



## Enhancing kindergarten children gross motor skills through clogs: An Indonesian traditional games

M. Yusran Rahmat<sup>1,a</sup>, Tasrif Akib<sup>a</sup>, Rizky Anggraini<sup>a\*</sup>

Email: <sup>1</sup>anggrainiashter22@gmail.com

<sup>a</sup>Universitas Muhammadiyah Makasar, Indonesia

### Article History

Submitted: 7 October 2023  
Accepted: 10 February 2024  
Published: 25 March 2024  
DOI:  
10.26555/jecce.v7i1.6663

Published by:  
Universitas Ahmad Dahlan

This is an open-access article  
under the CC-BY-SA license



\*Corresponding author

### Abstract

Gross motor development is a critical aspect of early childhood education, enabling children to build coordination, balance, and body strength. This study aimed to improve children's gross motor skills through the implementation of clogs (*bakiak*) traditional games in Aisiyiah Bustanul Athfal III Paranga Kindergarten, Gowa Regency. Using classroom action research conducted in two cycles, the study involved nine boys aged 5–6 years as participants. Data were collected through observation and performance assessments and analyzed descriptively. The results showed a significant improvement in gross motor skills, with the percentage of children achieving the expected developmental level increasing from 27.08% in the pre-cycle to 62.5% in cycle I, and 93.05% in cycle II. These findings indicate that clogs traditional games provide effective, culturally relevant, and engaging activities for enhancing young children's gross motor development. The study contributes practical insights for integrating local traditional games into early childhood education settings.

**Keywords:** clogs; early childhood education; gross motor skills; traditional games

## INTRODUCTION

Gross motor skills are a fundamental aspect of early childhood development, encompassing the ability to control large muscles for movements such as walking, running, jumping, and balancing. Mastery of these skills is essential for children's physical growth, coordination, and overall readiness for more complex activities in both school and daily life. Early stimulation of gross motor skills not only promotes health and fitness but also strengthens social interaction and emotional regulation, as children learn through active play and group participation (Mayra, Maulana, Kushendar, 2022; Tandon et al., 2020).

One culturally rich medium to stimulate gross motor development in Indonesia is through traditional games. Among them, clogs (*bakiak*) games are well known as group-based activities that require coordination, rhythm, and teamwork (Widyastuti, 2023). Children stand on long wooden clogs, moving their feet in unison to achieve a common goal, which encourages balance, leg strength, cooperation, and concentration. Previous research has highlighted the

benefits of traditional games, including clogs, in fostering motor development, teamwork, and cultural identity in early childhood education (Susanti, Afiif, & Damayanti, 2023). However, despite their benefits, the integration of such traditional games in formal educational settings has declined, largely overshadowed by modern play tools and digital entertainment.

Preliminary observations in Group B of Aisyiyah Bustanul Athfal III Paranga Kindergarten, Gowa Regency, revealed that the learning objectives for gross motor development had not been fully achieved. Out of the class, six children showed difficulties in fundamental gross motor activities. For example, when asked to throw a ball in the specified direction, several children were unable to perform the task correctly, indicating challenges in coordination, control, and balance. Ideally, the mastery of gross motor skills in this age group should reach at least 80% of the expected developmental milestones, but this target had not yet been met in the observed classroom. These conditions underscore the urgency of implementing innovative and engaging approaches to strengthen children's gross motor abilities.

Although several studies have examined the benefit of traditional games including clogs as learning media in early childhood (Winarsih et al., 2023; Susanti, Afiif, & Damayanti, 2023). Aisyiyah Bustanul Athfal III Paranga Kindergarten have not been utilized clogs as a pedagogical strategy for enhancing gross motor development for children. Accordingly, this study investigates the use of clogs (*bakiak*) traditional games to improve gross motor skills among children aged 5–6 years at Aisyiyah Bustanul Athfal III Paranga Kindergarten, Gowa Regency. The purpose of this study is to provide empirical evidence on the effectiveness of clogs games as a learning activity to strengthen children's physical development. The significance of this research lies in its contribution to early childhood education practices by demonstrating how traditional cultural games can be integrated into the curriculum to support both developmental outcomes and cultural values.

## METHOD

This study employed classroom action research (CAR), which was conducted in two cycles, each consisting of four stages: planning, implementation, observation, and reflection. The CAR design was selected because it enables continuous improvement of the learning process through direct involvement of teachers and students in the classroom context.

The study involved nine children aged 5–6 years from Group B of Aisyiyah Bustanul Athfal III Paranga Kindergarten, Gowa Regency, All participants were boys. The selection was

based on the teacher's preliminary observations indicating that several children experienced difficulties in mastering gross motor skills.

The intervention was implemented through clogs (*bakiak*) traditional games. In each cycle, children were introduced to the rules of the game, grouped, and guided to walk in unison using wooden clogs. Cycle I emphasized familiarization and coordination, while Cycle II strengthened balance, teamwork, and control.

Data collection used observation sheets and performance assessments based on developmental achievement indicators for gross motor skills, including walking, running, balance, and teamwork. The rating scale consisted of four categories: not yet developed (*belum berkembang/BB*), beginning to develop (*mulai berkembang/MB*), developing as expected (*berkembang sesuai harapan/BSH*), and developing very well (*berkembang sangat baik/BSB*).

The data were analyzed descriptively. Quantitative data from observation sheets were presented as percentages to show the improvement across cycles. Qualitative data from teacher notes and reflections were reduced, categorized, and interpreted to support the quantitative findings. Permission was obtained from the school principal, classroom teacher, and parents before the study was conducted. The identities of the children were kept confidential, and participation was voluntary.

## RESULTS AND DISCUSSION

### Result

The research was conducted in two cycles of classroom action research to improve children's gross motor skills through clogs (*bakiak*) traditional games. Data were collected using observation sheets with four indicators: walking, running, balance, and teamwork. Each indicator was assessed on a four-point scale: not yet developed (*BB*), beginning to develop (*MB*), developing as expected (*BSH*), and developing very well (*BSB*).

### Pre-Cycle

Before the intervention, observations indicated that the majority of children had not yet achieved the expected level of gross motor development. Table 1 shows the pre-cycle observation result of children in B class of Aisiyiah Bustanul Athfal III Paranga Kindergarten.

**Table 1. Pre-Cycle Observation Results**

| Indicator | BB (%) | MB (%) | BSH (%) | BSB (%) |
|-----------|--------|--------|---------|---------|
| Walking   | 33.3   | 44.4   | 22.3    | 0.0     |
| Running   | 44.4   | 33.3   | 22.3    | 0.0     |
| Balance   | 55.5   | 33.3   | 11.2    | 0.0     |
| Teamwork  | 44.4   | 44.4   | 11.2    | 0.0     |
| Average   | 44.4   | 38.9   | 16.7    | 0.0     |

Only 27.08% of children were in the “developing as expected” or “developing very well” categories. Six children had clear difficulties in gross motor tasks, such as throwing a ball in the specified direction or maintaining body balance. It indicates that children’s gross motor skills were at a low level. The majority of children were in the BB and MB categories across all indicators. Balance appeared to be the weakest area, with more than half (55.5%) not yet able to maintain stability during physical activity. Only a small proportion (16.7%) of children had achieved the expected developmental stage, and none reached the very well-developed level. These findings confirm the observation that six children had clear difficulties in performing tasks such as throwing a ball in the correct direction, highlighting the need for targeted intervention.

### Cycle I

Following the introduction of clogs games, children showed improvement, particularly in walking and running coordination. Table 2 presents the observation of children gross motor skills after action in the first cycle.

**Table 2. Cycle I Observation Results**

| Indicator       | BB (%) | MB (%) | BSH (%) | BSB (%) |
|-----------------|--------|--------|---------|---------|
| <b>Walking</b>  | 11.2   | 22.3   | 55.5    | 11.0    |
| <b>Running</b>  | 22.3   | 22.3   | 44.4    | 11.0    |
| <b>Balance</b>  | 33.3   | 33.3   | 22.3    | 11.0    |
| <b>Teamwork</b> | 22.3   | 33.3   | 33.3    | 11.0    |
| <b>Average</b>  | 22.3   | 27.8   | 38.9    | 11.0    |

In Cycle I, the percentage of children reaching the expected level (BSH and BSB) increased to **62.5%**. Most children showed progress in walking rhythmically and running with better coordination, although difficulties remained in teamwork and balance. Cycle I demonstrated notable progress compared to the pre-cycle. The percentage of children in the expected categories (BSH + BSB) rose to 62.5%. Walking showed the strongest improvement, with more than half of the children (55.5%) achieving the expected level. Running also improved, though a significant portion (44.6%) were still below expectation. Balance and teamwork, however, remained relatively weak areas, with about one-third of children still in the BB category. These results suggest that while the clogs game was effective in improving coordination and rhythm, children required more practice to strengthen balance and group cohesiveness.

## Cycle II

By Cycle II, children demonstrated significant improvement across all indicators. Table 3 below reports the observation results of children gross motor skills after the action in the second cycle.

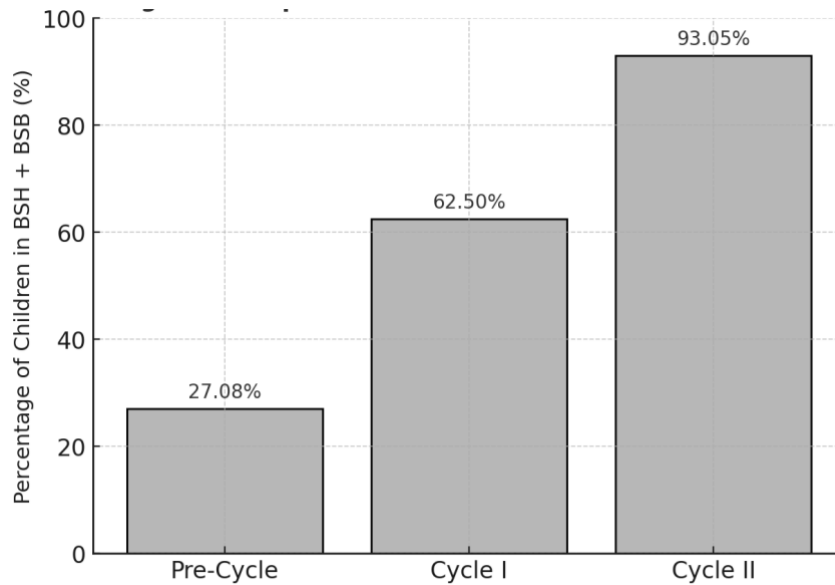
**Table 3. Cycle II Observation Results**

| <b>Indicator</b> | <b>BB (%)</b> | <b>MB (%)</b> | <b>BSH (%)</b> | <b>BSB (%)</b> |
|------------------|---------------|---------------|----------------|----------------|
| <b>Walking</b>   | 0.0           | 11.0          | 44.4           | 44.6           |
| <b>Running</b>   | 0.0           | 11.0          | 44.4           | 44.6           |
| <b>Balance</b>   | 0.0           | 11.0          | 33.3           | 55.7           |
| <b>Teamwork</b>  | 0.0           | 11.0          | 33.3           | 55.7           |
| <b>Average</b>   | <b>0.0</b>    | <b>11.0</b>   | <b>38.9</b>    | <b>50.1</b>    |

In Cycle II, 93.05% of children were in the BSH and BSB categories. Children were able to walk in unison, maintain balance, and demonstrate cohesive teamwork while playing the clogs game. Teachers reported that children were more enthusiastic, confident, and cooperative during the activities. In Cycle II, nearly all children achieved satisfactory development. A total of 93.05% of children were in the BSH and BSB categories. Balance and teamwork, which were the weakest indicators in previous stages, showed remarkable progress, with over half of the children reaching the highest category (BSB). None of the children remained in the “not yet developed” category, indicating that all participants benefited from the intervention. The consistency of results across walking, running, balance, and teamwork demonstrates that the clogs game effectively stimulated multiple aspects of gross motor skills. Teacher reflections also reported higher levels of enthusiasm, cooperation, and confidence among children, reinforcing the observed outcomes.

## Discussion

The results of this study, as illustrated Diagram 1, demonstrate a clear and significant improvement in children's gross motor skills through the implementation of clogs (*bakiak*) traditional games.



**Diagram 1. The improvement of children gross motor skill development**

The percentage of children achieving the expected developmental level increased from only 27.08% in the pre-cycle to 62.5% in Cycle I, and finally to 93.05% in Cycle II. This upward trend confirms that structured use of traditional games can effectively stimulate gross motor development in early childhood.

From a theoretical perspective, these findings are consistent with motor development theory, which emphasizes that repeated practice in meaningful and engaging contexts enhances children's physical abilities [insert citation here]. The line graph (see Diagram 2) not only shows linear improvement but also highlights the significant leap from the pre-cycle to Cycle I, suggesting that the novelty and cultural familiarity of the clogs game immediately captured children's interest and motivated them to participate actively.

Further, the CAR cycle diagram (Diagram 1) reflects the iterative process of improvement. In Cycle I, balance and teamwork remained weak indicators, as shown by the relatively high percentages in the BB and MB categories (Table 2). However, reflection and modification of strategies in Cycle II enabled children to achieve mastery in these areas, as evidenced by the dominance of BSB levels (Table 3). This progression supports the principle of scaffolding in early learning, where children gradually achieve higher competence through guided repetition and collaborative activity (Monteira, Jiménez-Aleixandre, & Siry, 2022; Puntambekar, 2022).

Comparisons with previous studies strengthen the argument. Similar improvements

have been reported where traditional games were used to develop gross motor and coordination skills (Susanti, Afiif, & Damatanti, 2023). For example, studies on cooperative physical play found that culturally embedded activities significantly increased balance, rhythm, and team cohesion among children (Bao, 2004; Ruben et al., 2024; Band, 2024). On the other hand, some researchers argue that structured sports or gymnastics may be more efficient than traditional games in targeting specific motor skills such as sprinting or agility (Shi et al., 2022; Jazvin et al., 2021). However, the present findings suggest that while structured sports emphasize physical performance, traditional games like clogs offer a more holistic approach by combining physical development with social cooperation and cultural identity.

Moreover, the strong improvement in teamwork (Diagram 2 and Table 3) indicates that clogs games not only develop physical skills but also nurture social interaction and peer collaboration. This is particularly relevant in the context of early childhood education, where the integration of physical, social, emotional, and cultural domains is essential for holistic development (Johnstone et al., 2022; Rodiah, Zulaika, & Saputra, 2024). The cultural relevance of the game may have also fostered a sense of belonging and enjoyment, which contributed to children's persistence and engagement throughout the intervention.

In summary, the diagrams and tables collectively show that the systematic application of clogs traditional games within the CAR framework produced measurable improvements in children's gross motor development. The findings align with existing literature supporting play-based, culturally relevant pedagogies, while also extending the discussion by providing empirical evidence from the Indonesian kindergarten context.

## CONCLUSION

This study demonstrated that the use of clogs (*bakiak*) traditional games significantly improved children's gross motor skills in Aisyiyah Bustanul Athfal III Paranga Kindergarten, Gowa Regency. The percentage of children achieving the expected developmental level increased from 27.08% in the pre-cycle to 62.5% in Cycle I, and further to 93.05% in Cycle II, as evidenced by the observation results and illustrated in the data tables and diagrams. The improvement was most notable in walking, running, balance, and teamwork, indicating that clogs games provide a comprehensive platform for stimulating multiple aspects of gross motor development.

The findings confirm that play-based, culturally relevant activities are effective tools for promoting early childhood development. Beyond physical growth, clogs games fostered

cooperation, confidence, and enjoyment, making learning both meaningful and engaging. The iterative nature of the classroom action research process allowed continuous reflection and adjustment, leading to significant progress across cycles. Practically, this study implies that teachers should consider incorporating traditional games into early childhood learning environments as a way to integrate physical development with cultural values and social interaction. Schools and curriculum developers may use these findings to strengthen local content in physical education, ensuring that traditional games are preserved while serving educational purposes. Future research could expand the scope by involving larger and more diverse groups of children, comparing different types of traditional games, or examining long-term impacts on both physical and socio-emotional development.

## ACKNOWLEDGMENT

Thank you to the Head of the Aisyiyah Bustanul Athfal III Paranga Kindergarten who has allow me to conduct research and all of the teacher, student, and parent consent.

## REFERENCES

- Bao, W. (2024). A study on the development of" coordination in movement" in early childhood education. *Journal of Interdisciplinary Insights*, 2(4), 109-114.
- Brand, N. (2024). Efficacy of Zulu indigenous games in enhancing perceptual-motor skills in pre-schoolers: A qualitative study of two informal settlements in Kwa Zulu Natal.
- Jazvin, A., Palić, A., Ademović, A. D. N. A. N., & Skender, N. (2021). Correlation between sprint, agility and vertical jump of elite soccer players. *Ovidius University Annals, Series Physical Education and Sport/Science, Movement and Health*, 21(2), 229-234.
- Johnstone, A., Martin, A., Cordovil, R., Fjørtoft, I., Iivonen, S., Jidovtseff, B., Lopes, F., Reilly, J., Thomson, H., Wells, V., & McCrorie, P. (2022). Nature-based early childhood education and children's social, emotional and cognitive development: A mixed-methods systematic review. *International Journal of Environmental Research and Public Health*, 19. <https://doi.org/10.3390/ijerph19105967>.
- Mayra, Z., Maulana, M. N., & Kushendar, K. (2022). The effect of emotional social development on physical motor development in early childhood. *Journal of Childhood Development*, 2(2), 64-70.
- Monteira, S. F., Jiménez-Aleixandre, M. P., & Siry, C. (2022). Scaffolding children's production of representations along the three years of ECE: A longitudinal study. *Research in Science Education*, 52(1), 127-158.



- Puntambekar, S. (2022). Distributed scaffolding: Scaffolding students in classroom environments. *Educational Psychology Review*, 34(1), 451-472.
- Rahayu, P., & Fitriyah, Q. F. (2024). Application of traditional clogs game in developing intelligence early childhood kinesthetics (Doctoral dissertation, Universitas Muhammadiyah Surakarta).
- Rodiah, I., Zulaika, G., & Saputra, D. (2024). The importance of holistic education for early childhood: integrating cognitive, emotional and social aspects. *Journal of Gemilang*. <https://doi.org/10.62872/s3mf4x22>.
- Ruban, A., Radovenchyk, A., Semal, N., Bilohur, V., Chkhailo, M., & Dzhy, V. (2024). Sports Games in the Context of Developing Children's Coordination Ability as a Component of Physical Development.
- Shi, P., & Feng, X. (2022). Motor skills and cognitive benefits in children and adolescents: Relationship, mechanism and perspectives. *Frontiers in Psychology*, 13, 1017825.
- Susanti, N. A., Afiif, A., & Damayanti, E. (2023). Implementing bakiak: A traditional game to improve the cooperative ability of children aged 5-6 years' old. *Journal of Early Childhood Care and Education*, 6(1), 45-57.
- Tandon, P., Hassairi, N., Soderberg, J., & Joseph, G. (2020). The relationship of gross motor and physical activity environments in child care settings with early learning outcomes. *Early Child Development and Care*.
- Widyastuti, T. (2023, December). The implementation of bakiak: An Indonesian traditional game to improve early childhood cooperative ability. In *INTERNATIONAL CONFERENCE OF HUMANITIES AND SOCIAL SCIENCE (ICHSS)* (pp. 261-364).
- Winarsih, Y., Komala, Y., Maspupah, E., & Watini, S. (2023). Implementation of the Atik model to improve gross motoric ability bakiak games in TKIT Nurussunnah Batam. *Journal Of Education and Teaching Learning (JETL)*, 5(1), 81-90.