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The Effact of the Traditional Long-Clog Game on Enhancing Students' Physical Fitness

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Abstract

This study is motivated by the importance of improving students' physical fitness through contextual, enjoyable, and culturally relevant learning methods. One alternative considered is the traditional game terompah panjang, which is believed to contribute positively to physical aspects while also instilling teamwork values. The purpose of this research is to analyze the effect of the terompah panjang traditional game on students' physical fitness. The study employed a quantitative approach, with data collected through questionnaires, interviews, and physical tests, and analyzed using validity and reliability tests, classical assumption tests, multiple linear regression, and hypothesis testing. The findings revealed that the terompah panjang game significantly affects students' physical fitness, indicated by a positive regression coefficient of 0.245, a t-count value of 2.848, and a significance level of 0.005. Furthermore, the coefficient of determination (R^2) of 0.097 shows that 9.7% of the variation in physical fitness can be explained by students' participation in the game. These results highlight that traditional games are not only beneficial for cultural preservation but also effective as an alternative learning medium in physical education, supporting the comprehensive improvement of students' fitness levels.

Keywords: traditional games, terompah panjang, physical fitness, physical education, students.

1 INTRODUCTION

Games have been an inseparable part of human life from childhood to adulthood. This activity is not only seen as a fun form of entertainment but also has much more complex functions. In the dimensions of education, social life, and culture, games play an important role in shaping personality, honing skills, and instilling life values. From an early age, individuals learn to understand rules, adapt to group members, devise strategies to achieve goals, as well as control emotions and resolve conflicts through playing activities. From a modern educational perspective, games are even viewed as a pedagogical approach that combines learning elements with recreational activities. One dimension of play that is often overlooked is the role of traditional games.

Traditional games are not merely ordinary physical activities, but part of cultural heritage rich in philosophical meaning. Each type of traditional game has its own rules, structure, and dynamics that teach certain social values. In Indonesia, with its rich cultural diversity, traditional games serve as a true reflection of togetherness, cooperation, tolerance, and honesty. These noble values are taught implicitly through interactions built within the games.

In physical education, physical fitness is a fundamental aspect that needs to be consistently developed. A healthy and fit body provides an important foundation for students to carry out daily learning activities. Students with good physical condition are more focused, less easily tired, and have stronger endurance against the risk of illness. However, in reality, the education system often focuses more on academic achievement, resulting in reduced physical activity. In fact, regular physical activity has been proven to

improve cardiorespiratory endurance, strengthen muscles, maintain flexibility, and also enhance body balance. Therefore, it is important for schools to provide learning that not only focuses on the brain but also gives adequate space for the body to move. One simple, enjoyable, and effective way is to integrate traditional games such as terompah panjang into learning activities.

The physical fitness benefits of the terompah panjang game are also significant. This game is not only regarded as a cultural heritage but also as a traditional sport that promotes health. However, the psychological and social aspects of this game have rarely been explored in depth. In fact, the potential of this game is very great, both in sharpening step coordination, strengthening endurance, and training physical balance. Therefore, it is important to broaden the perspective so that this game is not only seen as mere entertainment but also as an educational tool that makes a real contribution to developing students' fitness.

Along with the physical fitness benefits of the long clog game. This game is not only regarded as a cultural heritage but also as a traditional sport that promotes health. However, the psychological and social aspects of this game are still rarely explored in depth. In fact, the potential of this game is very great, both in sharpening step coordination, strengthening endurance, and training physical balance. Therefore, it is important to broaden the perspective so that this game is not seen merely as entertainment but also as an educational instrument that significantly contributes to shaping students' fitness.

One concrete example of implementing the long clog game is at Pasar Minggu Vocational High School. This school was chosen as the research subject because it has students from diverse social backgrounds and varying physical needs. These conditions are highly relevant for observing how traditional games can improve students' physical condition. The learning environment at this school also supports active physical activity, making it a strategic space to directly observe the development of students' fitness. In vocational education, where physical readiness is a requirement, traditional games can serve as practical exercises to train stamina, muscle strength, and body coordination.

Furthermore, this collaborative game can also strengthen group dynamics. When students fail to synchronize their steps, they learn from their mistakes, develop new strategies, and work together to succeed. This reflective process is important in shaping character values such as responsibility, trust, and solidarity. Thus, the traditional long clog game can serve as a pedagogical tool that unites cultural, physical, and social elements within a single series of activities.

Considering the important role of traditional games in supporting education and health, research on the influence of the long clog game on students' physical fitness becomes highly relevant. This study aims not only to enrich the theoretical knowledge of culture-based learning but also to provide practical contributions to education, particularly in supporting students' health and physical activity. Through traditional games, students not only preserve the nation's culture but also train themselves to be healthier, stronger, and more resilient in facing future challenges.

2 RESEARCH METHODS

This study uses a quantitative approach with a systematic design focused on collecting and analyzing numerical data to examine the relationships between the established variables. This approach was chosen because it can provide an accurate and measurable depiction of the extent to which traditional game activities, particularly the long clog game or terompah panjang, influence the improvement of students' physical fitness.

The research variables are divided into two: the independent variable, which is the traditional game with indicators including step synchronization, team coordination, practice frequency, and participation level; and the dependent variable, which is physical fitness with indicators such as speed, metabolic strength, flexibility, coordination, cardiovascular endurance, and muscle strength.

The collected data were analyzed through a series of statistical tests, starting with a validity test to ensure the accuracy of the instrument, followed by a reliability test using the Cronbach Alpha technique to examine the consistency of responses. Classical assumption tests were conducted, including the normality test (Shapiro Wilk), multicollinearity test using the Variance Inflation Factor (VIF) and Tolerance, as well as heteroscedasticity test using the Glejser method.

After that, multiple linear regression analysis was performed to examine the direct effect of traditional games on physical fitness, followed by partial hypothesis testing (t-test) and simultaneous testing (F-test) to assess the significance of the influence of independent variables on the dependent variable. The coefficient of determination (R^2) was also used to measure the extent to which the independent variables explained the variation in the dependent variable, considering the adjusted value to select the best regression model.

3 RESULT AND DISCUSSION

This study focuses on analyzing the effect of the traditional long stilts game on students' physical fitness as an innovative form of contextual, enjoyable physical education that also reflects local cultural nuances. The research was conducted using a quantitative approach with instruments including questionnaires, interviews, and physical tests that had been validated and tested for reliability. The study population consisted of 100 students, and the data analysis techniques included validity tests, reliability tests, classical assumption tests (normality, multicollinearity, and heteroscedasticity), multiple linear regression, partial tests (t-test), simultaneous tests (F-test), and calculation of the coefficient of determination.

The results showed that the long stilts game positively contributes to improving students' physical fitness, as reflected by a positive regression coefficient, a significance level that meets the criteria, and a coefficient of determination that, although relatively small, remains meaningful. Therefore, this study not only provides empirical evidence of the effectiveness of traditional games in physical education but also emphasizes the importance of integrating cultural values into modern learning processes.

Table 1. Validity TestTabel

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
X_1	49.37	8.195	0.312	0.801
X_2	49.27	8.046	0.402	0.798
X_3	49.30	8.201	0.355	0.804
X_4	49.20	8.273	0.368	0.803
X_5	49.36	8.328	0.310	0.805
X_6	49.46	8.429	0.325	0.802
X_7	49.30	8.194	0.395	0.799
X_8	49.33	8.261	0.387	0.800
Y_1	49.18	8.345	0.334	0.804
Y_2	49.30	8.182	0.359	0.803
Y_3	49.21	8.263	0.320	0.805
Y_4	49.18	8.200	0.342	0.803
Y_5	49.25	8.174	0.401	0.799

Y_6	49.33	8.248	0.365	0.802

Based on the validity test results, all questionnaire items representing both the independent variable (X) and the dependent variable (Y) showed Corrected Item-Total Correlation values above 0.30. This means that each question item in the research instrument is valid and capable of measuring the intended construct. For example, item X_2 with a correlation value of 0.402 and X_7 with 0.395 show a fairly strong contribution to the overall traditional games construct, while item Y_5 with a correlation of 0.401 indicates that the physical fitness indicator has a good relationship with the total score. Although some items had correlations close to the minimal limit, such as X_5 (0.310) and Y_3 (0.320), both still met the validity criteria.

The Cronbach's Alpha if Item Deleted values, which were relatively consistent around 0.799–0.805, indicate that no item significantly weakened the instrument's reliability. Therefore, this instrument is suitable for further analysis because each question item has been proven valid in representing the research variables.

Table 2. Reliability TestTabel

Cronbach's Alpha	N of Items
0.812	14

The reliability test produced a Cronbach's Alpha value of 0.812 with 14 items. This value is well above the minimum threshold of 0.60, which is generally used as the standard for research instrument reliability. It indicates that the instrument used has very good internal consistency. Each questionnaire item shows a strong correlation with the overall construct, so the responses provided by students can be considered stable and consistent. In physical education research, high reliability is crucial to ensure that the results truly reflect the actual conditions and are not coincidental. Therefore, the instrument can be trusted as an accurate data collection tool for measuring the influence of traditional game of long slipper (permainan tradisional terompah panjang) on physical fitness.

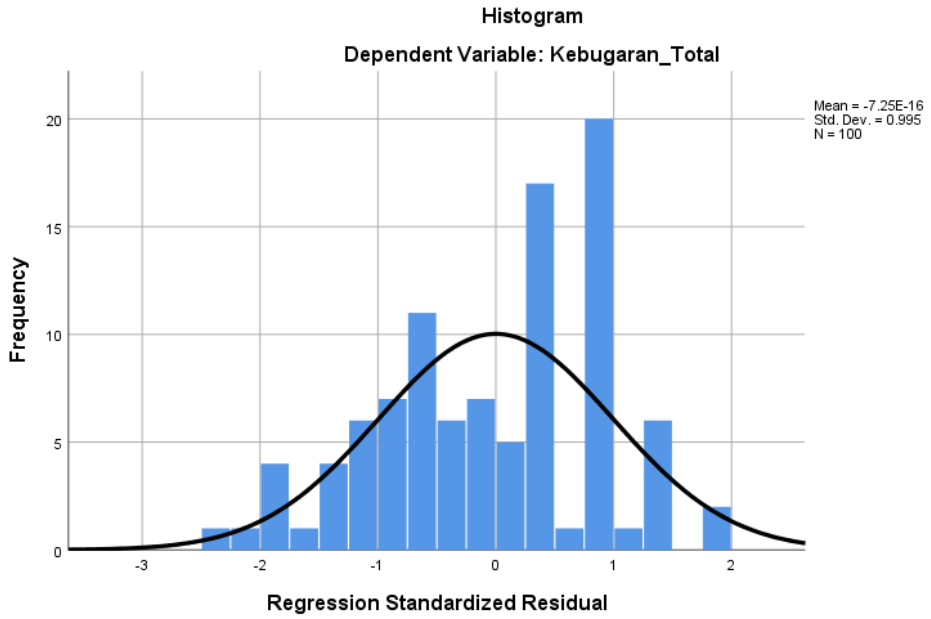

Figure 1. Normality Test

The normality test in this study aims to ensure that the residual data are normally distributed. Based on the Shapiro-Wilk analysis results, with a significance value greater than 0.05, it can be concluded that the data are normally distributed. The histogram graph and the Normal Plot also show that the data points spread along the diagonal line,

indicating that the regression model does not deviate from the normality assumption. This is important because the validity of linear regression analysis heavily depends on the normal distribution assumption. With normally distributed data, the results of the subsequent hypothesis tests can be statistically justified.

Table 3. Multicollinearity TestTabel

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions (Game_Tradisional_Total)
1	1	1.997	1.000	0.00	0.00
	2	0.003	25.329	1.00	1.00

The multicollinearity test results show that the highest Condition Index value of 25.329 is still within an acceptable range and does not indicate a serious multicollinearity problem. The balanced variance proportions between the constant and independent variables indicate that there is no excessive correlation among the independent variables. This means that traditional games, as the independent variable, stand alone without being influenced by other variables in the model. Therefore, the regression model used is free from multicollinearity, allowing for more accurate interpretation of the regression coefficients.

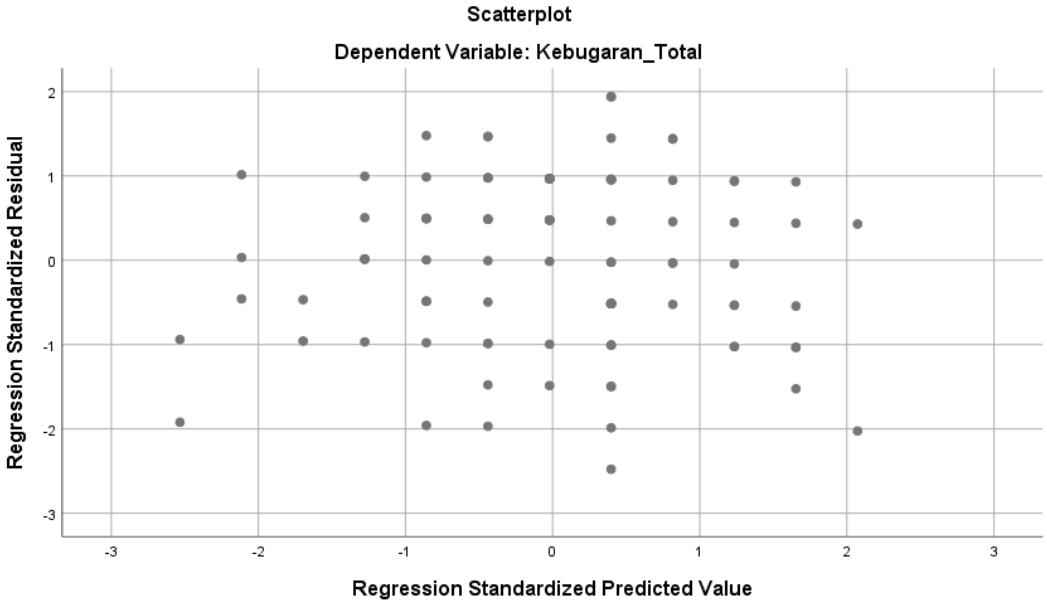

Figure 2. Heteroskedasticity Test

The heteroskedasticity test results show that the points on the scatterplot are randomly scattered around the zero axis and do not form any specific pattern. In addition, the Glejser test shows a significance value greater than 0.05, which means there is no heteroskedasticity problem in the regression model. Therefore, the homoscedasticity assumption is met, allowing the regression model to be used to validly estimate the effect of traditional games on physical fitness.Table 4. Multiple Linear Regression Analysis

Table 4. Multiple Linear Regression Analysis

Model	Unstandardized Coefficients	t	Sig.
(Constant)	22.156	9.594	0.000
Permainan_Tradisional_Total	0.245	2.848	0.005

Based on the linear regression results, the constant of 22.156 indicates that even without involvement in traditional games, students' physical fitness remains at a certain basic level. However, the regression coefficient of 0.245 shows that each one-unit increase in the involvement score in the traditional long slipper game contributes to a 0.245 increase in physical fitness. The calculated t-value of 2.848 with a significance of 0.005 indicates that this effect is statistically significant at a 95% confidence level. This means that traditional games have been proven to play an important role in improving students' physical fitness.Table 5. Partial Test (t-test)

Table 5. Partial Test (t-test)

Model	Unstandardized Coefficients (B)	Std. Error	t	Sig.
(Constant)	22.156	2.310	9.594	0.000
Traditional_Games_Total	0.245	0.086	2.848	0.005

The partial test confirms that the traditional games variable has a significant effect on physical fitness, with a calculated t-value of 2.848, which is greater than the critical t-value of 1.984. The significance value of 0.005 is also below the threshold of 0.05, thus the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted. This means that students' involvement in traditional games truly has a real impact on improving physical fitness, rather than being a result of chance or external factors alone.Table 6. Simultaneous Test (F-test)

Table 6. Simultaneous Test (F-test)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	40.208	1	40.208	9.702	0.002
Residual	366.702	98	3.741		
Total	406.910	99			

The simultaneous test, or F-test, produced an F-value of 9.702 with a significance of 0.002. Since the significance value is less than 0.05, it can be concluded that the traditional games variable collectively has a significant effect on physical fitness. This result further strengthens the findings of the previous partial test, showing that traditional games not only impact individual indicator levels but also have a meaningful overall contribution within the regression model

Table 7. Coefficient of DeterminationTabel

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.312	0.097	0.088	1.93521

The coefficient of determination (R^2) of 0.097 indicates that approximately 9.7% of the variation in students' physical fitness can be explained by their involvement in the traditional game of terompah panjang. Although this value is not very large, it is still statistically significant, which means the traditional game contributes meaningfully to physical fitness. The remaining 90.3% of the variation is likely influenced by other factors such as diet, physical activity outside of school, and individual health conditions. The Adjusted R Square value of 0.088 confirms the stability of the regression model, so it can be concluded that the traditional game remains one of the important factors in improving physical fitness, although it is not the only one.

Discussion

The results of the study show that the traditional game terompah panjang has a significant effect on improving students' physical fitness. This finding was obtained through a series of systematic statistical analyses, starting from validity and reliability tests that ensured the instrument's adequacy, to a multiple linear regression test which showed a positive coefficient of 0.245. This value can be interpreted as the higher the level of students' involvement in the traditional game, the higher their physical fitness. This is reinforced by a calculated t-value of 2.848 with a significance level of 0.005, proving that the effect is not merely coincidental but truly real empirically

This finding emphasizes that traditional games should not be viewed merely as recreational activities but can also be utilized as effective physical education tools. The activity involved in the terompah panjang game requires body coordination, muscle strength, step speed, and physical endurance. All these components are key indicators of physical fitness essential for student development. Therefore, physical education teachers can use this game as an enjoyable alternative method to improve students' physical condition without relying on rigid and monotonous training models.

Compared to previous studies, the results of this research are consistent with various studies confirming that game-based physical activity positively contributes to physical condition. Earlier studies have shown that traditional games can enhance agility, body endurance, and basic motor skills in students. The difference in this study lies in its specific focus on the terompah panjang game, whereas many previous researches examined traditional games more generally. This study offers a new perspective by thoroughly examining one specific game to observe its impact on physical fitness.

The implications of this fitness improvement are very important in the field of physical education. Terompah panjang involves almost all body components, from speed, strength, coordination, to endurance, making it a comprehensive workout for students. Interestingly, students do not feel they are in formal training because the activity takes place in a fun game atmosphere. This way, teachers can integrate educational values and entertainment simultaneously, making physical education more engaging and meaningful.

This research shows that the traditional game terompah panjang holds great potential as an innovative learning medium combining local cultural elements, entertainment, and physical education. The improvement in students' physical fitness after participating in this game is concrete evidence that traditional game-based methods can yield results comparable to, or even competitive with, modern physical training models. These findings not only offer practical benefits for school physical education but also enrich academic literature with a new approach that places physical fitness within the nation's cultural heritage. Thus, terompah panjang proves to be an effective means to improve health, develop stamina, and instill cultural values and togetherness among students.

4 CONCLUSION

On the conducted study, it can be concluded that the traditional game terompah panjang has a significant influence on students' physical fitness, as evidenced by the multiple regression analysis with a positive coefficient of 0.245, a calculated t-value of 2.848, and a significance level of 0.005, which indicate that students' involvement in this game truly contributes to the improvement of fitness. Additionally, the coefficient of determination (R^2) value of 0.097 shows that about 9.7% of the variation in physical fitness improvement can be explained directly by participation in the terompah panjang game. This finding confirms that although the percentage is not large, the influence of traditional games remains statistically significant and relevant as an effective, contextual, and enjoyable physical education learning medium, while also enriching local cultural aspects within modern educational practice.

5 REFERENCES

Alita, Debby, Ade Dwi Putra, and Dedi Darwis. "Analysis of Classic Assumption Test and Multiple Linear Regression Coefficient Test for Employee Structural Office Recommendation." IJCCS (Indonesian Journal of Computing and Cybernetics Systems) 15, no. 3 (2021): 295. https://doi.org/10.22146/ijccs.65586.

Ardiyanto, Asep, Veryliana Purnamasari, Sukamto Sukamto, and Ekasari Setianingsih. "Analysis of Clean Living Behavior and Physical Fitness During the Covid-19 Pandemic Among PGSD Lecturers." Jendela Olahraga 5, no. 2 (2020): 131–40. https://doi.org/10.26877/jo.v5i2.6216

Cahya Saputri, Pramesti, and Sri Katoningsih. "Analysis of the Influence of Traditional Games on Strengthening Global Diversity." Murhum: Journal of Early Childhood Education 4, no. 1 (2023): 392–405. https://doi.org/10.37985/murhum.v4i1.230

Cendana, Herliana, and Dadan Suryana. "Development of Traditional Games to Improve Language Ability in Early Childhood." Jurnal Obsesi: Journal of Early Childhood Education 6, no. 2 (2021): 771–78. https://doi.org/10.31004/obsesi.v6i2.1516

Damasceno, Benito. "Hypothesis Testing." Research on Cognition Disorders: Theoretical and Methodological Issues, no. October 2020 (2020): 1–245. https://doi.org/10.1007/978-3-030-57267-9

Deparia, Elda. "Implementation of Traditional Terompah Games in Scout Extracurricular to Improve Social Interaction at SDN 17 Rejang Lebong," 2023. http://e-theses.iaincurup.ac.id/id/eprint/5557

Destriana, Destriana, Dea Elrosa, and Syamsuramel Syamsuramel. "Physical Fitness and Students' Academic Achievement." Jambura Health and Sport Journal 4, no. 2 (2022): 69–77. https://doi.org/10.37311/jhsj.v4i2.14490

Kanahaya, Deswita, Haya Khaerunisa, Indah Nurul Hakiki, Nabillah Mujahadah Iskandar, and Teguh Prasetyo. "Aligning Body and Mind: Cognitive Benefits of Integrating Gymnastics into Physical Education." Karimah Tauhid 3, no. 3 (2024): 3669–84. https://doi.org/10.30997/karimahtauhid.v3i3.12644

Lopez-Fernandez, Daniel, Aldo Gordillo, Pedro P. Alarcon, and Edmundo Tovar. "Comparing Traditional Teaching and Game-Based Learning Using Teacher-Authored Games on Computer Science Education." IEEE Transactions on Education 64, no. 4 (2021): 367–73. https://doi.org/10.1109/TE.2021.3057849

Makorohim, M. Fransazeli, Mimi Yulianti, and Alficandra Alficandra. "Terompah Panjang as Traditional Games in the Perspective of Teenagers in Riau." Jurnal SPORTIF: Jurnal Penelitian Pembelajaran 8, no. 1 (2022): 44–58. https://doi.org/10.29407/js_unpgri.v8i1.17657

Martín-Martínez, David, Pere Lavega-Burgués, Cristòfol Salas-Santandreu, Conxita Duran-Delgado, Queralt Prat, Sabrine Damian-Silva, Leonardo Machado, et al. "Relationships, Decisions, and Physical Effort in the Marro Traditional Sporting Game: A Multimodal Approach." International Journal of Environmental Research and Public Health 18, no. 20 (2021): 1–27. https://doi.org/10.3390/ijerph182010832

Pranata, Dedy. "The Effect of Sports and Physical Training Models on Teenagers' Physical Fitness." Jurnal Kesehatan Olahraga 10 (2022): 107–16

Qomariah, Dede Nurul, and Siti Hamidah. "Exploring the Benefits of Traditional Games in Enhancing Gross Motor Skills: Context of Early Childhood." Jendela PLS 7, no. 1 (2022): 8–23. https://doi.org/10.37058/jpls.v7i1.4506

Rachman, Fadlu, Ziko Fajar Ramadhan, Satria Armanjaya, Aditya Gumantan, Rizki Yuliandra, and Muhammad Rifqi. "Preserving Traditional Sports Through Traditional Game Festivals in Bandar Lampung City." PROFICIO: Jurnal Pengabdian Kepada Masyarakat 4, no. 2 (2023): 2

Ribas, J. P., J. Hernández-Moreno, R. Díaz-Díaz, P. J. Borges-Hernández, J. V. Ruiz-Omeñaca, and A. R. Jaqueira. "How to Understand Sports and Traditional Games and How to Apply It to Physical Education. On the 'Goal of Game.'" Frontiers in Sports and Active Living 5, no. February (2023). https://doi.org/10.3389/fspor.2023.1123340

Sugiyono. "Sugiyono, Quantitative, Qualitative, and R&D Research Methods." Bandung Alf, 2020

Supariyadi, Tedy, Imam Mahfud, and Rachmi Marsheilla Aguss. "The Relationship Between Physical Fitness Levels and Learning Achievement in Physical Education Year 2021." Journal of Arts and Education 2, no. 2 (2022): 60–71. https://doi.org/10.33365/jae.v2i2.109

Syamsurrijal, Arif. "Learning While Playing: Traditional Games as a Medium for Instilling Character Education Values." ZAHRA: Research and Thought Elementary School of Islam Journal 1, no. 2 (2020): 1–14. https://doi.org/10.37812/zahra.v1i2.116

Toharudin, Uus, Iwan Setia Kurniawan, and Dahlia Fisher. "Sundanese Traditional Game 'Bebentengan' (Castle): Development of Learning Method Based on Sundanese Local Wisdom." European Journal of Educational Research 10, no. 1 (2021): 199–209. https://doi.org/10.12973/EU-JER.10.1.199.