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AN ANALYSIS OF GROSS MOTOR SKILLS IN FIVE-YEAR-OLD CHILDREN

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Abstract
This study aims to determine the level of gross motor development in five-year-old children at KB-TK Islam Al-Azhar 14 Semarang. The research employed a quantitative method with a survey approach and utilized the Test of Gross Motor Development–3 (TGMD-3) as the instrument to assess locomotor and object control skills. A total of 23 children participated in the study. Descriptive analysis showed that 1 child (4.3%) was in the very superior category, 10 children (43.5%) in the superior category, 7 children (30.4%) above average, 4 children (17.4%) average, and 1 child (4.3%) below average, with a mean Gross Motor Index (GMI) score of 141.35. These findings indicate that most children were in the above average to superior categories, reflecting a supportive learning environment and structured physical activities. However, the presence of a child in the below average category highlights the importance of early detection and appropriate interventions to support optimal gross motor development.

Keywords: *Gross Motor Development, Early Childhood, TGMD-3, Physical Activity, Early Detection*

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INTRODUCTION

Early childhood refers to the period when a child is between the ages of 0 and 6 years, during which they undergo rapid physical and mental development. The capital of intelligence in children who have developed is the formation of brain nerve cells. (Sulistyaningtyyas & Fauziah, 2019). An important aspect of early childhood development is gross motor, which includes physical abilities such as running, walking, jumping, and other physical activities. In this process, it not only includes an increase in body size or motor skills, but also cognitive, social, and emotional development which plays a major role in further education and character building. Therefore, proper stimulation and a supportive environment are essential to support the growth of a child's potential during this period.

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Gross motor development is an important part of early childhood growth. Gross motor involves physical activities that move large muscles, such as leg and arm muscles, as well as coordination systems in the body such as balance and agility. These abilities are important for advanced movement skills, which will later be used for sports and daily physical activities. Research by Hidayat (2023) shows that children tho have good gross motor skills tend to be more physically active and have greater confidence in participating in sports activities. This suggests that gross motor development at an early age contributes to a healthy and active lifestyle in the future.

In the scope of sports, gross motor development in early childhood not only contributes to physical aspects, but also has an impact on children's cognitive, emotional and social development. Children with good gross motor skills will generally be more active, confident, and have a better mentality in facing physical and social challenges. Conversely, if a child has delays or obstacles in gross motor development, it can interfere with the learning process, social interaction, and have an impact on long-term physical health, including the risk of posture disorders or obesity.

Based on observations made at Al-Azhar 14 Islamic Kindergarten in Semarang, it was observed that children showed variations in their gross motor skills. Some children demonstrated strong abilities in physical activities like running, jumping, and playing with a ball, whereas others struggled with these fundamental movements. Observations also showed that learning activities involving structured physical play, such as group games and outdoor activities, were of great interest to the children and could increase their participation. However, there were some children who did not actively participate, which may be due to lack of motivation or not understanding the instructions given. In addition, social interaction between children during physical activities was also seen to have a positive effect on their gross motor development. Children who were more active in interacting tended to show better progress in gross motor skills compared to those who were more likely to play alone. Thus, a systematic analysis of the gross motor

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conditions of children at Al-Azhar 14 Semarang Islamic Kindergarten is essential to design a more targeted basic movement development program. The data obtained from this observation can be used to identify children's specific needs and design more suitable activities to effectively improve their gross motor skills.

Today, many children exhibit low levels of physical activity due to lifestyle changes and increased use of digital devices. This phenomenon poses a challenge in the world of sport, especially in trying to increase physical activity through an educational approach from an early age. Therefore, this study is highly relevant to explore children's gross motor conditions in the context of early formal education. A study conducted in Indonesia by Pratama & Naufal (2024) showed a moderately strong negative correlation ($r = -0.546$; $p < 0.05$) between screen time and gross motor skills in children aged 2–3 years, indicating that the more time children spend in front of screens, the lower their gross motor skill scores tend to be. Meanwhile, several national studies on physical activity have demonstrated that structured movement programs—such as hula hoop games, joyful gymnastics, or outbound play—significantly enhance the gross motor development of preschool-aged children. For instance, research by Kiranti & Sit (2025) reported that the use of hula hoop activities increased gross motor skill scores from 62% in the first cycle to 86% in the second. Similarly, Julian et al. (2024) found that a combination of movement and song activities conducted every Tuesday to Thursday at TK Negeri Pembina in Serang City effectively stimulated flexibility, coordination, and movement precision. Another study published in Jurnal Obsesi by Purwanto & Baan (2022) concluded that a structured physical education program significantly improved arm and leg coordination in preschool-aged children compared to a control group that only engaged in free play.Given this context, the purpose of this study is to assess and analyze the state of gross motor skills among children at Al-Azhar 14 Semarang Islamic Kindergarten. The findings are anticipated to aid in the creation of a more effective model for teaching basic movement skills and serve as a foundation for designing physical activity programs that enhance children's motor development from an early age. This research aims to offer valuable insights into the significance

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of gross motor development as a crucial component of early childhood education and to provide recommendations for educators and parents in fostering an environment that promotes both the physical and mental growth of children.

METHOD

This research employs a quantitative methodology with a survey approach, utilizing testing as the primary data collection technique. The main focus is on assessing the gross motor skills of young children at KB-TK Islam Al-Azhar 14 Semarang. The study will include five-year-old children enrolled at the institution. It is planned to be conducted in July 2025, aiming to analyze and describe the state of gross motor development among children within a formal educational setting.

This study uses quantitative descriptive analysis techniques to process data from the TGMD-3 test results. The initial stage of analysis involved converting raw scores into standardized scores, percentiles, and age equivalents according to the norms set out in Ulrich's TGMD-3 (2019). This conversion process involved transforming the raw scores for each locomotor subtest and object or ball manipulation into standardized scores, then further converting them into percentiles and gross motor development quotients.

The data was then categorized based on the TGMD-3 scoring standards to determine the level of students' gross motor abilities. Descriptive statistical analysis included calculations of minimum, maximum, mean, median, mode, and standard deviation scores conducted using IBM SPSS Statistics 25 to ensure accuracy of calculations. The results of the analysis were presented comprehensively in the form of frequency distribution tables and histograms to visualize the distribution of data.

Furthermore, the processed data were interpreted to obtain a description of the characteristics of students' gross motor development. This analysis process aims to answer the research question comprehensively about the level of gross motor skills of students at Al-Azhar Islamic Kindergarten. The final results of the study were used to draw conclusions supported by valid and reliable statistical evidence in accordance with the TGMD-3 test standards.

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RESULT AND DISCUSSION

The results of this study describe the level of gross motor development in 23 5-year-old children at Al-Azhar Islamic Kindergarten 14 Semarang based on the Gross Motor Index (GMI) score from the TGMD-3 test as follows:

Table 1. Deskriptive Statistic

	N	Minimum	Maximum	Sum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
GMI	23	123	149	3251	141.35	1.101	5.280
Valid N (listwise)	23						

Based on the table above with descriptive statistical analysis, the average value (mean) is 141.35, with a minimum value of 123 and a maximum value of 149. The standard deviation of 5.280 indicates that the spread of values is relatively low and close to the average. The median and mode values are both 141, which indicates a fairly symmetrical and consistent data distribution.

The frequency distribution shows that the most frequently occurring GMI scores were 141 and 144, each obtained by 7 children (30.4%). These scores are in the "Above average" and "Excellent" categories according to the TGMD-3 standard classification. One child scored 123, and another scored 149, both of which fell into the "Very Excellent category. Meanwhile, there were two children with a score of 135 and two children with a score of 138, which was slightly lower than the group average, but still in the good normal development category.

This finding indicates that most of the children in this study had strong gross motor skills, with more than 95% of respondents in the "Average" to "Very Excellent" category. These results are in line with previous research which states that structured physical activities and play-based learning play an important role in supporting early childhood motor development (Pate et al., 2006, Hidayat, 2023), In addition, the symmetrical distribution of scores with a low standard deviation

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indicates that the gross motor development of students in this school takes place relatively evenly and uniformly.

A factor that may support this positive outcome is the implementation of active, movement-based learning activities at Al-Azhar Islamic Kindergarten 14 Semarang. Previous observations suggest that group physical activity, outdoor play and social interaction have a positive influence on children's engagement and motor performance. Children who are more socially active and engaged in physical activities tend to show higher GMI scores.

However, the finding of some children with lower GMI scores, although still within the normal range, suggests the importance of continuous monitoring. Additional interventions or individualized approaches are needed to help these children improve their optimal movement ability and build confidence in physical activity.

Discussion

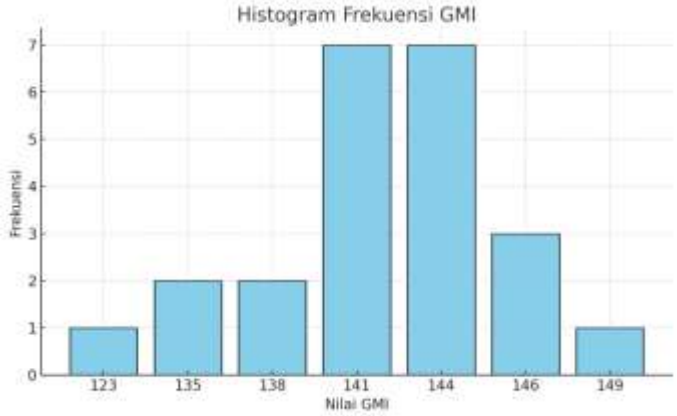

Figure 1. GMI Frequency Histogram

Based on the bar chart showing the distribution of Gross Motor Quotient (GMI) scores from 23 five-year-old children at KB-TK Islam Al-Azhar 14 Semarang, it can be observed that the majority of children scored between 141 and 144. These two values had the highest frequency, each achieved by 7 children or approximately 30.4% of the total respondents. This was followed by a score of 146 recorded by 3 children (13%), while scores of 135 and 138 were each achieved by 2 children (8.7%). The lowest score, 123, and the highest score, 149, were each

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recorded by only 1 child (4.3%). The mean GMI score was 141.35, with a median of 141 and a standard deviation of 5.280, indicating a relatively small and symmetrical spread of data around the average. With most GMI scores falling within the 141–144 range, it can be concluded that the majority of children demonstrated gross motor development in the good to very good category. This suggests that the school environment and physical activity programs have effectively supported the children's motor development.

These findings indicate that the children generally exhibited well-developed gross motor skills such as running, jumping, balancing, and performing basic movements that are essential for daily activities and school readiness. The high GMI scores achieved by most participants may be attributed to structured physical activities regularly conducted at the kindergarten, such as morning exercise routines, movement and song games, and outdoor play sessions, all of which help stimulate motor development in a consistent and age-appropriate manner.

This result is consistent with the findings of Julian et al. (2024), who reported that regular movement and song activities in early childhood education significantly improved children's coordination, flexibility, and movement accuracy. Similarly, Kiranti and Sit (2025) found that implementing a hula hoop game intervention led to a notable increase in gross motor skill scores among preschoolers. Furthermore, Pratama and Naufal (2024) emphasized that children with excessive screen time tend to show lower levels of gross motor development, highlighting the importance of balancing screen-based activities with active play. These findings reinforce the idea that consistent, guided, and enjoyable physical activities play a crucial role in enhancing gross motor skills.

Gross motor development in early childhood is not only important for physical growth but also plays a key role in supporting cognitive, emotional, and social development. Movement activities help improve brain function, spatial awareness, self-regulation, and attention span all of which are vital for academic success and personal confidence. Various factors influence gross motor development, including the child's health and nutrition, opportunities for

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movement, environmental safety, the role of educators and caregivers, and the level of parental involvement.

CONCLUSION

Most five-year-old children at KB-TK Islam Al-Azhar 14 Semarang demonstrated good to excellent gross motor development based on TGMD-3 results. This outcome was supported by structured physical activities and a supportive learning environment. This study was limited by a small sample size and single-school scope. Future research should involve larger, more diverse samples and explore other aspects of child development for more comprehensive insights.

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