostration, standing, and sitting movements.	
Ablution (Wudhu)	Can the children perform ablution independently? How do they open the tap and wash themselves?	Observing children washing their hands, feet, face, and turning taps on/off.	
Bead Stringing (Meronce)	Do the children find it difficult to string beads? How do teachers guide them during this activity?	Observing how children hold the string, insert beads, and maintain body posture while sitting upright.	

Letter Sequencing	How do teachers introduce letters to the children? Are they actively engaged in the activity?	Observing hand movements while arranging letters and their movement between stations.
Coloring	Can the children hold crayons or colored pencils properly? How long can they focus while coloring?	Observing hand pressure, sitting posture, and hand movements during coloring.

Data analysis was conducted in three stages: Data Condensation, this involves summarizing, selecting, focusing, and simplifying data collected from interviews, observations, and documentation. In this study, data from various educational activities such as healthy exercises, prayer, ablution, bead stringing, letter sequencing, and coloring were gathered and simplified to focus on aspects of children's gross motor skills. Data Display, data were presented systematically, such as in a table (e.g., Table 2 in the research findings), which organizes the forms of educational activities, interview questions, observation focus, and supporting documentation. This format helps researchers identify patterns in the development of children's gross motor skills more clearly. Conclusion Drawing, conclusions were drawn based on the findings obtained. These conclusions describe the types of gross motor skills displayed by early childhood children during educational activities and how these activities support their development.

To ensure data validity, triangulation techniques were applied: Source Triangulation, this involved interviewing three different teacher informants to obtain varied yet complementary perspectives on children's behaviors and gross motor abilities. Technique Triangulation, this combined data from interviews, observations, and documentation. For instance, if a child appeared enthusiastic and active during exercise, this was confirmed not only through the teacher's statement (interview), but also by direct observation of their movements (observation), and further supported by photographic or video evidence (documentation).

C. RESULTS AND DISCUSSION

Table 2. Research Findings

Educational Activities	Gross Motor Skills Developed
Indonesian Children's Healthy Gymnastics	Ability to move/lift arms and legs, move the head flexibly, and move the body
Prayer (Sholat)	Ability to move arms, body, head; arm endurance to support body weight; leg endurance when bearing body weight; and finger movement
Ablution (Wudhu)	Back strength to support the body; hand movement to touch the head and feet; arm strength in turning on a water faucet
Stringing Beads	Hand endurance and balance (holding string

	weight), body balance (sitting upright), and finger movements
Arranging Letters	Smooth hand movement
Coloring	Hand and finger endurance (pencil pressure)

Based on Table 2, the research findings on the Analysis of Gross Motor Skill Development in Early Childhood through Educational Activities at Nur Masithah Playgroup are described as follows:

1. Indonesian Children's Healthy Gymnastics

Figure 1. Gymnastics Movements
Source: Documentation of KB Nur – Masithah

Through gymnastics movements, children learn to lift their arms and legs, move their heads in a coordinated manner, and move their bodies with balance. This activity trains large muscle strength, enhances agility, balance, and physical endurance. Gymnastics also helps children become more active, healthier, and better able to control their body movements. The indicator of successful gross motor development includes children being able to raise their hands, swing their legs, rotate their bodies and heads, and jump enthusiastically to the rhythm of the music. The "Smart Basket" game, combining physical activity and number recognition, has been proven effective in enhancing gross motor development based on documentation, interviews, and observations (Rohfirsta & Zulfahmi, 2024). Simple outbound activities have also shown significant effectiveness in improving gross motor skills and confidence in children aged 5–6 years (Pangestu et al., 2024). Similarly, children's outbound games have significantly improved gross motor skills before and after intervention (Lita et al., 2023).

2. Prayer

Figure 2. Prayer Movements
Source: Documentation of KB Nur – Masithah

Prayer movements train large muscles through standing, bowing, prostrating, and sitting positions. Children get used to supporting body weight with their hands and feet, and moving the body in a structured way that builds balance, flexibility, and physical strength, especially in the hands, legs, back, and neck. An indicator of successful gross motor development is the child's ability to move their body, arms, and legs well, although some may still struggle with balance during bowing or prostrating due to insufficient arm strength. Improvements in gross motor competence from childhood to early adulthood are positively associated with physical fitness, particularly body strength and balance ability (Utesch et al., 2019). Structured educational curricula, ongoing teacher training, and school-family collaboration are essential for effective learning, with long-term impacts and technological integration needing further exploration (Hasanah & Aziz, 2024). Educational models using outdoor play-based approaches are innovative tools to enhance gross motor skills (Waffak et al., 2024).

3. Ablution

Figure 3. Ablution Movements
Source: Documentation of KB Nur – Masithah

During ablution, children perform movements such as bending over, lifting their arms, washing their faces and feet, and turning on the faucet. These actions train back strength, hand coordination, and upper body flexibility. Children also learn to execute sequential movements while maintaining stable posture. Success indicators include the ability to raise and move hands effectively for washing, from hands and face to head and feet. Additionally, children are able to use their hand muscles optimally to open a stiff faucet. Ablution movements bending, raising hands, washing can improve motor competence, including hand-eye coordination and body flexibility, which positively relate to children's self-esteem (Lopes et al., 2022). Repetitive activities like ablution contribute to improved coordination and upper body flexibility, supporting overall motor development (Menescardi et al., 2022). The sequential motions in ablution also train children's motor skills and physical activity, which support the development of executive functions through structured movement and posture control from an early age (Gamagitta et al., 2023).

4. Stringing Beads

Figure 4. Beading Movements
Source: Documentation of KB Nur – Masithah

Although categorized as fine motor skills, beading also involves hand endurance and body balance. Children maintain a stable seated posture, grip strings firmly with fingers and hands, and sustain concentration while moving. This activity indirectly strengthens arm muscles and sitting posture. Indicators

of successful gross motor development include the child's ability to move their hands and fingers well enough to hold beads without dropping them. Additionally, they can maintain their seated posture fairly well. Well-designed intervention programs significantly improve fundamental motor skills in typically developing children, including gross motor development in early childhood (Zhang et al., 2024). The relationship between physical activity and motor skills positively correlates with the development of children's gross motor abilities (Jones et al., 2021).

5. Arranging Letters

Figure 5. Arranging Letters Movements
Source: Documentation of KB Nur – Masithah

Arranging letters primarily involves fine motor skills, but when done while standing or moving, it helps children practice flexible hand movements. They also improve hand-eye coordination when transferring letters. These light movements may minimally engage arm and shoulder muscles. Success indicators include children being able to move their hands quickly and accurately when arranging letters. Executive function and gross motor skills in children aged 8–10 are essential for cognitive development support (Fathirezaie et al., 2022). Multiple factors influence gross motor development from birth to independent walking, including physical activity (Boonzaaijer et al., 2021). Activities like play, sports, and gym programs are designed to enhance coordination, muscle strength, and other gross motor skills (Faizah et al., 2024).

6. Coloring

Figure 6. Coloring Movements
Source: Documentation of KB Nur – Masithah

Coloring trains hand muscles to press and control pencil movement. Although focusing on fine motor skills, this activity can strengthen the arms when performed for extended periods. Indicators of successful gross motor development include the child's ability to move their hand following the image outline, using arm muscles to press the pencil and fingers to hold it properly. This indicates that the child's hand muscles function well and align with their developmental stage. Pen grip kinetics during writing tasks in school-aged children significantly correlate with fine motor performance, especially manual dexterity (Lin et al., 2017). Coloring activities significantly improve children's motor skills, including gripping and controlling writing tools (Fitrianingsih & Sari, 2019). Through coloring, children learn to control small muscles in their hands, which are crucial for skills such as writing and drawing (Jannah, 2022).

D. CONCLUSION

Educational learning effectively enhances the overall development of gross motor skills in accordance with early childhood developmental stages. Key points in motor skill development during childhood are reflected in parameters such as gait patterns, where specific physical activities can influence gross motor development in children (Wang et al., 2023). The contribution of motor skill development and physical activity to the development of executive functions in early childhood can improve both gross motor skills and children's cognitive functions (Willoughby & Hudson, 2023). The analysis of gross motor skill forms in early childhood at the Nur Masithah Playgroup shows that various educational activities can train large muscle strength and movement coordination. Healthy gymnastics exercises train balance, agility, and physical strength through coordinated hand, foot, and head movements. Prayer movements, such as standing, bowing, and prostrating, help strengthen leg, hand, and back muscles, although some children still struggle with balance. During ablution, children develop back strength and hand coordination through actions such as turning the faucet and washing body parts. Although classified as fine motor skills, activities such as beading, arranging letters, and coloring also support gross motor skills by

improving seated posture stability, finger and arm strength, and hand-eye coordination. Indicators of success in each activity are reflected in the children's ability to move body parts accurately and enthusiastically.

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AUTHOR CONTRIBUTIONS

Author1	:	Designed the topic, formulated the research problem, conducted field observations and interviews, and wrote the introduction and research objectives
Author 2	:	Conducted literature review, developed the theoretical framework, designed research instruments, and supported data validation using accurate triangulation techniques
Author 3	:	Analyzed qualitative data, drafted the findings and discussion, and systematically connected results to relevant theories.
Author 4	:	Composed the conclusion, revised the manuscript, edited the language, and ensured the scientific work's formatting and structure complied with standards.

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