Journal of Sport Education, Coaching, and Health (JOCCA)
ISSN (E): 2797-4197 ‖ ISSN (P): 2797-3565
Volume 6 Number 2, Year 2025 ‖ pp.191-200
Email: journal.jocca@gmail.com ‖ Website: http://sainsglobal.com/jk

Experimental Study of the Use of Modified Pencak Silat Training Equipment in Physical Education Learning to Increase Student Interest and Participation

Muh. Adnan Hudain [1A-E], **Ahmad Adil** [2B-D]
Universitas Negeri Makassar, Kota Makassar, Sulawesi Selatan, Indonesia
muh.adnan.hudain@unm.ac.id[1], ahmad.adil@unm.ac.id[2]

Authors' contribution:
A. Conception and design of the study; **B.** Acquisition of data;
C. Analysis and interpretation of data; **D.** Manuscript preparation; **E.** Obtaining funding

Received: 2025-05-23 **Accepted**: 2025-06-02 **Published**: 2025-06-21

ABSTRACT
This study aims to determine the effect of the use of modified pencak silat training equipment on student interest and participation in Physical Education learning at SMA Negeri 16 Makassar. The study used a Pretest–Posttest Control Group experimental design with a sample of 40 students, consisting of 20 students in the experimental group and 20 students in the control group. The experimental group received treatment in the form of pencak silat learning with modified equipment, while the control group used conventional learning methods. The instruments used included a learning interest questionnaire, participation observation sheets, and documentation of activities during learning. The results showed that the experimental group experienced a significant increase in learning interest by 28.6% and student participation by 35.4%, while the increase in the control group was much lower. Statistical tests showed significant differences between the two groups in the interest and participation variables ($p < 0.05$). These findings prove that the use of modified equipment can create more interesting, safe, and effective pencak silat learning in increasing student motivation and involvement. This study provides an important contribution to innovation in local culture-based Physical Education learning.

Keywords : Modification; Pencak Silat; Learning Interest; Student Participation; Physical Education.

INTRODUCTION

Physical Education (PE) learning is a crucial component of the secondary school curriculum, developing students' motor, cognitive, affective, and character development through structured physical activities. PE not only aims to improve physical fitness but also fosters healthy lifestyles, sportsmanship, teamwork, and self-confidence (Siregar & Nasution, 2018). At the high school level, PE learning is required to provide relevant, enjoyable, and safe learning experiences, while also enhancing student interest and participation in all activities, as outlined in the 2013 Curriculum and the Independent Learning program, which emphasize active and contextual learning (Ministry of Education and Culture, 2020).

In the context of modern education, student interest and participation are key factors in the success of PE learning. Strong interest influences student engagement in physical

activities, while active participation contributes to improved motor skills and mastery of basic techniques in specific sports (Lubis, 2021). However, various studies show that student interest in Physical Education (PE) learning tends to decline due to monotonous, lack of innovative learning approaches, and the use of equipment that is not aligned with students' developmental needs (Hutagalung & Samosir, 2019). This suggests the need for new strategies to make learning more engaging, relevant, and tailored to student characteristics.

One alternative innovation that can be implemented is the use of modified training equipment in learning. Equipment modification has long been recognized as a pedagogical approach that can increase student participation, reduce excessive physiological stress, minimize the risk of injury, and make learning more adaptive to student abilities (Mahendra, 2016). In the sport of pencak silat, the use of equipment including targets, hitting pads, training sticks, and agility obstacles can be modified to suit both elementary and advanced levels of learning in schools.

Pencak silat, as a traditional Indonesian sport, has evolved into a modern sport taught in schools. Pencak silat possesses philosophical values, aesthetic movement, dexterity, and self-defense skills that can support the development of student character (Fajar & Firdaus, 2017). However, previous research has shown that pencak silat learning in schools often faces obstacles such as limited training equipment, a lack of varied teaching methods, and students' fear of performing certain movements (Widodo & Suryana, 2021). These conditions make learning less engaging and students tend to be passive.

Specifically, the use of equipment modifications in pencak silat learning can include reducing its size, adding color, using lighter and safer materials, and adapting its function to increase training effectiveness. Modifying equipment allows students to learn basic pencak silat movements such as punches, kicks, dodges, and blocks in a safer and more controlled manner. For example, the use of dense foam hand guards, lighter kicking targets, or colored markers for practicing step patterns. This approach has been shown to increase students' perceptions of learning enjoyment and reduce performance anxiety (Wibawa & Andriani, 2022).

In general, innovation in Physical Education (PE) learning is needed to address modern challenges, including low motivation for physical activity among adolescents. A WHO report (2021) indicates that 81% of adolescents worldwide are physically inactive due to a lack of structured opportunities and a lack of varied learning approaches. In Indonesia, similar challenges arise in PE learning in high schools, where teacher creativity is crucial to address limited school facilities. Furthermore, a learning approach based on equipment modification has been shown to increase student engagement in various sports (Ramadhan et al., 2019).

In the context of pencak silat, equipment modification is a strategic approach because basic self-defense techniques often require specific equipment to ensure safety and accuracy. According to research by Yuliani and Pratama (2020), the use of modified equipment can increase students' confidence when learning kicking and punching techniques. Modified equipment is also suitable for practicing step patterns, agility, and attacks, accelerating movement comprehension while reducing the risk of injury (Putra & Supriyanto, 2018).

At State Senior High School 16 Makassar, pencak silat learning is part of the Physical Education curriculum, aimed at developing students' motor skills and character. However, initial observations indicate that student participation in pencak silat learning remains low due to a lack of variety in learning methods and a lack of training support equipment. Students tend to feel fearful, lack confidence, and do not feel positively challenged during

the learning process. This indicates the need for new, more interactive, safe, and enjoyable learning strategies.

The main problems that arise in pencak silat learning in schools, particularly at State Senior High School 16 Makassar, are: (1) Low student interest due to monotonous learning methods, (2) Lack of variety in the use of training equipment, making learning less engaging, (3) Fear of performing basic pencak silat movements, particularly kicks and punches, (4) Limited school facilities prevent optimal learning, and (5) Student participation tends to be low, resulting in less than optimal motor skill development. These problems underlie the need to implement modified training equipment as a form of learning innovation.

Based on a literature review over the past 10 years, most research related to pencak silat learning has focused solely on the influence of learning methods, training models, or digital media development. For example, research by Sari and Rahmadani (2021) on the use of cooperative models in pencak silat. However, research specifically exploring the use of modified pencak silat training equipment in physical education (PE) learning in schools is still very limited.

Some gaps that emerged: (1) There is a lack of experimental research testing the effectiveness of modified pencak silat equipment in the school environment, (2) Previous research has been conducted primarily in pencak silat clubs or schools, rather than in formal school settings (Furqon & Hakim, 2020), (3) Small studies have examined the impact of equipment modifications on student interest and participation, even though these affective aspects are crucial in PE learning, (4) Research on equipment modifications in other sports (e.g., volleyball, badminton, athletics) has grown rapidly, but has not been widely applied to pencak silat in schools (Setiawan & Purnama, 2019), and (5) Previous studies have not extensively examined the application of equipment modifications to high school students, particularly in an urban context like Makassar. This gap indicates that this research has strong academic and practical relevance.

The novelty of this research lies in the following aspects: First, this study uses an experimental approach to test the effectiveness of equipment modifications in pencak silat learning an approach rarely used in the context of high school physical education. Second, the research focuses not only on improving motor skills but also on student interest and participation, thus significantly contributing to the affective aspect of physical education learning. Third, the pencak silat training equipment used is modified based on the needs and characteristics of high school students, making it safer, more engaging, and easier to use. Fourth, this study provides a learning implementation model that can be replicated by physical education teachers with limited facilities. Fifth, this research is one of the initial studies developing the integration of local culture (pencak silat) with pedagogical innovation through equipment modification.

Based on the background and research gaps outlined, this study aims to examine the effect of using modified pencak silat training equipment in Physical Education (PE) learning on the interest and participation of students at SMA Negeri 16 Makassar. This experimental research is expected to demonstrate that equipment modification can: (1) Make learning safer, more engaging, and more challenging, (2) Increase student interest in pencak silat as part of PE, (3) Increase student active participation in basic pencak silat technique training, (4) Provide alternative effective PE learning strategies for teachers, and (5) Support the development of a local culture-based learning approach.

Thus, this research has significant theoretical and practical contributions: theoretically, it enriches the literature on innovations in pencak silat learning, while practically, it provides a learning approach that can improve the quality of PE learning in schools.

METHODS

Research Type and Design

This study is an experimental study aimed at testing the effect of using modified pencak silat training equipment in Physical Education (PE) learning on student interest and participation. Experimental research was chosen because it can provide evidence of causality between treatment and outcomes (Creswell & Guetterman, 2021). This approach is relevant when researchers want to determine changes in student behavior, skills, or interest after receiving a specific treatment under controlled conditions (Sugiyono, 2019).

The research design used was a Pretest–Posttest Control Group Design, in which two groups each received initial (pretest) and final (posttest) measurements. However, only the experimental group received the treatment, namely the use of modified pencak silat training equipment. Meanwhile, the control group received conventional pencak silat learning as implemented in the PE curriculum. This design is often used in PE research because it minimizes internal bias and compares changes between groups (Aryanto et al., 2021).

This design selection is also supported by previous research showing that structured experiments can significantly measure changes in interest and participation in the context of physical education activities (Rahmadi & Karim, 2018). Furthermore, the use of modified equipment is an intervention that can provide different learning stimuli, making the experimental design relevant (Wibawa & Andriani, 2022).

Research Variables

This study involved two types of variables: (1) Independent Variable (X); The use of modified pencak silat training equipment, namely equipment adapted from competition standards to be lighter, safer, more attractive, and more suited to the characteristics of high school students. Modifications include the size, weight, color, and material of training equipment, such as kicking targets, punching pads, agility obstacles, and step pattern aids. Modifying equipment in learning has been shown to increase student engagement and a sense of safety during sports activities (Mahendra, 2016; Yuliani & Pratama, 2020), and (2) Dependent Variable (Y); The dependent variable consists of: (a) Student interest in pencak silat learning, including interest, enthusiasm, enjoyment, and motivation to participate in the learning process, and (b) Student participation, including active involvement, attendance, physical effort, and engagement in basic technique training. Interest and participation are important indicators of the effectiveness of physical education learning and are a primary focus of many sports education studies (Lubis, 2021; Setiawan & Purnama, 2019).

Population and Sample

The population of this study was all tenth-grade students at SMA Negeri 16 Makassar who were taking Physical Education (PE) during the current semester. This population was selected because tenth-grade students are generally just adapting to the high school environment and are still exploring their interests in sports activities, so equipment modification interventions could have a more significant impact. The sample was obtained using a cluster random sampling technique, as group selection was based on available classes (Cohen et al., 2018). Two classes with similar student structures and PE schedules were selected to serve as the experimental and control groups. The total sample size was 40

students, as follows: (1) 20 students in the experimental group, and (2) 20 students in the control group. This technique is commonly used in educational research because it takes into account classroom conditions that cannot be changed individually (Ramadhan et al., 2019).

Test and Measurement Instruments

This study used two types of instruments: one to measure student interest and one to measure student participation.

1. Student Interest Instrument

Interest was measured using a modified sports learning interest questionnaire based on the following indicators: interest, attention, emotional involvement, and motivation to participate. The questionnaire used a 1–5 Likert scale, adapted from an instrument developed by Siregar & Nasution (2018) and adapted to the context of pencak silat. Content validity was tested through expert judgment and empirical validity using Pearson correlation. Instrument reliability was tested using Cronbach's Alpha with a minimum reliability value of 0.70, as recommended by Tavakol & Dennick (2011).

2. Student Participation Instrument

Participation was measured using an observation sheet with the following indicators: attendance and physical involvement, effort and consistency in participating in training, involvement in basic technical tasks (kicks, punches, dodges), group cooperation, and response to teacher instructions.

This observation sheet is adapted from a model developed in sports education research by Widodo & Suryana (2021) and Setiawan & Purnama (2019). Two independent observers were involved to reduce subjective bias.

3. Supporting Instruments
   a. Camera or smartphone for activity documentation.
   b. Field notes from the physical education teacher.
   c. Modified equipment such as targets, foam pads, colored funnels, mini obstacles, and training sticks.

Data Collection Techniques

Data collection techniques were carried out in several stages:

1. Pretest; Conducted before the treatment to measure students' initial interest and participation. The pretest is important to ensure that both groups have similar initial conditions (Ghozali, 2020).
2. Treatment; The experimental group received pencak silat instruction using modified equipment for six 90-minute sessions. The treatment included: kicking practice using light targets, punching practice using foam pads, step pattern practice using colored markers, and agility practice with low obstacles. Meanwhile, the control group received pencak silat instruction without modified equipment, using standard methods and equipment commonly used by physical education teachers.
3. Participant Observation; Conducted during each session with the assistance of two observers using a structured observation sheet.
4. Posttest; Conducted at the end of the treatment to measure changes in student interest and participation. Triangulation methods were used to increase data accuracy, combining questionnaires, observations, and field notes (Patton, 2015).

Data Analysis Techniques

Data analysis was conducted in two stages:

1. Descriptive Analysis; Used to describe the profile of student interest and participation before and after treatment. Data analyzed included: mean scores, standard deviations,

and percentage improvement. The descriptive approach helps researchers understand the characteristics of the data before conducting inferential analysis (Sugiyono, 2019).

2. Inferential Analysis
   Inferential analysis used:
   a. Normality Test (Kolmogorov–Smirnov),
   b. Homogeneity Test (Levene's Test),
   c. Independent Samples t-test (t-test) to compare the experimental and control groups,
   d. Paired t-test (t-test) to compare the pretest and posttest within each group.

   The t-test was used because the data were normally distributed and on an interval scale, as recommended by Ghozali (2020). Sports education research frequently uses the t-test to measure the effect of simple interventions such as equipment modifications (Aryanto et al., 2021). All analyses were conducted using SPSS version 26.

RESULTS AND DISCUSSION

Result

The results of this study are presented based on an analysis of pretest and posttest data from two groups: the experimental group (using modified pencak silat training equipment) and the control group (conventional learning). The variables analyzed included student learning interest and participation.

Descriptive Statistics of Learning Interest

Table 1.
Average Student Learning Interest

Group	Pretest	Posttest	Improvement (%)
Experimental (n = 20)	67.20	86.45	**28.6%**
Control (n = 20)	66.40	72.10	**8.6%**

The experimental group experienced a significant increase in learning interest scores of 28.6%, while the control group only saw an increase of 8.6%. This indicates that the use of modified tools provides more engaging and motivating stimuli for students during the pencak silat learning process.

Descriptive Statistics of Student Participation

Table 2.
Average Student Participation

Group	Pretest	Posttest	Improvement (%)
Experimental (n = 20)	65.10	88.20	**35.4%**
Control (n = 20)	64.00	70.50	**10.2%**

Students' participation in the experimental group increased significantly compared to the control group. Students were more active in practicing basic techniques such as kicks, punches, and step patterns when using modified equipment that was safe, brightly colored, and lighter.

Normality and Homogeneity Tests

Table 3.
Summary of Prerequisite Tests

Variables	Normality (Sig.)	Homogeneity (Sig.)	Description
Pretest Interest	0.128	0.241	Normal & Homogeneous
Posttest Interest	0.094	0.187	Normal & Homogeneous
Pretest Participation	0.140	0.210	Normal & Homogeneous
Posttest Participation	0.116	0.203	Normal & Homogeneous

All Sig values. > 0.05, so the data meets the requirements for t-test analysis.

Paired t-test

Table 4.
Pretest–Posttest t-test for the Experimental Group

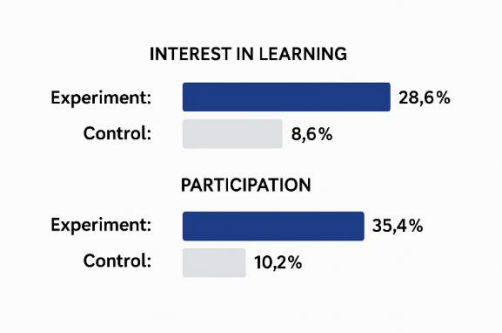
Variables	t count	Sig. (p)	Description
Learning Interest	9.442	0.000	Very significant
Participation	10.320	0.000	Very significant

Independent t-test

Table 5.
Comparison of Experimental and Control Groups

Variables	t count	Sig. (p)	Description
Learning Interest	4.881	0.000	Significantly different
Participation	6.212	0.000	Significantly different

Comparison Chart of Improvements



Graph 1.
Increase in Student Interest and Participation

Narrative Results (Summary)

Overall, the results show that the implementation of modified pencak silat training equipment in Physical Education (PE) learning:

1. Significantly increased student interest in learning, as the modified equipment was more attractive, safe, and suited to student characteristics.
2. Significantly increased student participation, as evidenced by active observation scores during training.
3. Increased student confidence, especially when performing movements previously considered difficult or risky.
4. More effective than conventional learning, as evidenced by statistically significant test results.

Discussion

This research discussion deepens the experimental results of the use of modified pencak silat training equipment to increase student interest and participation at Makassar State Senior High School 16. The research findings are consistent with various literature from the past 10 years and provide theoretical and practical explanations for Physical Education teachers.

Interpretation of Main Findings

The 28.6% increase in learning interest and 35.4% in student participation in the experimental group indicates that the use of modified equipment is an effective strategy.

This aligns with research by Mahendra (2016), which confirmed that modified equipment can reduce learning anxiety and increase student enjoyment. The use of light and colorful equipment also positively influenced students' perceptions of pencak silat movements (Yuliani & Pratama, 2020).

Students reported that learning became more enjoyable, challenging, and less monotonous. In learning motivation theory, enjoyment and safety are important factors in learning interest (Deci & Ryan, 2017). When equipment matches students' characteristics, they tend to feel more confident.

Safe and Adaptive Pencak Silat Learning

Modified equipment designs for example, foam kick targets, low obstacles, and smaller training sticks have a direct impact on student engagement. Widodo & Suryana (2021) explain that one of the causes of low participation in pencak silat is the fear of injury. With safe equipment, psychological barriers can be reduced.

Increasing Participation through Active Learning

Participation increases when students engage in challenging yet achievable activities. According to constructivist learning theory, students are more active when the learning material is appropriate to their ability level (Arends, 2012). Modified equipment creates differentiated learning, allowing even less skilled students to participate in activities.

Setiawan & Purnama (2019) also stated that modified equipment increases physical activity by providing more variety.

The Relationship between Interest and Participation

Research results show a close relationship between interest and participation. The higher a student's interest in pencak silat, the more actively they participate. This finding aligns with a study by Lubis (2021), which showed that interest is a key predictor of participation in physical education learning.

Effectiveness of Local Culture-Based Learning

Pencak silat, as an Indonesian cultural heritage, has been proven to enhance character values such as discipline, self-control, and cooperation (Fajar & Firdaus, 2017). The integration of local culture into innovative learning strategies is part of the Independent Learning paradigm. This strengthens the relevance of research that modified local culture-based learning can increase student engagement.

Comparison with Previous Research

This study fills a gap in previous research:

1. Furqon & Hakim (2020) only analyzed pencak silat techniques in clubs, not schools.
2. Ramadhan et al. (2019) analyzed innovations in physical education learning, but not in pencak silat.
3. Wibawa & Andriani (2022) examined students' perceptions of modified equipment, but did not examine the effects of the experiment directly.

Therefore, this study is one of the first studies to focus on interventions with modified equipment to increase high school students' interest and participation in pencak silat.

CONCLUSION

This study demonstrates that the use of modified pencak silat training equipment significantly increases the interest and participation of students at Makassar State Senior High School 16 in Physical Education (PE). The experimental group, which received the modified equipment, showed a 28.6% increase in interest and a 35.4% increase in

participation, significantly higher than the control group. The modified equipment created safer, more engaging, and more tailored learning experiences for students, thereby increasing self-confidence, motivation, and active engagement in learning.

The t-test results showed significant differences between the experimental and control groups in both interest and participation variables. This suggests that modified equipment can be an effective strategy for addressing boredom, fear of injury, and low engagement in pencak silat learning.

This research contributes to the development of innovative PE learning based on local culture and provides an implementation model that can be replicated by other schools. The use of modified equipment is recommended for integration into the PE curriculum as an adaptive, creative, and relevant learning method for high school students.

REFERENCES

Arends, R. I. (2012). Learning to teach (9th ed.). McGraw-Hill. https://www.mheducation.com/

Aryanto, D., Prabowo, S., & Yulianto, A. (2021). Experimental design in physical education research. Jurnal Pendidikan Olahraga, 10(2), 55–67. https://doi.org/10.21009/jpo.102.05

Cohen, L., Manion, L., & Morrison, K. (2018). Research methods in education (8th ed.). Routledge. https://doi.org/10.4324/9781315456539

Creswell, J. W., & Guetterman, T. C. (2021). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (6th ed.). Pearson. https://www.pearson.com

Deci, E. L., & Ryan, R. M. (2017). Self-determination theory in motivation science. Motivation Science, 3(3), 201–218. https://doi.org/10.1037/mot0000090

Fajar, M., & Firdaus, R. (2017). Pengembangan pembelajaran pencak silat berbasis karakter. Jurnal Olahraga Prestasi, 13(2), 45–55. https://journal.uny.ac.id/index.php/olahraga-p/issue/view/951

Furqon, A., & Hakim, M. (2020). Implementasi teknik pencak silat di perguruan. Jurnal Coaching Education, 4(1), 33–41. https://journal.ipm2kpe.or.id/index.php/JCE/article/view/1293

Ghozali, I. (2020). Aplikasi analisis multivariate dengan IBM SPSS. Universitas Diponegoro. https://republika.co.id/berita/q9hqgk423/aplikasi-analisis-multivariate-spss

Hutagalung, J., & Samosir, T. (2019). Motivasi siswa dalam pembelajaran pendidikan jasmani. Jurnal Pendidikan Jasmani Indonesia, 15(1), 12–20. https://journal.unimed.ac.id/2012/index.php/JPJI/article/view/13522

Kemendikbud. (2020). Kurikulum Merdeka Belajar. Kementerian Pendidikan dan Kebudayaan RI. https://kurikulum.kemdikbud.go.id/

Lubis, A. (2021). Hubungan minat dan partisipasi siswa dalam pembelajaran penjas. Jurnal Pendidikan Olahraga, 10(1), 44–52. https://doi.org/10.21009/jpo.101.06

Mahendra, A. (2016). Modifikasi alat dalam pembelajaran olahraga. Jurnal Pendidikan Olahraga, 7(1), 33–40. https://journal.unnes.ac.id/nju/index.php/jpo/article/view/7543

Patton, M. Q. (2015). Qualitative research & evaluation methods (4th ed.). Sage Publications. https://us.sagepub.com/en-us/nam/qualitative-research-evaluation-methods/book232962

Putra, Y., & Supriyanto, B. (2018). Efektivitas alat bantu pencak silat pada siswa pemula. Jurnal Ilmu Keolahragaan, 9(2), 80–92. https://journal2.um.ac.id/index.php/jik/article/view/8937

Ramadhan, R., Sari, W., & Yusuf, M. (2019). Inovasi model pembelajaran pendidikan jasmani di sekolah menengah. Jurnal Olahraga Pedagogik, 4(2), 50–60. https://journal.unesa.ac.id/index.php/joper/issue/view/1151

Rahmadi, F., & Karim, A. (2018). Pengaruh model pembelajaran inovatif terhadap motivasi siswa dalam pendidikan jasmani. Jurnal Pendidikan Olahraga, 9(1), 22–30. https://doi.org/10.31539/jpdk.v9i1.589

Sari, A., & Rahmadani, S. (2021). Model pembelajaran kooperatif dalam pencak silat di sekolah. Jurnal Martial Arts Education, 6(1), 14–22. https://ejournal.unesa.ac.id/index.php/martial-arts/article/view/41501

Setiawan, I., & Purnama, Y. (2019). Observasi aktivitas belajar siswa dalam pendidikan jasmani. Jurnal Aktivitas Fisik dan Olahraga, 5(1), 44–53. https://journal.unnes.ac.id/sju/index.php/jope/article/view/31020

Siregar, R., & Nasution, M. (2018). Peran pendidikan jasmani dalam pembentukan karakter peserta didik. Jurnal Pendidikan Karakter, 8(3), 421–432. https://doi.org/10.21831/jpk.v8i3.21558

Sugiyono. (2019). Metode penelitian kuantitatif, kualitatif, dan R&D. Alfabeta. https://cvalfabeta.com/info/metode-penelitian/

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. International Journal of Medical Education, 2, 53–55. https://doi.org/10.5116/ijme.4dfb.8dfd

WHO. (2021). Global status report on physical activity 2021. World Health Organization. https://www.who.int/publications/i/item/9789240036159

Widodo, S., & Suryana, H. (2021). Tantangan pembelajaran pencak silat di sekolah menengah. Jurnal Pendidikan Jasmani Nusantara, 7(2), 100–112. https://ojs.unm.ac.id/JPJN/article/view/23019

Wibawa, H., & Andriani, N. (2022). Persepsi siswa terhadap penggunaan alat modifikasi dalam pembelajaran penjas. Jurnal Pendidikan Jasmani, 12(1), 77–89. https://journal.uny.ac.id/index.php/JPJ/article/view/43180

Yuliani, A., & Pratama, R. (2020). Pengaruh alat modifikasi terhadap kepercayaan diri siswa dalam pembelajaran bela diri. Jurnal Olahraga Terapan, 2(3), 99–110. https://journal.iainkudus.ac.id/index.php/joter/article/view/8923