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Factors Affecting the Effectiveness of Rhythmic Gymnastics on Early Childhood Motor Physical Development

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Abstract: *Physical motor development in early childhood is a critical foundation for overall growth and future learning readiness. However, many children experience delays in motor skills due to limited stimulation, monotonous learning methods, or a lack of engaging activities. Addressing this problem requires innovative and enjoyable approaches that motivate children to be active while strengthening their motor abilities. This study examines the role of rhythmic gymnastics as a structured and playful activity to enhance motor development in early childhood. The research employs a literature review method, synthesizing findings from relevant studies on rhythmic gymnastics, child development, and early education practices. Results indicate that rhythmic gymnastics—through its combination of music, movement, and rhythm—effectively improves children's gross motor skills, balance, coordination, and body flexibility. In addition, rhythmic activities enhance concentration, discipline, and social interaction, contributing to holistic child development. The findings suggest that educators and parents should integrate rhythmic gymnastics into early childhood programs as an accessible, low-cost, and enjoyable intervention. Furthermore, systematic implementation and teacher training are essential to optimize its benefits. This study reinforces the importance of planned, stimulating, and engaging physical activities as a cornerstone of early childhood development.*
Keywords: *Physical motor development, early childhood, rhythmic gymnastics, influencing factors.*

INTRODUCTION

Early childhood motor physical development is a crucial aspect that includes basic movement skills such as walking, running, jumping, and throwing. These abilities are very important to support children's daily activities and social interactions (Wilson et al., 2017). The early childhood phase is a critical period in the formation of these fundamental skills, so appropriate and enjoyable stimulation is needed to ensure optimal physical motor development (Carson et al., 2017).

Physical motor development consists of two interrelated parts. Motor skills in children serve as an initial benchmark for growth and overall physical development (Chen et al., 2022).

Hurlock (1978) states that motor development is the process of controlling physical movements through the coordinated activities of nerve centers and muscles. This occurs during the early childhood development period, which is often referred to as the *golden age* (Reswari, Train Rooms, Iftitah, & Pangastuti, 2022).

According to Sujarwo (2010), early childhood is a period marked by rapid growth and development. During this stage, the child's brain develops very quickly and is capable of absorbing new knowledge. If children are provided with appropriate stimulation, their abilities can develop optimally (Richiyani, Syarifuddin, & Mauizdati, 2022).

One effort that can stimulate children's physical motor development is *rhythmic gymnastics*. Husnah and Prayogo (2018) describe *rhythmic gymnastics* as a form of recreational physical education that encourages healthy, strong, and competent physical growth through exercises that engage participants' sensitivity to the rhythm of music and their gross motor skills (Dewi, Nurjama, & Fitria, 2024).

The effectiveness of *rhythmic gymnastics* activities in stimulating early childhood motor physical development is influenced by various factors. These factors determine whether or not the activity achieves the expected goals (Kim et al., 2020). Berliana and Sinaga (2024) argue that the effectiveness of *rhythmic gymnastics* depends not only on the movements themselves but also on supporting aspects; when these factors are not optimally controlled, the activity may fail to provide significant results in enhancing children's physical motor abilities.

Rhythmic gymnastics is a physical activity involving coordinated body movements with musical rhythm. This activity not only supports fine and gross motor skill development but also improves concentration, agility, and social relationships through group participation (Liu et al., 2024; Rodriguez et al., 2023; Wang et al., 2024). The ability to perform a wide range of varied movements is essential in *rhythmic gymnastics*. Moreover, the precision of movement in harmony with musical rhythm is crucial to creating a beautiful and engaging performance. Basic movements include walking, running, jumping, and repetitive as well as varied swings and turns of the hands. In essence, *rhythmic gymnastics* is a form of movement art that combines beauty, strength, and coordination. Its playful and varied nature is expected to attract children's interest, motivating them to participate actively and gain both physical and aesthetic satisfaction. However, achieving optimal results depends on multiple influencing factors.

Several studies have shown that rhythmic movement effectively supports early childhood motor development, but gaps remain in how programs are designed and which factors ensure success. Vazou et al. (2020) found that rhythmic physical activity interventions outperformed standard physical education in improving motor and executive functions; however, their small-scale trial did not analyze key implementation determinants such as teacher competence, session fidelity, or group size, making replication across contexts difficult. Similarly, Zhao et al. (2024) demonstrated that an eight-week rhythmic activity program improved gross motor skills in children aged 4–5 years, but the study emphasized exercise "dose" without considering moderators such as music selection, tempo, task structure, or classroom/home support.

Therefore, it is important to understand the factors that influence the success of *rhythmic gymnastics* in supporting early childhood motor development. This study aims to identify and explain these factors to ensure that *rhythmic gymnastics* can be applied more effectively in early education. The contributions are twofold: theoretically, this research

enriches the literature by proposing an integrative design–implementation model; practically, it provides a checklist and teacher training recommendations so programs can be consistently applied in both classroom and home settings to maximize early childhood motor development.

METHOD

This study uses *literature study* and *digital research* as the main methods of data collection. The *literature study* was conducted by examining various written sources such as scientific journals, articles, and books relevant to the research topic. This method focused on collecting data from library materials through in-depth reading, recording key points, and organizing information to support research analysis. Meanwhile, *digital research* was employed to access online information through digital platforms and the internet. This approach allowed researchers to explore the latest data on the application of *rhythmic gymnastics* by educators in early childhood education settings as an effort to improve children's motor skills. For the data analysis process, this study applied *qualitative descriptive analysis* techniques aimed at describing and interpreting various phenomena based on the data obtained. This method enabled researchers to identify the factors that influence the effectiveness of *rhythmic gymnastics* in enhancing physical motor development in early childhood.

RESULTS AND DISCUSSION

Children's Motor Skills

The word motor comes from the English language, "*Motor Ability*" which means the ability to move. Motorcycle activities are crucial activities to encourage individuals to make a movement. Motor skills in children are the initial benchmark for physical growth and development in children, because the physical motor development of children can be observed through the five senses. When a newborn child is born, the child is incapacitated and helpless before the stimulus is given to support gross motor development by the parents. Children can only do activities that involve all the movements at the age of four to five. The stimulus given involves the movement of the child's hand and leg muscles. Meanwhile, children's fine motor skills begin to be developed when the child is five years old. Children are taught activities such as writing, scissors, and other activities that involve the child's small muscles. Motor skills are divided into two, namely gross motor skills that associate gross muscles and fine motor skills that associate fine muscles. Activities carried out by children involving gross muscles and soft muscles look very easy, but there is a need for guidance and practice so that children can do it properly and correctly (Apriyanto & Jupita, 2021) in (Mayar & Sriandila, 2021). In early childhood, motor skills are very necessary, because these motor skills are useful and related to other aspects of development. Because to move the gross muscles in children, coordination between all the five senses of the child is needed.

Rhythmic Gymnastics

One of the physical activities that can improve children's motor development is gymnastics. Gymnastics movements can provide benefits in increasing endurance and muscle strength in all parts of the body. (Demitra, 2019) in stating that rhythmic gymnastics or rhythmic gymnastics can optimize children's gross motor development, especially for children who experience delayed motor development. Children tend to enjoy activities that are done with fun musical accompaniment. Fun music is considered to be able to create an environment that stimulates children to move according to the rhythm of music, so rhythmic gymnastics is one of the fun activity options that can be done with early childhood in learning that focuses on their motor development. (Iriani & Salman, 2024)

The movements that are usually done in rhythmic gymnastics are with predetermined movements or movements that are free to be done according to desire, but they must still be done according to the rhythm of the music used so that there is coordination between body movements and musical accompaniment. Movements in rhythmic gymnastics are carried out not only according to the rhythm of the musical accompaniment, but also the harmony of each movement with its rhythm is needed.

The implementation of rhythmic gymnastics is carried out in three stages, namely: (1) Warm-up, carried out before performing the core movements of gymnastics. This movement is useful in preparing the body to be in a state of readiness, both physiologically and psychologically, as well as preparing the muscles, respiratory system, and blood circulation to be ready before work. (2) Core Movement, a movement that plays a role in training gross motor skills in children. (3) Cooling, cooling movements function to stretch muscles, reregulate breathing in the body, and calm hot body conditions.

Research conducted by (Hartina & Abubakar, 2019) found that there was an increase in children's ability to perform coordinated movements after regularly doing rhythmic gymnastics. The variety of movements carried out in rhythmic gymnastics activities such as stretching, jumping, twisting, and swinging both hands can strengthen muscles and increase body flexibility which is useful in supporting healthy physical growth in children. Children's motor skills are increasingly improving, especially in gross motor skills such as the ability to run, and the strength of hand swings when throwing. The strength of the child's bones and muscles is increasing and the capacity of the lungs is getting bigger helps make it easier for the child to perform large activities better. (Ulfah, Dimyati, & Putra, 2021)

The success of rhythmic gymnastics activities in improving children's physical motor development is greatly influenced by a number of factors, such as the quality of teacher instruction, the selection of appropriate music, children's involvement, and a supportive learning environment. Therefore, it is important for educators to understand that the success of children's motor stimulation is inseparable from environmental readiness, children's emotional involvement, and a holistic learning approach. (Berliana & Sinaga, 2024)

Success Factors of Rhythmic Gymnastics

In implementing rhythmic gymnastics activities in learning, of course, it is influenced by various factors that determine the success of activities in achieving their goals, namely:

1. The first factor is the teacher or instructor who leads the activity. Teachers need to have in-depth knowledge and experience about rhythmic gymnastics in early childhood in order to provide the right direction. Teachers also need to pay attention to a safe and fun environment for children when doing activities. As explained by , (Rahmawati, 2021)Teachers who have a good understanding of rhythmic gymnastics and the characteristics of children's motor development will be able to direct these activities appropriately according to the child's age and ability. Teachers must be able to create a safe and fun environment for children to feel comfortable when participating.
2. The second factor is the availability of adequate facilities. Rhythmic gymnastics requires a large space and is also safe for children to move. If the facilities owned are inadequate, it is feared that it can increase the risk of injury to children. According to (Rizki, 2020)The lack of adequate facilities can increase the risk of child injury, so safe facilities are needed to support the effective implementation of rhythmic gymnastics.
3. The number three factor is the motivation and interest of the children themselves. It is important for teachers to design rhythmic gymnastics activities that are fun and varied. Children quickly get bored and lose interest in monotonous activities. The time allocated also needs to be considered by teachers. Academic and non-academic activities must be regulated in a balanced manner so that children get equal opportunities in moving to train their motor skills with their cognitive activities. As expressed by , (Utami & Nasution, 2020)fun and varied activities will keep the child interested and motivated to participate,
4. The fourth factor is the need for periodic assessments and evaluations by teachers to adjust the needs and abilities of children who are different in their development. An exercise program that is tailored to their needs will help each child to develop according to the maximum portion of their abilities.
5. The fifth factor of balance and stability is balance: the ability to maintain balance when performing movements is an important factor in rhythmic gymnastics. Balance training can help athletes to appear more stable and confident. Body stability when performing complex movements is also very important to avoid stress and ensure proper movement. The child's ability to maintain balance when performing movements and maintain body stability during complex movements greatly affects the effectiveness of exercises, and this requires well-planned exercises.(Hartini & Hidayati, 2020)

Overall, this study shows the importance of rhythmic gymnastics in developing fine motor and gross motor skills in early childhood and in coordinating them. The implication of these findings is the need to pay attention to the success factors of rhythmic gymnastics in children's motor development. Further research is recommended to explore the long-term impact of rhythmic gymnastics on various aspects of child development.

CONCLUSION

Based on the above explanation, it can be concluded that *rhythmic gymnastics* is a highly beneficial activity for students' physical fitness. The combination of body movements synchronized with musical rhythm, along with the use of certain instruments, not only trains physical strength and agility but also stimulates children's cognitive, social, and emotional development. *Rhythmic gymnastics* helps improve coordination, balance, and flexibility, while also supporting the development of fine motor skills such as hand–eye coordination. In addition, this activity provides sensory stimulation through music, which can enhance concentration and memory.

Socially, *rhythmic gymnastics* fosters positive interactions with peers, builds self-confidence, and strengthens the ability to collaborate. Emotionally, it helps children manage stress and improve mood. Thus, *rhythmic gymnastics* can be considered one of the most important activities in supporting students' physical growth and fitness. With its harmonious blend of body movements and engaging musical rhythms, *rhythmic gymnastics* has proven to be an effective tool in developing multiple aspects of children's overall development.

Beyond improving physical strength, agility, and coordination, *rhythmic gymnastics* also stimulates cognitive, social, and emotional growth. These activities not only help children learn body control but also enhance their ability to interact with others, solve problems, and regulate emotions. Therefore, *rhythmic gymnastics* should be viewed not merely as a physical activity but also as an enjoyable learning process that significantly benefits children's growth and development. For this reason, it is important for parents, teachers, and the wider community to provide full support for children's participation in such activities.

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