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Effects of Target-Game Training on Shooting Accuracy in Futsal Players

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Abstract

Shooting accuracy is a fundamental skill in futsal and remains a common performance limitation among amateur players. This study aims to examine the effect of target-game training on the shooting accuracy of THE BOS Futsal Club players. A one-group pretest–posttest experimental design was implemented with 20 male athletes aged 14–18 years. Shooting accuracy was assessed using a standardized shooting test, and data were analyzed using normality testing, homogeneity testing, and a paired sample t-test. The results showed a significant improvement in shooting accuracy after the intervention, with mean scores increasing from 13.1 ± 1.81 to 15.5 ± 1.53 points. Statistical analysis indicated a significant effect of target-game training on shooting accuracy ($t = 12.352$, $p < 0.001$), with an improvement rate of 18.7%. These findings suggest that target-game training is an effective and engaging method for enhancing shooting accuracy in futsal players. The novelty of this study lies in applying a game-based accuracy model specifically tailored for amateur club athletes, offering evidence-based recommendations for futsal coaching practice.

Keywords: futsal, shooting, target training, training intervention.

Introduction

Futsal is one of the most rapidly developing team sports due to its fast tempo and high technical demands. The sport requires frequent high-intensity actions, rapid decision-making, and precise technical execution, making shooting accuracy a critical performance component (Castagna et al., 2009). Futsal has also become increasingly competitive at regional and national levels (Kharisma & Mubarok, 2020), and its accessibility allows many youth athletes to train in smaller indoor spaces (Zainuddin & Yusuf, 2021). These contextual factors highlight the importance of developing sport-specific technical skills such as shooting.

Shooting accuracy is a decisive factor for scoring success in futsal. Players must execute precise shots under time pressure, limited space, and defensive constraints. According to Iyakrus (2023), accuracy reflects an athlete's ability to direct movement toward a target, which directly influences goal-scoring effectiveness. This is supported by biomechanical research showing that proper foot placement, striking technique, and body coordination significantly affect shooting outcomes (Katis & Kellis, 2009). Despite its importance, both empirical studies and coaching reports indicate that shooting accuracy remains underdeveloped among amateur players.

Field observations in November 2024 confirmed similar issues in THE BOS Futsal Club, where players frequently produced weak or off-target shots. Such limitations negatively affect goal conversion, attacking efficiency, and overall match success. Improving shooting accuracy is therefore essential for enhancing athlete development and team performance.

Previous studies have explored training methods to enhance shooting performance. Target-game drills, for example, have been shown to improve precision and maintain player engagement (Buya et al., 2021). Game-based practice can also enhance decision-making and technical execution by simulating realistic match contexts (Travassos et al., 2012; Davids et al., 2013). However, there is still limited research examining how target-game training specifically affects shooting accuracy among amateur futsal players in competitive club settings.

Target games emphasize accuracy, focus, and control through structured scoring zones, offering immediate feedback and replicating competitive shooting scenarios. This approach may provide a more engaging and effective method than monotonous repetitive drills.

Based on this rationale, the present study aims to evaluate the effect of target-game training on shooting accuracy among players of THE BOS Futsal Club. The main research question is:

"Does target-game training significantly improve shooting accuracy among amateur futsal players?"

Methods

This type of research is experimental. The experimental method is defined as a systematic approach used to establish relationships that involve cause-and-effect phenomena (causal-effect relationship).

Research Design

This study employed a *One-Group Pretest–Posttest Design*, in which participants were measured before and after the intervention. This design was chosen because the research population consisted of a single intact team, making random assignment or the use of a control group impractical in the club's training environment. Although the absence of a control group limits internal validity, this design allows researchers to detect changes directly attributable to the intervention when the population is homogeneous (Munir et al., 2022).

The training program lasted four weeks, with three sessions per week, for a total of 12 training sessions. Each session lasted approximately 60 minutes, consisting of warm-up, target-game shooting drills, and cool-down. All sessions were supervised by the researchers and the team coach to ensure consistency of implementation.

The study was conducted at THE BOS Futsal Club, located in Prabumulih City, South Sumatra.

Participants

The participants were 20 male futsal athletes, aged 14–18 years, who were active members of THE BOS Futsal Club. A total sampling technique was used because the entire population met the characteristics required for the study (Azizah et al., 2022).

Inclusion criteria

1. Active club member for at least six months
2. Participated in routine weekly training
3. No lower-limb injury within the last three months
4. Able to complete all training sessions

Exclusion criteria

1. Players with current musculoskeletal injuries
2. Players absent for more than two training sessions
3. Players who did not complete pretest or posttest measurements

Ethical Considerations

Ethical approval was obtained from the Institutional Research Ethics Committee (insert

approval number if available). All participants and their guardians (for those under 18) provided informed consent before participating in the study.

Instrument

The instrument used to measure shooting accuracy was a standardized futsal shooting accuracy test, adapted from Miftahul & Sin (2019). The goal area was divided into scoring zones with predetermined point values. Each participant performed five instep shots from a distance of 10 meters.

Validity and Reliability

1. The test has been commonly used in futsal training assessments and demonstrated content validity based on expert evaluations (Miftahul & Sin, 2019).
2. Reliability testing in previous research showed r = 0.82, indicating high measurement stability.
3. Prior to data collection, the test was pilot-tested on five players from another local club, showing consistent scoring across repeated trials.

Scoring Zones

A diagram illustrating the scoring areas should be included to facilitate clarity for international readers.

Procedure

Data collection followed several key stages:

Pretest

Players performed five instep shots toward the target-zone goal. Scores were recorded according to the standardized scoring sheet.

Training Intervention

1. Duration: 12 sessions (4 weeks)
2. Frequency: 3× per week
3. Content: Target-game shooting drills emphasizing precision, visual targets, and decision-making
4. Supervision: Conducted under the researcher and head coach to maintain consistency
5. Drills used included:
   a. Corner target shots
   b. Moving-ball target shots
   c. Zone-based scoring challenges Training focused on accuracy development, not volume-based or conditioning-based shooting.

Posttest

After the intervention period, participants performed the same five-shot accuracy test under identical conditions.

Simplified Scoring System

1. 2 points → center
2. 3 points → upper/lower middle
3. 4 points → between tire and cone
4. 5 points → cone or tire target
5. 0 points → misses, post hits, or hitting barrier strings

Norm categories (Miftahul & Sin, 2019) were applied to classify results.

Data Analysis

The data were analyzed using SPSS 26. Prior to hypothesis testing:

1. Normality test (Shapiro-Wilk)
2. Homogeneity test (Levene test)

A paired sample t-test was used to compare pretest and posttest scores.

Effect size was calculated using Cohen's d, with the following interpretation:

1. 0.2 = small
2. 0.5 = medium
3. 0.8 = large

Confidence intervals (95% CI) were reported to increase the analytical rigor of the study.

Results

The results of this study present descriptive statistics, assumption testing, and hypothesis testing related to the effect of target-game training on shooting accuracy among THE BOS Futsal Club players. All analyses were conducted using SPSS 26.

Table 1

Descriptive Statistics of Shooting Accuracy Scores

Statistik	Pretest	Posttest
N	20	20
Mean	13.10	15.55
Median	13	15
Mode	12	15
Std. Deviation	1.81	1.53
Minimum	10	13
Maximum	16	18

Table 2

Paired Sample t-Test Results

Parameter	Value
Mean Difference	–2.450
Standard Deviation	0.887
Standard Error Mean	0.198
95% CI Lower	–2.865
95% CI Upper	–2.035
t(19)	–12.352
p-value	< .001

Descriptive data for pretest and posttest shooting accuracy scores are presented in Table 1.

As shown in Table 1, the mean shooting accuracy improved from 13.10 (pretest) to 15.55 (posttest), representing an increase of 2.45 points (18.7%). Minimum and maximum scores also increased, indicating improvement among both lower- and higher-performing players. The reduction in standard deviation suggests more consistent shooting performance following the intervention.

The results of the paired-sample t-test comparing pretest and posttest shooting accuracy are shown in Table 2.

The paired-sample t-test indicated a statistically significant increase in shooting accuracy following target-game training, $t(19) = -12.352$, $p < .001$.

To complement significance testing, the effect size was calculated using Cohen's *d*, resulting in $d = 2.76$, which represents a very large effect. This indicates that the training produced a meaningful and substantial improvement in players' shooting accuracy.

Discussion

The findings of this study demonstrate that target-game training significantly improved the shooting accuracy of THE BOS Futsal Club players. The increase in mean scores from 13.1 (pretest) to 15.5 (posttest) indicates a meaningful enhancement in players' ability to direct shots toward the target. This improvement aligns with the characteristics of game-based training, which integrates perceptual–motor demands, decision-making, and precision under dynamic conditions. Such characteristics have been shown to enhance shooting performance in futsal and football settings (Travassos et al., 2012; Katis & Kellis, 2009).

The effectiveness of target-game training in this study is consistent with the findings of Buya et al. (2021), who reported that target-based drills improve shooting precision by providing specific visual cues and performance feedback. Similarly, Prasetyo (2019) found that training with predetermined target zones increases players' accuracy due to heightened concentration and the development of shot-placement strategies. These parallels suggest that shooting accuracy improves when training incorporates structured scoring zones rather than monotonous repetitive drills.

From a performance-analysis perspective, shooting accuracy is a critical determinant of successful offensive play in futsal, owing to the fast pace and spatial constraints of the game (Castagna et al., 2009). Players must make rapid decisions while maintaining technical control, making targeted accuracy training particularly relevant. Improved shooting accuracy not only increases goal-scoring chances but also enhances a player's tactical confidence in tight match situations. This is especially important for amateur players, who often struggle with composure and decision-making under pressure.

The descriptive data further supports the quantitative findings. In the pretest, although most players were classified in the "good" and "very good" categories, their accuracy still exhibited variability. Following the intervention, all players achieved the "very good" category, indicating a more consistent level of performance across the team. This aligns with the aim of structured target-based training, which reduces performance inconsistency by reinforcing motor patterns and shot-placement strategies.

The results of the present study are also in line with another study by Sari Br P (2022), who examined the effects of target training among female futsal athletes and reported a 21.06% improvement in shooting accuracy, similar to the 18.7% improvement found in this study. These converging results strengthen the evidence that target-oriented drills are effective across different populations, regardless of age or gender.

Shooting accuracy is influenced by several factors, including kicking technique, foot–eye coordination, body alignment, focus, and tactical awareness. Target-based drills train these aspects simultaneously by providing immediate feedback and requiring players to execute precise shots in controlled scenarios. This supports the theoretical perspective proposed by Davids et al. (2013), which emphasizes that skill acquisition improves when training environments replicate the perceptual demands of actual gameplay.

Despite the positive outcomes, several limitations must be noted. First, the sample size was relatively small ($n = 20$) and derived from a single club, which may limit generalizability. Second, the players were not in a controlled training environment, allowing possible additional unmonitored practice outside of the intervention. Third, the study did not assess biomechanical variables such as foot placement or body orientation, which may provide deeper insights into the mechanism of improvement. Future studies should include a control group, larger participant samples, and possibly a biomechanical analysis to better understand how target-based methods influence shooting kinematics.

Overall, this study supports the use of target-game training as an effective approach to enhancing shooting accuracy in futsal players. The integration of accuracy-focused tasks, structured target zones, and repeated practice within game-like scenarios contributes to improvements in both shot precision and player confidence. These

findings provide practical implications for coaches seeking evidence-based methods to improve offensive performance in futsal.

Conclusions

Based on the research findings, it can be concluded that accuracy training can be effectively used to improve the shooting accuracy of players from The Bos Futsal Club Prabumulih. This is evidenced by the increase in scores from the pretest to the posttest after the players underwent shooting practice as an intervention. The average pretest score was 13.1, which rose to 15.5 in the posttest, indicating measurable improvement. The analysis results show that targeted training had a significant effect, with an impact of 18.7% on the shooting accuracy of the players. These findings are in line with previous studies, which also demonstrated that shooting drills can positively influence shooting accuracy when compared to performance prior to such training interventions.

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