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The Effect of Star Jump Games on Children's Gross Motor Skills: An Educational Management Perspective

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ABSTRACT

This study aims to examine the effect of Star Jump games on children's gross motor skills from an educational management perspective, particularly in managing physical activity learning in early childhood education. A quantitative approach with a quasi-experimental nonequivalent control group design was employed, involving 28 children divided into experimental and control groups. Data were collected through structured observation using a gross motor skill assessment instrument focusing on body balance and movement accuracy, and analyzed using the Wilcoxon Signed Rank Test and the Mann–Whitney U Test. The results revealed a significant improvement in gross motor skills among children in the experimental group after the implementation of Star Jump games compared to the control group. These findings indicate that well-planned and systematically managed movement-based learning activities effectively enhance children's balance and movement precision. From an educational management perspective, the study underscores the importance of organizing, implementing, and evaluating engaging physical activity programs to support gross motor development. Therefore, Star Jump games can be considered an effective and enjoyable alternative for managing physical activity learning in early childhood education.

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INTRODUCTION

Gross motor skill development is a crucial aspect of early childhood education, serving as a foundation for children's physical readiness, coordination, and learning engagement (Tang, 2023; Capone et al., 2023). Across societies, children with underdeveloped motor abilities often face challenges in participating in daily physical and academic activities, potentially affecting their long-term health and educational outcomes. Strengthening gross motor skills not

only supports physical fitness but also fosters self-confidence, social interaction, and cognitive engagement, which are essential for holistic development (Veldman et al., 2023; Guohui & Xiujin, 2024). Effective interventions at an early age can prevent delays and promote sustainable motor and cognitive growth. Therefore, examining structured movement-based activities, such as Star Jump games, offers significant implications for communities and educational systems (Aini et al., 2025; Maulidy & Zaini, 2025). By providing evidence-based strategies for physical activity management in early learning, this research contributes to broader societal goals of enhancing child development and lifelong learning competencies. In conclusion, promoting gross motor skills is not merely an individual benefit but a societal imperative.

Despite the acknowledged importance of gross motor development, many children globally still exhibit deficiencies in balance, coordination, and locomotor skills (Astuti et al., 2024; Gieysztor et al., 2024). Research indicates that sedentary lifestyles, limited structured play opportunities, and inconsistent educational management practices contribute to these delays (Fernandes, 2024; Cocca et al., 2025). Early childhood educators often struggle to integrate systematic physical activities into the curriculum due to insufficient planning, resource constraints, or lack of pedagogical training (Xia et al., 2023; Martin, 2024). Consequently, children's motor skill acquisition may be inconsistent, leaving gaps in their readiness for both academic and social tasks. This issue is particularly relevant in educational management, as schools must balance cognitive, social, and physical learning within limited instructional time (Fauzi et al., 2025; Maulidy & Zaini, 2025). Addressing such gaps through carefully planned and well-supervised physical activities is essential for improving learning outcomes and optimizing classroom management. In essence, the problem lies not only in children's abilities but also in how educational systems organize and manage motor development programs (Solehah & Manshur, 2025).

Observational studies in early childhood classrooms reveal that many children struggle with basic locomotor activities, such as jumping, hopping, and maintaining balance (Ferasinta & Padila, 2022; Ningrum & Ningrum, 2023). In structured settings, children often fail to execute movements with precision, indicating underdeveloped coordination and muscle control. For instance, during jumping exercises, children may misalign their feet, lose balance upon landing, or demonstrate inconsistent spatial accuracy (Solehah & Manshur, 2025). These difficulties suggest that conventional free play alone may not provide sufficient stimulation for motor development. Moreover, teachers report challenges in monitoring and providing individualized guidance due to class size and time constraints (Saearani et al., 2024). Integrating targeted activities like Star

Jump, which require specific movement patterns and controlled execution, can enhance both the effectiveness of motor learning and classroom management. The observed field phenomenon underscores the need for structured, teacher-guided interventions that align with educational management principles to maximize children's motor skill acquisition.

Several studies have highlighted the effectiveness of movement-based games in promoting gross motor skills (Jasri, 2025; Samsi & Jasri, 2025). Hasibuan and Jannah (2018) found that jump rope and hopping games improve large muscle strength and body control among preschoolers, while Widayanti and Hasibuan (2023) demonstrated that structured physical activities significantly enhance balance and coordination. Additionally, Kojić et al. (2024) reported that guided physical activity sessions result in higher motor competency compared to unstructured play. Despite these findings, research often neglects the integration of such activities within a broader educational management framework, including planning, supervision, and assessment (Khoiroh et al., 2025). Previous studies primarily focus on activity effectiveness, leaving a gap in understanding how systematic management of movement-based learning can optimize outcomes. By addressing this gap, the current study positions itself to contribute to both child development literature and practical management strategies for early childhood educators (Marinšek et al., 2025; Zhang et al., 2024).

In addition to effectiveness, scaffolding and teacher involvement are critical factors for maximizing motor skill development. Vygotsky's sociocultural theory emphasizes that children achieve higher developmental outcomes when guided by adults (Vygotsky, 2014). Studies have shown that structured play with active teacher feedback enhances children's coordination, balance, and movement precision (Capio et al., 2023; Koç & Koç, 2024; Saearani et al., 2024). Similarly, research on play-based learning platforms demonstrates that systematic guidance improves engagement and skill acquisition (Aloizou et al., 2025; Guohui & Xiujin, 2024). However, existing studies rarely combine movement-based interventions with formal educational management strategies that include planning, monitoring, and evaluating physical activities. This research aims to bridge this gap by examining how Star Jump games, implemented with structured management principles, can simultaneously enhance motor skills and optimize classroom instructional practices, offering both pedagogical and managerial contributions .

This study introduces a novel approach by integrating Star Jump games within an educational management perspective, emphasizing systematic planning, teacher supervision, and assessment of motor skill development. Unlike previous research that focuses only on the physical activity itself, this study considers the organizational and instructional dimensions of early

childhood education. By combining structured physical activity with management strategies, the research provides practical guidance for educators to implement movement-based interventions effectively. This approach addresses the dual challenge of enhancing children's gross motor skills while improving classroom management and learning outcomes. The study offers new insights into how early childhood programs can organize, monitor, and evaluate physical activity to maximize developmental benefits, highlighting the importance of managerial competence in promoting holistic child development.

Based on identified gaps, this research investigates the effect of Star Jump games on preschool children's gross motor skills within a structured educational management framework. The central research question is whether implementing Star Jump activities, guided and supervised through organized classroom management, significantly improves children's balance, coordination, and movement accuracy. It is hypothesized that children participating in managed Star Jump activities will show greater improvements in motor skills compared to peers without such interventions. The study contributes both theoretically, by integrating movement-based learning with educational management, and practically, by offering a replicable model for teachers to enhance physical development systematically, addressing both pedagogical and managerial aspects of early childhood education.

RESEARCH METHODS

The unit of analysis in this study included early childhood students as the material object, specifically 28 children from Group B who were divided into an experimental group (n=14) and a control group (n=14). The study focused on structured physical activity programs, particularly the implementation of Star Jump games, as a pedagogical event in early childhood education. The research also considered the classroom setting, teaching activities, and monitoring processes as part of the educational management context to ensure that the intervention aligned with systematic learning planning and supervision.

This study employed a quantitative approach using a quasi-experimental design with a nonequivalent control group. The main sources of information were the participating children as respondents, while additional data were obtained from instructional documents and structured assessment tools. Observational techniques were applied to collect data using a gross motor skill assessment sheet based on BSKAP No. 032/H/KR/2024, focusing on two indicators: body balance and movement accuracy (Kebudayaan, 2024). The instruments were validated for reliability and declared suitable for data collection, ensuring that the implementation and supervision of the Star Jump activity adhered to classroom management standards.

Data analysis involved preliminary tests for normality and homogeneity, followed by hypothesis testing. The Wilcoxon Signed Rank Test was used to compare pretest and posttest scores within the experimental group, while the Mann–Whitney U Test compared outcomes between the experimental and control groups. Data processing included reduction, display, and verification stages, integrating educational management principles such as structured observation, systematic documentation, and teacher-mediated monitoring. These procedures ensured that the intervention's effectiveness could be accurately assessed within a managed and controlled learning environment.

RESULTS AND DISCUSSION

Results

The study results indicate that Star Jump games have a positive effect on the improvement of gross motor skills in early childhood. Children in the experimental group demonstrated better balance and movement accuracy compared to the control group. Improvements were particularly observed in children's ability to maintain body stability during jumps, follow the prescribed jump patterns, and land with more controlled body positioning. This condition shows that children could coordinate their body movements more effectively after participating in Star Jump activities.

Table 1. Wilcoxon Signed Rank Test Results for Experimental Group

Description	Value
Calculated T	0
Table T	17
Significance ($\alpha = 0.05$)	< 0.05
Decision	**Ha accepted**

The Wilcoxon test results show a significance value of less than 0.05, indicating a significant difference between children's gross motor skills before and after the Star Jump intervention. This suggests that Star Jump provides an effective stimulus for gross motor development. Repeated jumping activities with varied patterns and directions require children to engage large muscles, maintain balance, and control movements consciously, helping them enhance physical ability while developing body awareness.

Play-based learning allows children to learn through meaningful direct experiences (Malaikosa & Adhe, 2023). Structured play activities enable children to naturally develop motor skills without academic pressure. Star Jump games allow children to actively engage in learning, optimizing both motor stimulation and enjoyment.

Table 2. Mann–Whitney U Test Results

Description	Value
Mann–Whitney U	1.500
Wilcoxon W	106.500
Z	-4.534
Significance (2-tailed, α = 0.05)	**0.000**

The Mann–Whitney U test results show a significance value of 0.000 (<0.05), indicating a significant difference between the experimental and control groups. The experimental group receiving Star Jump treatment demonstrated greater improvement in gross motor skills than the control group engaged in conventional learning. This indicates that Star Jump is more effective in stimulating gross motor skills in early childhood.

The differences between the two groups highlight that active and structured movement-based learning methods have a greater impact on motor skill development. In the experimental group, children moved freely but within guided Star Jump patterns, while the control group experienced less intensive locomotor stimulation, limiting optimal motor development.

Movement-based games, particularly activities involving jumps and obstacles, significantly enhance gross motor skills (Ningrum & Ningrum, 2023). Star Jump not only strengthens large muscles but also helps children improve coordination, balance, and movement accuracy. Additionally, the game provides an enjoyable learning experience, increasing children's motivation to participate. Based on these findings, Star Jump is an effective alternative learning activity that can be integrated into early childhood programs to support optimal motor development.

Discussion

The findings of this study are consistent with prior research showing that structured movement-based activities improve gross motor development in young children. Studies by Hasibuan and Jannah (2018) and Widayanti and Hasibuan (2023) confirm that jumping games and structured physical activities enhance body control and balance. Similarly, Kojić et al. (2024) found that guided physical activity sessions are more effective than unstructured play in developing motor competence. Star Jump, as implemented in this study, provides repeated, structured, and supervised movement experiences, aligning with these findings.

From an educational management perspective, the study highlights the importance of planning, organizing, and supervising play-based interventions. Fernandes (2024) emphasizes that effective early childhood programs require systematic management, including monitoring and assessment of learning

activities. The results suggest that integrating Star Jump within a managed curriculum allows teachers to optimize both learning outcomes and classroom organization, ensuring that children receive adequate stimulation while maintaining structured activity flow.

Furthermore, teacher guidance and scaffolding are essential for motor development, in line with Vygotsky's sociocultural theory (Vygotsky, 2014). Active teacher involvement, as demonstrated in this study, facilitates children's ability to execute movements accurately and maintain balance. This is supported by research from Capio et al. (2023) and Saearani et al. (2024), which shows that teacher-mediated structured activities enhance coordination, balance, and motor skill acquisition.

Play-based learning also promotes motivation and engagement, essential for sustained physical activity (Aloizou et al., 2025; Guohui & Xiujin, 2024). Star Jump activities encourage children to participate actively, supporting both gross motor development and social-emotional engagement. By combining movement-based interventions with systematic educational management, the study provides a model for optimizing motor skill development in early childhood, bridging the gap between theory and classroom practice (Marinšek et al., 2025; Zhang et al., 2024).

In summary, the study demonstrates that Star Jump games, when implemented within a structured and well-managed learning environment, significantly improve gross motor skills, including balance, coordination, and movement accuracy, while providing an enjoyable learning experience. These results support the integration of play-based movement activities into early childhood programs as part of effective educational management strategies.

CONCLUSION

The main finding of this study is that Star Jump games have a significant positive effect on the development of gross motor skills in early childhood, particularly in the aspects of body balance and movement accuracy. Children in the experimental group showed greater improvement compared to the control group after participating in the Star Jump intervention. This indicates that structured and engaging movement-based activities not only enhance physical coordination but also foster body awareness, concentration, and active participation. The study highlights that incorporating enjoyable and meaningful play into early childhood education provides a practical and effective strategy for stimulating motor development while supporting holistic learning.

From a scientific perspective, this research contributes to the field by demonstrating the integration of movement-based interventions within an educational management framework, emphasizing planning, supervision, and

structured implementation. These insights can guide teachers in designing and managing active learning activities effectively. However, the study is limited by its small sample size and single-institution setting, which may restrict generalizability. Future research could explore larger, multi-site samples, long-term effects of Star Jump or similar interventions, and the integration of cognitive or socio-emotional outcomes alongside motor skill development.

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