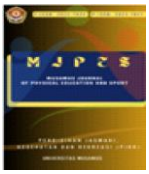
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The Effect of Gate Striking Practice with Varying Distances on Gate Entry Accuracy in the Bina Guna Gateball Club in 2026

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Abstract
Objectives:
This study aimed to determine the effect of gate shot practice with distance variations on the gate entry accuracy among members of the Gateball Student Activity Unit (UKM) at STOK Bina Guna in 2026.
Materials and Methods:
This study employed a quantitative experimental approach using a One Group Pretest Posttest Design. The population consisted of 20 members of the Gateball UKM at STOK Bina Guna. Using a total sampling technique, all 20 members were selected as research samples.
Results:
The results indicated a significant improvement in the participants' gate entry accuracy. The mean pretest score of 13.95 (min 9, max 19) increased to 25.20 in the posttest (min 23, max 27), representing an average increase of 11.25 points or an improvement rate of 80.65%. Hypothesis testing yielded a calculated t value of 19.98, exceeding the critical t table value of 2.093 with a significance level of $p = 0.000$ ($p < 0.05$). Consequently, the null hypothesis (H0) was rejected and the alternative hypothesis (Ha) was accepted.
Conclusions:
In conclusion, gate shot practice with distance variations significantly enhances gate entry accuracy in Gateball UKM members at STOK Bina Guna in 2026. Coaches are recommended to implement distance varied shot exercises into regular training programs to optimize athletes' stroke power control and precision.
Keywords: Distance Variation Practice; Gate Shot Accuracy; Gateball Sport; STOK Bina Guna.

Introduction

Sports are an important element of human life that have a significant influence on improving quality of life (Ishak et al., 2023). Regular physical activity provides tangible benefits for physical health, such as improving physical fitness, maintaining organ function, strengthening endurance, and preventing various diseases. In addition to physical benefits, sports also contribute to mental health by reducing stress, increasing self confidence, and promoting a positive outlook on life (Sahabuddin et al., 2023).

Sports are a health promoting activity, meaning that all activities are intended to maintain and improve health and achieve an optimal level of health for society (Sahabuddin et al., 2022; Ishak et al., 2022). In a broader context, sports serve as a means of character development, including discipline, responsibility, hard work, honesty, and sportsmanship. Therefore, sports are not merely recreational activities but also an important part of education and human resource development.

The role of sports in society continues to develop alongside increasing awareness of the importance of a healthy lifestyle. Modern society has begun to regard sports as a daily necessity that cannot be separated from routine activities. Various sports have developed rapidly, both individual and team sports, as well as recreational and competitive sports. In addition to serving as a means of maintaining health, sports also have social value because they bring together individuals from diverse cultural, economic, and age backgrounds in an atmosphere of togetherness. Many sports have also developed into

competitive and professional activities, thereby providing economic benefits for their participants.

In education, sports play a strategic role as a means of developing healthy, active, and well characterized athletes. Universities, as educational institutions, are responsible not only for developing students' academic abilities but also for supporting non academic development, including sports. Students, as the younger generation, need opportunities to channel their interests and talents positively so that they can develop in a balanced manner intellectually, emotionally, and physically. Therefore, various universities provide sports development programs through curricular and extracurricular activities.

One form of sports development in universities is implemented through Student Activity Units (UKM). UKM is a student organization that serves as a means of developing students' interests, talents, creativity, and achievements outside academic activities. Through sports UKM, students have opportunities to participate in regular training, competitions, improve technical skills, and develop leadership qualities. The presence of sports UKM is important because it provides a platform for developing student athletes who have the potential to achieve success at regional, national, and even international levels.

One sport that has developed in the university environment is Gateball. Gateball is a team sport originating from Japan and played by hitting a ball with a mallet or stick so that it passes through gates according to the rules of the game (Wulandari et al., 2023). In a match, two teams compete to earn points through accurate strokes and effective playing strategies. Gateball is known as a sport that can be played by various age groups because it does not require intense physical contact. Nevertheless, gateball still requires technical skills, precision, concentration, and the ability to make quick and appropriate decisions.

In general, gateball has unique characteristics because it combines technical, tactical, and mental aspects of competition. Players are not only required to hit the ball effectively but must also be able to read the game situation, determine stroke targets, and develop strategies to outperform their opponents. Under certain circumstances, a single stroke can determine the course of a match. Therefore, gateball is often regarded as a sport that requires a balance between physical ability and playing intelligence.

In gateball, mastery of basic techniques is a primary factor determining player success. These basic techniques include mallet grip, body posture during preparation, foot position, stroke swing, and the ability to control the direction and power of the ball. Proper basic techniques enable players to implement game strategies and improve performance consistency during matches. Conversely, weaknesses in basic techniques can lead to stroke errors that result in lost scoring opportunities.

One of the most important basic techniques in gateball is the gate stroke. The gate stroke is performed to send the ball through a gate as a requirement for scoring points and continuing the game. Successfully performing a gate stroke provides a significant advantage to the team because it is directly related to scoring and game positioning. Therefore, the ability to perform accurate gate strokes is an important indicator of a gateball player's quality.

The accuracy of a gate stroke is influenced by several factors. These factors include the ability to control stroke power, ball direction, body stability, hand eye coordination, and the ability to estimate the distance between the ball and the gate. In addition, psychological conditions such as confidence, focus, and composure also influence stroke outcomes. Small errors in determining the stroke angle or swing power can cause the ball to deviate and fail to pass through the gate. This indicates that a gate stroke is not merely a ball hitting movement but a complex skill that requires repeated and planned practice.

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To improve gate stroke performance, a systematic, programmed, and continuous training process is required. Sports training should be designed based on training principles, such as specificity, individualization, progression, overload, and variation. The principle of training variation is particularly important to prevent athletes from experiencing boredom and to prepare them for different game situations. A monotonous training program tends to slow skill development because players become accustomed to only one movement pattern.

One form of training variation relevant to improving gate stroke performance is distance variation training. This training is performed by gradually changing the distance between the ball and the gate, starting from short, medium, and long distances. Each distance variation requires different adjustments in technique, power, and stroke angle. Through this training, players become accustomed to adjusting their movements according to the conditions they encounter. The more frequently players practice at different distances, the better their technical adaptability becomes.

Distance variation training also contributes to the development of movement coordination. Players are required to adjust their visual focus, arm swing, and body balance so that the ball moves toward the intended target. In addition, this training improves distance estimation, enabling players to determine stroke power more accurately. Thus, distance variation training improves not only technical aspects but also perceptual motor abilities that are essential in gateball.

In addition to technical and physical aspects, distance variation training also influences players' mental readiness. Players who are accustomed to facing various difficulty levels during training tend to have greater confidence when competing. They become more composed in making decisions because they have experience dealing with similar situations during practice. Confidence is particularly important in precision sports such as gateball, because even slight hesitation can affect stroke outcomes.

The Gateball UKM at STOK Bina Guna is one of the sports student activity units that actively conducts student development in the sport of gateball. This UKM provides opportunities for students interested in gateball to participate in training, develop their abilities, and take part in various competitions. The UKM regularly implements training programs to improve technical skills and competitive readiness among its members. Based on preliminary observations conducted by the researcher during training activities, it was found that the accuracy of the members' gate strokes was still not optimal. Some members continued to experience difficulties in sending the ball through the gate, even at relatively short distances and under favorable playing conditions. When given the opportunity to attempt gate strokes, some members were still unable to control the direction and power of their strokes, causing the ball to fail to pass through the gate properly. This finding was also supported by test data collected by the researcher. Of the 20 athletes participating in the Gateball UKM, only 6 (30%) were able to perform accurate strokes, while the remaining 14 (70%) were unable to perform them properly. The data can be seen in the appendix. These conditions indicate that the members' basic ability to perform gate strokes needs to be improved. If this problem is not addressed promptly, it may affect the overall quality of the team's performance. In gateball matches, failing to send the ball through the gate means losing scoring opportunities and disrupting the planned game strategy. Therefore, improving gate stroke accuracy is an urgent need in the UKM training process.

One factor suspected of contributing to low gate stroke accuracy is the lack of optimal training methods. Based on the researcher's observations, training activities still tend to follow the same patterns and lack variation, particularly in the use of stroke distances. Members more frequently practice at a particular distance repeatedly without simulating

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the various conditions commonly encountered in matches. Consequently, members are less prepared to face distance variations during competition.

In actual matches, the position of the ball relative to the gate varies considerably. Sometimes players must perform strokes from short distances, while on other occasions they must perform strokes from medium or long distances. Each condition requires different technical adjustments. Players who are accustomed to practicing at only one distance tend to experience difficulties when facing new situations. This provides an important rationale for implementing systematic distance variation training.

Theoretically, gate stroke training using distance variations is expected to improve the accuracy of members' gate strokes. Through this training, members will gain broader movement experience, improve their ability to adjust stroke power, enhance ball direction accuracy, and develop confidence. However, the effectiveness of this training method needs to be scientifically established through experimental research so that the findings can be justified.

Experimental research in sports is important for determining the effect of a particular training intervention on improving specific abilities. Through an experimental method, the researcher can provide a distance variation training program to the research participants and then measure changes in gate stroke accuracy before and after the intervention. The research findings will provide an objective description of the effectiveness of the training method applied.

To date, scientific studies on gateball remain relatively limited, particularly those examining basic technical training methods in the university environment. Therefore, this research is important as an effort to enrich sports science, particularly in the sport of gateball. In addition to its academic benefits, the findings can be used as a consideration for coaches in developing more effective and efficient training programs.

Materials and Methods

Study Design

This study employed an experimental research method. experiment is a method used to investigate causal relationships between two factors deliberately introduced by the researcher while controlling or eliminating confounding factors. Experimental research aims to examine the effects of a specific treatment. Therefore, this study used an experimental method with a pretest and posttest group design.

Study Participants

The population in this study consists of 20 students who are members of the Gateball student activity unit (UKM) at STOK Bina Guna. In this study, the entire population is used as the sample, totaling 20 individuals.

Study Organization

The data collection instruments in this study consisted of a standard gateball court, gates, gateball balls, mallets, measuring tape, assessment sheets, and writing materials. The test was conducted by positioning athletes at predetermined hitting points and placing the gate at specified distances. Each athlete performed strokes to pass the ball through the gate, with an equal number of attempts provided to every athlete. The test was conducted using several distance variations, and each stroke was assessed based on whether the ball successfully passed through the gate.

Statistical Analysis

The data analysis technique used in this study was the t test. Before conducting the t test, the mean was calculated using the formula for the difference between pre test and post test scores. The analysis used pre test and post test data to determine improvement, calculated using the formula (O2 − O1), where O2 represents the post test and O1 represents the pre test. Normality testing was conducted to determine whether the data

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were normally distributed, while homogeneity testing was performed to determine whether the variances of the data were homogeneous.

Results

This study aims to determine the effect of gate-shooting practice with varying distances on the accuracy of passing the ball through the gate among members of the STOK Bina Guna Gateball Student Activity Unit (UKM) in 2026.

The assessment used was a test of accuracy in successfully hitting the ball through the gate. The measurement results before and after the intervention are as follows:

1. Data Description

a) Pretest Data

The results for the pretest on gate-shooting practice with varying distances show a minimum score of 9, a maximum score of 19, and a standard deviation of 2.56.

b) Posttest Data

The results for the posttest on gate-shooting practice with varying distances show a minimum score of 23, a maximum score of 27, and a standard deviation of 1.

Table 1. Pretest and Posttest Results

No	Name	Pretest	Posttest	Difference
1	Yurmelia Gulo	14	24	10
2	Shinta Wian Nursaleh Lombu	13	25	12
3	Syukur Anugerah Gulo	15	27	12
4	Yolrind Exaudi Lase	15	26	11
5	Bebi Putra Sentosa Halawa	19	27	8
6	Listen Sarumaha	9	23	14
7	Cindi Gulo	12	25	13
8	Raymond Hulu	16	25	9
9	Ricky Harefa	16	24	8
10	Ristin Zega	14	24	10
11	Meri Zega	12	23	11
12	Citra	14	23	9
13	Kevin	11	26	15
14	Lewis Sorahu Waruwu	12	24	12
15	Romen	11	26	15
16	Yefita	16	27	11
17	Ian Zebua	18	27	9
18	Putra Lase	16	26	10
19	Irwansyah Giawa	15	25	10
20	Iman Betrand Waruwu	11	27	16

Table 2. Descriptive Statistics for Pretest and Posttest Scores on Gate Hitting Practice with Distance Variations, in Relation to Accuracy in Passing Through the Gate.

Statistics	Pretest	Postest
N	**20**	**20**
Mean	**13,95**	**25,2**
Median	**14**	**25**
Mode	**16**	**27**
Stdv	**2,56**	**1,44**
Minimum	**9**	**23**
Maximum	**19**	**27**

Table 3. Statistics for Pretest and Posttest Data

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Variabel	N	Minimum	Maksimum	Mean	Std. Deviasi
Pretest	**20**	**9**	**19**	**13,95**	**2,72**
Posttest	**20**	**23**	**27**	**25,20**	**1,44**

Based on Table 3, the mean pretest score is 13.95, while the mean posttest score is 25.20. This indicates an average increase of 11.25 points following the implementation of gate shot practice with varying distances. Furthermore, the maximum score rose from 19 to 27, and the minimum score increased from 9 to 23. These results demonstrate a relatively uniform improvement in ability across all members of the STOK Bina Guna Gateball Student Activity Unit (UKM).

Based on the table above, the mean pretest score was 13.95. Following the intervention consisting of gate hitting practice with distance variations the mean posttest score increased to 25.20. Consequently, there was an average improvement of 11.25.

2. Prerequisite Analysis Tests

The sample for this study consists of 20 individuals. Since the sample size is less than 50, the Shapiro-Wilk test is used to assess normality. Ghozali (2021) explains that the Shapiro-Wilk test is recommended for sample sizes smaller than 50, as it offers greater power in detecting deviations from a normal distribution compared to several other normality testing methods.

The decision making criteria for the Shapiro-Wilk test are as follows:

- If the Sig. value (p-value) > 0.05, the data are considered to be normally distributed.
- If the Sig. value (p-value) < 0.05, the data are considered not to be normally distributed.

Table 4. Normality Test Data

Variabel	Statistics	df	Sig.
Pretest	0,959	20	0,515
Posttest	0,951	20	0,393

Based on the normality test results, the significance value for the pretest is 0.515, and for the posttest, it is 0.393. Both values are greater than 0.05, indicating that the data are normally distributed. Consequently, the analysis can proceed using a parametric test, namely the Paired Sample t test.

Discussion

The results showed that gate stroke training using distance variations had a significant effect on improving gate passing accuracy. This can be seen from the increase in the participants' mean scores from 13.95 in the pretest to 25.20 in the posttest, representing an average improvement of 11.25 points.

This improvement indicates that a training program incorporating distance variations can enhance members' ability to control stroke direction, power, and accuracy. In gateball, successfully sending the ball through the gate is determined not only by stroke power but also by the player's ability to estimate distance, determine the stroke angle, and maintain proper movement coordination. Training with distance variations provides more diverse movement experiences, enabling players to adjust their stroke techniques to different game situations.

From the perspective of sports training theory, these findings are consistent with the principle of specificity of training, which states that skill development is more effective when training activities correspond to the movement characteristics required during competition. By incorporating distance variations, players become accustomed to adjusting the ball's travel distance, thereby improving their ability to control stroke speed and direction.

Furthermore, repetitive training based on the principles of repetition and progressive overload allows neuromuscular adaptations to occur. These adaptations improve coordination between the nervous system and muscles, making movements more efficient, stable, and accurate. This explains why almost all participants demonstrated improved performance after completing the training program.

The statistical test results further support these findings. The paired sample t test showed a calculated t value of 19.98, which was considerably higher than the critical t value of 2.093, with a significance value of 0.000 ($p < 0.05$). Therefore, the improvement was not merely due to chance but was associated with the training intervention provided throughout the study.

These findings also support previous studies indicating that systematic technical training combined with training variations can improve accuracy in team sports. Training variations help reduce boredom, increase training motivation, and enrich athletes' movement experiences, allowing technical skills to develop more optimally.

Practically, these findings imply that coaches at the Gateball UKM of STOK Bina Guna can incorporate gate stroke training with distance variations into their regular training programs to improve athletes' accuracy. This training program is not only effective in improving stroke precision but also prepares athletes to face various situations during actual matches.

Conclusions

The results showed that gate stroke accuracy increased from an average pretest score of 13.95 to a posttest score of 25.20, representing an improvement of 80.65%. The Paired Sample t test showed a calculated t value of 19.98 > 2.093 and a significance value of 0.000 < 0.05. Therefore, gate stroke training with distance variations had a significant effect on improving gate accuracy among members of the Gateball UKM STOK Bina Guna in 2026.

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Conflict of Interest

The authors declare no conflict of interest.

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