



The Effect of Local Wisdom-Based Football Games on Elementary School Students' Motivation in Physical Education Learning

Arifuddin ^{1*}, Mariamah¹, Rabwan Satriawan¹, Ewan Irawan¹, Ainun Fitriani¹

¹Physical Education , STKIP Taman Siswa Bima, Bima, Indonesia

Corresponding Author: ariflambu89@gmail.co.id

Abstract

Objective: This study aimed to determine the effect of local wisdom-based football games on students' motivation to learn Physical Education, Sport, and Health (PESH) at Rato Public Elementary School, Lambu District, Bima Regency.

Materials and Methods: This quantitative study employed a pre-experimental one-group pretest–posttest design. The participants were 16 third-grade students from Rato Public Elementary School. Data were collected using a PESH learning motivation questionnaire administered before and after the intervention. The data were analyzed using a normality test and a paired-samples *t*-test.

Results: The findings demonstrated a significant improvement in students' motivation to learn PESH following their participation in local wisdom-based football games. These results indicate that integrating Mbojo local wisdom into football activities can create a more engaging, meaningful, and culturally relevant learning experience for elementary school students.

Conclusion: Local wisdom-based football games can serve as an enjoyable and contextual learning strategy for enhancing elementary school students' motivation to learn PESH while preserving Mbojo cultural values. The study's main contribution lies in integrating local cultural wisdom into football-based learning activities. However, the one-group pretest–posttest design, absence of a control group, and relatively small sample limit the generalizability of the findings. Future research should employ a controlled experimental design with a larger sample to strengthen the validity of the results. These findings provide practical implications for developing culturally responsive PESH learning models in elementary schools.

Keywords : local wisdom; football games; learning motivation; physical education; elementary school students.



Introduction

Education Physical , Sports , and Health (PJOK) is Wrong One eye lesson important at school purposeful basis develop fitness physical , skills movement , attitude social , and character student through activity physical . However , in In practice , PJOK learning in many school base Still delivered with monotonous method And not enough interesting , so that student tend not enough motivated And not enough active participate in learning (Yustiyati et al., 2024). This low motivation to learn has an impact on the minimal active involvement of students, both physically and emotionally, in the movement learning process.

Learning motivation is a psychological factor that significantly determines the success of the learning process, including in physical education (PJOK). Motivation can be understood as an internal or external drive that drives students to actively engage, persist, and strive to achieve learning goals. One model widely used to explain learning motivation is the ARCS (Attention, Relevance, Confidence, Satisfaction) model, which emphasizes that learning motivation will increase if learning is able to attract students' attention, is relevant to students' lives, builds self-confidence, and provides satisfaction after the learning process. Elementary school students in particular require learning stimuli that are concrete, enjoyable, and involve physical activity so that their learning motivation grows optimally.

Local wisdom is the values, norms, and knowledge that grow and develop within a community and are passed down from generation to generation as guidelines for behavior and social interaction. In an educational context, local wisdom can be integrated into learning through traditional games that emphasize the values of cooperation, sportsmanship, and mutual assistance. Traditional games serve not only as a means of recreation but also as a medium for character education and cultural preservation, which can be adapted into physical education (PJOK) lessons in elementary schools.

Football is one of the most popular and beloved sports among children, including elementary school students, due to its dynamic, competitive nature and ease of modification. As a learning medium, the game can be modified in terms of its form, rules, and cultural elements, thus not only training basic technical skills but also serving as a vehicle for instilling local wisdom. Modifying the game based on local culture has the potential to create more contextual and meaningful physical education (PJOK) learning for students.

One alternative approach that is considered effective in increasing student learning motivation in PJOK learning is by integrating traditional games or local wisdom into the learning process. The results of the study showed that the integration of traditional games in PJOK learning can significantly increase the learning motivation of elementary school students, because learning activities that are fun, involve physical activity, and are related to local culture can create a more lively and meaningful learning atmosphere for students (Setyawan et al., 2025). Other studies also confirmed that the use of traditional games in PJOK learning can increase the learning interest of elementary school students (Yustiyati et al., 2024).

Bima Regency, particularly the Lambu District, has a wealth of Mbojo cultural values, imbued with a spirit of togetherness and mutual cooperation, as reflected in the local philosophy of life. These local wisdom values have the potential to be integrated into soccer learning through modifications to the rules of the game, the formation of team formations that emphasize cooperation, the use of traditional Bima cheers and chants, and the instilling of sportsmanship and togetherness as part of the learning process. This approach aligns with the findings that traditional games can be used as local wisdom-based learning media in elementary schools (Moh. Alfian Habibi, 2015) and have been proven to improve student cooperation and social interaction. Various related



studies have been conducted by other researchers, but this research has gaps as depicted in Figure 1.

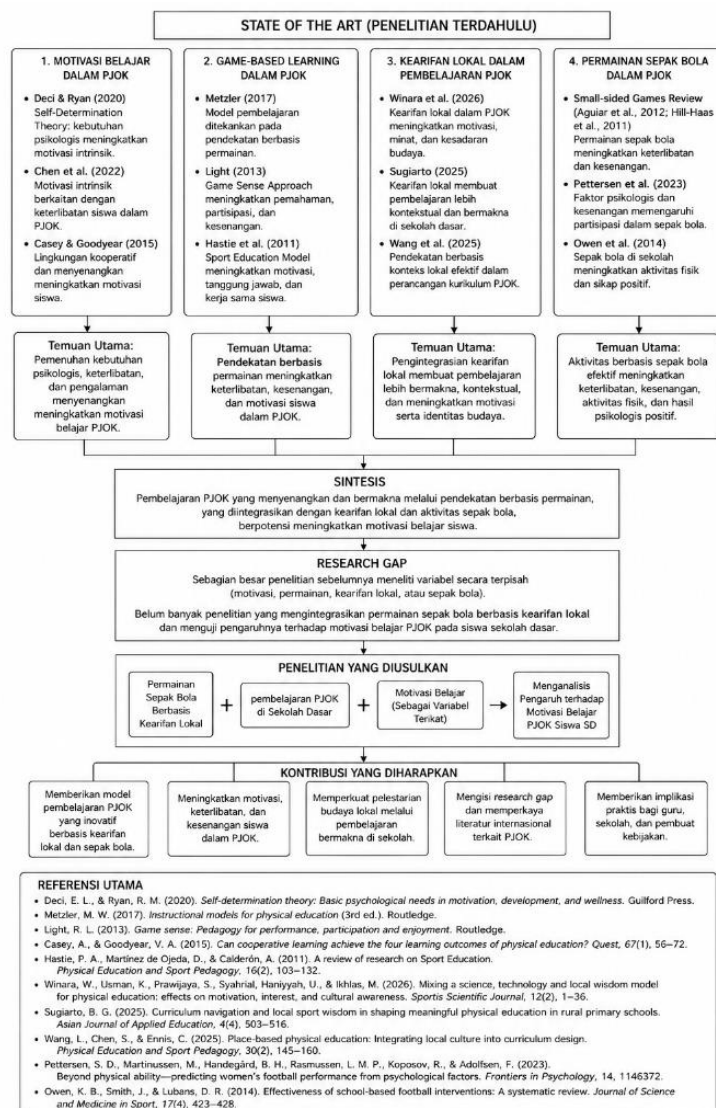


Figure 1. State of the Art

Study This own a number of difference fundamental compared to previous studies on traditional games and motivation to learn PJOK. Most previous studies used traditional games as a general without modification special on branch sport certain (Yustiyati et al., 2024), (Ilahi et al., 2025), whereas study This specifically modifying the game of soccer by integrating the local wisdom values of the Mbojo community, such as karawi kabuju (mutual cooperation), in the aspects of game rules, team formations, and traditional cheers. In terms of method and subjects, this study used a one-group pre-experimental pretest-posttest design with subjects being grade III elementary school students in the Lambu District, Bima Regency, which geographically and culturally has not been widely studied compared to other regions in Indonesia (Bate, 2026). In addition, the learning motivation instrument used refers to the ARCS model which has been tested validity And its reliability , so that different from part study earlier than focus on aspect fitness physique or skills motor solely (Penjakora et al., 2021).

Urgency study This based on on Still limited studies that are special lift integration wisdom local public Mbojo into Physical Education (PJOK) learning, particularly through soccer, at the elementary school level. Efforts to preserve local culture through formal education are becoming increasingly important in line with the demands of the



Independent Curriculum, which encourages contextual learning based on students' potential and environment. This research is expected to contribute both theoretically, by enriching studies on the integration of local wisdom into PJOK learning, and practically, by providing an alternative learning model that can be implemented by PJOK teachers in elementary schools to increase student learning motivation and instill local cultural values.

The novelty of this research lies in the modification of the soccer game which explicitly includes Mbojo cultural values in the form of team formations based on cooperation, traditional cheers, and the instillation of local sportsmanship values, which have not been found in previous research.

Although study about game traditional And motivation learning PJOK is enough Lots studied , research that is special integrate game football with values wisdom local public Mbojo (Bima), especially in the region Subdistrict Lambu , still very limited . By Because that , research This aim For know influence game football based wisdom local to motivation learning physical education for elementary school students Rato , District Lambu , Bima Regency .

Materials and Methods

Study Design

This study used a quantitative approach with a one-group pretest-posttest pre-experimental design. This design involved one group of research subjects who were given measurements before and after treatment. The initial measurement (pretest) was conducted to determine the level of students' motivation to learn Physical Education (PJOK) before being given treatment, while the final measurement (posttest) was conducted after students participated in local wisdom-based soccer game learning. The independent variable in this study was local wisdom-based soccer game, while the dependent variable was students' motivation to learn Physical Education (PJOK). The research design can be described as follows:

$$O_1 \rightarrow X \rightarrow O_2$$

Description:

O₁ = Pretest of students' motivation to learn PJOK

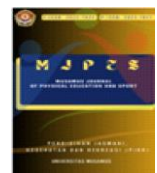
X = treatment in the form of learning soccer games based on local wisdom

O₂ = posttest of students' motivation to learn PJOK

A one-group pretest-posttest design was chosen because the study aimed to determine changes in students' learning motivation after experiencing physical education (PJOK) through a soccer game developed by integrating elements of local wisdom. This design allowed researchers to compare students' learning motivation before and after treatment in the same group.

Study Participants

The research subjects were all 16 third-grade students of Rato State Elementary School, Lambu District, Bima Regency. The research subjects were selected using a total sampling technique, meaning all members of the population who met the research criteria were made research subjects. The inclusion criteria for this study included: (1) students registered as third-grade students of Rato State Elementary School at the time the research was conducted; (2) participating in Physical Education (PJOK) lessons during the research period; and (3) obtaining permission from their parents/guardians to



participate in the research. The exclusion criteria were students who were unable to participate in the complete series of research activities, especially at the pretest, treatment, or posttest stages. Before the research was conducted, the researcher coordinated with the principal and PJOK teachers regarding the objectives, schedule, procedures, and technical implementation of the research. Information regarding the objectives and procedures of the research was also conveyed to the students using language appropriate to their developmental level.

Study Organization

The research was conducted at Rato Public Elementary School, Lambu District, Bima Regency, West Nusa Tenggara Province, in July 2026. The research was conducted during physical education (PJOK) learning activities according to a schedule agreed upon with the school. The selection of Rato Public Elementary School as the research location was based on the consideration that physical education (PJOK) learning in schools can be developed through a game-based approach that is closely related to students' life experiences and socio-cultural environment. The integration of local wisdom into soccer games is expected to create a more contextual, engaging, and appropriate learning environment for elementary school students.

Research Instrument

The instrument used in this study was a PJOK learning motivation questionnaire with a Likert scale (1–5), which measures learning motivation indicators including: (1) students' attention to learning, (2) relevance of the material to students' lives, (3) confidence in participating in learning, and (4) students' satisfaction with the learning process, referring to the ARCS motivation model. Instrument tested validity And its reliability before used For data collection . As for procedure study as following .

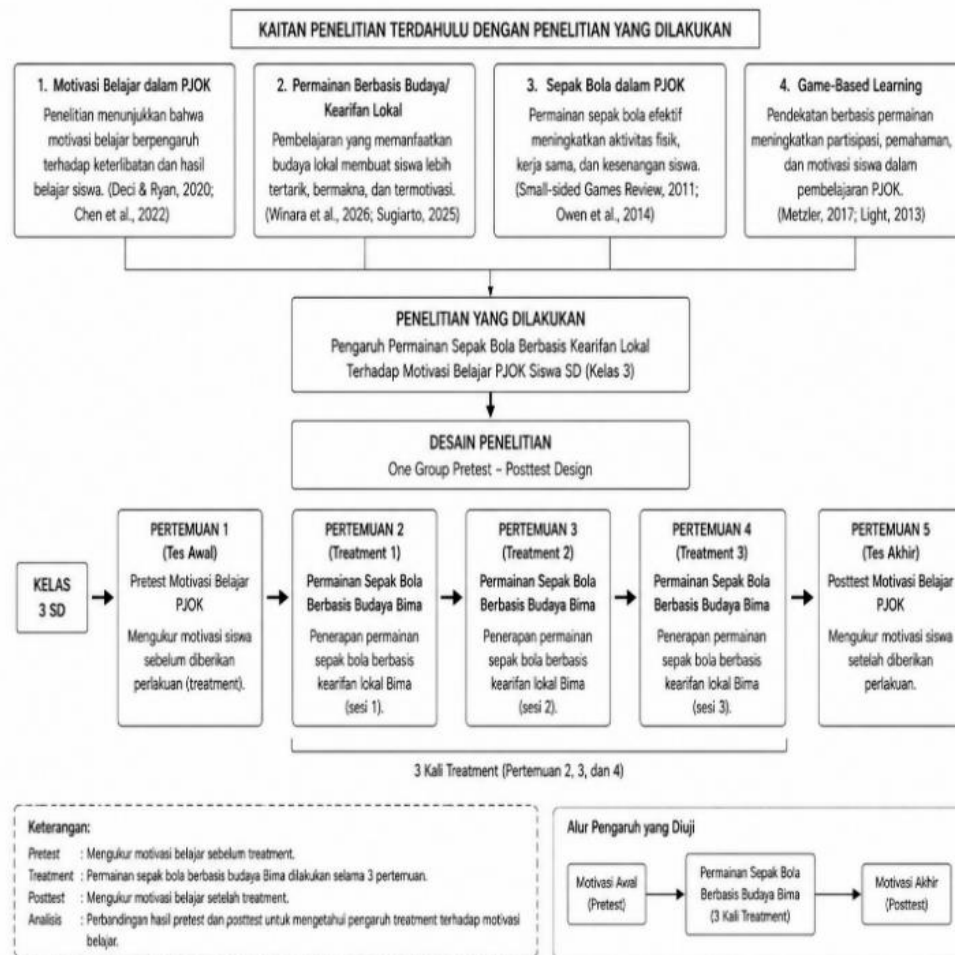


Figure 2. Procedure Study

Statistical Analysis

The research data were analyzed quantitatively to determine the increase in students' motivation to learn Physical Education (PJOK) after being taught through local wisdom-based soccer games. The analysis was conducted by comparing the pretest and posttest scores of students' learning motivation. The magnitude of the increase in learning motivation was analyzed using normalized gain (N-Gain). N-Gain analysis is used to determine the level of improvement in scores obtained by students after treatment by considering the maximum score that can be achieved. The N-Gain value is calculated using the following formula:

$$N\text{-Gain} = \frac{\text{Skor Posttest} - \text{Skor Pretest}}{\text{Skor Maksimal Ideal} - \text{Skor Pretest}}$$

Information:

Pretest = learning motivation score before treatment is given;

Posttest = learning motivation score after being given treatment; and

Maximum Score = the maximum score that can be obtained from the learning motivation instrument.

The N-Gain value is then interpreted based on the improvement category. An N-Gain value <0.30 is categorized as low, $0.30 \leq \text{N-Gain} < 0.70$ is categorized as medium, and an N-Gain ≥ 0.70 is categorized as high. In addition to calculating the overall N-Gain, the N-Gain value can also be used to describe the increase in learning motivation in each student. The average N-Gain value of the group is then used to determine the



level of effectiveness of increasing learning motivation after the implementation of local wisdom-based soccer games. Data analysis was carried out using SPSS. The results of the N-Gain analysis are presented in the form of an average value, standard deviation, minimum value, maximum value, and improvement categories to provide a comprehensive picture of changes in student learning motivation.

Results

Study involving 16 students , consisting of over 9 students male (56.25%) and 7 students women (43.75%). Before given treatment , students take the pretest for know ability beginning , then after learning posttest was conducted for know improvement results learning . The results of the descriptive analysis show that the pretest scores are in the range of 55–65 with an average of 59.69. The highest pretest score obtained was 65, while the lowest score was 55, so the range of scores is 10. This indicates that students' initial abilities are still in the moderate category with relatively small variations in scores.

After given treatment , posttest results show improvement . Posttest scores ranged from 69 to 80 with an average of 73.94. The highest score was 80, while the lowest was 69, with a range of 11. The average posttest score increased by 14.25 points compared to the pretest average, indicating an improvement in student learning outcomes after participating in the learning process. Individually, all students experienced an increase in scores from pretest to posttest. No students experienced a decrease or obtained the same score between pretest and posttest. The increase in scores ranged from 13 to 15 points, indicating that the treatment provided had a fairly even impact on all students. Because the sample size was less than 50 people, the normality test used Shapiro–Wilk.

Normality Test

Table 1. Results of the Shapiro–Wilk Normality Test for Pretest and Posttest Scores

Measurement	Shapiro–Wilk Statistic	<i>p</i> -value	Interpretation
Pretest	0.978	0.942	Normally distributed
Posttest	0.969	0.821	Normally distributed

Mark The significance of the pretest was 0.942 and the posttest was 0.821, both more big of 0.05 ($p > 0.05$). With Thus , the pretest and posttest data are normally distributed , so that testing hypothesis furthermore can using paired sample t-test. The N-Gain results are as following .

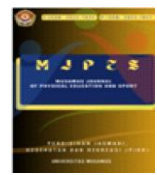
N-Gain Analysis

Table 2. Results N-Gain analysis of motivation learn PJOK

Information	Mark
Average N-Gain	0.354
Minimum N-Gain	0.311
Maximum N-Gain	0.429
Category	Currently

Discussion

The results of the study indicate that the implementation of a soccer game based on local wisdom has a positive impact on elementary school students' motivation to learn Physical Education (PJOK). This is indicated by an increase in the average learning motivation score from 59.69 in the pretest to 73.94 in the posttest, or an increase of 14.25 points. All students experienced an increase in their learning motivation scores after participating in the learning. The N-Gain analysis result of 0.354 indicates that the



increase in learning motivation is in the moderate category. These findings indicate that a soccer game developed by integrating elements of local wisdom has the potential to be a PJOK learning approach that can increase student engagement and motivation. Thus, PJOK learning is not only directed at mastering motor skills, but can also be developed through a cultural context close to students' lives.

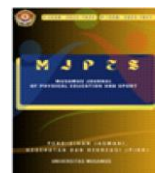
The novelty of this research lies in the integration of soccer with the local wisdom of the Mbojo community as a context for physical education (PJOK) learning to increase elementary school students' motivation. Unlike conventional soccer learning, which generally emphasizes mastery of basic techniques such as passing, dribbling, controlling, and shooting, this research develops the playing experience by incorporating local cultural values, such as *karawi kabaju* (mutual cooperation), togetherness, sportsmanship, mutual respect, responsibility, and the use of traditional chants. Thus, local wisdom is not merely placed as additional material, but is integrated into the playing experience and student interactions during learning.

This novelty is important because research on local culture-based physical education (PJOK) learning tends to use traditional games as the main activity, while this study uses a sport that is already familiar and popular among students, namely soccer, then modified it with local cultural values and identities. This approach brings together three learning elements: physical activity, playing experiences, and local cultural identities. The integration of these three elements provides an alternative approach to PJOK learning that is more contextual for elementary school students, especially in educational environments that have a rich local culture such as the Mbojo community in Bima Regency.

The findings of this study align with those of Adrizal et al. (Moh. Alfian Habibi, 2015), who demonstrated that developing local wisdom-based learning can enhance students' motivation in physical education. This similarity suggests that incorporating elements close to students' social and cultural environments can enhance their interest in learning activities. In this study, this closeness is demonstrated through a soccer game linked to the cultural values of the Mbojo community, enabling students to gain a more familiar and contextual learning experience. The results of this study also align with those of (Fainu et al., 2024) Which emphasizes the importance of integrating local culture into physical education learning. Learning that accommodates cultural contexts allows students not only to gain movement experience, but also to understand the social values found in their environment. A similar point was made (Ilahi et al., 2025), which shows that integrating cultural contexts into the physical education curriculum can create more meaningful learning experiences for students. In the context of this research, the values of togetherness, mutual cooperation, sportsmanship, and responsibility contained in games provide social experiences that occur simultaneously with physical activity.

The findings of this study can be further compared with studies that use traditional games as a medium or learning approach (Setyawan et al., 2025), (Ilahi et al., 2025). Both studies show that games that are close to students' experiences can increase engagement in learning. The similarity with this study lies in the use of game characteristics as a means to create enjoyable learning and increase student engagement. The difference is that this study does not use traditional games directly as the main activity, but rather modifies the soccer game by incorporating local cultural elements and values.

Insani's research (Insani et al., 2026)also strengthens the findings of this study by showing that games containing social and cultural meanings are not only related to the development of motor skills, but also have implications for the psychological and social aspects of students. This is in line with the results of this study because increasing learning motivation is not only related to physical activity during play, but also to



students' experiences in working together, communicating, following rules, competing healthily, and gaining positive experiences during learning.

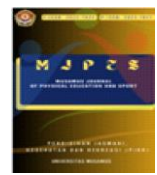
Meanwhile, research (Evans, 2026)] shows an increase in motivation in a higher category through the integration of science, technology, and local wisdom. These results differ from this study which produced an N-Gain of 0.354 with a moderate category. The difference in results can be caused by differences in learning design, intervention scope, student characteristics, treatment duration, and the number and type of learning components used. Winara et al.'s research integrated several learning components simultaneously, while this study focused on one form of intervention, namely a local wisdom-based soccer game. Therefore, the comparison of results cannot be understood solely as differences in effectiveness, but also needs to consider differences in intervention characteristics and research context.

Overall, a comparison with previous research shows that the results of this study are consistent with the trend of previous research which shows that PJOK learning based on games and local culture can create a more interesting and meaningful learning experience (Setyawan et al., 2025)(Prasetyo & Hasan, 2025)(Abady et al., 2026)(Ulama et al., 2026)(Nur et al., 2025)(Taufiq, 2023). However, this study provides a more specific context by integrating Mbojo cultural values into the game of soccer. Thus, the results of this study expand the application of a local wisdom-based approach from traditional games to modifying sports that are already known and of interest to students.

The similarities between the results of this study and previous research can be explained by the characteristics of experiential learning. Games provide opportunities for students to engage directly in learning activities, so they not only receive verbal information from the teacher but also experience the learning process themselves through physical activity and social interaction. When these activities are linked to a culture students are already familiar with, the learning material becomes more relevant to their experiences. This can increase student attention, interest, and engagement during learning.

From a motivational perspective, local wisdom-based soccer games can also fulfill several psychological needs of students. Students have the opportunity to demonstrate their abilities through movement activities (competence), interact and collaborate with friends (relatedness), and make decisions and be actively involved in the game (autonomy) (Taufiq, 2023). Fulfilling these needs can provide positive experiences that further encourage students' intrinsic motivation in participating in PJOK learning. From a constructivist perspective, increased motivation can also be understood because students build learning experiences through direct activities. During the game, students must understand the rules, develop simple strategies, communicate with group members, make decisions, and solve problems that arise in the game. This process makes students active participants in learning. Thus, learning not only produces experiences in the psychomotor aspect, but also involves cognitive, affective, and social aspects.

However, the moderate N-Gain category indicates that the learning effect has not yet reached an optimal level of improvement. This condition may be influenced by several factors. First, the relatively short treatment duration may limit students' opportunities to adapt and gain repeated learning experiences. Motivation is a psychological construct that develops gradually, so a longer intervention has the potential to produce stronger changes. Second, the study's small number of 16 students limits the variation in participant characteristics and the generalizability of the study's results. Third, motivational gains may also be influenced by individual student characteristics, such as interest in soccer, previous playing experience, physical ability, self-confidence, peer relationships, and family and school support. These factors could not all be controlled for in this study.



The difference in results from studies that found higher motivation increases may also be due to differences in research methodology. This study used a one-group pretest-posttest design without a control group, so the changes in scores found cannot be fully attributed to the intervention alone. External factors, such as previous learning experiences, interactions with teachers and peers, and other learning activities during the study period, may still have contributed to changes in student motivation.

The primary contribution of this research to the field of physical education is that it provides empirical evidence that local wisdom can be integrated into modern sports games familiar to students, not just through the use of traditional games. These findings broaden the perspective on culture-based learning in physical education by demonstrating that local cultural values can be incorporated into sports learning designs without eliminating the fundamental characteristics of the sports being taught.

Conceptually, this research strengthens the relationship between local wisdom-based learning, games, learning motivation, and contextual learning. Soccer provides a medium for physical activity, while local wisdom provides a social and cultural context that makes the experience more relatable to students' lives. This integration results in a learning approach that is not solely oriented toward motor skills but also provides space for character development, social interaction, and strengthening cultural identity.

Another contribution concerns the context of regional education. This research demonstrates that local social and cultural environments can be leveraged as sources of learning innovation without the need for complex technology or learning facilities. This provides opportunities for physical education teachers to develop instruction tailored to the characteristics of their respective schools and students.

This study has several limitations that should be considered when interpreting the results. First, the study only involved 16 students from one class at one school, so the results cannot be broadly generalized to the elementary school student population, which has different characteristics. Second, the study used a one-group pretest-posttest design without a control group, making it impossible to compare changes in motivation with those in a group receiving conventional physical education (PEK) instruction. Third, the study focused on learning motivation as the outcome variable and did not simultaneously measure changes in students' motor skills, cognitive learning outcomes, character development, or social skills. Fourth, the motivation measurement used a self-report questionnaire, which could influence students' subjective perceptions. Therefore, future research could combine the questionnaire with behavioral observations, interviews, or other instruments to obtain a more comprehensive picture of motivation.

Practically, the research findings provide implications for physical education (PJOK) teachers: soccer learning can be developed through game modifications that integrate local wisdom. Teachers can adapt game rules, activity formats, group divisions, the use of local terms, cheers, and cultural values to suit the characteristics of the school environment. This approach can be an alternative for creating more active, enjoyable, contextual, and meaningful PJOK learning for students.

For schools, the research findings can be used as a basis for developing learning that utilizes the potential of local culture and the environment as learning resources. This integration not only supports the achievement of physical education (PJOK) learning objectives but can also contribute to strengthening character, teamwork, sportsmanship, and introducing regional cultural identity to the younger generation.

Academically, this research contributes to the development of local wisdom-based physical education (PJOK) learning studies by demonstrating that cultural integration can be applied to soccer. These findings also reinforce the perspective that learning motivation can be built through learning experiences relevant to the students' social and cultural environments.



Further research is recommended to use a quasi-experimental or true experimental design involving both experimental and control groups. Research with a larger sample size and involving multiple schools is also needed to increase the external validity and generalizability of the findings. Furthermore, future research could extend the duration of the intervention and test its impact on other variables, such as motor skills, physical education (PJOK) learning outcomes, cooperation, sportsmanship, character, and cultural literacy. Developing a soccer game based on local wisdom into a validated model or learning tool could also be a direction for further research.

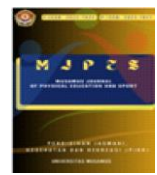
Overall, this study shows that local wisdom-based soccer games can be a potential alternative for Physical Education (PJOK) learning to improve elementary school students' learning motivation. The increase in the average score from 59.69 to 73.94 and the N-Gain value of 0.354 in the moderate category indicate an improvement after the treatment. This improvement can be understood through the learning characteristics that combine physical activity, games, social interactions, and local cultural values. The main finding of this study lies not only in the increase in motivation, but also in the way Mbojo local wisdom is integrated into the soccer game as part of the students' learning experience. This approach provides an alternative for more contextual PJOK learning while opening up opportunities to link the achievement of sports competencies with the strengthening of local character and cultural identity. Although the effectiveness obtained is still in the moderate category and the study has limitations in design and sample size, these results provide an empirical basis for the development of research and practice of local culture-based PJOK learning in elementary schools.

Conclusions

Based on the research results, it can be concluded that the implementation of local wisdom-based soccer games has a positive influence on the motivation to learn Physical Education (PJOK) of elementary school students. This is indicated by an increase in the average score from 59.69 in the pretest to 73.94 in the posttest or an increase of 14.25 points. All students experienced an increase in scores, with increases ranging from 13–15 points, thus indicating that the treatment had a relatively even impact on all students. The results of the normality test using Shapiro–Wilk showed that the pretest ($p = 0.942$) and posttest ($p = 0.821$) data were normally distributed ($p > 0.05$), thus meeting the requirements for hypothesis testing using a paired sample t-test. In addition, the results of the N-Gain analysis showed an average of 0.354 which is included in the moderate category, so it can be interpreted that local wisdom-based soccer games are able to increase the motivation to learn Physical Education (PJOK) at a moderate level of effectiveness. Overall, soccer games that integrate local Mbojo cultural values have proven to be effective in creating more engaging, enjoyable, and meaningful physical education (PJOK) learning. This approach not only contributes to increased student motivation but also serves as an alternative learning method that supports the preservation of local wisdom in elementary education settings.

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Conflict of Interest

Writer state No there is conflict interest in study This .

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