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Optimizing Early Childhood Motor Development through the Integration of Gymnastics Activities into the Learning Process

[1]Asiah*, [1]Resti Pujiyanti, [1]Siti A'isah, [1]Rihatul Jannah

Affiliations:
[1]Syekh Manshur College of Teacher Training and Education, Pandeglang, Banten, Indonesia
*Correspondence: asiahbst@gmail.com

ABSTRACT

Motor development is a crucial component of early childhood growth that affects children's physical, cognitive, and socio-emotional abilities. As a form of well-planned physical activity, gymnastics can help enhance children's motor skills, particularly gross motor skills. This research focuses on how gymnastics can support the motor development of young children. Gymnastics, when carried out in a fun and active manner, not only trains body strength and coordination but also improves children's focus, discipline, and self-confidence. This study was conducted through participatory observation using a descriptive qualitative approach. The results indicate that improvements in gross motor skills can be achieved through gymnastics, which is performed regularly, systematically, and according to the child's developmental stage. Therefore, gymnastics should be incorporated into the daily curriculum and integrated with play and learning activities by early childhood educators.

Keywords
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Introduction

According to Arifudin et al. [1], newly born children who have not yet reached the age of six are referred to as early childhood. This age is a crucial period for shaping a child's character

and personality; it is a time when children experience rapid growth and development, often called the golden age. Therefore, learning activities for children at this stage must always focus on their needs. Early childhood requires education that optimizes all aspects of their development, including intellectual, language, motor, and socio-emotional abilities [2]. This means that early childhood refers to children aged 0–6 years who undergo rapid growth and development, thus requiring stimulation to optimize all aspects of their development by adjusting learning activities according to their needs.

Early childhood development is a crucial foundation for a child's future life. One of the key areas that requires serious attention is motor development. According to Damayanti et al. [3], early childhood can optimize every aspect of their development, including physical and motor development. In other words, motor skills emerge alongside physical maturity and control over body movements. When a child's physical condition develops well, they can independently explore their environment and enhance their physical abilities without relying on others.

This indicates that physical development is reflected in the growth of both gross and fine motor skills in children. Gross motor development involves a child's ability to control large muscle movements, such as running, jumping, and kicking. Meanwhile, fine motor development refers to a child's ability to control small muscle movements, such as writing, drawing, and squeezing, which require good hand-eye coordination. However, the development of gross motor skills is not always balanced with cognitive or academic aspects in early childhood education. The urgency of this issue is increasingly evident as many young children experience delays in motor development due to a lack of physical activity at home and insufficient physical stimulation at school. Since physical development is closely related to a child's ability to concentrate, socialize, and regulate emotions, empirical data show that learning activities with limited movement can hinder children's overall readiness to learn.

Gymnastics activities, particularly rhythmic and creative gymnastics, are enjoyable, structured forms of physical activity that are easy to integrate into children's learning activities. Gymnastics trains physical strength and body coordination and enhances children's self-confidence and social skills in interacting with their environment. In early childhood education, gymnastics holds great potential as a learning method combining movement, music, and play [4]. However, not all early childhood education institutions can optimally integrate gymnastics activities into their daily curriculum. Many teachers still perceive gymnastics as a supplementary or leisure activity, rather than an essential part of a systematic learning process. Rhythmic gymnastics designed according to children's developmental stages can significantly positively impact the gross motor skills of early childhood [4].

Therefore, it is important to explore how gymnastics activities can be effectively integrated into the learning process in early childhood education in order to support

comprehensive and sustainable motor development. This effort is highly relevant in addressing the need for an educational approach that focuses on cognitive abilities and balances children's physical, emotional, and social growth.

According to Gesell's theory of motor development, a child's motor skills are one of the key aspects that develop alongside age and the stimulation provided. This theory suggests that a child's physical development follows a predictable pattern and occurs gradually through the maturation of the nervous system and body organs. However, the theory also emphasizes the importance of motivating activities to influence environmental factors. Gymnastics is one form of stimulation that has been proven effective. In group learning settings, gymnastics enhances physical strength and coordination and supports social and emotional development. In this context, Atqiya and Pratama [5] demonstrated that regularly and systematically conducting gymnastics can enhance early childhood physical and motor development. Their research shows that gymnastics helps children improve their coordination, balance, and active participation in learning activities. Therefore, gymnastics is an important learning medium that addresses children's physical needs while supporting broader educational goals. This aligns with a holistic development approach, which views motor stimulation as essential to early childhood education.

This article examines how gymnastics can be integrated into early childhood learning to optimize motor development. A qualitative descriptive method and active participation were employed in conducting this research. Accordingly, the article discusses the techniques used to design and implement gymnastics activities; presents empirical findings regarding the impact of these activities on children's gross motor development; and critically evaluates the role of gymnastics in supporting children's physical and socio-emotional aspects. The article concludes with recommendations that can serve as a reference for developing holistic learning practices in early childhood education settings.

Materials and Methods

This study aims to gain an in-depth understanding of integrating gymnastics activities into early childhood learning and their influence on the development of gross motor skills. This study employed a descriptive qualitative research design appropriate for capturing naturalistic phenomena, particularly the participants' behaviors, interactions, and contextual meanings in educational settings. The research was conducted at TK Lab Sekolah Syekh Manshur, Kabupaten, Pandeglang, Provinsi Banten, Indonesia. It involved 15 children aged 4 to 6 years as participants. The sampling technique used was total sampling, based on the children's active participation in gymnastics-based learning sessions.

Data collection involved several techniques:

- Participatory Observation. The researcher was directly involved in observing the learning process, focusing on gymnastics' planning, implementation, and evaluation phases. Particular attention was given to children's motor responses, the types of movements performed, and teacher involvement.
- Documentation. Supporting data were collected from children's developmental progress records, photographs, and video recordings of gymnastics activities within the learning process.

For data analysis, the study followed the Miles and Huberman interactive model, which includes:

- Data reduction, where relevant data were selected, categorized, and focused based on research objectives;
- Data display, which involved presenting data in the form of descriptions, narrative quotations, and visual documentation;
- Conclusion drawing and verification, through identifying patterns, themes, and relationships between gymnastics integration and children's gross motor development.

To ensure data validity, the study applied Lincoln and Guba's trustworthiness criteria, including:

- Triangulation of sources and methods (e.g., comparing observational and documentation data);
- Member checking, where findings were confirmed with involved informants;
- Prolonged engagement, ensuring adequate time was spent in the field to build trust and deepen understanding of the phenomena

Results and Discussion

According to Yusuf et al. [7], early childhood refers to a group of children in a unique growth and development stage characterized by distinctive traits, interests, and needs, making appropriate stimulation essential to optimizing their potential. This is reinforced by the Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System, Article 1 Paragraph (14), which defines early childhood education as a development effort for children from birth to six years of age, conducted through educational stimulation to assist their physical and spiritual growth and development in preparation for further education.

As explained by Khoerunnisa et al. [8], motor development is the progression of a child's ability to control physical movements through the coordination of muscles, nerves, and the central nervous system. This process involves complex collaboration between the brain, nerves, and muscles and is influenced by genetic factors, environmental conditions, and the stimuli a

child receives. Motor development is typically categorized into gross motor skills, for instance, movements involving large muscles for walking and jumping, and fine motor skills, which involve smaller, more precise movements such as drawing or buttoning a shirt [9].

Integrating gymnastics into early childhood learning is a strategy to support the holistic development of children's motor skills. As a structured form of physical activity, gymnastics stimulates gross motor development, such as balance and agility, and indirectly aids fine motor coordination. Yuliani et al. [10] emphasize that physical activities like gymnastics foster an active, experiential, and enjoyable learning environment that enhances young children's physical, cognitive, and social development.

In the present study conducted at TK Lab Sekolah Syekh Manshur, gymnastics activities such as cheerful hand movements and spinning exercises successfully engaged children and stimulated their gross motor functions. Observational data revealed that 12 of 15 children actively participated and enthusiastically followed the teacher's instructions. This finding aligns with Atqiya and Pratama's research, which confirmed that regular implementation of gymnastics significantly supports children's physical development by enhancing muscle strength, coordination, and body awareness [6]. Furthermore, the types of movements incorporated, such as raising hands, swinging, jumping, and rotating, reflect the gross motor activities recommended by developmental theorists like Gallahue, who asserted that young children require dynamic physical engagement to promote neuromuscular maturation and control [11].

The results also reinforce Fitriani's [12] findings, which indicated that gymnastics could contribute meaningfully to motor skills and emotional and social development. Children were observed learning discipline, patience, and collaboration as crucial to early character building. Even children who were initially passive began participating when the approach was playful and supportive, echoing Vygotsky's socio-cultural theory, which emphasizes the role of guided interaction and social context in learning.

Despite these positive outcomes, challenges such as reduced focus, fatigue, and difficulty in following instructions were evident; this is consistent with prior findings by Khadijah and Amelia [13], who noted that variations in stamina and attention span among early learners require differentiated approaches. Thus, as recommended by Dockett and Perry [14], early childhood educators must adapt their teaching methods by using shorter sessions, integrating rest periods, and aligning physical activities with developmental capabilities.

In addition, embedding gymnastics within thematic learning, such as using number concepts while counting jumps or colors in movement games, reinforces academic understanding

and supports integrated learning approaches. This aligns with the principles of integrated curriculum models for early childhood proposed by Beane and Bredekamp.

Gymnastics is a crucial pedagogical tool in early childhood education. When implemented with intentional design and responsive teaching, they can enhance gross motor development and support children's cognitive, emotional, and social growth. These findings affirm previous research while contributing practical insights for future application in early learning environments. Morning gymnastics activities are conducted by early childhood students at TK Lab Sekolah Syekh Manshur, accompanied by teachers and student interns. The activity takes place in the school's outdoor area, which is designed to provide ample space for children's physical movement. The children are seen enthusiastically following instructions, indicating active engagement in structured physical exercises. The presence of teachers and student interns offers emotional and instructional support, which is essential for developing gross motor skills.



Fig. 1. Gross Motor Activities during Morning Gymnastics

Based on the findings and analysis, it can be concluded that integrating gymnastics activities into early childhood education significantly contributes to children's development of gross motor skills. The active participation of children in gymnastics activities demonstrated improvements in movement coordination, body balance, and more directed motor responses. This indicates that gymnastics is a physical activity and an educational medium capable of stimulating physical aspects while holistically supporting children's cognitive and socio-emotional development. These achievements are consistent with motor development theories and are further supported by previous studies emphasizing the importance of structured stimulation during the golden age of childhood.

Social interaction improvements were observed after the teacher provided a playful and supportive approach, particularly toward children who were initially passive or shy. This intervention proved effective in encouraging active peer engagement during the activity.

Table 1. Children's Gross Motor Responses during Gymnastics Activities

No	Indicator	Observed Behavioral Description	Number of Children (n=15)
1	Coordination	Followed the sequence of movements smoothly	10
2	Balance	Maintained posture while jumping and spinning	8
3	Strength	Demonstrated effort while kicking and jumping	6
4	Participation	Showed enthusiasm and followed instructions	11
5	Social Interaction	Improved after encouragement from the teacher	15

Although most children demonstrated improved coordination, balance, and participation, the data revealed that only six children exhibited optimal physical strength during gymnastics. This result does not fully align with the initial expectation that all participants would progress significantly in gross motor strength. According to Gallahue and Ozmun's [8] motor development theory, the advancement of physical abilities in early childhood is greatly influenced by neuromuscular maturation and the frequency and intensity of physical engagement. In this context, the lower strength outcomes observed in some children may be attributed to limited exposure to physically demanding activities outside formal learning hours and individual differences in physical readiness. These findings are consistent with the study by Fitriana and Kustiawati [9], which noted that variations in children's motor development may occur even when similar stimuli are provided, depending on each child's prior motor experiences. Therefore, a more adaptive and responsive physical education approach is needed to accommodate the diverse physical capabilities of young learners.

Conclusion

Based on observations at TK Lab Sekolah Syekh Manshur, gymnastics activities designed in a structured and enjoyable manner have proven effective in supporting the gross motor development of early childhood, particularly in terms of movement coordination, muscle strength, and body balance. These activities foster active participation, create a positive learning environment, and promote socio-emotional skills such as cooperation, self-confidence, and commitment. Despite variations in children's physical readiness, the teachers' adaptive approaches successfully addressed these differences. When integrated into thematic learning, gymnastics serves as a physical activity and strengthens the connection between motor activities and cognitive concepts in a contextual manner. Therefore, gymnastics should continue to be developed and systematically integrated into the early childhood education curriculum as part of a holistic learning strategy.

Conflict of Interest

The authors declare that there is no conflict of interest.

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Authors



Asiah is affiliated with the Department of Early Childhood Education, Syekh Manshur College of Teacher Training and Education, located at Jln. Raya Labuan Km.5 Kadulisung, Pandeglang, Banten 42253, Indonesia. Her academic involvement focuses on the foundational development of children and pedagogical practices in early education. (eEmail: asiahbst@gmail.com).



Resti Pujiyanti is a faculty member in the Department of Early Childhood Education at Syekh Manshur College of Teacher Training and Education, Pandeglang, Banten, Indonesia. She is dedicated to advancing learning outcomes in early childhood through effective teaching strategies and student-centered education. (email: restipujiyanti525@gmail.com).



Siti A'isah is a lecturer in the Department of Early Childhood Education at Syekh Manshur College of Teacher Training and Education in Pandeglang, Banten, Indonesia. Her interests include child development, curriculum implementation, and inclusive learning environments for young learners. (email: sitiaisyahh1432@gmail.com).



Rihatul Jannah is a lecturer and education scholar at Syekh Manshur College of Teacher Training and Education in Pandeglang, Banten, Indonesia. She is the Head of the Early Childhood Education Study Program, leading academic program development and quality assurance. Her areas of expertise include pedagogy, curriculum planning, and teacher training. She is actively involved in research and instructional innovation to strengthen future educators' capacity. (email: reehat085@gmail.com).