

## CROSS-SECTIONAL ANALYSIS OF SHOOTING DISTANCE OF FUTSAL PLAYERS IN INDONESIAN FUTSAL LEAGUE MATCHES

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### Abstract

Putting the ball into the goal more than the opponent with shooting skills is the main principle of the futsal game. The study purpose was determined the shooting distance of futsal players in the Indonesian Futsal League match. This study also analyzed the shooting distance that scored and did not score. The research method used a cross sectional survey design. The sample consists of a Black Steel vs BTS match played by 20 players. Movie maker software was used for cutting videos of every shooting motion and Kinovea software was used for shooting distance analysis. The shooting motion was expressed in total shots, while the shooting distance taken by the players was expressed as the total distance, mean, and SD. The results showed that during the Black Steel vs BTS match, the total shots were 65 times with a total shooting distance of 708.12 meters, the average shooting distance was 10.89±4.57. From these shots, 5 shots scored with a total shooting distance of 26.36 meters, the average shooting distance was 5.27±0.69, while 60 shots did not score with a total shooting distance of 681.76 meters, the average shooting distance was 11.36±4.44. Based on the result can be concluded that the total shooting distance taken by futsal players is 708.12 meters with an average shooting distance of 10.89 meters. From the shooting effort, the goals scored were done with an average shooting distance of 5.27 meters, while for goals that were not scored, the average shooting distance was 11.36 meters.

**Keywords:** Analysis, Distance, Shooting, Futsal

### Introduction

Futsal is a very challenging sport with a small space and limited time, thus requiring players to make decisions quickly in anticipating actions on the field, creating empty spaces and playing opportunities [1]. Futsal players must have highly developed abilities with repeated sprinting, leg muscle power and strength, along with ball skills in passing, dribbling and shooting, as well as well-developed coordination [2]. In the attack strategy, players must adjust their position to improve shooting which has a chance to create goals. In the game of futsal, the skill of kicking the ball with the aim of entering the ball into the goal is called shooting [3]. Shooting skills need to be trained so that players can play futsal well and create goals. Exercises aimed to improve shooting action are carried out by identifying patterns in the game obtained through match analysis [4]. Several analyzes of shooting futsal in matches have been observed in recent years. The research by Lapresa et al. which shows

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the difference between the type of shot and the area of the shot was carried out. Research shows that shooting that scores goals mostly comes from the center definition area with a percentage of 8.9%, while others come from the center safety area, left creation area opponent's area, centre creation area opponent's area and left definition area with a percentage of < 1% [5], while Abdel-Hakim's research shows the part of the goal where goals were scored in the 2012 Thailand Futsal World Cup. Research shows most of the goals are at the bottom of the goal which includes the bottom left with a percentage of 26.4%, the middle of the goal with a percentage of 24.3%, and the bottom right with a percentage of 25.5%, while the others are above the goal with a percentage of 23.8% [1].

Both of these studies have provided information about the goals scored from which part of the field and the goals scored landed on which part of the goal, where in these two studies some of the zones analyzed have been determined by researchers. Meanwhile, in this research, analyzing the shooting distance of futsal players in one match will finally conclude the average shooting distance taken. This research study needs to be carried out to support success in shooting so that goals are created by how far the mean shooting distance is. This is because decisions in shooting are related to the playroom [6]. Therefore, the results of this study can be applied in futsal shooting exercises by coordinating each player in the team based on the distance that has been analyzed, as is the case in the research of Vilar et al. that the need for coordination patterns that arise between player under the constraints of key competitive tasks, one of which is the goal position, so that it supports successful performance in futsal [7]. Therefore, this study purpose was analyzed the shooting distance of futsal players in Indonesian Futsal League matches. This study also analyzed the shooting distance that scored and did not score. Research in this context is very important for future sports preparation because it contributes to the optimization of players' technical preparation. Supporting this statement, Santos et al state that analytical research can help coaches better understand performance based on all available data, while also contributing to determining priorities when training and managing futsal competitions [8].

### Methodology

#### Method

The cross sectional survey design was used to observe the shooting distance of futsal players in the Black Steel vs BTS match and then measure how far

the shooting distance was by the players. Cross sectional studies a dynamic with an approach, observation, or data collection at a certain moment which is momentary and carried out simultaneously at the same time taken from various people involved [9].

#### Subject

The research sample is the semi-final match of Black Steel vs BTS Indonesian Futsal League 2021. Players who are in a position to play as defender, winger, and pivot are analyzed for their shooting distance, so the sample of this study is 20 players. Each player who shoots, is analyzed the shooting distance so that it can represent the shooting distance of futsal players during the match.

#### Procedure

Players who contribute during the competition are identified through a computer program [10]. In this study, the video of the Black Steel vs BTS match of the Indonesian Futsal League 2021 is input to the computer and then the shooting motion of each player is analyzed starting from cutting the video using movie maker software. Then the results of the cutting video of the futsal shooting movement were analyzed for distance using kinovea software. The shooting distance covered is calculated as the cumulative sum of successive frame shifts. The results of the analysis of the shooting distance taken are calculated in meters. To more accurately characterize shooting movements during the Black Steel vs BTS Indonesian Futsal League 2021 match, the researcher analyzed every shooting movement made by players during the game period in 1<sup>st</sup> and 2<sup>nd</sup> round.

#### Data analysis

The shooting motion was expressed in total shots, while the distance taken by the players is expressed as the total distance, mean, and SD. Data analysis was carried out based on the total shooting distance as a whole as well as the distance of each shooting that scored and did not scored. All statistical procedures were performed using Ms. Excel.

### Results and Discussion

#### Research result

Table 1 shows the movement of shooting and distance shooting of futsal as a whole that the number of shooting futsal match Black Steel vs. BTS amounted

to 65 times with a total distance of shooting is 708.12 meters, the average distance shooting as far as 10.89 meters, the standard deviation of 4.57, the farthest distance of 21.75 meters, and the shortest distance is 2.95 meters (Table 1).

Table 2 shows the distance shots were scored as a whole that the number of shots that scored in the game Black Steel vs. BTS amounted to 5 times for a total distance of shots is 26.36 meters, the average distance shots extent to 5.27 meters, the standard deviation of 0.69, the distance shots farthest 6.14 meters, and distance shots shortest 4.45 meters (Table 2).

Table 3 shows the distance shots that had not scored as a whole that the number of shots that had not scored in the game Black Steel vs. BTS amounted to 60 times with a total distance of shots is 681.76 meters, the average distance shots as far as 11.36 meters, the standard deviation of 4.44, distance shots farthest 21.75 meters, and distance shots shortest 2.95 meters (Table 3).

Table 4 shows the distance of shots scored in each half and for each team. In the first half, one shot done by a team of Black Steel with an average distance shot 6.14 meters, 2 shots performed by BTS team with an average distance shots of 4.58 meters. In second half, 2 shots were taken by the Black Steel team with an average shooting distance of 5.54 meters (Table 4).

Table 5 shows the distance of shots that did not scored each half and each team. In the first round, 11 shots made by a team of Black Steel with an average distance shots of 11.32 meters, 10 shots performed by BTS team with an average distance shots 11.67 meters. In the second half, 23 shots made by a team of Black Steel with an average distance shots of 11.61 meters, 16 shots performed by BTS team with an average distance shots of 10.85 meters (Table 5).

Table 6 shows the percentage of shooting distance in the Black Steel vs BTS match where the percentage of distance shots that do not score is greater than the shots that score. Percentage of distance shots that had not scored for 96.277% with an average distance shots as far as 11.36 meters, while the

**Table 1:** Description of Overall Result Analysis of Futsal Shooting Distance.

Statistics	Results
N	65
Amount	708.12
Mean	10.89
SD	4.57
Farthest Distance	21.75
Shortest Distance	2.95

**Table 2:** Data Description of Overall Result Analysis of Shots Distance that Scored a Goal.

Statistics	Results
N	5
Amount	26.36
mean	5.27
SD	0.69
Farthest Distance	6.14
Shortest Distance	4.45

**Table 3:** Description of Overall Result Analysis of Shots Distance that Did Not Scored.

Statistics	Results
N	60
Amount	681.76
mean	11.36
SD	4.44
Farthest Distance	21.75
Shortest Distance	2.95

**Table 4:** Data Description of the Distance of Shots Scored in Each Half.

Half	Team	Number of Shots	Mean
First half	Black Steel	1	6.14
	BTS	2	4.58
Second half	Black Steel	2	5.54
	BTS	0	0

**Table 5:** Data Description of the Distance of Shots that Don't Score Each Half.

Half	Team	Number of Shots	Mean
First half	Black Steel	11	11.32
	BTS	10	11.67
Second half	Black Steel	23	11.61
	BTS	16	10.85

**Table 6:** Percentage of Shooting Distance in Black Steel vs BTS Match.

Shooting	Distance	Mean	Percentage
Scored	26.36	5.27	3,723%
Not Scored	681.76	11.36	96.277%

percentage of distance shots that scored at 3.723% with an average distance shots extent to 5.27 meters (Table 6).

**Discussion**

Futsal is a high-intensity and competitive indoor sport that requires athletes to have dynamic and balanced playing abilities [11]. Dynamic includes the ability to improvise transition movements in a team from an attack-defense or defense-attack pattern, while balanced means that in attack and defense there must be balance. The main principle of futsal is to win by scoring more goals than the opponent, and therefore shooting skills are a very important feature in players to get more goals scored [12]. Hermans & Engler stated that the shot on goal is an attempt to score a goal that is kicked using the feet, but other body parts can also be used except the hands [13]. This study was conducted to analyze the shooting movements of Black Steel and BTS players during the match in order to measure the shooting distance taken by the players. Match analysis provides an overview of the actual situation and recording of movement during the match [10], while studies on the distance traveled by players are more representative of the general intensity of futsal and can be used as an overall index to provide more precise information about the demands of futsal [14]. The results showed that the futsal match between the teams Black Steel vs. BTS done 65 times shooting with an average distance of shooting of 10.89 meters. Of the 65 shootings, 5 goals were scored with an average shooting distance of 5.27 meters, while 60 goals were not scored with an average shooting distance of 11.36 meters. Of the 5 goals, 1 goal was scored by the Black Steel team in the 1<sup>st</sup> half with an average shooting distance of 6.14 meters, 2 goals were scored by the BTS team in the 1<sup>st</sup> half with an average shooting distance of 4.58 meters, and 2 goals were scored by the Black Steel team in the 2<sup>nd</sup> half with average shooting distance of 5.54 meters. To 60 times the shooting that did not produce a goal, 11 times shooting by a team of Black Steel in the 1<sup>st</sup> half with an average shooting distance of 11.32 meters, 10 times shooting by a team of BTS in the 1<sup>st</sup> half with an average shooting distance of 11.67 meters, 23 times the shooting was done the Black Steel team in 2<sup>nd</sup> half with an average shooting distance of 11.61 meters, and BTS team shooting 16 times in 2<sup>nd</sup> half with an average shooting distance of 10.85 meters. Based on this research, it shows that the failure of the goals scored even with the many shooting attempts, occurs because the shooting distance is far from the players. Práxedes et al stated that in the implementation of shooting as an offensive action, it was carried out by advancing towards the goal by crossing the defense line and being near the goal [15]. In line with this, Abdel-Hakim stated that to get the ball into the goal, players need to shoot at close range so that the chances of the ball falling into the goal are smaller [1]. Therefore, to practice shooting, it is necessary to pay attention to the shooting distance in each training session. In line with this statement, Vieira et al state that the practice implementation criteria for effective shooting techniques can be applied with players practicing shooting directly at the goal near the goal [16].

**Conclusion**

This study shows that the total shooting distance taken by futsal players is 708.12 meters with an average shooting distance of 10.89 meters. From the shooting effort, the goals scored were done with an average shooting distance of 5.27 meters, while for goals that were not scored, the average shooting distance was 11.36 meters. This futsal shooting distance analysis can be used as a basis for shooting accuracy training. Thus, the coach can plan a shooting practice program with that distance and maximize the players mastering shooting to achieve high accuracy.

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