



The Effect of Traditional Kasti Ball Games on Improving Physical Fitness among Elementary School Extracurricular Students

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Abstract

Objectives: This study aimed to examine the effect of traditional kasti ball games on improving the physical fitness of students participating in extracurricular activities at SD Negeri 88 Palembang.

Materials and Methods: This study employed a quantitative experimental approach using a one-group pretest–posttest design. The participants consisted of 23 male elementary school students selected through total sampling. The intervention involved structured traditional kasti ball game activities conducted over 16 sessions from April 6 to May 6, 2026. Physical fitness was assessed using the Indonesian Physical Fitness Test (TKJI), which included the 40-meter sprint, sit-up, bent-arm hang/pull-up, and vertical jump tests. Data were analyzed using descriptive statistics, normality testing, and a paired sample t-test with a significance level of 0.05.

Results: The pretest results indicated that 39.13% of students were classified in the poor category and 60.87% in the very poor category. Following the intervention, 60.87% of students achieved the very good category, while 39.13% reached the good category. The paired sample t-test revealed a statistically significant improvement in physical fitness scores between the pretest and posttest (mean difference = -7.783 ; $t = -88.500$; $df = 22$; $p < 0.001$).

Conclusions: Traditional kasti ball games significantly improved the physical fitness of elementary school students participating in extracurricular activities. These findings suggest that traditional game-based activities can serve as an enjoyable, culturally relevant, and practical strategy for enhancing students' physical fitness and promoting active participation in school-based physical activity programs.

Keywords: traditional games; kasti ball; physical fitness; extracurricular activities; elementary school students



Introduction

Physical fitness is an important foundation for students because it supports learning readiness, daily movement, participation in physical education, and overall health. In elementary school, adequate fitness enables students to perform school activities without excessive fatigue and helps them develop physical, social, and emotional competencies. However, children's physical activity is increasingly challenged by sedentary behavior, gadget use, and monotonous exercise patterns. Therefore, schools need enjoyable movement-based strategies that can increase students' willingness to participate actively in physical activity.

Traditional games offer an alternative approach because they combine physical movement, cultural values, cooperation, rules, and enjoyment. In the Indonesian context, traditional games are not only recreational activities but also educational media that can stimulate fundamental movement skills such as running, jumping, throwing, catching, and striking. Previous studies have reported that traditional games can improve physical fitness, physical literacy, manipulative movement skills, motivation, and social interaction among elementary school students (Kurniawan, 2023; Santoso et al., 2024; Sudarwo et al., 2023; Suryadi et al., 2025).

Kasti ball is one of the traditional Indonesian games that requires players to run, throw, catch, hit, avoid opponents, and coordinate with teammates. These movement characteristics are closely related to several fitness components, including speed, muscular strength, agility, coordination, explosive power, and endurance. Because the game is performed in a competitive but enjoyable situation, students are encouraged to move repeatedly without feeling that they are doing monotonous physical training.

Initial observations at the extracurricular program of SD Negeri 88 Palembang showed that students' physical fitness was still low. Several students experienced early fatigue, rapid stamina decline, and limited agility during dynamic movement. The extracurricular training process also tended to be less varied, which reduced students' enthusiasm for active movement. Although kasti ball activities were available, their use as a structured medium for improving physical fitness had not been optimized. Based on these problems, this study examined the effect of traditional kasti ball games on improving the physical fitness of extracurricular students at SD Negeri 88 Palembang.

Materials and Methods

Study Design

This study employed a quantitative experimental method using a one-group pretest–posttest design. One group of students was measured before the intervention, received traditional kasti ball game treatment, and was measured again after the intervention. The design was represented as O1–X–O2, where O1 refers to the pretest, X refers to the traditional kasti ball game treatment, and O2 refers to the posttest.

Study Participants

The participants were students who joined the traditional kasti ball extracurricular program at SD Negeri 88 Palembang. The sample consisted of 23 male students selected using total sampling because all members of the population were included in the study.

Study Organization

The research was conducted through several stages, including pretest measurement, implementation of traditional kasti ball game activities, and posttest measurement. The intervention was carried out in 16 meetings from April 6 to May 6, 2026. Physical fitness data were collected using components of the Indonesian Physical



Fitness Test (TKJI), including the 40-meter sprint, sit-up, bent-arm hang/pull-up, and vertical jump tests.

Statistical Analysis

The data were analyzed using descriptive statistics, normality testing, and paired sample t-test. The paired sample t-test was used to determine the difference between pretest and posttest scores. All statistical analyses were conducted using SPSS version 26 with a significance level of 0.05.

Results

The physical fitness distribution changed substantially after the traditional kasti ball game intervention. Before the intervention, no students were in the very good, good, or moderate categories. Most students were classified as very poor and poor. After the intervention, all students moved into the good and very good categories.

Table 1. Physical fitness category of students before and after the intervention

Category Interval	Pretest n	Pretest %	Posttest n	Posttest %	Category
>17.60	0	0.00	14	60.87	Very good
15.30-17.60	0	0.00	9	39.13	Good
12.90-15.20	0	0.00	0	0.00	Moderate
10.50-12.80	9	39.13	0	0.00	Poor
<=10.40	14	60.87	0	0.00	Very poor
Total	23	100	23	100	-

The normality test showed that both pretest and posttest data were normally distributed. The Kolmogorov-Smirnov significance value was 0.127 for the pretest and 0.200 for the posttest, both greater than 0.05. Therefore, the data met the assumption for parametric testing.

Table 2. Normality test results

Variable	Kolmogorov-Smirnov Sig.	Decision
Pretest	0.127	Normal
Posttest	0.200	Normal

The paired sample t-test showed a significant difference between pretest and posttest physical fitness scores. The mean difference was -7.783, with $t = -88.500$, $df = 22$, and $p = 0.000$. Because $p < 0.05$, the hypothesis was accepted, meaning that traditional kasti ball games had a significant effect on students' physical fitness.

Table 3. Paired sample t-test results

Comparison	Mean Difference	t	df	Sig. (2-tailed)	95% CI
Pretest-Posttest	-7.783	-88.500	22	0.000	-7.965 to -7.600

Discussion

The findings demonstrate that structured traditional kasti ball games significantly improved the physical fitness of extracurricular students at SD Negeri 88 Palembang. The movement of all participants from the poor and very poor categories into the good



and very good categories indicates that the intervention produced a clear positive change. This improvement can be explained by the movement characteristics of kasti ball, which requires repeated running, quick direction changes, throwing, catching, hitting, and coordinated team play. These activities stimulate multiple components of physical fitness simultaneously, including speed, coordination, muscular strength, agility, and explosive power.

The results are consistent with Suryadi et al. (2025), who reported that traditional games positively contribute to elementary students' physical fitness because they are designed through play-based activities aligned with children's developmental stages. The present study supports this view because kasti ball enabled students to exercise through enjoyable play rather than isolated and repetitive drills. This playful context is important for elementary students because enjoyment can increase participation, movement intensity, and persistence during physical activity.

This finding also aligns with Kurniawan (2023), who found that the implementation of traditional Lombok games improved physical fitness among fifth-grade elementary students. Similar to that study, the present intervention used familiar cultural games as a medium for structured physical activity. The similarity of findings suggests that traditional games can be adapted across different local contexts as long as they are organized systematically and matched with students' physical abilities.

The improvement in this study is also supported by Sudarwo et al. (2023), who showed that traditional Lombok games increased physical literacy among elementary school students. Physical literacy is closely related to students' confidence, competence, and motivation to move. In the present study, kasti ball may have supported these aspects by providing students with opportunities to experience success in movement tasks, interact with peers, and participate in team-based play. As students became more engaged, their movement volume and quality also increased.

Furthermore, the results are in line with Santoso et al. (2024), who found that traditional games improved manipulative movement skills among elementary school students. Kasti ball contains many manipulative skills, especially throwing, catching, and hitting. These skills are not only technical movements but also require coordination, timing, balance, and body control. Repeated exposure to these movements during the intervention likely contributed to the improvement of fitness-test performance, especially in components that require power, strength, and coordinated movement.

The practical implication of this study is that traditional kasti ball games can be used by physical education teachers and extracurricular coaches as a low-cost, culturally relevant, and enjoyable strategy to improve elementary students' fitness. Schools do not always need complex equipment to develop students' fitness; structured traditional games can provide sufficient movement stimulus when planned with appropriate frequency, duration, and progression. However, this study was limited by its one-group design, small sample size, and absence of a control group. Future studies should involve larger samples, include female students, compare traditional games with other training models, and measure specific fitness components more comprehensively.

Conclusions

Traditional kasti ball games had a significant effect on improving the physical fitness of extracurricular students at SD Negeri 88 Palembang. The intervention shifted students' fitness levels from the poor and very poor categories to the good and very good categories. The paired sample t-test confirmed a significant difference between pretest and posttest scores. Therefore, kasti ball can be recommended as a practical, enjoyable, and culturally meaningful extracurricular activity for improving physical fitness among elementary school students.

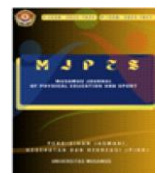


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