



The accuracy level of shooting using the instep and inside foot among extracurricular football students

Research Article

Muhammad Fitra Ramadani*

Universitas Islam Riau
INDONESIA

Rices Jatra

Universitas Islam Riau
INDONESIA

Abstract.

Background	Shooting accuracy is a fundamental skill in football, directly influencing scoring opportunities and overall game performance. Observations during training sessions of the extracurricular football program at SMK Negeri 4 Pekanbaru indicated that many students struggled to execute accurate shots using both the instep and inside foot, often missing the intended target. Such technical inconsistencies can hinder the development of optimal performance in competitive play.
Objectives	This study aimed to evaluate the accuracy level of shooting using the instep and inside foot among extracurricular football students at SMK Negeri 4 Pekanbaru.
Methods	A descriptive quantitative research design was employed, with a sample of 20 students selected from the program. The data were collected using a standardized shooting test incorporating both techniques. Each student's performance was assessed, and scores were averaged and categorized according to established criteria
Results	The analysis revealed that the combined average score for shooting accuracy using the two techniques was 18.93, which falls into the "fair" category. These results suggest that while students possess basic competence in shooting, there remains substantial room for improvement in precision and consistency.
Conclusion	In conclusion, the overall shooting accuracy among the participants is at a fair level, highlighting the need for targeted skill-based training to enhance both instep and inside foot shooting techniques. This study contributes to school football coaching strategies by providing baseline data to design more focused, technique-specific training interventions aimed at improving performance in extracurricular football programs.

Keywords: shooting accuracy, using the instep, inside foot.

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*Correspondence: mfitramadani@student.uir.ac.id

Muhammad Fitra Ramadani

Program Studi Pendidikan Jasmani Fakultas Keguruan dan Ilmu Pendidikan, Universitas Islam Riau, 28293, Pekanbaru, Indonesia

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INTRODUCTION

National education exists to develop the abilities and improve the quality of life and dignity of the Indonesian people as an effort to realize national goals. This is pursued through improved educational services at all levels, types, and pathways of education. Education becomes an effort to prepare students through teaching, guidance, and training for their roles in the future. One form of education that plays a significant role in achieving national education goals is physical education. Physical education and sports are activities included in the curriculum to improve physical fitness and sports through the educational system. To achieve the goals of physical education and sports learning, certain supporting aspects are required, such as qualified educators and learning programs aligned with the curriculum. Sports encompass all aspects related to physical activities requiring regulation, education, training, coaching, development, and supervision. Presidential Regulation Number 86 of 2021 regarding the Grand Design of National Sports states: "The Grand Design of National Sports is a master plan document that contains policy directions for national sports development carried out effectively, efficiently, excellently, measurably, systematically, accountably, and sustainably within the scope of educational sports, recreational sports, achievement sports, and the sports industry."

In relation to this, physical education and sports in schools must be improved. Physical education is a process of educating individuals both personally and socially, conducted consciously and systematically through physical activities to achieve improvements in physical skills, intellectual

growth, and character formation. In physical education, football (soccer) is one of the most favored subjects among students. Football can be included in formal educational institutions from the lowest to the highest levels. Usually, it is offered through school programs such as extracurricular activities. In schools today, extracurricular activities serve as a way to develop students' skills (Jatra et al., 2024). Extracurricular activities are educational activities conducted outside regular class hours to help students develop according to their needs, potential, talents, and interests through activities specifically organized by competent educators or school staff. Based on their stage of growth and development, vocational high school students fall into the adolescent category, transitioning into adulthood. At this stage, they are easily influenced by negative behavior. To protect them from such influences, one effort is to direct their free time toward positive activities, such as engaging in extracurricular programs.

According to Winata & Daharis, (2024), extracurricular activities are programs undertaken by students in schools or universities outside the standard curriculum hours. (Meria, 2018) defines extracurricular activities as learning programs conducted outside of regular classes, tailored to support students' knowledge, development, guidance, and habituation to acquire essential supporting skills. These activities are usually more open and rely on the students' own initiative to participate. According to Gazali et al., (2019), educational institutions are responsible for producing students who possess knowledge and skills, and further develop them through both formal and non-formal education, with extracurricular activities included as part of non-formal education. Fatmawati, (2022) state that extracurricular activities are additional programs conducted outside of class hours, either within or outside the school setting, aimed at gaining knowledge, skills, insights, and assisting in character formation based on students' interests and talents.

In addition, sports extracurricular activities are more popular among students than other extracurricular programs, prompting schools to view them as essential components that must be organized. These activities also serve as platforms for schools to gain recognition from the wider community, especially when the school achieves notable success (Candra et al., 2019). Football is a highly popular ball game played by two teams, each consisting of eleven players. Football fosters teamwork and sportsmanship, which must be upheld. The objective of each team is to score as many goals as possible while defending their own goal from being scored on, all in a fair manner according to the rules of the game.

Many experts have their own definitions of football. According to Arne Pettersen in (Gema et al., 2016), "Soccer is one of the most popular among youth worldwide, with an increasing number of young female players," meaning football is one of the most popular sports among young people globally, including a growing number of female players. Football has become a widely embraced sport in Indonesia, from urban to rural areas, and across all age groups, from children to the elderly. Their reasons vary—some play just to pass the time, for exercise, or to achieve high-level performance (Jatra, 2017). The game is played with the goal of scoring against the opposing team and defending one's own goal by preventing the other team from scoring (Kafrawi, 2022).

One of the basic techniques important for scoring goals is the shooting technique. Shooting is kicking the ball using one foot, either the inner or outer part of the foot, with specific techniques combined with power and accuracy (Hasrion et al., 2020). Basic shooting techniques involve using various parts of the foot, such as the instep, inner foot, outer foot, and toe. However, shooting with the instep and inner foot is more effective and commonly used. According to (Arjunnaja et al., 2022) shooting using the instep, when executed efficiently and effectively, produces powerful shots that are difficult for goalkeepers to stop, thus increasing the chances of scoring. However, these shots often lack accuracy.

Steps to perform instep shooting: (a) Place the support foot beside and in line with the ball. (b) Swing the kicking leg from behind. At the oment of contact, the toe points downward and must be tensed. The ball should be struck with the instep or the area where the shoelaces are located. (c) Lock and firm up the ankle for more powerful contact. (d) Lean the body slightly forward. If the body is not leaning, the ball is likely to go high. (e) Follow through after contact; don't stop the leg swing. According to Sugiono et al., (2024), inner-foot shooting is a commonly used technique for delivering accurate and targeted shots. It involves slightly leaning the body back for balance, slightly bending both arms at the sides, focusing on the ball and target, and striking the ball in its center with the inner part of the foot. This type of kick is often used for long-range shots requiring precision rather than power.

Steps for inner-foot shooting: (a) Place the support foot next to and close to the ball with a slightly bent knee. (b) Swing the kicking leg from behind, rotating the knee outward. At the moment of

contact, the kicking foot should be at a 90-degree angle to the support foot. (c) Keep the body above the ball (covering it). (d) Stretch out the arms to the side for balance. (e) Kick the ball in the center. The part of the foot contacting the ball is the middle of the inner foot. Executing a good and accurate shooting technique is not easy. Beginners often miss their target or kick the ball too high. To shoot effectively, players must know the correct contact point on the ball and foot placement: the support foot beside the back of the ball, the kicking leg swings from behind, contact point on the foot is between the front and back of the foot, arms spread for balance, eyes on the ball, and a follow-through motion after the kick (Sugiono et al., 2024). Common mistakes in shooting are often due to a lack of ball direction accuracy toward the goal.

Factors influencing accuracy include internal factors (e.g., skill: coordination, movement strength/speed, technique mastery, anticipation ability; and feelings: sensitivity, focus, sensory sharpness) and external factors (e.g., difficulty level: target size/distance; and environmental conditions). This study was conducted with the aim of examining the relationship between lower limb muscle strength and shooting accuracy among soccer players at SMK Negeri 4 Pekanbaru. The importance of this research lies in its effort to enhance the effectiveness of shooting technique training by understanding the physical aspects that support it, namely lower limb muscle strength. The results of this study are expected to provide a scientific basis for coaches and physical education instructors to design more focused and tailored training programs, thereby improving players' technical abilities in executing powerful and accurate shots optimally.

Furthermore, this research is significant because shooting is a critical skill in soccer that greatly influences match outcomes. Many beginner players still struggle to master accurate shooting techniques, especially in controlling the power and direction of their kicks. By understanding the role of lower limb muscle strength, a more holistic training approach can be developed that not only hones technique but also builds the physical condition supporting that technique. Therefore, this study is expected to make a meaningful contribution to the development of soccer athletes at the vocational high school level and to enhance sports achievements in the educational environment.

METHOD

Participants

The participants in this study consisted of 20 students enrolled in the extracurricular football program at SMK Negeri 4 Pekanbaru. Participants were selected purposively, with the criteria being active involvement in the football extracurricular activities and willingness to take part in all stages of the measurement process conducted by the researcher.

Research Design

This study employed a descriptive quantitative approach to describe the level of shooting accuracy using the instep and inside foot techniques. The data collection instrument was a shooting test in which participants were required to shoot the ball at a goal using both techniques. Each participant performed a series of shooting attempts, and scores were assigned based on the accuracy of the ball hitting the predetermined target.

Data Analysis

The collected data were analyzed by calculating the mean score of all participants' performances. The resulting average scores were then classified into ability categories (very good, good, fair, poor, and very poor) according to established assessment guidelines. This analysis aimed to provide a general overview of the shooting accuracy level for each technique as well as the combined performance.

RESULTS AND DISCUSSION

Results

Based on the results of this research on the Accuracy Level of Shooting Using the Instep and the Inside of the Foot among Football Extracurricular Students at SMK Negeri 4 Pekanbaru, the findings can be described as follows:

The Accuracy Level of Shooting Using the Instep Among Football Extracurricular Students

Based on the descriptive statistical analysis of the shooting accuracy ability using the instep among football extracurricular students at SMK Negeri 4 Pekanbaru, it was found that the maximum score achieved was 14.51, while the minimum score was 2.97, indicating a considerable difference in individual abilities. The mean score of 7.84 suggests that, in general, the students are at a moderate level of proficiency. The standard deviation of 3.37 shows a relatively wide spread of data from the mean, indicating variability in performance among students. The median score of 7.695 is close to the mean, suggesting that the data distribution is fairly balanced, although not perfectly normal. Meanwhile, the mode—or the most frequently occurring value—was not found, meaning that no particular score appeared more than once, indicating a fairly even distribution with no dominant value. Furthermore, the data is also distributed according to test norm classifications as follows:

Table 1. Frequency Distribution of Shooting Accuracy Ability Using the Instep Among Football Extracurricular

No	Interval		Category	Absolute Frequency	Relative Frequency
1	> 12,89		Very Good	2	10,00%
2	9,52	- 12,89	Good	4	20,00%
3	6,15	- 9,52	Fair	7	35,00%
4	2,78	- 6,15	Poor	7	35,00%
5	< 2,78		Very Poor	0	0,00%
Summary				20	100%

Based on the frequency distribution table of shooting accuracy ability using the instep among football extracurricular students at SMK Negeri 4 Pekanbaru, it is evident that the majority of students fall into the "Fair" and "Poor" categories, with 7 students (35%) in each, indicating that most students have not yet achieved an optimal level of technical mastery. Meanwhile, 4 students (20%) are in the "Good" category, and only 2 students (10%) reached the "Very Good" category. No students were categorized as "Very Poor." This reflects that although some students have demonstrated good instep shooting ability, intensive training is still needed to enhance the skills of the remaining students in order to reach higher proficiency levels.

The data presented in the table is also illustrated in the following histogram:

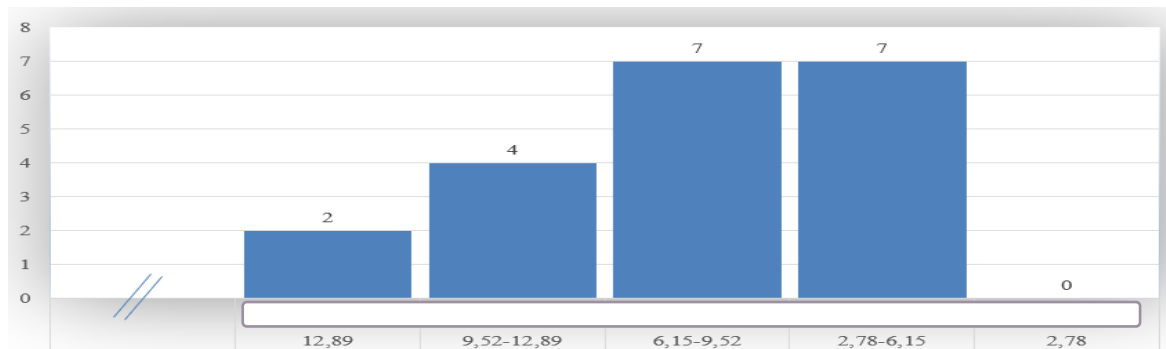


Figure 1. Histogram of Shooting Accuracy Ability Using the Instep Among Football Extracurricular

The Accuracy Level of Shooting Using the Inside of the Foot Among Football Extracurricular Students

Based on the descriptive analysis of the shooting accuracy ability using the inside of the foot among football extracurricular students at SMK Negeri 4 Pekanbaru, it was found that the highest score achieved was 17.85, while the lowest was 4.77, indicating a significant difference in individual abilities. The mean score of 11.09 suggests that, in general, students' abilities fall within the moderate or fair category. The median score of 10.895, which is nearly equal to the mean, indicates a relatively symmetrical distribution of the data. The standard deviation of 3.63 reflects a considerable variation in abilities among students from the average value. Meanwhile, no mode was found, meaning that no score appeared more than once, suggesting a fairly even distribution without the dominance of any particular value. These findings indicate that although some students have mastered the inside-foot shooting

technique well, the majority still require more intensive and targeted technical training. Furthermore, the data are also distributed based on test norm classifications as follows:

Table 2. Frequency Distribution of Shooting Accuracy Ability Using the Inside of the Foot Among Football Extracurricular Students

No		Interval		Kategori	Absolute Frequency	Relative Frequency
1		> 16,53		Very Good	1	5,00%
2	12,9	-	16,53	Good	5	25,00%
3	9,27	-	12,9	Fair	7	35,00%
4	5,64	-	9,27	Poor	6	30,00%
5		< 5,64		Very Poor	1	5,00%
Summary					20	100%

Based on Table 3 regarding the frequency distribution of shooting accuracy ability using the inside of the foot among football extracurricular students at SMK Negeri 4 Pekanbaru, it can be observed that the majority of students fall into the "Fair" category, with 7 students (35%), followed by the "Poor" category with 6 students (30%). This indicates that most students are still at a moderate to low level of technical mastery. A total of 5 students (25%) are in the "Good" category, while only 1 student (5%) reached the "Very Good" category, and another 1 student (5%) fell into the "Very Poor" category. These data suggest that although a few students have demonstrated good mastery of the inside-foot shooting technique, many others still require further and more targeted training to enhance their abilities to a higher level. The data presented in the table are also illustrated in the following histogram:

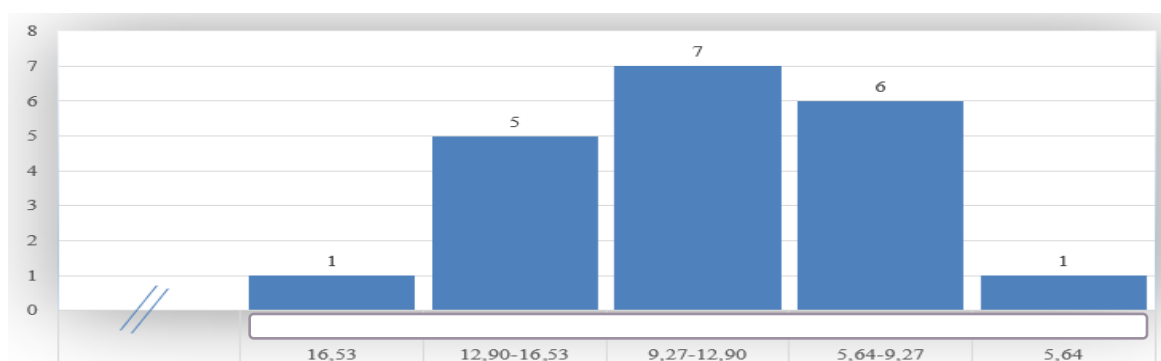


Figure 2. Histogram of Shooting Accuracy Ability Using the Inside of the Foot Among Football Extracurricular

The data processing results from the shooting ability test using the instep and the inside of the foot among extracurricular soccer students at SMK Negeri 4 Pekanbaru were analyzed based on the total final scores from both techniques, accompanied by ability categorization according to score intervals. The data collected from 20 students revealed that the average (mean) score of shooting ability was 18.93, which falls into the "Fair" category. This indicates that, in general, the students have an understanding and mastery of the basic shooting techniques, although improvements are still needed to reach a higher performance category.

The maximum score (Max) achieved was 26.82, obtained by a student named Wahyu. This student falls into the "Excellent" category and is the only participant at this level, representing 5% of the total sample. Meanwhile, the minimum score (Min) was 9.94, achieved by a student named Alif, who falls into the "Very Poor" category. This reflects a relatively wide range of abilities among the students, further illustrated by a standard deviation (stdev) of 4.98, indicating a moderate to high spread in the data. To further visualize the data distribution, a classification was made based on the following category intervals:

Table 3. Recapitulation of Shooting Accuracy Using the Instep and the Inside of the Foot Among Extracurricular Soccer Students

No	Interval		Category	Absolute Frequency	Relative Frequency
1	> 26,39		Very Good	1	5,00%
2	21,41	26,39	Good	6	30,00%
3	16,44	21,41	Fair	7	35,00%

4	11,46	-	16,44	Poor	4	20,00%
5		< 11,46		Very Poor	2	10,00%
		Summary			20	100%

Discussion

Based on the frequency distribution table, the majority of students (35%) fall into the "Fair" category, indicating that most students possess a basic understanding of shooting techniques but have yet to fully optimize crucial elements such as power, accuracy, and kicking speed. This finding aligns with recent research by (Mohendra et al., 2024), who found that foundational skills are necessary but insufficient alone to achieve optimal shooting performance without focused physical and technical training. Meanwhile, 30% of students categorized as "Good," including Riyan, Fikri, Dio, Novrian, Veto, and Ryko, demonstrate balanced proficiency in both instep and inside foot shooting techniques, consistent with (Ridwan & Putra, 2021) findings that strength and coordination positively correlate with higher shooting accuracy.

However, 30% of students remain in the "Poor" and "Very Poor" categories, highlighting significant challenges in mastering shooting mechanics, particularly in power and accuracy. For example, students like Alif and Dilan, scoring below 11.5, underscore the need for targeted training focused on strengthening leg muscles and refining basic technique, as supported by Putra and Wulandari (2021), who emphasize individualized physical conditioning in skill development. Additionally, the uneven distribution of proficiency between instep and inside foot shooting—such as Fikri excelling in inside foot but not instep shooting, and Rehan showing the opposite trend—suggests potential imbalances in the current training program or differences in student comfort with specific techniques. Sugiono et al. (2024) highlight that balanced training across multiple techniques is essential to develop well-rounded players.

Overall, extracurricular soccer students at SMK Negeri 4 Pekanbaru are at a moderate skill level ("Fair") in shooting accuracy, suggesting that systematic and diversified training, combined with regular performance evaluation, are vital for improvement. The variability in scores and technical strengths among students further supports the necessity for personalized training approaches, as noted in the literature on individualized coaching strategies to maximize athlete potential (Mashuri & Gunarto, 2023). These findings reflect that while the students have an adequate foundation in shooting, significant room for development remains to enhance both power and precision.

CONCLUSION

Based on the findings from 20 students in the football extracurricular program at SMK Negeri 4 Pekanbaru, the overall shooting accuracy using both the instep and inside foot techniques was classified as fair, with an average score of 18.93. While students have generally mastered the basic shooting techniques, they still face challenges in achieving an optimal balance between power and accuracy. In the instep shooting test, the majority were in the "Fair" (35%) and "Poor" (35%) categories, indicating the potential for powerful shots but a lack of precision. Conversely, the inside foot shooting test produced slightly better results, with 25% in the "Good" category and 35% in "Fair," suggesting greater comfort with controlled and accurate shots, though still below optimal standards. The high variability in scores points to differences in individual abilities, emphasizing the need for tailored training programs. These findings can be applied by integrating structured and targeted drills that develop both instep and inside foot techniques, supported by physical conditioning to enhance leg strength, coordination, and balance. This study contributes valuable baseline data for coaches and educators in designing evidence-based football training interventions and highlights technical disparities that require focused improvement. It is recommended that training sessions incorporate individualized coaching, regular progress evaluations, and game-like shooting scenarios to better prepare students for competitive play. With consistent and targeted practice, students can improve their shooting performance, benefiting both their individual development and the overall competitiveness of school football programs.

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AUTHOR CONTRIBUTION STATEMENT

MFR and JR were responsible for the development of the research concept and design, data collection, and preparation of the initial draft of the manuscript.

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