



The Effect of Sparking Training on Gateball Hitting Accuracy Among University Athletes

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Abstract

Objectives:

This study aims to determine the effect of the Sparking technique on stroke accuracy in gateball among members of the STOK Bina Guna Medan Student Activity Unit (UKM).

Materials and Methods:

The research employed an experimental method using a one-group pretest-posttest design. The study population consisted of 20 members of the STOK Bina Guna Medan Gateball Student Activity Unit (UKM), while the sample comprised 10 individuals selected through purposive sampling.

Results:

The research results indicate that the average pre-test score was 7.5 (categorized as fair), while the average post test score was 11.1 (categorized as good).

Conclusions:

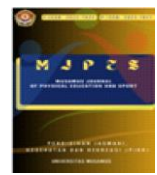
Based on the research findings, it can be concluded that Sparking practice influences stroke accuracy in the game of gateball among members of the STOK Bina Guna Medan Student Activity Unit (UKM).

Keywords: Sparking Drills; Hit Accuracy; Gateball.

Introduction

Sport is a physical activity that cannot be separated from human life and has become a fundamental need for maintaining a balanced quality of life amid the increasingly complex dynamics of modern development (Ishak et al., 2023). Engaging in regular sports activities not only provides significant benefits for physical health but also contributes substantially to mental fitness and emotional stability through the release of endorphins, which can reduce daily stress levels (Sahabuddin et al., 2023). As an integral part of national health efforts, sport aims to maintain and improve optimal health for all levels of society in order to create superior and productive human resources (Sahabuddin et al., 2023). Systematically measured physical activity also plays a crucial role in developing physical potential, sharpening mental abilities, and strengthening social cohesion among individuals, as mandated by Law No. 3 of 2005 concerning the National Sports System, which serves as the primary legal framework for sports activities throughout the Unitary State of the Republic of Indonesia.

Nowadays, the scope of sport has become increasingly broad and specialized, ranging from educational sports implemented in schools, recreational sports for leisure activities, to competitive sports that require a high level of dedication and discipline. One such competitive sport is Gateball, a team game that uses sticks and balls and uniquely combines intelligent strategic elements similar to chess, positional accuracy comparable to billiards, and striking techniques resembling golf, but played on a different scale of field. Gateball first emerged in Hokkaido Prefecture, Japan, in 1947, introduced by Eiji Suzuki as a solution for physical activity during the post-war period. Gateball began to spread to Indonesia around 1994 through tourism activities in Bali and was eventually officially recognized and governed by the Persatuan Gateball Seluruh Indonesia (PERGATSI) as the national governing organization responsible for athlete development and the organization of official competitions.



One of the main characteristics that makes Gateball distinctive from other sports is its reputation as a limitless sport, meaning a sport that can be enjoyed by people from various backgrounds and age groups. The game can be played by all generations, both men and women, young and old, without requiring explosive physical strength or excessive stamina, making it accessible to individuals with various physical conditions (Arif Indrajaya & Kristiyanto, 2019). Although Gateball may appear physically relaxed, the game actually requires a high level of concentration, composure, and tactical awareness throughout the match. Each team consists of five players who must work synergistically and establish strong cooperation to pass through three gates sequentially and eventually hit the goal post located at the center of the field as the final target. The dynamics of the game depend heavily on the intelligence of the captain and players in positioning the ball strategically to create advantages for their own team while effectively restricting the movement and creating disadvantages for the opposing team.

In competitive Gateball, shot accuracy is regarded as a fundamental element and one of the most decisive factors in achieving victory in each match. A player is not merely required to hit the ball so that it moves forward but must also be able to control its direction, rebound angle, and speed with a high degree of precision. Success in executing the initial shot through the gate or performing a long-distance attack aimed at the opponent's ball is largely determined by accumulated playing experience and the quality of accuracy training undertaken consistently by athletes. Without adequate accuracy, even the most sophisticated strategies designed by the team captain cannot be effectively executed on the field. Therefore, striking technique training should be a primary component of athlete development programs, particularly for young players.

One of the most crucial techniques and one of the most difficult to master in Gateball is the Sparking technique. This technique occurs when a player legally strikes and makes contact with another ball (touch), whether it belongs to a teammate or an opponent. Following the touch, the player is entitled to perform Sparking, a technical procedure in which the player firmly steps on their own ball to stabilize it and places the touched ball closely against the side of their own ball. The player then strikes their own ball with controlled force so that the kinetic energy generated by the stroke is transferred to the second ball, propelling it toward the intended target without displacing the primary ball held under the player's foot.

The Sparking technique has significant strategic value during a match and can often become a turning point or a decisive factor in determining the outcome of a game. Functionally, the technique can be used to assist a teammate who is in a difficult or unfavorable position in passing through a gate by using the momentum generated from another ball. Conversely, it can also serve as an effective offensive weapon for sending an opponent's ball out of the playing area (outball). Given its vital role in controlling the flow of the game, even minor errors in executing Sparking can have serious consequences because they may provide an immediate advantage to the opponent and disrupt the team's strategy. Therefore, the ability to perform Sparking with high accuracy and appropriate power control is an essential competency for players who aspire to compete at a high level.

Based on observations conducted by the researcher at the Gateball Student Activity Unit (UKM) of STOK Bina Guna, through direct observation and interviews with the Chairperson of the Gateball UKM, Yurmelia Gulo, and the supervisor of the Gateball UKM, Dr. Ramadan Ginting, S.Pd., M.M., M.Pd., AIFO, several difficulties were identified in performing the Sparking technique correctly. According to an interview with the Chairperson of the Gateball UKM, Yurmelia Gulo, most UKM members still experience difficulties in applying the basic Sparking technique properly. Common problems observed on the field include unstable foot positioning when stepping on the



ball, which causes the ball to shift, as well as poor coordination between the stick swing and the direction of the player's gaze. Meanwhile, an interview with the Gateball UKM supervisor, Dr. Ramadan Ginting, S.Pd., M.M., M.Pd., AIFO, indicated that another major problem lies in the players' ability to control the power of their strokes. He explained that many players are still unable to adjust the strength of their strokes according to the demands of the game situation, resulting in inaccurate Sparking outcomes. As a consequence of inadequate technical mastery, Sparking shots frequently miss their intended targets, fail to send the opponent's ball out of the field, or even place a teammate's ball in a less advantageous position on the playing area.

The suboptimal technical condition is further influenced by the rules of Gateball, which limit the time available for players to make decisions. Each player is given a maximum of 10 seconds to determine a strategy and execute a stroke after being called by the referee. This very limited time pressure can create additional mental and psychological burdens for players at STOK Bina Guna, causing them to lose composure when required to perform complex techniques. Insufficient technical readiness to execute Sparking under such time constraints may lead to fouls or poorly controlled strokes, which ultimately disrupt the team's strategic rhythm and reduce the probability of winning in competitive matches.

To address these technical and mental problems comprehensively, systematic, measurable, and continuous training specifically focused on improving Sparking accuracy is required. Structured and repetitive training is expected to develop strong muscle memory, enabling players to perform the movement more automatically and with a high degree of precision even under pressure. Through appropriate training approaches and periodic evaluation, the failure rate in executing Sparking is expected to be minimized, thereby increasing the effectiveness of team attacks and enabling every opportunity created on the field to be converted into points or advantageous positions that contribute to winning the match.

Materials and Methods

Study Design

The research design employed by the researcher is the One-Group Pretest-Posttest Design. In this design, the group of subjects is administered an initial test (pre-test) before receiving the treatment, followed by a final test (post-test) to measure the effect of that treatment.

Study Participants

The population for this study consisted of 20 students who were members of the Gateball Student Activity Unit (UKM) at the Bina Guna College of Sports and Health (STOK) in Medan. Purposive sampling was employed, resulting in a sample of 10 individuals selected from the total population of 20 to meet the study's requirements.

Study Organization

In this study, the instrument used is a stroke accuracy skill test for the game of gateball. This test aims to measure the player's level of precision in striking the ball toward a designated target.

Statistical Analysis

Data analysis is the process of systematically processing and organizing data obtained from research findings, making it easy to understand and suitable for drawing conclusions. The data for this study were derived from pre test and post test results regarding stroke accuracy in the game of gateball.

Results

Based on the data previously collected, this chapter presents an analysis and discussion of the research findings regarding the effect of Sparking practice on stroke accuracy in gateball among members of the STOK Bina Guna Medan student club (UKM). The



results are explained in accordance with the research objectives and the hypotheses previously proposed. The results of the study conducted with the STOK Bina Guna Medan gateball club members are presented in the following table:

Table 1. Results of the Study on Stroke Accuracy in Gateball among STOK Bina Guna Medan Student Club Members

Information	N	Mean	Mode	Std Dev	Min	Max
<i>Pretest</i>	10	7.5	7	1,08	6	9
<i>Posttest</i>	10	11.1	11	1,29	9	13

The results of the observation regarding shot accuracy in the game of gateball among members of the STOK Bina Guna Medan Gateball Student Activity Unit (UKM) prior to the administration of the Sparking training treatment are as follows:

Table 2. Pre-Test Results for Shot Accuracy in Gateball among STOK Bina Guna UKM Members

Intervals	Category	Frequency	Presentation (%)
13–15	Very good	0	0%
10–12	Good	0	0%
7–9	Fair	8	80%
4–6	Poor	2	20%
0–3	Very Poor	0	0%
Total		10	100%

Based on the data, it is evident that the gateball stroke accuracy of STOK Bina Guna Medan student club members prior to the Sparking training intervention fell predominantly into the Fair category. This indicates a need to improve the players' stroke accuracy through programmed and systematic training, enabling them to execute shots with greater precision and accuracy toward the target.

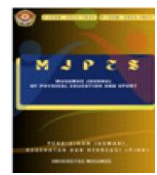
Upon completion of the entire training program, a post-test was conducted to gather data on the improvement in players' stroke accuracy. The post-test data regarding gateball stroke accuracy are presented in the following table:

Table 3. Post-Test Results for Gateball Stroke Accuracy among STOK Bina Guna Student Club Members

Intervals	Category	Frequency	Presentation (%)
13–15	Very good	1	10%
10–12	Good	8	80%
7–9	Fair	1	10%
4–6	Poor	0	0%
0–3	Very Poor	0	0%
Total		10	100%

Based on the data, it is evident that the striking accuracy of STOK Bina Guna Medan Gateball Club members improved significantly following the Sparking training intervention. The majority of respondents fell into the Good category, with some even achieving the Very Good category..

Discussion



Based on the results of the research conducted, it was found that Sparking training had an effect on improving shot accuracy in gateball among members of the UKM STOK Bina Guna Medan. This can be seen from the Pre-Test and Post-Test results, which showed an increase in scores after the participants received Sparking training as the treatment. In the Pre-Test results, most respondents were in the moderate category, with a percentage of 80%, while 20% were in the low category. This indicates that the players' shot accuracy before the treatment was not yet optimal. The players still experienced difficulties in controlling the direction, power, and accuracy of their shots toward the target (gate). The lack of specific and repetitive technical training was one of the factors contributing to the players' low level of shot accuracy.

After receiving Sparking training over several sessions, the Post Test results showed an improvement in shot accuracy. The Post Test results indicated that 10% of respondents were in the very good category, 80% were in the good category, and 10% were in the moderate category. There were no longer any respondents in the low or very low categories. In addition, the mean Pre-Test score of 7.5 increased to 11.1 in the Post Test. This improvement indicates that Sparking training was able to produce a positive change in the shot accuracy of gateball players.

Sparking training is a technical training method in gateball that is performed repeatedly and systematically to improve control of shot direction, movement coordination, concentration, and accuracy in hitting the ball toward the target. Through continuous practice, players become more accustomed to controlling the angle and power of their shots, allowing the ball to move more accurately toward the intended target. The improvement in shot accuracy in this study was also influenced by the gradual and programmed training process. The players were provided with training involving variations in direction, distance, and shot position, enabling them to improve their ability to adjust their shooting techniques. In addition, Sparking training helped players improve body balance and coordination among hand movements, foot movements, and visual focus when performing a shot.

The results of this study are consistent with the research conducted by Supardi, Nawir, and Sahabuddin (2020), which stated that shot training had an effect on improving shot accuracy in gateball. The study explained that repetitive training could improve players' ability to control the direction and accuracy of their shots toward the target. Furthermore, research conducted by Ijyayama, Sena, and Permatasari (2018) also showed that repetitive shot training could improve shot accuracy among gateball players. The study explained that continuous and directed training methods could improve players movement coordination and shot consistency, thereby enhancing their shot accuracy.

This study is also supported by research conducted by Komaini and Chaeroni (2025), which stated that the repetition training method had an effect on improving the shot accuracy of gateball athletes. The study explained that the more frequently athletes performed programmed technical training, the greater their ability to control the direction and power of their shots. Furthermore, research by Sahabuddin et al. (2023) on shot accuracy at the first gate in gateball also showed that shot accuracy is strongly influenced by technique and structured training. Players with good mastery of shooting techniques tend to be able to produce more accurate shots toward the target.

Based on the findings of previous studies, it can be seen that systematic and repetitive technical training is closely related to improvements in shot accuracy in gateball. This is consistent with the results of the present study, in which Sparking training was shown to improve shot accuracy among members of the UKM STOK Bina Guna Medan. Therefore, it can be concluded that Sparking training is an effective form of training for improving shot accuracy in gateball because it can enhance ball direction control,



movement coordination, concentration, and the accuracy of players' shots toward the target.

Conclusions

Based on the research findings, Sparking training has an effect on improving shot accuracy in gateball among members of the UKM STOK Bina Guna Medan. This is indicated by an increase in the average shot accuracy score from 7.5 in the Pre-Test to 11.1 in the Post-Test. Therefore, systematically and repeatedly implemented Sparking training can be an effective form of training for improving shot accuracy in gateball players.

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Conflict of Interest

The authors declare no conflict of interest.

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References

- Ardiyanto, H., & Fajaruddin, S. (2019). Tinjauan atas artikel penelitian dan pengembangan pendidikan di Jurnal Keolahragaan. *Jurnal Keolahragaan*, 7(1), 83–93. <https://doi.org/10.21831/jk.v7i1.26394>
- Arif Indrajaya, F., & Kristiyanto, A. (2019). Peningkatan Ketrampilan Teknik Dasar Gateball Melalui Penggunaan Media Adobe Flash Player. *Prosiding Seminar Nasional IPTEK Olahraga*, 38–40.
- Arifin Zaenal. (2017). Kriteria Instrumen dalam Suatu Penelitian. *Jurnal THEOREMS (The Original Research of Mathematics)*, 2(1), 28–36.
- Candra Susanto, P., Ulfah Arini, D., Yuntina, L., Panatap Soehaditama, J., & Nuraeni, N. (2024). Konsep Penelitian Kuantitatif: Populasi, Sampel, dan Analisis Data (Sebuah Tinjauan Pustaka). *Jurnal Ilmu Multidisplin*, 3(1), 1–12. <https://doi.org/10.38035/jim.v3i1.504>
- Dede, & Firmansyah, D. (2022). Teknik Pengambilan Sampel Umum dalam Metodologi. *Jurnal Ilmiah Pendidikan Holistik (JIPH)*, 1(2), 85–114.
- Fahmeyzan, D., Soraya, S., & Etmy, D. (2018). Uji Normalitas Data Statistik. *Jurnal VARIAN*, 2(1), 31–36.
- Febriyanti, I. P. W., & Rahmawati, I. (2025). Pengembangan Media Game Interaktif Berbasis Wordwall (Gateball) Pada Materi Perkalian Bilangan Cacah Kelas III Sekolah Dasar. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, 1(2), 61–76.
- Hasan, H., Informasi, S., Vidio, D., & Pendahuluan, I. (2022). Pengembangan sistem informasi dokumentasi terpusat pada stmik tidore mandiri. 2(1), 23–29.
- Hukum, M. I., Padjadjaran, U., Coblong, K., Bandung, K., & Barat, J. (2024). 1735-4475-1-Pb. 13, 223–239.
- Ijyayama, G. D., Sena, I. G. A., & Permatasari, A. A. A. P. (2018). Latihan Pukulan Repetisi Meningkatkan Dan Set Tetap Meningkatkan Ketepatan Pukulan Pada Pemain



- Gateball Smp Tp 45 Denpasar. *Jurnal Kesehatan Terpadu*, 2(2), 77–81.
<https://doi.org/10.36002/jkt.v2i2.538>
- Komaini, A., & Chaeroni, A. (2025). artikel Pengaruh Metode Latihan Repetisi terhadap Peningkatan Kemampuan Ketepatan Pukulan Atlet Gateball PUGC di Kota Padang: Gateball. *Jurnal IKEOR*, 3(1), 293–299.
- Nurul Melani Haifa, Indah Nabilla, Virda Rahmatika, Rully Hidayatullah, & HarmOnedi HarmOnedi. (2025). Identifikasi Variabel Penelitian, Jenis Sumber Data dalam Penelitian Pendidikan. *Dinamika Pembelajaran : Jurnal Pendidikan Dan Bahasa*, 2(2), 256–270. <https://doi.org/10.62383/dilan.v2i2.1563>
- Sahabuddin, S., Hakim, H., Ishak, M., Syahrudin, S., & Sofyan, D. (2023). Ketepatan Pukulan Pada Gate Pertama Dalam Permainan Gateball:(Studi Eksperimen Pada Pukulan Start dari Kanan dan Kiri). *Jurnal Olahraga Kebugaran Dan Rehabilitasi (JOKER)*, 3(2), 124–131.
- Sibarani, T., Nauli, T., Zega, Y., Barus, T. A., Sari, V. D., & Amati, T. (2024). Jurnal Ilmiah STOK Bina Guna Medan MODEL PERMAINAN OLAHRAGA GATEBALL UNTUK REMAJA GATEBALL SPORT GAME MODEL FOR BEGINNERS *Jurnal Ilmiah STOK Bina Guna Medan*. 12(77), 300–306.
- Simorangkir, W. P., Irfan, M., & Valianto, B. (2022). Management Analysis on Gateball Sport Coaching in Pergatsi North Sumatera. *Proceedings of the 6th Annual International Seminar on Transformative Education and Educational Leadership(AISTEEL 2021)*, 591(Aisteel), 79–82.
<https://doi.org/10.2991/assehr.k.211110.064>
- Sri Wahyu Ningrum, N. L. P., Agus Dharmadi, M., & Budi Darmawan, G. E. (2022). Kontribusi Kekuatan Otot Lengan dan Fleksibilitas Pergelangan Tangan pada Pukulan Tengah ke Gate dalam Gateball. *Jurnal Pendidikan Kepelatihan Olahraga Undiksha*, 13(1), 1–9.
<https://doi.org/10.23887/jjpko.v13i1.52204>
- Supardi, S., Nawir, N., & Sahabuddin, S. (2020). Pengaruh Latihan Pukulan Terhadap Akurasi Pukulan Pada Cabang Olahraga Gateball Di Club Bina Marga Makassar. *Eprints, Universitas Negeri Makassar*, 000, 34. <http://eprints.unm.ac.id/19649/>
- Yam, J. H., & Taufik, R. (2021). Hipotesis Penelitian Kuantitatif. *Perspektif : Jurnal Ilmu Administrasi*, 3(2), 96–102.
<https://doi.org/10.33592/perspektif.v3i2.1540>
- Zulkifli, A., Gusniati, J., Septi Zulefni, M., Aldania Afendi, R., Asni, W., & Fitriani, Y. (2025). Tutorial uji normalitas dan uji homogenitas dengan menggunakan aplikasi SPSS. *Jurnal Cahaya Nusantara*, 1(2), 3093–8113.
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