JTIKOR
(Jurnal Terapan Ilmu Keolahragaan)

e-ISSN: 2549-6360 | homepage: ejournal.upi.edu/index.php/JTIKOR/index
email: jtikor@upi.edu | DOI: 10.17509/jtikor.v11i1

Original Arcticle | JTIKOR 11(1): 6-12 (May 2026) | DOI: 10.17509/jtikor.v11i1.98911

The Impact of Traditional Athletic Games on Motor Skills and Sportsmanship in Elementary School Students

Siskariyanti*, Ella Anugrarista, Arisman

Department of Sport Education, Universitas Katolik Santo Agustinus Hippo, Indonesia

Article Info

Article History

Submitted: March 14, 2026
Accepted: May 29, 2026
Published: May 29, 2026

Article Access

Correspondence

*Siskariyanti
Address: Jalan Ilong, Dusun Gasing Pal 4, Desa Amboyo Utara, Kabupaten Landak, Kalimantan Barat 79357, Indonesia
E-mail: siskariyanti@sanagustin.ac.id

Abstract

This study aims to evaluate the effect of traditional mini-athletics-based games on the motor skills and sportsmanship of elementary school students. The study used a pre-test and post-test experimental design with a control group. The study sample consisted of 60 students, divided into two groups: 30 students in the experimental group and 30 students in the control group. The experimental group participated in traditional mini-athletics-based games for 4 weeks, with a frequency of 2 times per week and a duration of 45–60 minutes per session, while the control group participated in regular physical education (PJOK) learning. Data were collected through motor skills tests, sportsmanship questionnaires, and social observations before and after the intervention. The results showed that the experimental group experienced an increase in motor skills from M = 1.86 to M = 3.10 with t = 8.98; p < 0.001; Cohen's d = 1.64. Sportsmanship also increased from M = 1.70 to M = 2.55 with t = 6.65; p < 0.001; Cohen's d = 1.21. Post-test comparison showed that the experimental group was higher than the control group in motor skills p = 0.003 and sportsmanship p = 0.006. Thus, traditional games based on mini-athletics can be an effective PJOK learning strategy to improve motor skills and sportsmanship of elementary school students.

Keywords: traditional games, mini-athletics, motor skills, sportsmanship, elementary school students

Introduction

Physical education in higher education has a very important role in developing students' understanding and skills about the dynamics of social events that occur in the context of sports. One approach that can be used in sports learning is Project Based Learning (PBL), which emphasizes project-based learning where students can develop analytical and problem-solving skills through given projects. This approach encourages students to be more actively involved in the learning process, work in groups, and apply knowledge in real-world contexts (Restuina, 2025). Through play, children not only get pleasure, but also develop various important aspects in their lives. In the context of Physical Education (Penjas) students, Catholic University of St. Augustine us Hippo.

In the context of physical education, traditional games not only enrich learning and movement activities, but also become an arena for social interaction that allows the formation of social bonds between students (Irwan, 2020). Through these activities, children learn to work together, build mutual trust, and foster true empathy towards peers. Basically, physical education aims to develop children's basic motor skills, such as balance, coordination, agility, strength, and speed. Good motor skills not only support children's success in the field of sports, but also contribute to academic abilities and character building, such as concentration, discipline, and cooperation. Therefore, physical activity education in schools should not only focus on the physical aspects or formal sports skills, but also integrate very important learning, namely social and moral for the development of children's character. Sportsmanship is also a very important aspect in sports education (Siskariyanti, 2016). Physical skills, children need to be taught about the values of sportsmanship, such as cooperation, discipline, mutual respect, and accepting victory and defeat with an open mind. Traditional games that involve healthy competition can be an ideal platform for teaching these values. Children can learn to compete fairly and respect each other with their classmates, and develop a strong mentality in facing challenges. Traditional games, which are rich in culture and history, provide opportunities for students to learn how social dynamics are manifested in various physical activities and games (Aris, 2025). Traditional games not only emphasize physical or technical aspects, but also serve as a means to understand social interaction, leadership, teamwork, and social roles in society (Hambali, 2021). "This change makes the opportunity to build a sense of togetherness, cooperation, and empathy in groups increasingly reduced, because the real interactions that usually occur in traditional games are starting to be replaced by virtual interactions". The shift in student preferences from Astono (2025) traditional games to digital games has quite significant sociological consequences. Traditional games are basically based on face-to-face interactions *(face-to-face interaction)* which involves physical movement, direct communication, and cooperation in groups. This situation allows students to build a sense of togetherness And Empathy arises because they experience real social processes: sharing roles, negotiating rules, and feeling joy and disappointment together.

The factor causing low participation of children in sports activities is the rapid development of digital technology. Children spend more time in front of gadget screens, which causes a decrease in outdoor physical activity (Pribadi et al., 2023). A sedentary lifestyle results in a decline in children's basic motor skills, and a weakening of social values, such as sportsmanship, cooperation, and empathy for other humans. In fact, these values are very important in forming a child's character from an early age. For example, Aris (2023) states that through games, children can stimulate their thinking skills and develop their abilities. motor to be more active.

Of the sports that can be implemented in elementary schools, the implementation of traditional athletic- based sports games has not been optimally implemented. This is due to a lack of understanding and knowledge about how traditional games can be adapted into interesting and educational mini-games. Therefore, this study aims to study the implementation of traditional mini-game-based sports games to develop motor skills and sportsmanship in elementary school children. It is hoped that this research can contribute to the development of more interesting and beneficial sports learning methods for children in elementary schools, and increase understanding of the importance of sportsmanship in sports education (Andriani, 2011). Through this game, school youth are trained to hone patience, foster an attitude of sportsmanship, and build solidarity. Among peers, conditions in the field show that physical education learning in many schools still tends to be monotonous and focuses on rigid sports techniques, without paying attention to the characteristics of children's development. Many schools still apply conventional teaching methods that do not actively involve children in interesting and fun physical activities (Pribadi et al., 2023). As a result, children tend to feel bored and less enthusiastic about participating in physical education lessons, which ultimately affects their interest in sports.

As digital technology advances, children are increasingly exposed to electronic games that can reduce social interaction and physical activity. This has an impact on development of children's motor skills and social character, such as sportsmanship, teamwork, and respect for opponents. One way to address this problem is to integrate (Irwan, 2020). Traditional athletic mini-games are incorporated into physical education activities in elementary schools. However, although numerous studies have demonstrated the positive benefits of physical activity on child development, research focusing on the effects of traditional athletic mini-games on children's motor skills and sportsmanship at the elementary school level is still limited.

This study aims to evaluate the impact of implementing traditional athletic games on elementary school students' motor skills and sportsmanship. In this study, the authors wanted to identify changes in motor skills, such as coordination, balance, and agility, as well as sportsmanship attitudes, including fair play, teamwork, and respect for opponents, after students participated in the games.

Methods

According to Sulistyawati (2023) this design is very effective for evaluating the direct effects of the treatment given because there is a comparison between the two existing groups (experimental and control). With a pre-test, researchers can measure the initial value of the variable being measured before the treatment is given, and with a post-test, researchers can measure the changes that occur after the treatment. The comparison between the pre-test and post-test scores in the experimental group will show the changes resulting from the treatment, while the control group will show values that are not affected by the intervention.

The advantage of the pre-test post-test control group design is its ability to control external factors that may influence the results of the study. For example, if there are external factors such as different motivations of children or different physical conditions of children, this design will allow researchers to minimize the influence of these factors because measurements are taken on both groups (experimental and control) before and after the treatment. With this method, researchers can ensure that the observed changes are more likely caused by the treatment given and not by other uncontrolled factors (Alfatih, 2019).

The advantage of the pre-test post-test control group design is its ability to control external factors that may influence the results of the study. For example, if there are external factors such as different motivations of children or different physical conditions of children, this design will allow researchers to minimize the influence of these factors because measurements are taken on both groups (experimental and control) before and after the treatment. With this method, researchers can ensure that the observed changes are more likely caused by the treatment given and not by other uncontrolled factors (Alfatih, 2019).

Research Design

The sampling technique used was random sampling, which allows for the random selection of participants from the relevant population. This technique was chosen to minimize bias and ensure that the sample is representative of the entire population being studied.

Participants

The population in this study was all elementary school students at SDN 34 Ayo Gundaleng who participated in physical education activities. This study focused on students participating in traditional athletic mini-games to observe the development of motor skills and sportsmanship.

The research sample consisted of 60 students, who were divided into two groups, namely 30 students in the experimental group and 30 students in the control group. The experimental group participated in a traditional game intervention based on athletic mini-games, while the control group participated in physical education learning as usual without any special intervention.

The inclusion criteria for this study were students who were actively enrolled at SDN 34 Ayo Gundaleng, participating in physical education lessons, willing to participate in the entire research process, and physically fit to participate in the game activities. The exclusion criteria were students who were absent during the pre-test or post-test, had health problems or injuries that prevented physical activity, and did not participate in the full intervention activities.

Instrument

The instruments used in this study consisted of two types: a motor skills test and a sportsmanship questionnaire. Both instruments were developed with the appropriateness of the research objectives, participant characteristics, and the indicators to be measured in mind. The use of these two instruments aimed to assess not only changes in participants' physical abilities but also changes in their attitudes during traditional sports activities.

Procedure

Intervention Procedure

The traditional athletic mini-game intervention was conducted for 4 weeks, with a frequency of 2 times

per week and a duration of 45–60 minutes per session. Activities were given to the experimental group through traditional games that included elements of basic athletic movements, such as running, jumping, zigzagging, maintaining balance, changing direction, and working together in groups. Each session began with a warm-up, continued with the implementation of the main game, and ended with a cool-down and a brief reflection on the value of sportsmanship.

Control Group

The control group was not given the traditional athletic mini-games. Students in the control group continued to participate in physical education (PJOK) lessons as usual, consistent with school routines. These activities included general physical activity, basic training, and sports instruction, with no additional interventions specifically emphasizing traditional athletic mini-games.

Data Collection Procedures

Data collection was conducted through pre-tests and post-tests. The pre-test was administered before the intervention to determine students' initial abilities in motor skills and sportsmanship. Motor skills were measured through coordination, balance, and agility tests, while sportsmanship was measured using a questionnaire and observations of social behavior during the activity. After the intervention was completed, a post-test was conducted using the same instrument to determine changes in scores between before and after the treatment. Data from the experimental group was then compared with the control group to determine differences in results after the treatment.

Data Analysis

Descriptive Statistics: Used to summarize data. Research data were analyzed using descriptive statistics and inferential statistics. Descriptive statistics were used to describe motor skills and sportsmanship data, including mean values, standard deviations, minimum values, and maximum values.

Assumption tests are first performed, namely the normality test and the homogeneity test. The normality test is used to determine whether the data is normally distributed, while the homogeneity test is used to determine whether the variance between groups is homogeneous. If the data meets these assumptions, the analysis continues using parametric tests. However, if the data does not meet these assumptions, then the use of non-parametric tests can be considered.

The analysis used a paired t-test to compare pre-test and post-test scores in the experimental group. Furthermore, an independent t-test was used to compare the results of the experimental and control groups after the intervention. Additionally, ANCOVA was used to control for external factors, such as participants' motivation and physical condition, that could potentially influence the study results.

Although the instrument uses a 1–4 scale, the data were still analyzed parametrically because scores were obtained from a combination of several items, so they can be treated as interval data practically in quantitative research. To determine the magnitude of the intervention's effect, Cohen's d effect size was used. The entire data analysis process was carried out using IBM SPSS Statistics software and Microsoft Excel for initial data processing.

Results

A total of 60 students participated in this study, consisting of 30 students in the experimental group and 30 students in the control group. The experimental group participated in traditional athletic mini-games, whereas the control group participated in regular physical education (PJOK) learning without any additional intervention.

The pre-test results indicated that the experimental and control groups had relatively

similar baseline abilities in both motor skills and sportsmanship. As shown in Table 1, the mean motor skills score of the experimental group was 1.86, while the control group obtained a mean score of 1.84. Similarly, the experimental group achieved a mean sportsmanship score of 1.70, compared to 1.68 in the control group.

To confirm baseline equivalence between groups, an independent t-test was conducted. The results demonstrated no significant differences between the experimental and control groups in motor skills ($p = 0.913$) or sportsmanship ($p = 0.897$), indicating that both groups were statistically equivalent prior to the intervention.

Following the intervention, the experimental group demonstrated greater improvements compared to the control group. As presented in Table 2, the post-test mean score for motor skills in the experimental group increased to 3.10, whereas the control group achieved a mean score of 2.26. In sportsmanship, the experimental group obtained a mean score of 2.55, while the control group scored 1.85.

The paired t-test results showed significant improvements in the experimental group for both motor skills ($t = 8.98$; $p < 0.001$; Cohen's $d = 1.64$) and sportsmanship ($t = 6.65$; $p < 0.001$; Cohen's $d = 1.21$). In contrast, the control group showed only a small improvement in motor skills ($p = 0.044$) and no significant improvement in sportsmanship ($p = 0.307$). Detailed results are presented in Table 3.

An independent t-test was also conducted to compare post-test scores between the experimental and control groups. As shown in Table 4, significant differences were found in

Table 1
Descriptive Statistics of Pre-test Based on Group

Variables	Group	N	Mean	SD	Information
Motor skills	Experiment	30	1.86	0.70	Baseline data before treatment
Motor skills	Control	30	1.84	0.68	Initial data without treatment
Sportsmanship	Experiment	30	1.70	0.62	Baseline data before treatment
Sportsmanship	Control	30	1.68	0.60	Initial data without treatment

Table 2
Descriptive Statistics of Post-test Based on Group

Variables	Group	N	Mean	SD	Information
Motor skills	Experiment	30	3.10	0.90	Post-test after intervention
Motor skills	Control	30	2.26	1.19	Regular PJOK post-test
Sportsmanship	Experiment	30	2.55	0.85	Post-test after intervention
Sportsmanship	Control	30	1.85	1.05	Regular PJOK post-test

motor skills (p = 0.003) and sportsmanship (p = 0.006), indicating that students who participated in traditional athletic mini-games achieved higher outcomes than those who received regular PJOK learning.

To control for baseline differences, ANCOVA analysis was performed using pre-test scores as covariates. The results demonstrated that the intervention remained significant for motor skills (F = 11.89; p = 0.001; partial eta squared = 0.173) and sportsmanship (F = 7.96; p = 0.007; partial eta squared = 0.123). These findings indicate that traditional athletic mini-games had a moderate effect on both variables after controlling for students' initial abilities (Table 5).

The correlation analysis revealed a weak positive relationship between motor skills and sportsmanship (r = 0.28; r^2 = 0.0784). This result indicates that improvements in motor skills were associated with sportsmanship improvement; however, the shared contribution was relatively small (7.84%). The correlation results are presented in Table 6.

Overall, the findings suggest that traditional athletic mini-games were effective in improving students' motor skills and sportsmanship compared to regular PJOK learning.

Discussion

The results showed that traditional athletic mini-game-based games had a positive impact on elementary school students' motor skills and sportsmanship. In the experimental group, motor skills scores increased from 1.86 in the pre-test to 3.10 in the post-test, with paired t-test results of t = 8.98; p < 0.001; Cohen's d = 1.64. An increase also occurred in sportsmanship, from 1.70 to 2.55, with a value of t = 6.65; p < 0.001; Cohen's d = 1.21. These results indicate that the intervention had a strong influence on both variables.

Table 3
Paired t-Test Results

Group	Variables	Pre-test Mean	Post-test Mean	Mean Diff.	t	df	p	Cohen's d
Experiment	Motor skills	1.86	3.10	1.24	8.98	29	<0.001	1.64
Experiment	Sportsmanship	1.70	2.55	0.85	6.65	29	<0.001	1.21
Control	Motor skills	1.84	2.26	0.42	2.10	29	0.044	0.38
Control	Sportsmanship	1.68	1.85	0.17	1.04	29	0.307	0.19

Table 4
Results of the Independent t-Test between the Experimental and Control Groups

Variables	Experimental Mean	Mean Control	Mean Diff.	t	df	p	Cohen's d	Interpretation
Motor skills	3.10	2.26	0.84	3.08	58	0.003	0.80	Significant
Sportsmanship	2.55	1.85	0.70	2.84	58	0.006	0.73	Significant

Table 5
ANCOVA Results

Dependent Variable	Covariates	F	p	Partial Eta Squared	Interpretation
Post-test motor skills	Motoric pre-test	11.89	0.001	0.173	Moderate effect after controlling for initial ability
Post-test sportsmanship	Pre-test sportsmanship	7.96	0.007	0.123	Moderate effect after controlling for initial ability

Table 6
Correlation between Motor Skills and Sportsmanship

Variables	N	r	r^2	Category	Information
Motor skills and sportsmanship	60	0.28	0.0784	Weak	Positive relationship, but joint contribution is only 7.84%

Comparisons between groups also showed significant results. In the post-test, the experimental group obtained higher motor skill scores than the control group, namely 3.10 compared to 2.26, with a t value = 3.08; p = 0.003; Cohen's d = 0.80. In sportsmanship, the experimental group also scored higher than the control group, namely 2.55 compared to 1.85, with a t value = 2.84; p = 0.006; Cohen's d = 0.73. Thus, the improvement in the experimental group was not only seen descriptively, but also supported by statistical results.

This finding is in line with research by Afif et al., (2025) which showed that traditional games significantly influence students' gross motor skills, physical fitness, and social skills. In the study, gross motor skills increased with a value of F = 56.959; η^2p = 0.337, while social skills increased with a value of F = 58.553; η^2p = 0.343. These results support that traditional games can help children's physical and social development simultaneously.

The results of this study are also in line with Akbari et al. who found that traditional games for 24 sessions were more effective than daily activities in improving children's basic motor skills, with an average difference of 17.12 and a p value <0.001. In addition, Febrianto et al., (2022) found that traditional games improved student cooperation, with an average pre-test score of 126.06 increasing to 141.91 in the post-test, and a p value = 0.000.

However, the correlation between motor skills and sportsmanship in this study was only r = 0.28, which is considered weak. This value indicates that improvements in motor skills are not always directly followed by improvements in sportsmanship. Motor skills are more related to physical abilities such as coordination, balance, agility, and speed of movement, while sportsmanship is related to aspects of social attitudes such as fair play, cooperation, adherence to rules, and respect for opponents. With a value of r^2 = 0.0784, the relationship between the two variables only explains about 7.84% of the shared variation, so sportsmanship is likely more influenced by other factors, such as student motivation, teacher instillation of values, peer interaction, classroom atmosphere, and previous playing experience.

This study shows that traditional athletic mini-games have the potential to improve motor skills and sportsmanship in elementary school students. The research sample has been consistent with N = 60 students, consisting of 30 students in the experimental group and 30 students in the control group. The experimental group participated in traditional athletic mini-games, while the control group participated in regular PJOK learning.

The pre-test results showed that the initial abilities of both groups were relatively equal. In motor skills, the experimental group obtained an average of 1.86, while the control group obtained 1.84. In sportsmanship, the experimental group obtained an average of 1.70, while the control group obtained 1.68. After the intervention, the experimental group experienced greater improvement than the control group. The post-test average of motor skills for the experimental group was 3.10, while the control group obtained 2.26. In sportsmanship, the experimental group obtained 2.55, while the control group obtained 1.85.

Statistical test results support these findings. A paired t-test in the experimental group showed significant improvements in motor skills and sportsmanship. An independent t-test also showed significant differences between the experimental and control groups, namely motor skills p = 0.003 and sportsmanship p = 0.006. ANCOVA showed that the intervention remained effective after controlling for baseline scores.

However, the relationship between motor skills and sportsmanship was weak, with an r value of 0.28. This means that improved motor skills do not necessarily automatically lead to improved sportsmanship. Sportsmanship is likely more influenced by other factors, such as student motivation, teacher instillation of values, peer interactions, classroom atmosphere, and previous playing experiences.

Conclusions

Based on the research results, traditional athletics-based games can improve elementary school students' motor skills and sportsmanship. Improvement in the experimental group was higher than in the control group, both in motor skills and sportsmanship. However, the relationship between motor skills and sportsmanship was weak, so improving sportsmanship depends not only on physical ability but also on social factors, motivation, and the instillation of values during learning.

This study has several limitations. First, although the sample size was consistently 60 students, the study was conducted in only one school, so the results cannot be widely generalized. Second, the sportsmanship instrument used a scale of 1–4, so students' answers could be influenced by the subjectivity and understanding of each participant. Third, the duration of the intervention was relatively limited, so its long-term impact on sportsmanship cannot be determined. Fourth, external factors such as motivation, physical condition, extracurricular activities, teacher teaching style, and peer influence could not be fully controlled.

Acknowledgment

The researchers would like to express their gratitude to Universitas Katolik Santo Agustinus Hippo for their support and assistance in conducting this research. Special thanks are also extended to all parties who contributed, directly or indirectly, to this research. Without the assistance and collaboration of various individuals and organizations, this research would not have been possible.

References

Afif, M., Bafirman, B., Kiram, Y., & Masrun, M. (2025). *The effect of traditional games on students' gross motor skills, physical fitness, and social skills*. Jurnal Penelitian Pendidikan Indonesia, 11(4), 603–609.

Akbari, H., Abdoli, B., Shafizadeh, M., Khalaji, H., Hajihosseini, S., & Ziaee, V. (2009). The effect of traditional games in fundamental motor skill development in 7–9 year-old boys. *Iranian Journal of Pediatrics, 19*(2), 123–129.

Andriani, T. (2011). Permainan tradisional dalam membentuk karakter anak usia dini. *Jurnal Sosial Budaya, 9*(1), 122–136.

Aris, M. T. (2023). Pengembangan pembelajaran atletik di sekolah dasar kelas V. *Jurnal Filsafat, Sains, Teknologi, dan Sosial Budaya, 29*(3), 112–120.

Aris, M. T. (2025). The role of traditional games and sports in shaping social order. *JTIKOR: Jurnal Terapan Ilmu Keolahragaan, 10*, 123–129.

Astono, F. (2025). The influence of traditional games on the development of motor skills and character of elementary school students. *Jurnal Pendidikan Jasmani dan Olahraga, 1*(1), 307–316.

Febrianto, D., Resita, C., & Gustiawati, R. (2022). The effect of traditional games on cooperation in class VIII Junior High School 4 Purwadadi. *Jurnal Pendidikan Jasmani, 3*(2), 152–160.

Hambali, Y. I. (2021). The relationship between smartphone usage intensity and sleep quality with physical fitness of grade VIII students at SMP Negeri 2 Karangpucung, Cilacap Regency during the Covid-19 pandemic in 2021. *Suparyanto dan Rosad, 5*(3), 248–253.

Irwan, M. (2020). *Implementation of simple and traditional games in physical education and health learning in elementary schools in Andong Regency*. 1–197.

Pribadi, B., Junaidi, I. A., & Kumbara, H. (2023). Pengaruh permainan tradisional terhadap peningkatan kemampuan motorik kasar siswa SD N 06 Rambang Kuang. *Journal Physical Health Recreation, 4*, 221–227.

Restuina, C. (2025). The role of traditional games in the effort of PGSD students. *Jurnal Pendidikan Dasar, 1*, 126–132.

Siskariyanti. (2016). Development of an athletic learning model with a local culture-based game approach for elementary school students in grade V semester 1. *Jurnal Pendidikan Jasmani dan Olahraga, 3*, 41–50.

Sulistyawati. (2023). Qualitative research: Qualitative research methods. *Equilibrium Journal, 5*, 1–7.