Available online at : http://journal.unj.ac.id/unj/index.php/gjik
Gladi : Jurnal Ilmu Keolahragaan, 17 (01) 2026, 75- 86
Permalink/DOI: https://doi.org/10.21009/GJIK.171.08

Innovation of Kasti Ball Slide Media on Students' Batting Abilities

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(Submission Track: Received: 29-12-2025, Final Revision: 20-02-2026, Available Online: 07-03-2026)

Abstract. Kasti is co mmonly taught in elementary physical education; however, batting skills remain challenging for many students due to difficulties in timing, ball contact accuracy, and hit direction control. This study examined the effect of kasti ball slide media on students' batting ability. A pre-experimental one-group pretest–posttest design was applied. Participants were 21 fourth-grade students at MI Darul Ma'wa in the 2025/2026 academic year, selected through total sampling. Batting performance was measured using a validated kasti batting skill test. The intervention was implemented across 10 instructional meetings by integrating the slide media into structured and progressive batting practice activities. Data were tested for normality using the Shapiro–Wilk test and analyzed using a paired-samples t-test to compare pretest and posttest scores. Results showed that the students' mean batting score increased from 15.28 in the pretest to 22.33 in the posttest. The paired-samples t-test indicated a significant improvement after the intervention (Sig. 2-tailed = 0.000, $p < 0.05$). These findings suggest that kasti ball slide media has a significant effect and can be used as an alternative learning medium to improve elementary students' batting skills in physical education lessons. Future studies are recommended to involve a control group, larger samples, and retention testing to strengthen evidence of effectiveness.

Keywords: batting; kasti; learning media; physical education; elementary school.

INTRODUCTION

Education is a planned effort to create a learning environment in which students can actively develop their potential (Saifuddin et al, 2023). Physical Education, Sports, and Health are the foundations that play a role in developing students' physical, psychomotor, social, and emotional aspects (Ramadhan et al, 2023). In physical education, kasti ball is included in the small ball games taught to students. Kasti is a team game that uses a ball and a bat, which aims to train students' basic motor skills such as throwing, catching, and hitting (Rudin, 2025). However, mastery of basic movements, especially in hitting skills, is still not optimal, so some students experience difficulties. Kasti ball hitting skills are still a major problem often faced by students during learning. Hitting techniques require eye-hand coordination, arm strength, timing, and an understanding of the starting position (Hari, 2024). Students' low abilities in these aspects cause them to have difficulty hitting, which leads to low interest in kasti ball.

The game of kasti ball not only involves basic techniques that influence students, but psychological and motivational aspects can also affect student interest. Students also show a lack of enthusiasm in participating in kasti ball lessons because they are afraid of being hit by the ball and bat (Fazlullah et al, 2024). This fear causes students to rush when hitting the ball, resulting in inaccurate contact with the bat and suboptimal results. This shows that kasti ball lessons have not been able to fully create a learning environment that is safe, enjoyable, and suited to the characteristics of elementary school students.

Physical Education, Sports, and Health learning, kasti ball is designed to improve students' strength and physical fitness and instill a spirit of sportsmanship (Aliriad, 2023;Ode, 2024). Physical activities in the form of games are more likely to attract interest and encourage students to participate actively at the elementary school age. The principle of "playing, moving, and feeling happy" is the basis of learning (Febriyanto et al, 2024). Therefore, kasti ball games must be designed in a more innovative way and in accordance with the characteristics of students.

In an effort to increase students' interest and ability in hitting a kasti ball, it is necessary to use innovative learning media that is appropriate for the characteristics of elementary school students. One form of innovation is the use of a kasti ball slide media, which is a learning media designed to help students improve their hitting skills (hitting a ball). This media works on a simple principle, where the ball is rolled by a partner from

the top of the slide, then the student as the hitter stands at the end of the media that has been marked to hit the sliding ball. The use of kasti ball slide media is expected to make it easier for students to coordinate their eye and hand movements and improve the accuracy and power of their hits, thereby potentially improving their learning outcomes in kasti ball hitting skills.

Previous studies have also discussed modifications in kasti ball games to improve students' batting skills (Rifai & Purnama, 2020;Sadewa, 2022). Research on improving student learning outcomes in batting using modified batting aids and balls (Lusye, 2020). Research conducted by Kadir also shows that using hanging balls can improve students' batting skills (Kadir, 2022). Similar research shows that using the swinging ball technique can improve kasti ball batting skills (Safitri, 2020).

Although various studies have proven that modifications to the game, tools, and certain techniques in kasti ball can improve students' batting skills, studies that specifically examine the use of innovative kasti ball slide media are still very limited or non-existent. Most previous studies have focused more on modifying the media or game methods to improve students' batting skills, such as the use of the hanging ball method (Habibi, 2022). The use of learning media innovations specifically designed to train movement coordination and batting timing has not yet been studied. Therefore, the use of kasti ball slide media is an innovative alternative that has the potential to complement previous findings in an effort to improve students' batting skills.

This study aims to determine the effect of the innovative kasti ball slide media on students' batting skills. This study is expected to contribute new insights to the development of Physical Education learning literature, particularly in kasti ball game materials. Additionally, the results of this study are expected to serve as a practical reference for teachers in selecting and applying effective learning media to improve students' batting skills, eye-hand coordination, and interest in kasti ball learning.

METHOD

This study used a pre-experimental method with a one-group pretest–posttest design. One group of students had their batting skills measured before (pretest) and after (posttest) being given treatment in the form of using a ball slide media to see whether the ball slide media improved batting skills. An experiment is a type of research used to measure the effect of a treatment on student abilities or to test the hypothesis of whether

a particular treatment has an impact (Sugiyono, 2018). The one-group pretest-posttest method was applied in this study by measuring the initial and final conditions in the same group so that the effectiveness of the treatment could be analyzed more measurably (Arib et al, 2024).

This study was conducted at MI Darul Ma'wa in the 2025/2026 academic year with a sample of 21 fourth-grade students. This study used total sampling, allowing the entire population to be involved so that the data obtained reflected the actual condition of the students. The total sampling technique was chosen because every individual in the population had characteristics relevant to the research objectives, so all of them were included as research samples (Ramadani et al, 2025).

The instrument used was a kasti ball batting test quoted from Mardiyata (2015) research. The instrument in this study has been tested and has a validity value (0.992) and reliability (0.991), making it suitable for use. The success of this study was measured by the increase in students' batting skills before and after the media treatment. The test was conducted using test facilities and infrastructure such as a school field, cones, kasti balls, kasti bats, whistles, and measuring tapes. The test procedure was as follows: the test subject stood in the hitting area with his hand holding the bat. Then, the test subject was ready to hit the ball given or thrown by the tester. The test subject hit the ball to the right and left of the field ten times. The balls that are counted are those that hit the bat. Each hit is aimed at one area of the field. The hit must not cross the first base line (point 1), cross the first base line (point 2), or cross the second and third base lines (point 3).

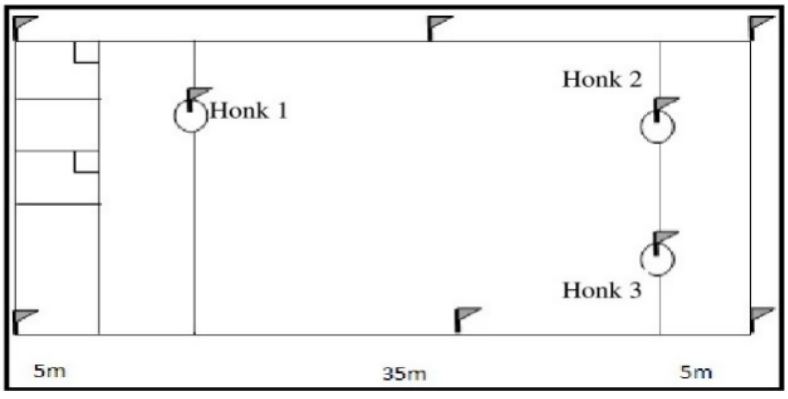

Figure 1. Ball-hitting test

The study was conducted over 10 sessions consisting of three stages. First, the pretest stage measured the students' initial batting skills using a batting skills test adapted from Mardiyata (2015) study, which was designed to determine the students' initial skills

before treatment. Second, the treatment stage involved providing treatment to students using a kasti ball slide media for 8 sessions. The treatment was conducted once a week with each session lasting 3×35 minutes in accordance with the allocation of physical education learning time at school. At the beginning of the treatment, the training focused on introducing the media, the initial stance when hitting, and hand-eye coordination through slow hits with a stable ball direction. In subsequent sessions, the difficulty level of the exercises increased over time, starting with the speed of the ball being rolled. Third, the post-test involved students retaking the same batting ability test as in the pre-test to measure changes and improvements in ability after using the kasti ball slide media.

The data for this study were analyzed using several stages. First, a normality test was conducted to ensure that the research data met the assumptions of parametric tests and to determine whether the research was normally distributed or not (Isnaini et al, 2025). Second, a t-test (paired sample t-test) was conducted to determine the difference between the pretest and posttest results in one group so that the researchers could conclude whether there was a change or not (Silva et al, 2022). Data analysis in this study was conducted using SPSS 27 software to assist in the analysis, so that the calculations were more accurate and scientifically acceptable.

RESULT AND DISCUSSION

Result

Based on the test results of 21 subjects, it shows that most students' abilities were in the "low" category in the pretest, with pretest scores ranging from 13 to 18, indicating that the students' initial abilities were still relatively low. Meanwhile, the posttest results show a significant improvement after the treatment.

Table 1. Frequency of Pretest and Posttest Results

Pretest			***Posttest***		
Category	*Frek.*	Percentage	Category	*Frek.*	Percentage
Very High	0	0%	Very High	1	5%
High	0	0%	High	12	57%
Moderate	1	5%	Moderate	8	38%
Low	15	71%	Low	0	0%
Very Low	5	24%	Very Low	0	0%

Based on the distribution of pretest and posttest scores, it can be seen that after the treatment, there was a significant improvement. At the "pretest" stage, most participants were in the "low" category (15 students), while 5 students were in the "very low"

category, 1 student was in the "medium" category, and no participants were in the 'high' or "very high" categories. Conversely, in the "posttest" stage, most participants were in the "high" category (12 students) and 'medium' category (8 students), with even 1 person in the "very high" category.

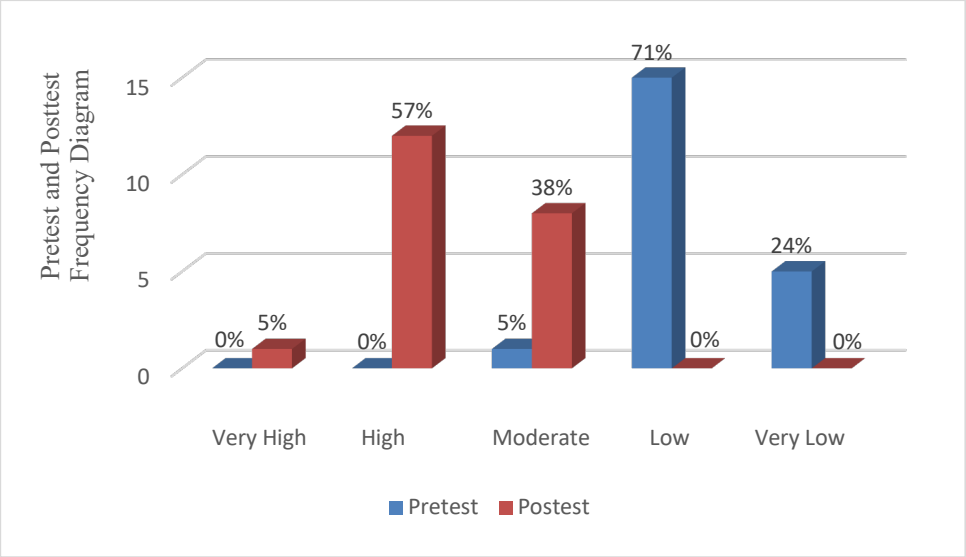

Figure 2. Pretest and Posttest Frequency Diagram

The results of the descriptive statistical analysis of the kasti ball batting ability of fourth grade students of MI Darul Ma'wa pretest and posttest using kasti ball slide media are as follows.

Table 2. Statistical Description of Pretest and Posttest

Statistics	*Pretest*	*Posttest*
N	*21*	*21*
Mean	*15.28*	*22.33*
Standard Deviation	*1.14*	*185*
Minimum	*13*	*19*
Maximum	*18*	*27*

Based on the description of the pretest and posttest statistics, it is known that the average pretest score of 15.28 increased to 22.33 on the posttest, indicating an increase in ability after the treatment was given. In addition, the minimum score also increased from 13 to 19, and the maximum score from 18 to 27. The standard deviation in the pretest was 1.14 and in the posttest was 1.85, indicating that the distribution of scores was still within a reasonable range. Overall, the data shows that the treatment affected the participants' learning outcomes.

Table 3. Results of Normality Test (Shapiro-Wilk)

Shapiro-Wilk		
Statistics	*df*	*Sig.*
,931	21	,147
,940	21	,222

The results of the Shapiro–Wilk normality test indicate that both the pretest and posttest data are normally distributed, with significance values of 0.147 and 0.222, respectively. These values are above the 0.05 significance limit. Thus, the assumption of normality is met, and the data can proceed to the parametric statistical analysis stage.

Table 4. Hypothesis Test Results (Paired Sample T-Test)

Paired Differences							
95% Confidence Interval Of The Difference							
Mean	*Std. Dev*	*St.Eror Mean*	*Lower*	*Upper*	*t*	*df*	*Sig.(2 Tailed)*
-7,048	*1,687*	*0,368*	*-7,816*	*-6,279*	*-19,139*	*20*	*0,000*

The results of the Paired Sample t-test showed that there was a significant difference between the pretest and posttest scores. The mean difference between the pretest and posttest was -7.048, which means there was an increase in scores after the treatment was given. The standard deviation value of the difference was 1.687 with a standard error of the mean of 0.368. The increase in scores was consistent and reliable, with a 95% confidence interval ranging from -7.816 to -6.279. With a degree of freedom (df) of 20 and a significance value (Sig. 2-tailed) of 0.000 < 0.05, it can be concluded that there was a statistical increase in learning outcomes from the pretest to the posttest.

Discussion

The results of the study indicate that training with a kasti ball slide media for eight sessions improved students' batting skills. This can be seen from the mean difference of -7.048 between the pretest and posttest. The increase in batting ability found in this study can be explained by the mechanism of increasingly effective movement integration as a result of using the slide media. The creation of more focused motor coordination patterns is encouraged by stable training conditions. Research by Syaifulloh & Aguss (2021) ,

also explains that the ability to control functional movement variability greatly influences the mastery of striking skills.

When compared to other studies, the findings of this study support the results of research on controlled aids that improve batting performance. N. M. Bordelon (2025) found that the use of tools that control the direction and speed of the ball can affect batting performance, while Ino (2024) said that the consistency of visual stimuli affects the temporary coordination between the arrival of the ball and the swing. In this study, the slide media played an important role in providing constant stimuli so that students could concentrate on perfecting their swing and body position (Morimoto, 2025). Meanwhile, research on kasti ball conducted by Raka et al (2023) and (Karsam, 2023) also showed that the development of game-based media can significantly improve basic skills. This makes slides an appropriate medium for the elementary school context.

The results of this study also show that there was an improvement in striking skills, but not in cognitive or tactical abilities in the game. This is in line with Narumalina (2022) opinion, which states that the relationship between cognitive abilities and match experience greatly affects striking performance. Therefore, technical training is not sufficient to improve decision-making aspects. Furthermore, Themanson (2023) findings support the view that predictive ability is closely related to hitting performance. This prediction process is largely influenced by direct game experience. Thus, slide media is very effective for technique acquisition. However, for optimal skill transfer, situational training or game-based learning must be combined with it.

Sliding media is suitable for school learning because it is easy to make and inexpensive. These results are in line with Perrett (2024) and Ohyama (2025), who emphasize that lower body kinematics and ground reaction force are very important to support hitting performance. These two components can be trained better if the ball stimulus is stable and controlled. Additionally, Yang (2025) found that overall body movement efficiency significantly influences swing energy enhancement, and using slides can help students build rhythm and physical readiness before the swing. However, this study also has limitations, such as very short training sessions and not being tested in real game situations. This is in line with Huang (2022) findings that environmental and situational factors can affect batting performance, as well as Nakahara (2023) findings that batting strategies in games require more complex match conditions.

The use of the kasti ball slide media showed a significant improvement in basic batting technique. However, further research is needed to evaluate skills in actual game situations. Additionally, this media should be combined with tactical training approaches as suggested by Toole & Fogt (2021) regarding the importance of swing pattern classification and visual prediction.

CONCLUSION

The conclusion of the study states that the kasti ball slide media has a significant effect on improving the batting skills of fourth-grade students at MI Darul Ma'wa in the 2025/2026 academic year. This can be seen from the increase in the average pretest score of 15.28 to 22.33 on the posttest. These findings indicate that the kasti ball slide media can be used as an alternative learning medium in physical education, particularly to support the improvement of kasti ball batting skills. In addition to contributing to the improvement of students' technical abilities, the use of this media also has the potential to increase students' interest in the learning process. For further research, it is recommended to use a control group and a larger sample size to strengthen the evidence of effectiveness.

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