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THE EFFECTIVENESS OF SKIPPING GAMES IN IMPROVING MOTOR SKILLS OF SIXTH-GRADE STUDENTS AT SD NEGERI 3 PASEKAN

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Abstract

Eye, foot, and hand coordination is crucial for motor development, which is important in sports and children's daily activities. Children with good motor skills tend to have higher self-confidence and optimal social skills. This study aims to improve the gross motor skills of sixth-grade students at SD Negeri 3 Pasekan through skipping training. This research identifies effective forms of skipping exercises, their effectiveness in improving coordination, and the extent of improvement. Using a quantitative One-Group Pretest-Posttest experimental method with 25 students, the results showed that skipping training effectively improved motor skills significantly. The initial pretest showed that 40% of children had not developed, but after four training sessions, there was a drastic improvement: 12% developed as expected and 80% were very good (total 92%). The Normalized Gain (N-Gain) value of 0.84 indicates a very significant improvement, proving the effectiveness of this method in motor development. Teachers also observed an increase in student enthusiasm and active participation, even taking the initiative to practice skipping during breaks. In addition, skipping had a positive impact on psychological aspects such as student confidence, discipline, and cooperation.

Keywords: Body coordination; Children's motor skills; Skipping; Jump rope.

INTRODUCTION

Excessive use of gadgets and online games has become a major concern because it can interfere with children's physical activity and reduce time spent playing outdoors, which is crucial for motor development. This addiction contributes to a sedentary lifestyle and health problems such as obesity, which may hinder children's motor development and movement coordination (Jansen, Mulkens, & Jansen, 2016). Learning activities that involve physical movement are very important in education, not only for fitness but also for motor and cognitive development (Nurulita et al., 2024). Structured physical activities, such as skipping, can improve eye–hand–foot coordination as well as cognitive function and long-term memory. Skipping also supports social-emotional development, reduces anxiety, and increases self-confidence and learning motivation (Pica, 2006; Iriani & Salman, 2024).

To understand further, coordination is defined as the ability to control and regulate body movements efficiently, which is essential in daily activities and sports (Maulin, Suzanti, & Widjayatri, 2019). Coordination involves the cooperation of nerves, muscles, and the senses, and is influenced by speed, strength, endurance, flexibility, balance, and rhythm (Suyanto, 2005; Wawan et al., 2024). Skipping, or jump rope, is a physical activity involving jumping movements using a rope (Putri et al., 2018; Fitria & Amidanal Chikmah, 2024). The benefits of skipping include improving cardiovascular fitness, developing coordination (eye, hand, and foot), burning calories, strengthening muscles, and enhancing mental health (Kesehatan et al., 2016; Sudirman, 2016). Regular skipping practice can improve basic motor skills such as jumping, catching, and running. Although these benefits are widely known, skipping as a learning medium has not been optimally utilized in elementary schools (Ali, 2023). Therefore, this study aims to examine the effectiveness

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of skipping as a learning medium to strengthen eye, foot, and hand coordination in elementary school children.

In the field of education, various studies show that physical activity combined with active learning can facilitate the development of motor and cognitive skills simultaneously. For example, activities involving sports or physical games can improve coordination skills, speed, accuracy, and endurance. According to a study by Angioni et al., (2021), participation in structured physical activity not only improves physical fitness but also enhances students' cognitive function and long-term memory.

In the context of physical education in elementary schools, the use of game-based media such as skipping can be integrated into the curriculum to improve motor skills. Attractive learning media can increase students' interest in exercise, motivating them to practice more actively (Puspitarini & Hanif, 2019). However, despite the many benefits of motor training, many children are still physically inactive. Therefore, innovative strategies are needed to capture children's attention and encourage them to practice. The implementation of skipping as a motor skill training medium can be carried out through various game variations, such as competitions or challenges that make training more engaging (Brian, Goodway, Logan, & Sutherland, 2017).

This is in line with the study by Kesehatan et al., (2016), which shows that variety in training can increase children's interest and activeness. In addition, environmental factors also play an important role in strengthening children's motor skills. Safe play areas and adequate facilities can support children's physical activity. The importance of strengthening motor skills in elementary school-age children is also supported by studies showing a positive relationship between physical activity and academic achievement. Physically active children tend to have better concentration and higher learning outcomes (Candra et al., 2023). Therefore, strengthening motor skills not only focuses on physical aspects, but also impacts cognitive development.

Oktaviana (2019) study on children's motor skills using finger painting media in early childhood education showed a significant improvement in finger and hand coordination. Jump rope/skipping is also a medium that can be used to improve coordination and train motor skills in children. Unfortunately, skipping media has not been widely utilized by educators in elementary school learning. Therefore, this research is intended to examine how effective skipping media is in strengthening eye, foot, and hand coordination in elementary school children.

Although numerous studies highlight the benefits of physical activities and traditional games such as jump rope in improving children's motor development, most previous studies have focused more on early childhood education or specific physical fitness outcomes, such as cardiovascular endurance, rather than comprehensive motor coordination involving the integration of eye, hand, and foot movements in upper elementary school students. Furthermore, many studies used descriptive or correlative designs, while experimental studies with structured interventions and quantitative effectiveness measures, such as normalized gain (N-Gain), are still limited, especially in the context of physical education in elementary schools in Indonesia. Furthermore, the practical implementation of jump rope as a learning medium in regular school settings has not been adequately explored. Therefore, this study addresses this gap by experimentally testing the effectiveness of structured jump rope training in improving gross motor coordination (eye, hand, and foot) in sixth-grade students, while also observing its impact on student engagement and psychological aspects in a real-life school setting.

RESEARCH METHOD

This study was conducted at SD Negeri 3 Pasekan, an elementary school located in Pasekan Village, Eromoko Subdistrict. This school was selected as the research site because it has adequate facilities for sports activities, particularly a sufficiently large field area to carry out physical exercises such as jump rope (skipping). In addition, the school has a number of students who meet the research criteria, namely elementary school-age children who are able to participate in motor coordination training. The entire research process, starting from the implementation of training

using skipping as a learning medium to the measurement of foot, eye, and hand coordination outcomes, was carried out within the school environment both in the classroom for the pre-test and on the school field for training and physical test measurements. This study was conducted at SD Negeri 3 Pasekan, an elementary school located in Pasekan Village, Eromoko Subdistrict. The school was selected as the research site due to its adequate sports facilities, particularly a sufficiently large field that supports physical activities such as jump rope (skipping). The research process included pre-test administration conducted in the classroom, followed by the implementation of skipping-based training and post-test measurements carried out on the school field to assess students' eye, hand, and foot coordination.

The data collection technique in this study used tests and measurements with a test–retest repeated measurement estimation approach, conducted by carrying out two measurements: the initial measurement and the repeated measurement (Sugiyono, 2020; Gunartha, 2022). This technique was adapted from the measurement instrument developed by Ningtyasih (2023), which is parallel in nature and administered to respondent groups either directly or separately within a predetermined time interval.

The calculation results using the N-Gain formula showed a value of 0.84, which falls into the "high" category. This value indicates that the use of skipping media in movement learning not only has a positive impact, but is also highly effective in improving children's overall gross motor skills. This is supported by the classification proposed by Hake (1998), which states that an N-Gain score of > 0.7 indicates a high and meaningful improvement.

RESULT AND DISCUSSION

Results

Overall, the findings of this study indicate that the training method using skipping as a learning medium is highly effective in improving children's motor skills. The initial data (pretest) showed that most children were still in the category of underdeveloped motor skills. After four training sessions, there was a significant improvement in students' motor abilities. This improvement can be seen in more detail through the combined pretest and posttest data presented in Table 1.

Table 1. Pretest and Posttest Scores

Category	Score	Pretest (Number of Students)	Posttest (Number of Students)	Total Pretest Score	Total Posttest Score
BB	1	10	0	10	0
MB	2	5	2	10	4
BSH	3	4	3	12	9
BSB	4	6	20	24	80

Based on Table 1, there is a clear shift in students' motor development categories from the pretest to the posttest condition. In the pretest, 10 students (40%) were classified in the "Not Yet Developed" (BB) category. However, after the intervention, the number of students in the BB category decreased drastically to 0 in the posttest. In contrast, the number of students in the "Very Well Developed" (BSB) category increased sharply from 6 students in the pretest to 20 students in the posttest, indicating that most students achieved an optimal level of motor development. The total percentage of students who developed as expected (BSH) and developed very well (BSB) in the posttest reached 92%.

The progress in students' improvement was also observed through comparisons at each intervention stage, as presented in Table 2.

Table 2. Comparison of Pretest–Posttest Measurements

Assessment	Pretest	Intervention I	Intervention II	Posttest
BB	40%	28%	12%	-
MB	20%	16%	24%	8%
BSH	16%	20%	20%	12%
BSB	24%	36%	44%	80%

Table 2 shows continuous improvement at each stage of training. The percentage of students in the "Not Yet Developed" (BB) category steadily decreased from 40% in the pretest to 12% after Intervention II, and no students remained in this category in the posttest. Conversely, the percentage of students in the "Very Well Developed" (BSB) category consistently increased from 24% in the pretest to 80% in the posttest. This improvement in students' abilities was also quantified through a Normalized Gain (N-Gain) value of 0.84, which is categorized as high, indicating that the skipping-based training method is highly effective in significantly improving children's gross motor skills and providing meaningful benefits.

Discussion

In addition to the quantitative results, qualitative findings obtained through interviews with the physical education teacher at SD Negeri 3 Pasekan further support the effectiveness of skipping-based training. Prior to the intervention, most students particularly female students demonstrated low interest and passive behavior during physical education classes. This condition is consistent with previous studies reporting that elementary school students tend to show lower engagement in conventional physical activities (Kesehatan et al., 2016; Candra et al., 2023). However, after the implementation of skipping training, a noticeable behavioral change was observed. Students became more enthusiastic, actively participated in learning activities, and some even initiated independent skipping practice during break time, indicating increased intrinsic motivation toward physical activity (Yip & Cheng, 2023).

These findings align with previous research suggesting that game-based physical activities can significantly enhance students' engagement and participation (Pica, 2006; (Nurulita & Aziz, 2024). Skipping, as a rhythmic and repetitive movement activity, requires continuous coordination between visual perception, hand movement, and foot placement. This integrated movement pattern stimulates neuromuscular coordination, which explains the significant improvement observed in students' eye, hand, and foot coordination. Similar improvements in coordination have been reported in studies focusing on traditional games and rhythmic exercises as effective motor learning strategies (Putri et al., 2018; Fitria & Amidanal Chikmah, 2024).

Recent empirical evidence further supports the present findings on the benefits of skipping-based interventions for children's coordination. For instance, Deng et al., (2024) reported that a 10-week fancy rope-skipping program significantly improved children's motor coordination (assessed using the KTK, including subtests such as hopping and lateral jumping) and also showed benefits for selective attention accuracy in primary school children aged 7–9 years, indicating that rope-skipping may stimulate both motor and cognitive processes through complex and rhythmic movement patterns. Similarly, Trecroci et al., (2015) demonstrated that incorporating jump-rope training for 8 weeks within regular training sessions significantly enhanced general motor coordination and dynamic balance in preadolescent participants compared with controls, suggesting that repeated rope-jump movements require continuous integration of upper–lower limb coordination and postural control. These studies are consistent with the improvements observed in the current intervention, reinforcing that skipping activities particularly when delivered progressively and in an engaging format can serve as an effective strategy to strengthen children's gross motor coordination in school settings.

Beyond the two key studies previously discussed, a broader body of evidence also supports the role of rope-skipping in improving children's movement-related outcomes across school

settings. For example, a rope-jump training program embedded in physical education lessons for 10–12-year-old boys over 10 weeks was found to improve key performance components such as leg strength, sprint performance, and aerobic fitness, which are foundational physical capacities supporting movement quality and motor performance in children (Eler & Acar, 2018). In a randomized controlled trial design, a 12-week jump-rope homework intervention showed significant improvements in multiple physical fitness indicators (e.g., speed, endurance, power, and core muscular endurance) compared with controls, highlighting that structured skipping practice can produce measurable benefits even when implemented beyond formal class time (Huang, Song, Zhao, Han, & Fang, 2022). In addition, a PRISMA-guided systematic review synthesizing evidence from randomized controlled trials concluded that jumping rope is consistently effective for promoting students' physical fitness, reinforcing the intervention value of skipping-based activities in youth populations (Zhao, Wang, Niu, & Liu, 2023). These findings strengthen the interpretation that skipping can be an efficient, scalable, and school-feasible activity that contributes to improved movement performance and readiness for broader motor skill development.

Evidence also indicates that skipping activities relate closely to coordination, timing control, and cognitive–motor integration, which aligns with the coordination gains found in this study. A school-based randomized trial involving elementary games that included jumping rope reported significant improvements in coordination-related outcomes, such as hand–eye coordination (via wall-toss) and speed performance in 8–9-year-old children compared with controls (Petrušič & Novak, 2024). Studies in special populations provide further support: jump rope training significantly improved agility in deaf elementary students in a one-group pretest–posttest design, suggesting skipping can be a practical method for enhancing motor-related outcomes even in learners with specific needs (Pribadi, Raharjo, & Andiana, 2024). Moreover, rope-jumping has been linked to precise timing and upper–lower limb coordination demands; research on children with ADHD reported that impaired timing perception and poorer hand–foot coordination were associated with less accurate rope-jumping performance, underscoring that skipping is sensitive to coordination and motor control processes (Chen et al., 2013). Skipping may also contribute to learning-related outcomes through short, rhythmic activity bouts: a controlled study applying brief rope skipping after math learning sessions examined cognitive effects and illustrates how skipping can be integrated into school routines beyond physical education alone (Burdack & Schöllhorn, 2023). Finally, an intervention framework that includes fundamental motor-skill elements (including rope skipping) has been discussed as beneficial for improving coordination/agility outcomes and supporting broader health trajectories in children, particularly in obesity-related contexts (Ge, Liu, Song, Zhang, & Guo, 2025). Collectively, these studies reinforce the present findings that skipping is not only a fitness-oriented activity, but also a coordination-demanding task that can enhance children's motor control and engagement when delivered in structured and enjoyable formats.

The structured and progressive nature of the training also contributed to the effectiveness of the intervention. The initial stage focused on basic jumping movements (3 sets × 10 jumps, 10–15 minutes per session) to establish fundamental coordination, rhythm, and movement confidence. Once students mastered the basic techniques, advanced variations such as the criss-cross technique were introduced. This movement requires higher levels of bilateral coordination, timing accuracy, and concentration, thereby enhancing both gross and fine motor skills. According to motor learning theory, gradual increases in task complexity support better motor adaptation and skill retention (Suyanto, 2005; Wawan et al., 2024).

In addition to motor improvements, the skipping intervention also demonstrated positive psychological and social impacts. The teacher reported increased self-confidence, improved discipline during practice, and better cooperation among students. These findings support earlier studies indicating that structured physical activities can foster social interaction, emotional regulation, and self-efficacy in children (Angioni et al., 2021; Iriani & Salman, 2024). Therefore, the findings of this study extend previous research by demonstrating that skipping-based training not

only enhances motor coordination but also contributes to holistic child development within the elementary school physical education context.

CONCLUSION

This study shows that the use of skipping as a learning medium is highly effective in improving motor coordination skills (eye, foot, and hand) in elementary school-age children. Skipping training not only improves physical skills but also brings positive changes in children's psychological and social aspects, such as increased self-confidence, discipline, and cooperation skills. A gradual training method from basic to advanced stages was proven to stimulate motor development progressively. Therefore, skipping media is recommended as an effective intervention to address the problem of insufficient physical activity and to support the development of children's motor skills in elementary schools.

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