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Target Training to the Goal on Shooting Accuracy in Futsal for High School Students

Asdar Musa[1], Muhammad Sahib Saleh[2], Fahrizal[3]
[1, 2, 3] Department of Physical Education and Sports, Postgraduate, Makassar State University, Indonesia

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ABSTRACT

This research is motivated by the importance of shooting accuracy as a crucial skill in futsal, which is often not optimally achieved by school-level athletes. The primary objective of this study was to evaluate the effectiveness of the target training model in improving the shooting accuracy of extracurricular futsal athletes at High School 5 Barru. Using a quasi-experimental method with a two-group pretest-posttest design, a sample of 22 players was selected through purposive sampling and divided into experimental and control groups. Data were collected through shooting accuracy tests and analyzed using descriptive and inferential statistics. The findings showed a significant improvement in the experimental group, with the average score increasing from 11.55 during the pretest to 17.91 in the posttest, representing an increase of 55.1%. Statistical analysis via paired sample t-test yielded a calculated t-value of 5.670, which exceeds the t-table value of 2.086 (df=20; alpha=0.05) with a significance value of 0.000 < 0.05, confirming that the working hypothesis is convincingly accepted. In contrast, the control group showed no significant change, with a calculated t-value of only 0.319 and a significant level of 0.756 > 0.05. These findings provide empirical evidence that the target training model is a valid and effective method for optimizing athletes' shooting techniques systematically and measurably compared to conventional training.

Corresponding Author:
Asdar Musa
Department of Physical Education and Sport, Postgraduate, Makassar State University, Indonesia
Email: asdarcedda26@gmail.com

1. INTRODUCTION

Futsal has transformed into a global sporting phenomenon enjoyed by people of all ages, from children to adults (Hudain et al., 2025; Usman et al., 2025). The sport's popularity is driven not only by its recreational aspect but also by its logistical efficiency, requiring only simple equipment to begin playing (Mendes et al., 2022; Méndez-Dominguez et al., 2022). This characteristic strengthens futsal's position as an inclusive and accessible sport for the wider community.

In addition to the ease of equipment, the flexibility of venue is a key advantage that makes futsal increasingly popular compared to conventional football (Spyrou et al., 2020). This game can be implemented in various arenas, both indoors and outdoors, without requiring a large field (Bueno et al., 2018; Naser et al., 2017). This mobility and practicality make futsal a primary choice in sports curricula and extracurricular activities at the secondary school level (Iman et al., 2023; Mulloh et al., 2025).

In a competitive context, the fundamental goal of futsal is to create strategic opportunities to score as many goals as possible against the opponent's goal (Rogon et al., 2026; Rodrigues et al., 2025). To achieve peak performance, a comprehensive synergy between excellent physical condition, technical mastery, tactical intelligence, and mental stability is required (Arede et al., 2026). The foundation of this success rests on a solid mastery of basic techniques, including receiving, shooting, passing, chipping, heading, and dribbling (Sofia et al., 2025).

Among these various techniques, shooting, or shots on goal, plays the most vital role as a decisive instrument for victory (Priyambada et al., 2024). Conceptually, shooting is a directed kick that combines physical strength with high precision. While mechanically simple, this technique demands complete concentration and pinpoint accuracy to convert every opportunity created into a legitimate goal (Pizarro et al., 2021).

However, the reality on the field shows that achieving precise shots is a significant challenge, especially for players at the student or beginner level. A common error is failure to hit the target, where the ball often bounces high or misses the target due to poor control of the ball's accuracy (Jameel, 2025; Ismail & Nunome, 2020). This confirms that accuracy is a determining variable that defines the quality of an athlete's shooting technique.

This phenomenon of low accuracy was empirically observed in extracurricular futsal athletes at High School 5 Barru, where attacking effectiveness was often hampered by technical errors. Observations showed that many players still shot too high; the ball moved too slowly, making it easy for opponents to anticipate; or even missed the goal frame. Identifying these problems urgently calls for intervention through a more specific and measurable training model.

To overcome these technical obstacles, a training process specifically designed to hone athletes' visual and motor skills through target training is needed. This method is not simply a simple repetition exercise, but rather a systematic approach to optimizing ball control to specific target points. The use of media such as circles or specific target areas on the goal is believed to significantly improve athletes' focus and concentration during execution (Ali, 2025; Sekulic et al., 2021).

The uniqueness of this study lies in the specificity of using target training as a solution to accuracy problems in high school students, who have unique psychological and motor characteristics. By integrating target-based training methods into an extracurricular program, this study seeks to scientifically prove its effectiveness. Based on this argument, the purpose of this study was to determine the shooting accuracy level of extracurricular futsal athletes at High School 5 Barru before and after the

implementation of target game training and to analyze the effect of this training on improving their accuracy.

2. METHOD

This study employed a quantitative approach with a quasi-experimental design. The design employed was a Two-Group Pretest-Posttest Design, in which the researcher conducted a pretest before administering the treatment and a posttest after the intervention was completed. This procedure was used to compare the experimental group receiving target-game training with the control group, to objectively assess the effectiveness of the treatment.

The research was conducted in August 2025 at High School 5 Barru, South Sulawesi Province. This location was selected based on the availability of support facilities and the relevance of the problems encountered in the field. The entire data collection process, from the initial observation stage to the final test, was conducted in an integrated manner within the school environment, while still considering the students' academic schedules.

The population in this study included all athletes participating in extracurricular futsal activities at High School 5 Barru. Sampling was conducted using a purposive sampling technique with specific inclusion criteria: active athletes in grades 10 and 11, in good physical condition, and committed to following the entire training program. Based on these criteria, a sample of 22 athletes was obtained, which was then divided into two research groups.

The research variables consisted of target-game training as the independent variable and shooting accuracy as the dependent variable. To measure these variables, a modified shooting accuracy test was used. Each participant attempted five shots from 10 meters toward a pre-scored target area. This procedure was a strategic step in obtaining valid and reliable primary data.

To ensure the credibility of the research results, data trustworthiness was maintained through testing the validity, reliability, and objectivity of the instrument. Content validity was achieved through an expert judgment process involving futsal coaching experts and physical education teachers. Meanwhile, data reliability was maintained by implementing identical testing procedures for the pre-test and post-test, as well as objective assessment criteria based on the number of shots on target within the measured target area.

The data analysis technique in this study was conducted through several stages before testing the hypotheses. As prerequisites for analysis, normality and homogeneity tests were conducted to ensure the data were normally distributed and had uniform variance. After the prerequisites were met, hypothesis testing was carried out using a t-test to determine the significance of the influence of target-game training on increasing shooting accuracy in these athletes.

3. RESULTS AND DISCUSSION

Results

Descriptive Statistical Analysis

The results of the descriptive statistical analysis conducted the shooting accuracy level of extracurricular participants at High School 5 Barru after the implementation of the research is detailed in depth in Table 1. The data presents a comprehensive picture of the athletes' performance, which serves as the main indicator in evaluating the effectiveness of interventions or training methods that have been implemented during the research period.

Table 1. Descriptive Statistical Results

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Pretest Experimental Group	11	8	17	11.55	3.174
Pretest Control Group	11	7	16	11.73	2.611
Posttest Experiment Group	11	16	22	17.91	2.166
Posttest Control Group	11	8	17	11.82	2.442

Inferential Statistical Analysis

Normality Test

Data analysis began with a prerequisite test, a normality test, for the pretest and posttest variables in the shooting accuracy group before proceeding to the t-test. This test aims to ensure that the research data distribution meets the assumption of normality as a basis for determining appropriate inferential statistics. Using the Shapiro-Wilk analysis method, the results of the data distribution evaluation for each research variable have been systematically summarized in Table 2.

Table 2. Normality Test Result

Group	Sig.	α	Information
Pretest Experimental Group	0.593	0.05	Normal
Pretest Control Group	0.931	0.05	Normal
Posttest Experiment Group	0.714	0,05	Normal
Posttest Control Group	0.784	0.05	Normal

Homogeneity Test

The homogeneity test of the data is intended to determine whether the samples taken from the population come from the same variance and do not show significant differences from one another. The summary of the results of the data variance homogeneity test is presented in the following Table 3.

Table 3. Homogeneity Test

Data	Sig.	Sig. 0.05	Description
Group Experiment	0.322	0.05	Homogeneous
Group Control	0.890	0.05	Homogeneous

The data presented in Table 4, the significance probability value (sig.) for the pretest and posttest was recorded at 0.125. Because this value is greater than the significance level (alpha) = 0.05, it can be concluded that the variance of the research data is homogeneous. The fulfillment of this homogeneity assumption allows data analysis to be continued using parametric statistics. Thus, all data have met the technical criteria required for hypothesis testing through the t-test, so that the results of the subsequent analysis can be considered statistically valid.

Hypothesis Testing

The results of the normality and homogeneity tests, hypothesis testing, were then carried out using a paired sample t-test to determine the effect of the experimental group with the target exercise method on the control group that did not receive treatment. The hypothesis test for the experimental class was conducted using a t-test (paired sample t-test), the results of which can be seen in the following table:

Table 4. Hypothesis Testing (t-Test) for the Experimental Group

Group	Average	T-test for Equality of Means				
		t hitung	t tabel	Sig.	Selisih	%
Pretest	11.55	5.670	2.086	0.000	6.36	55.1%
Posttest	17.91					

The t-test results for the experimental group yielded a calculated t-value of 5.670, which is greater than the t-table value of 2.086 at 20 degrees of freedom (df) and a significance level of 0.05. This finding is supported by a significant value (p) of 0.000, well below the 0.05 threshold, thus concluding that the intervention significantly impacted the measured variables.

This hypothesis testing was conducted to evaluate the effectiveness of target training on shooting accuracy in futsal at High School 5 Barru. By comparing the control and experimental groups through paired sample t-test analysis, the statistical results summarized in Table 5 provide strong empirical evidence of differences in performance before and after the treatment.

Table 5. Hypothesis Test (t-Test) for the Control Group

Group	Average	t-test for Equality of Means				
		t hitung	t tabel	Sig.	Selisih	%
Pretest	11.73	0.319	2.086	0.756	0.91	7.8%
Posttest	11.82					

The t-test analysis results for the control group yielded a calculated t-value of 0.319, which is smaller than the t-table value of 2.086 at 20 degrees of freedom (df) and a significance level of 0.05. Furthermore, the resulting significance (p) value was 0.765, which is statistically well above the 0.05 threshold.

The combination of the t-value and significance level indicates that there was no significant effect on the control group during the observation period. This indicates that

without any intervention or special treatment, there were no significant changes in the performance of the study subjects in that group.

Discussion

Building upon the data analysis, a significant improvement in performance was found in the experimental group after receiving the target practice intervention. This finding demonstrates that training focused on specific targets positively impacts the shooting accuracy of futsal athletes at High School 5 Barru. Theoretically, this aligns with the principle of task-specific training, which states that training designed to mimic actual task demands can improve athletes' visual acuity and motor coordination more effectively than conventional methods (Lochhead et al., 2024).

The results of the hypothesis testing confirmed the convincing acceptance of the working hypothesis, indicating a strong effect of target practice on accuracy improvement. Psychologically and motorically, this improvement was driven by the high motivation of participants in the experimental group when faced with a concrete target. Focusing on achieving a specific target encouraged students to self-correct their shooting technique, resulting in a significant advantage in post-test results compared to the control group.

The success of this intervention also aligns with previous studies that emphasize the importance of direct visual feedback in mastering sports skills (Mödinger et al., 2022; Petancevski et al., 2022; Steinberg et al., 2016). Target practice provides athletes with an instant evaluation mechanism, which, according to motor learning theory, is crucial in shortening the cognitive phase to the autonomous phase. Thus, measured repetition on a clear target helps automate movement patterns and build consistency in shooting.

Procedurally, this series of studies was conducted in three main stages to ensure the validity of the conclusions. The initial stage began with a pretest to map the baseline accuracy abilities of both groups, followed by 12 training sessions conducted three times a week. The final stage concluded with a posttest to objectively measure the effectiveness of the intervention, ensuring that the comparison between the experimental and control groups was based on a systematic and controlled methodology.

The quantitative data in this study provides strong empirical support through contrasting statistical comparisons between the two groups of subjects. In the experimental group, the calculated t-value was 5.670, significantly exceeding the t-table value of 2.086, indicating that the intervention had a significant statistical impact. In contrast, the control group only recorded a calculated t-value of 0.319—far below the table value—indicating that the routine training method did not produce significant performance changes for the athletes during the study period.

These calculation results formally support the acceptance of the working hypothesis, which states that there is a significant effect of the target training model on improving futsal shooting accuracy at High School 5 Barru. Meanwhile, the null hypothesis for the control group cannot be rejected because the conventional training model has been shown to be unable to significantly optimize students' accuracy ability profiles. This striking difference in results confirms that a training structure directed at concrete

targets is far more effective in developing motor skills than a training pattern without specific targets.

These findings align with the principles of motor learning theory (Mödinger et al., 2022; Schöllhorn et al., 2022) and various previous studies that emphasize the importance of deliberate practice for achieving performance excellence (Machado et al., 2023; Sukmanawati & Suherman, 2025). Previous research has shown that training with external feedback, such as using targets, helps athletes refine motor schemes through faster error detection (Oftadeh et al., 2021; Sayed, 2024). Therefore, integrating target training into extracurricular curriculum not only measurably improves technical aspects but also provides a more systematic framework for developing athletic talent at the high school level.

Overall, the effectiveness of this target training model makes an important contribution to the field of sports pedagogy, particularly in the development of basic futsal techniques. The success of this intervention demonstrates that a task-oriented training approach is more effective in improving the technical skills of school-level athletes. These results are expected to be a reference for coaches and physical education teachers at High School 5 Barru in developing more efficient and measurable training programs.

4. CONCLUSION

This study concludes that the application of the target training model has a positive and significant impact on improving the shooting accuracy of futsal athletes at High School 5 Barru, as evidenced by the increase in the average value (mean) of the experimental group from 11.55 to 17.91, or an increase of 55.1%. This significance is strengthened by the results of the t-test, which shows a calculated t value of 5.670, far exceeding the t_table of 2.086 with a significance value of $0.000 < 0.05$, so that the working hypothesis is convincingly accepted. In contrast, the control group did not show a significant change in performance with a calculated t_value of only 0.319 and a significance level of $0.756 > 0.05$. This contrasting difference in results provides empirical evidence that the target training model is a valid and effective method for optimizing the quality of athletes' shooting techniques systematically and measurably compared to conventional methods.

As a recommendation, coaches and physical education teachers are advised to routinely integrate target-game training into extracurricular programs with dynamic target variations to maintain motivation and maintain accuracy. In line with this, athletes are expected to perform target-based training independently and with discipline to strengthen muscle memory for precise execution during matches. School support is also very necessary in facilitating training aids such as target boards or modified goals to optimize students' potential achievements, while for future researchers, it is recommended to expand the scope of research variables such as physical conditions or involve larger samples in different age groups to increase the generalization of research results more comprehensively.

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