



Comparison of the Effects of Jump Rope Games and Rhythmic Gymnastics on the Development of Children Aged 4–5 Years in Tondomulyo Village, Jakenan District, Pati Regency

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Abstract. Toddler growth and development require special attention because the first five years of life, known as the golden age, are a critical period for physical, cognitive, and psychosocial development. Child development involves both quantitative and qualitative changes and can be assessed through gross motor, fine motor, language, and personal-social domains. According to the World Health Organization (WHO, 2018), growth problems among children under five include not only undernutrition but also stunting and overweight. Globally, the prevalence of wasting was 7.3%, overweight 5.9%, and stunting 21.9%. Furthermore, approximately 52.9 million children under five experienced developmental disorders in 2016, with 95% living in low- and middle-income countries. In Indonesia, the prevalence of severe undernutrition, undernutrition, normal nutritional status, and overweight among children under five was 3.9%, 13.8%, 79.2%, and 3.1%, respectively. WHO also reported a developmental disorder prevalence of 7.51% among Indonesian children under five. Rhythmic Jump Rope Game is a gross motor activity in which children jump over an elastic rope while following musical rhythms. This activity helps improve coordination, balance, and lower-limb motor skills. Rhythmic gymnastics, another music-based physical activity, is widely used to enhance gross motor development, physical fitness, and overall growth. A preliminary survey involving 15 mothers of children aged 4–5 years in Tondomulyo Village showed that all participants were familiar with jump rope games and rhythmic gymnastics as developmental stimulation methods. However, Posyandu services in the village mainly focus on growth monitoring (weight and height), while developmental assessments are rarely conducted. Therefore, this study aims to compare the effects of rhythmic jump rope games and rhythmic gymnastics on the development of children aged 4–5 years.

Keywords: Jump Rope Game, Rhythmic Gymnastic, Child Development

INTRODUCTION

Toddlerhood (0–5 years) is considered the golden age, a critical period for children's growth and development. During this stage, children experience rapid development in several domains, including gross motor, fine motor, language, and personal-social skills. Development is defined as the increase in skills and body functions that occur systematically as a result of maturation; therefore, each developmental aspect requires optimal stimulation from an early age (Ranuh & Soetjiningsih, 2014). One of the most important domains is gross motor development, which supports children's ability to perform physical activities such as walking, running, jumping, and maintaining balance (Yuniarti, 2015).

According to the World Health Organization (WHO), child growth and developmental problems remain a global concern. In 2018, the prevalence of wasting, overweight, and stunting among children under five was 7.3%, 5.9%, and 21.9%, respectively (WHO, 2018). In addition, approximately 52.9 million children under five experienced developmental disorders, with most cases occurring in low- and middle-income countries (WHO, 2018). In Indonesia, the prevalence of developmental deviations among children under five reached 7.51%, highlighting the need for appropriate developmental stimulation (WHO, 2016).

Two forms of stimulation that may enhance children's motor development are Jump Rope Games and Rhythmic Exercise. Jump rope games are gross motor activities that improve

coordination, balance, and lower-limb skills through rhythmic jumping movements. Likewise, rhythmic exercise, which is performed with musical accompaniment, has been shown to effectively improve gross motor development, flexibility, balance, and physical fitness among children (Saputri, 2021). Previous research conducted by Nudesti (2023) demonstrated that rhythmic exercise had a significant effect on children's motor development.

A preliminary survey conducted in Tondomulyo Village found that most mothers were aware of the benefits of jump rope games and rhythmic exercise as developmental stimulation activities. However, child development monitoring had not been optimally implemented because Posyandu services primarily focused on growth assessment, such as weight and height measurements. Therefore, this study aims to analyze the differences in the effects of jump rope games and rhythmic exercise on the development of children aged 4–5 years in Tondomulyo Village, Jakenan District, Pati Regency.

Although both Jump Rope Games and Rhythmic Exercise have been widely recognized as effective methods for stimulating gross motor development in early childhood, comparative studies examining the effectiveness of these two interventions remain limited. Most previous studies have focused on evaluating each intervention separately, making it difficult to determine which activity provides greater benefits for child development. Furthermore, evidence regarding the implementation of these interventions in community settings, particularly in rural areas, is still scarce. Identifying effective and practical stimulation methods is important to support parents, educators, and healthcare providers in promoting optimal child development. Therefore, a comparative analysis of Jump Rope Games and Rhythmic Exercise is needed to provide scientific evidence regarding their effectiveness in enhancing developmental outcomes among preschool children.

METHODS

This study employed a quasi-experimental design using a two-group pretest–posttest approach. The study was conducted in Tondomulyo Village, Jakenan District, Pati Regency. A total of 30 children aged 4–5 years participated in the study. The sample was selected using a total sampling technique, in which all eligible children in the population were included. Participants were divided into two intervention groups. Group I received a Jump Rope Game intervention, while Group II participated in Rhythmic Exercise activities. Children's development was assessed before and after the interventions using the Pre-Screening Developmental Questionnaire (KPSP). Data collection was supported by observation sheets and Standard Operating Procedures (SOP) to ensure consistency during intervention implementation. The study aimed to compare the effects of Jump Rope Games and Rhythmic Gymnastic on the development of children aged 4–5 years.

Data analysis was performed using descriptive and inferential statistics. Descriptive analysis was used to summarize participant characteristics and developmental scores. The Wilcoxon Signed-Rank Test was applied to determine differences in developmental scores before and after each intervention. Furthermore, the Mann–Whitney U Test was used to compare post-intervention developmental outcomes between the Jump Rope Game group and the Rhythmic Exercise group. Statistical significance was established at a p-value of less than 0.05.

RESULTS AND DISCUSSION

This study involved 30 children aged 4–5 years in Tondomulyo Village, Jakenan District, Pati Regency. Based on gender distribution, 16 participants (53.3%) were female and 14 participants (46.7%) were male.

The results showed a significant improvement in child development after the implementation of the Jump Rope Game intervention. The mean developmental score increased from 8.53 before the intervention to 16.47 after the intervention, with a statistically significant difference ($p = 0.000$). Similarly, the Rhythmic Exercise intervention also produced a significant improvement

in developmental outcomes. The mean developmental score increased from 8.07 before the intervention to 15.53 after the intervention ($p = 0.001$).

To compare the effectiveness of both interventions, a Mann–Whitney test was conducted. The post-test mean score in the Jump Rope Game group was 16.67, while the Rhythmic Exercise group achieved a mean score of 14.33. Although the Jump Rope Game group showed a slightly higher mean score, the difference was not statistically significant ($p = 0.465$). Therefore, both interventions were found to be equally effective in improving the development of children aged 4–5 years.

	N	Mean	Mean Difference	<i>P value</i>
Jump Rope Game	15	16,67	2,34	0,465
Rhythmic Gymnastic	15	14,33		

Table 1. Comparison of the Effects of Jump Rope Games and Rhythmic Exercise on Child Development

The findings of this study indicate that both Jump Rope Games and Rhythmic Exercise significantly improved developmental outcomes among children aged 4–5 years. Early childhood is a critical period for growth and development, particularly in the gross motor domain. Appropriate stimulation during this period is essential to ensure that children achieve developmental milestones according to their age (Soetjningsih, 2014).

The significant increase in developmental scores following the Jump Rope Game intervention may be attributed to the nature of the activity, which involves coordinated body movements, balance control, agility, and lower-limb muscle strength. Jumping activities stimulate large muscle groups and encourage children to actively engage in movement-based learning. Through repeated practice, children develop better coordination, body awareness, and confidence in performing physical tasks. Gross motor development is influenced by several factors, including nutritional status, health conditions, intelligence, parental support, environmental stimulation, and previous experiences (Fitriani & Adawiyah, 2018).

These findings are consistent with previous studies reporting that jump rope activities effectively improve gross motor skills in preschool children. Febriani (2015) found that children who participated in jump rope activities demonstrated improvements in jumping ability, balance, agility, and lower-body strength. Similar findings were reported by Padmaswari et al. (2016), who concluded that jump rope games significantly enhanced gross motor development among kindergarten children. Furthermore, Wahyuni, Ali, and Yuniari reported that children who regularly engaged in jump rope activities showed improvements in balance, leg muscle strength, and agility.

The Rhythmic Exercise intervention also demonstrated a significant positive effect on child development. Rhythmic Exercise combines movement and music, creating an engaging and enjoyable learning environment. Children are encouraged to follow movement patterns while synchronizing their actions with musical rhythms. Such activities stimulate coordination, flexibility, balance, and neuromuscular development. Furthermore, music can increase children's motivation and participation, making the intervention more attractive and enjoyable (Anggraini, 2016).

The improvement observed after Rhythmic Exercise may be explained by its ability to stimulate both gross and fine motor skills while strengthening muscles and joints. Rhythmic movements require children to control their bodies, maintain posture, and coordinate movements in response to external stimuli. These processes contribute to overall developmental progress. Firdaus et al. (2018) reported that rhythmic exercise effectively improved gross motor skills among preschool children. Likewise, Ulfah (2021) stated that rhythmic exercise plays an important role in enhancing children's coordination, flexibility, and body control. Previous

research by Rizkya et al. (2014) and Yuliansih (2015) also demonstrated a positive relationship between rhythmic exercise and gross motor development in early childhood.

The comparison between the two intervention groups revealed no statistically significant difference in developmental outcomes. Although the mean post-test score of the Jump Rope Game group was slightly higher than that of the Rhythmic Exercise group, the Mann–Whitney test indicated that both interventions produced comparable results. This finding suggests that both activities provide similar developmental stimulation and can be equally recommended for promoting child development.

The absence of a significant difference may be explained by the fact that both interventions target similar developmental components, particularly gross motor skills. Jump Rope Games and Rhythmic Exercise both involve active body movement, muscle strengthening, coordination, balance, and motor control. Consequently, both activities stimulate similar developmental mechanisms and lead to comparable improvements in developmental outcomes (Decaprio, 2013).

Overall, the results suggest that both Jump Rope Games and Rhythmic Exercise are practical, affordable, and effective approaches for promoting child development. These activities can be implemented in homes, early childhood education centers, and community health programs. Parents, teachers, and healthcare providers should encourage regular participation in such activities to support optimal developmental outcomes among preschool children (Aminati, 2013).

CONCLUSIONS

This study found that both Jump Rope Games and Rhythmic Gymnastic significantly improved the development of children aged 4–5 years. The mean development score in the Jump Rope Game group increased from 8.53 to 16.47 ($p = 0.000$), while the Rhythmic Exercise group showed an increase from 8.07 to 15.53 ($p = 0.001$). These findings indicate that both interventions effectively stimulated child development and helped children achieve age-appropriate developmental milestones. However, the comparison between the two intervention groups using the Mann–Whitney test showed no statistically significant difference ($p = 0.465$). Although the Jump Rope Game group demonstrated a slightly higher mean score (16.67) than the Rhythmic Exercise group (14.33), both methods were equally effective in promoting child development.

Healthcare professionals should provide education and counseling regarding child development and the importance of developmental stimulation. Parents are encouraged to regularly engage their children in gross motor activities, such as jump rope games and rhythmic exercise, to support optimal development. Future studies are recommended to explore other forms of developmental stimulation through play and physical activities in early childhood.

ACKNOWLEDGMENTS

The authors would like to express their sincere gratitude to all individuals and institutions who contributed to the completion of this study. Special thanks are extended to the Head of Tondomulyo Village, community health workers, and Posyandu cadres for their support and assistance during the data collection process. The authors also appreciate the participation of the children and parents who willingly took part in this research. The authors are grateful to the Diploma III Midwifery Study Program and Midwife Professional Education Study Program, Bakti Utama Pati Institute of Health Sciences, for providing academic support and guidance throughout the research process. Finally, the authors would like to thank all colleagues and parties whose contributions, encouragement, and cooperation made this study possible.

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