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Original Article Research

Efforts to Improve Long Jump Performance Using a Modified Hula Hoop for 11th-Grade Students at SMK Negeri 2 Semarang

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Abstract

Students in the 11th grade at SMK Negeri 2 Semarang demonstrated poor learning outcomes in the long jump. These poor results were attributed to a lack of variety in teaching materials, low student motivation, and low student engagement. The purpose of this study was to determine the effectiveness of using a modified hula hoop as a teaching aid to improve students' long jump performance. This study employed a quantitative approach and an experimental method using a single-group pretest-posttest design. Simple random sampling was used to select the research subjects, consisting of 34 students in the 11th-grade Marketing 2 class. Data collection was conducted through a long jump skill test, which involved the aspects of approach, take off, flight, and landing. Since the data did not have a normal distribution, the Shapiro-Wilk normality test and the Wilcoxon test were used to analyze it.The results of the study indicate an improvement in student learning outcomes, as evidenced by an increase in the average score from 8.40 on the pretest to 8.94 on the posttest. The significance value of the Wilcoxon test, 0.032 (< 0.05), indicates that there is a significant difference between students' learning outcomes before and after the intervention. Therefore, the use of the modified hula hoop has proven effective in improving students' performance in the long jump. It is hoped that this study will serve as an alternative for innovation in physical education learning media and help develop more engaging and efficient teaching methods.

Keywords: Learning outcomes, Long Jump, Learning media, Modified Hula Hoop, Physical Education

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1. INTRODUCTION

Education plays a vital role in improving the quality of human resources on earth. Life on earth improves as a result, leading to increased productivity; conversely, when the quality of human resources is low, life on earth deteriorates (Pinton Setya Mustafa, 2022). Physical education is essential in education. Students develop cognitively, emotionally, and psychomotorically through physical activity (Gopur et al., 2024). Learning about sports, health, and sports is not only done indoors, it can also be taught directly outdoors. According to (I Nyoman Kurniawan et al., 2022), many factors influence the teaching and learning of physical education, sports, and health in schools. Technological advancements, progressive educational ideas, and social transformation have brought about significant changes in education since the 19th century. Public libraries and public schools were established in the 1800s, enabling broader access to formal education and knowledge (Setiya Yunus Saputra, 2024).

Learning outcomes from video-based instructional materials can be demonstrated through a process that can be replayed repeatedly when students do not fully understand the material, which can help them achieve good learning outcomes (Fridayanti et al., 2022). This indicates that improving students' mastery of sports skills can be achieved through repeated and structured practice (Zulfikar, 2024). This suggests that a learning process that provides opportunities for continuous practice will help students master movement techniques more effectively. In line with the above view, learning outcomes are defined as an assessment conducted after the learning process is complete that evaluates students' knowledge, attitudes, and skills, as well as changes in their behavior.in their behaviour (Henzi Haryanto, Kartono, 2023). All psychological domains include learning outcomes. Learning outcomes are a measure of the learning process or learning activities that students have engaged in over a specific period of time. Learning outcomes should indicate that students have achieved learning outcomes that meet the established standards or minimum competency criteria. However, some students are unable to achieve maximum learning outcomes (RAHMI, 2022).

All other sports are based on athletics, which involves basic movements such as walking, running, jumping, and throwing (Hafidz et al., 2021). Track and field, the oldest and most enduring sport, involves movements that are essential to human life. According to (Siskariyanti, 2023), the basic movements of track and field—which consist of walking, running, throwing, and jumping constitute the oldest form of sport in the world. This is because each event has its own basic techniques. Track and field, which includes walking, running, throwing, and jumping, is the oldest sport in the world. Each event has its own basic techniques. According to the Kamus Besar Bahasa Indonesia (KBBI), track and field is a sport that requires strength, agility, and speed. There are events for running, walking, jumping, and throwing. According to (Gilang & Rumini, 2023), "The word 'athletics' comes from the Greek word 'athlon,' which means 'competition.' Athletics includes events such as walking, running, jumping, and throwing." (Furkon et al., 2024) However, other track and field events, such as throwing and jumping events, have the necessary facilities and equipment available through the use of specialized equipment. It is crucial to innovate and develop teaching materials, especially in light of the recent pandemic, as teachers must continue to innovate to serve as a safeguard for the future, ensuring that learning can continue and achieve its goals despite obstacles.

The long jump is a sport in which athletes attempt to jump as far as possible while adhering to the rules (Teguh Prasetyo SP et al., 2021). However, according to (Albertus et al.,

2022), students are already capable of performing the basic movements of the long jump before they are trained or taught. The long jump is just a number. The long jump is a track and field event that requires body coordination, balance, strength, and speed. Teaching the long jump to young athletes involves more than just achieving a good jump. It also involves developing basic motor skills, proper technique, and an understanding of the phases of movement (Muh. Yasa, 2025). According to (Budi Rahmat, 2025), success in the long jump depends heavily on the athlete's ability to maximize horizontal speed at take off. Previous studies have examined how speed, strength, and technique correlate in the long jump. There are many factors that influence long jump performance, including explosive power, speed, strength, agility, flexibility, coordination, and balance (Rizal Tri Ardiansyah, 2024).

Considered an effective solution to this problem, the modified hula hoop learning tool can help students gradually understand the steps involved in the long jump and boost their confidence. It also creates a more active, safe, and enjoyable learning environment, which is expected to improve students' long jump performance.

In the field of education, instructional media serve as a means of communication. The use of media will increase if teachers create an effective learning environment. The use of media will increase. If homeroom teachers use media correctly, they can shorten the learning process. Educational media have the potential to help teachers foster dynamic and personalized learning processes and help students understand concepts. In long jump lessons, the use of teaching aids can increase student participation and understanding of movement techniques, as well as boost their motivation to learn. Each of these components improves learning outcomes in the long jump. Is (Fadhilah & Widyastuti, 2025). Media can serve as an extension of students' thoughts and actions. Modern educational media is considered to play a crucial role in increasing students' motivation to learn. According to (Royana, 2025) ,learning outcomes in motor skills in physical education are positively influenced by the use of engaging and interactive instructional media. The selection and implementation of media by teachers are crucial to the success of learning. Compared to instruction that relies solely on the teacher's verbal explanations, instructional media can help students better understand movement techniques (Khamila & Supriyadi, 2023). Instructional media can be used during the orientation phase to maximize the learning process. They can also be used to convey messages and lesson content effectively. All of this is intended to increase students' interest and motivation to participate in learning activities, as well as to improve the quality of education (Putu et al., 2023). Learning materials are essential as tools to support the learning process. In the field of education, learning materials are indispensable and will always be needed in every learning process (Elsa Kaniawati, 2023).

Semarang State Vocational High School 2 can implement long jump instruction using a modified hula hoop. This will boost student motivation and increase their engagement in physical education classes covering the long jump. The handball game aid, which incorporates a hula hoop, is presented in an engaging manner. The materials used in this teaching aid consist of a modified hula hoop attached to a pole (Ansori et al., 2022). Previous studies have examined the use of instructional media to improve students' long jump performance. However, research specifically addressing the use of modified hula hoops with vocational high school students remains limited. Previous studies typically employed other media, such as hanging balls or simple equipment modifications, and were primarily conducted in elementary and middle schools. Furthermore, few studies have examined how effective modified hula hoop media are in improving long jump learning outcomes, particularly regarding the psychomotor aspects of vocational high school

students. Consequently, the objective of this study is to investigate how the use of modified hula hoop media impacts the long jump learning outcomes of students in the 11th grade at State Vocational High School 2 Semarang.

The purpose of this study is to determine the effectiveness of using a modified hula hoop as a teaching aid in long jump instruction for 11th-grade students at SMK Negeri 2 Semarang. This study also aims to determine whether the use of a modified hula hoop increases students' interest and engagement in physical education, as well as improves their long jump performance, particularly in the psychomotor aspect.

2. METHOD

This study employs a quantitative approach using an experimental method. The study aims to determine the effect of using a modified hula hoop on improving the long jump performance of 11th-grade students at SMK Negeri 2 Semarang. The research design used is a One-Group Pretest-Posttest Design, in which a pretest is administered before the intervention and a posttest is administered after the intervention.

2.1 Participants

This study involved 273 students from the 11th grade at SMK Negeri 2 Semarang, representing various majors such as Marketing, PPLG, ULP, and MPLB. The sample, consisting of 34 students from Marketing Class 2, was selected using simple random sampling, which means the sample was chosen at random without considering population strata.

2.2 Research Design

In this study, a one-group pretest-posttest design was used. Before the intervention began, the students took a pretest to measure their initial performance in the long jump. After the intervention, the students received instruction using a modified hula hoop. Once the intervention was complete, the students took a posttest to determine whether their learning outcomes had improved following the intervention. The research design can be described as follows.

$$O_1 \rightarrow X \rightarrow O_2$$

Description:

O_1: Pretest

X: Treatment using a modified hula hoop

O_2: Posttest

2.3 Instruments

The psychomotor assessment rubric was used to evaluate long jump ability in this study. Three main components determine the assessment: starting position (take off), execution of the movement (push-off and flight), and final position (landing). Since each aspect is scored on a scale of 1 to 4, students can achieve a maximum score of 12 based on their psychomotor ability to objectively apply the basic techniques of the long jump. A score of 1 is considered very poor, a score of 2 is considered fairly-poor, a score of 3 is considered fairly good, and a score of 4 is considered very good.

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2.4 Procedures

In this study, the independent variable was the use of a hula hoop as a modification tool to help students learn the long jump. Various types of exercises using a hula hoop helped students understand and master the basic techniques of the long jump, such as the approach, take-off, flight, and landing. However, the dependent variable is students' long jump performance, as measured through practical skill assessments. The assessment is based on indicators of mastery of long jump technique and the practical scores students received after participating in lessons using modified hula hoops.

Before conducting the test, the researchers observed the participants' psychomotor skills in the long jump. They then prepared the research instruments. The researchers conducted the study over the course of three sessions. In the first session, they administered a pre-test; in the second session, they conducted the intervention; and in the third session, they administered a post-test. In the context of physical education, all 11th-grade students in the study sample received the same treatment, so no groups were formed. All participants were involved in every activity carried out by the researchers.

At each stage of the study, the researcher served as the designer of learning activities using modified hula hoops, a facilitator who guided and instructed students throughout the learning process, an observer who monitored student activities during the lesson, and an evaluator who assessed students' learning outcomes in the long jump. Before the activity began, the students were given instructions that included an explanation of the learning objectives for the long jump, the function and proper use of modified hula hoops during practice, basic long jump techniques, instructions on the practice steps to be followed, and an explanation of safety precautions during practice. These instructions also encouraged the students to participate actively and take part in the entire activity.

During the study, participants attended an orientation session and a briefing on the material and engaged in physical activity to prepare for the study. Next, the students took part in the following core activities: watching a demonstration of how to use the modified hula hoop performing preparatory exercises leading up to the take off point with the aid of a hula hoop performing take off exercises through a modified hula hoop arrangement; performing coordination exercises for flight and landing using a hula hoop as a target; and participating in the long jump activity as a whole using the prepared equipment. Students performed a cool-down before the learning outcome evaluation, and the researcher provided feedback to the students on the results of the modified hula hoop test during the closing activity.

2.5 Data Analysis

Data analysis was conducted quantitatively using the IBM SPSS statistical software. The steps involved in the data analysis included: Calculating the mean, minimum, maximum, median, and mode of students' pre- and post-test scores through descriptive statistics; Normality Test: The Shapiro-Wilk test was used to determine whether the data were normally distributed. According to the decision criteria, the data is normally distributed if the significance value is greater than 0.05, and if the significance value is less than 0.05, the data is not normally distributed. Hypothesis Testing: The Wilcoxon Signed Ranks test was used to measure differences in students' learning outcomes before and after the intervention because the research data was not normally distributed. Hypothesis testing criteria: If the significance value is < 0.05, then H_1 is accepted and H_0 is

rejected. If the significance value is > 0.05, then H_0 is accepted and H_1 is rejected. Thus, the Wilcoxon test was used to determine the effect of using the modified hula hoop on improving the long jump learning outcomes of 11th-grade students at SMK Negeri 2 Semarang.

3. RESULTS

This section presents the results of data analysis obtained from *the pretest* and *posttest* (Table 1) to evaluate the effectiveness of the use of modified hula hoop media in improving the learning outcomes of long jump students in grade XI of SMK Negeri 2 Semarang. The data collected included students' psychomotor ability scores before and after the intervention, which were then statistically tested using descriptive analysis, the Shapiro-Wilk normality test, and the Wilcoxon hypothesis test.

Table 1.

Description of the pretest & posttest

Description	Pretest	Posttest
Number of Students	34	34
Minimum Score	6	6
Maksimum Score	11	11
Average	8,40	8.94
Median	8	8
Modus	9	9

Table 1 shows that the use of the modified hula hoop improved students' learning outcomes. The mean score rose from 8.40 on the pretest to 8.94 on the posttest. The median and mode also increased from 8 to 9. This indicates that students generally performed better in the long jump after learning with the modified hula hoop**.**

Table 2.

The normality test using the Shapiro-Wilk

Data	Sig.	Description
PreTest	0,033	Abnormal
Posttest	0,012	Abnormal

The results of the normality test using the Shapiro-Wilk test are shown in Table 2. The significance value for the pretest was 0.033 and the significance value for the posttest was 0.012; both were lower than 0.05 (Sig. < 0.05), so the data were not normally distributed. Therefore, the analysis was continued using the Wilcoxon test, which is nonparametric.

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Table 3.

Wilcoxon Signed Rank Test

Category	Number of Students	Mean Rank
Improvement	17	15.18
Decline	9	10.33
Fixed	9	-

The results of the Wilcoxon test, as shown in Table 3, indicate that 17 students showed an improvement in learning outcomes after the intervention using the modified hula hoop, while 9 students showed a decline, and the remaining 9 students maintained their scores. The group that showed an increase of 15.18 had a higher average rank score than the group that showed a decrease of 10.33. This indicates that after the implementation of the modified hula hoop medium in long jump instruction, improvements were more dominant than declines.

Table 4.

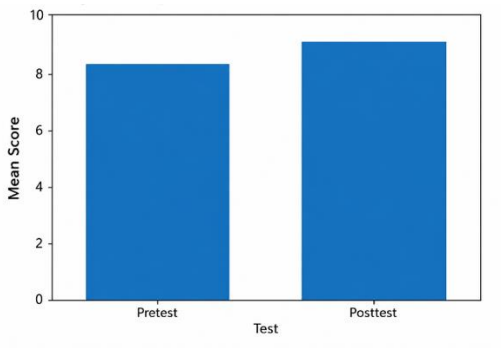
Hypothesis Test Results

Statistics	Value
Z	-2,140
Asymp. Sig. (2-tailed)	0,032
Remarks	Significant

There is a significant difference between the pretest and posttest results, according to Table 4, as the significance value of the Wilcoxon Signed Ranks test is 0.032, which is lower than 0.05 (0.032 < 0.05). Therefore, the 11th-grade students at SMK Negeri 2 Semarang showed a significant improvement in their long jump performance thanks to the use of the modified hula hoop. These results indicate that the alternative hypothesis (H1) is accepted, and the null hypothesis (H0) is rejected.

Figure 5.

Comparison of Mean Pre-test and Post-test



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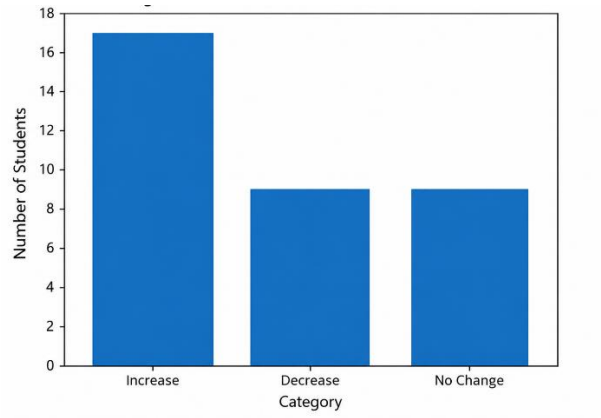
The Figure 5 shows an increase in the average learning outcomes of students from the pretest to the posttest after being treated with the modified hula hoop medium. And then, the Figure 6 shows that more students experienced improvement than decline or no change after the treatment. This indicates a positive effect of the treatment on student performance.

Figure 6.

Students experienced improvement



Overall, the results of the data analysis provide a strong synthesis that the application of modified hula hoop media has a significant positive impact on students' long jump performance. Although the study data were not normally distributed, the results of the Wilcoxon test ($p = 0.032$) proved a marked difference between before and after treatment, with the majority of students (17) successfully improving their abilities. The increase in the average score from 8.40 to 8.94 and the dominance of the number of students who experienced performance improvements confirmed that this media innovation was effective in helping students master the psychomotor technique of long jump better.

4. DISCUSSIONS

The results show that 11th-grade students at SMK Negeri 2 Semarang perform better in the long jump when using a modified hula hoop. Since the p-value was 0.032 (< 0.05), the alternative hypothesis was accepted, and learning outcomes improved from 8.40 on the pretest to 8.94 on the posttest. The results indicate that people's understanding of motor skills, particularly the psychomotor aspect, can be more effectively supported by creative and useful learning media. This success can be attributed to the modified hula hoop's ability to simplify the steps of the long jump into a more systematic and easy-to-understand sequence. Students not only receive verbal explanations but also engage in guided practice to gain hands-on learning experiences. The use of media will increase. If homeroom teachers use media correctly, they can shorten the learning process. For teachers, instructional media have the potential to foster dynamic individual learning and help students grasp concepts or reflect on them. Media can serve as a vital extension of students' thinking and actions (Khamila & Supriyadi, 2023).

In addition, student learning outcomes are also influenced by student engagement and motivation during the learning process. For students, Media can serve as an extension of our most basic thoughts and actions. Modern learning media are considered to play a crucial role in boosting students' motivation to learn. The selection and use of these media by teachers are

essential to the success of the learning process (Khamila & Supriyadi, 2023) Previous research findings are consistent with this. (ERWANSYAH, 2021) found that using a hanging ball improves long jump skills. On the other hand, (Rawe & Siprianus, 2022) found that learning outcomes can be significantly improved with just a few changes to the tools.There fore, this study reinforces the evidence that the creation of learning aids is a crucial component in enhancing the quality of physical education instruction and students' psychomotor skills. Because this study uses a single-group design, it lacks a control group and has an unlimited sample size. Consequently, a more robust experimental design and a broader sample size are needed to ensure that the results can be more effectively generalized.

5. CONCLUSIONS

This study shows that the long jump performance of 11th-grade students at SMK Negeri 2 Semarang improved through the use of a modified hula hoop. The results of the Wilcoxon Signed-Rank Test revealed a significant difference between performance before and after the intervention, with a p-value of 0.032 ($p < 0.05$). In addition, the students' average score rose from 8.40 on the pretest to 8.94 on the posttest. The results indicate that the modified hula hoop can be used as a useful alternative teaching method to improve students' long jump performance. These improved learning outcomes indicate that students are better able to understand and apply the basic techniques of the long jump using the new learning tool. Students learn the movement steps gradually using a modified hula hoop, starting with the approach, take off, flight, and landing. This makes the learning process more focused and easier to understand. These results align with the research by (Fadhilah & Widyastuti, 2025), which states that the use of learning media can improve students' understanding of movement techniques and learning outcomes in the long jump.

The use of modified hula hoops enhances students' psychomotor skills and increases their engagement in learning. Learning can become more enjoyable and engaging for students through the use of engaging learning materials. This aligns with (Khamila & Supriyadi, 2023) view that learning materials play a crucial role in boosting students' motivation to learn and their academic success. Previous studies have shown that changes in teaching materials and tools can improve learning outcomes in the long jump. The results of this study also support these findings. (ERWANSYAH, 2021) found that the use of a hanging ball can increase vocational high school students' interest and learning outcomes in the long jump. In addition, (Rawe & Siprianus, 2022) found that incorporating cardboard modifications into long jump instruction can significantly improve students' learning outcomes. Therefore, modified hula hoops can serve as a useful innovation for athletics instruction. However, this study still has several limitations. This study used only a one-group pretest-posttest design, without a control group, because the effect of the treatment could not be compared with other learning methods. Furthermore, because the sample size was very small and drawn from a single class, the results cannot be widely generalized to a larger population.

Given these limitations, further research is recommended to employ a more robust experimental design, such as a pre-test-post-test control group design, involve a larger sample size, and examine the effects of the modified hula hoop medium on students' affective and cognitive aspects, learning motivation, and self-confidence. Future research could also compare the modified hula hoop medium with other athletic learning methods. Overall, the modified hula hoop can be recommended as an effective, practical, and user-friendly innovation in physical

education for teaching athletics. The use of this tool not only improves students' learning outcomes in the long jump but also helps create a more active, engaging, and student-centered learning process. This study provides theoretical and practical contributions to the development of physical education learning media, particularly for long jump instruction, at the vocational high school level.

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