League 3 of Indonesia Bali Zone: Shots and patterns of scoring a goal

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ABSTRACT

An indicator of a success football team in a match is to score more goals than its opponents. Continuous and stable victories can be achieved by applying sports science and technology, one of them in this case is analyzing team performance. The purpose of this study is to describe the pattern of shots taken and goals scored during League 3 of Indonesia Bali Zone in 2021. The research method chosen for this study is descriptive quantitative research. A total of 38 matches are observed to see the number of shots and goals scoring patterns based on time intervals (15 minutes), type of play, number of passes before shot and goal scoring, player action before shooting and goal scoring, playing zone and player position in play. The result of this study indicates that 52.9% of shots occurred in the first half and 51.8% of goals are scored in the second half. Shots (78%) and goals (77%) occurred through the open play process. 61.2% of shots and 64.7% of goal scoring come from the lowest number of passes (0-4 passes). In the central ultra-offensive zone, there are 43.7% shots and 71.2% goal scoring. Based on the playing position, the midfielder recorded the number of shots 34.5% and the striker got 39.6% in scoring goals. The findings of this study can provide information for coaches in seeing the scoring pattern of all teams playing in the Indonesia League 3 Bali Zone. Therefore, it has implications for the way the coach prepares a tactical training program that focuses on how to goal scoring. The limitation of this study is that it has not identified the part of the goal area that produces score. It is important further to examine the part of the goal area where the ball is often conceded or scored by the opponent.

Keywords: Shots; goal scoring; football; league 3

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INTRODUCTION

A successful football team in a match or competition is a team that can win or be number one. The victory in this case is the team that managed to get the ball into the opponent's goal more than the number of goals that went into its own net (Danurwindo et al., 2017). Scoring goals is an indicator of the success of a football team, because the winning team is the team that is able to score more goals than its opponents (Larkin & Araya, 2012). A goal which created can be started from an attacking action, namely, build up then complete the attack by shooting at the opponent's goal (Danurwindo et al., 2017). An attack is said to be successful

when the team can create shot opportunities, whether the result is a goal or not (Mahoney et al., 2012). It was also stated that scoring goals is an important technical indicator of the successful performance of a football team, even though it is only 1% of ball possession in professional competitions (Oghonyon et al., 2020). However, analyzing the final score is not enough to reflect the attacking and defensive characteristics of the team. Because the result of the match is a combination of many elements including technical, tactical, physical, and psychological interactions between two teams (Burwitz, 2014). Technical and tactical indicators that are closely related to the success of the game include accuracy of passing, number of goals scored, number of shots on target, number of passes, percentage of ball possession, success rate of crosses, and corner kicks. These indicators are ideal profiles that are present in a match to achieve success, and can also be used to predict the next action in various team sports activities (Volossovitch & Carita, 2017). To be able to score goals, high accuracy is one of the success factors for making shots (Finnoff et al., 2002).

Sports science and technology that continue to develop should be one of the tools in helping the performance of football coaches in order to improve the performance of their teams, both during preparation and when undergoing a competition/league. One implementation of the use of sport science in football is to analyze the performance of each match. Performance analysis during matches is a cognitive activity that applies concrete data to reflect quantitative and characteristic relationships between physical, technical, and tactical variables performed in training or games (Konstadinidou & Tsigilis, 2005). Performance of athletes in a competition to achieve the top position is the result of a combination of various factors, such as physical factors, motor skills, technical, and training (Wismanadi, 2017). The technical factor in this case can be an analysis of performance in a match. Match performance in football can be defined as the interaction between different technical, tactical, mental, and physiological factors (Carling, 2010; Drust et al., 2007). Therefore, the data obtained can be a feedback or an information for the coach in evaluating his training program such as deficiencies, progress, and strategies for the next match.

A lot of studies has been done on team performance in a football competition. Starting from analyzing the team's performance in scoring goals during the 1990 to 1998 World Cups (Hughes & Franks, 2005), passing characteristics and scoring patterns in the Australian A-League (Garratt et al., 2017), the time or period of goals occurrence in the Champions League. Europe 2012 (Mitrotasios & Armatas, 2012), including an analysis of goals scored during the 2006 World Cup (Armatas & Yiannakos, 2010), the number of passes and fouls that occurred in several areas of the football game (Beauchamp et al., 2005), the pattern of goals scored in Women's World Cup 2019 (Wang & Qin, 2020), analysis of one of the English Premier League teams, namely Crystal Palace in scoring goals in several matches in the English League (Kim et al., 2019), and scoring patterns in the 2018 World Cup (Kubayi, 2020).

Meanwhile, at the level of Indonesian football competition, research has also been carried out on match performance. Analysis of passing, ball possession, and shooting in the 2019 Presidential Cup final (Siregar & Faruk, 2020), and an analysis of the performance of the Indonesian U-18 National Team players in the 2019 AFF Cup (Fauzan & Bawono, 2021). However, the focus of this research is only on statistics on the basic techniques of the players and no detailed match analysis data has been found, especially in the amateur football category in Indonesia. It is important to reveal the patterns of shots and how to score goals in an amateur league, namely 2021 Indonesia League 3 Bali Zone in order to see how far the development of football in Indonesia, starting from the time period, playing patterns, player positions to the playing zone. The game zones in question include ultra-defensive, defensive, central, offensive, and ultra-offensive zones (Camerino et al., 2012). It is very important for coaches to analyze the performance of players and teams in football games.

Figure 1. Play Zone

METHOD

This study is descriptive study whcih uses a quantitative approach. A total of 38 matches, starting from the group stage (22 matches), the quarter-finals (12 matches) to the final round (4 matches) are observed through match record which available on PSSI Bali youtube channel and Bali United TV. Observational data obtained include the number of shots and goals based on time intervals (1-15, 15-30, 30-45, 45-60, 60-75, 75-90, extra time), type of play (open play and set play), play zone (ultra defensive, defensive, central, offensive, and ultra offensive), number of passes before shots and goals scored, actions before shots and goals scored, and playing positions (striker, winger, midfielder, defender) in the form of frequency and percentage.

RESULTS AND DISCUSSION

A total of 830 shots and 139 goals are recorded in 38 matches in 2021 League 3 of Indonesia Bali Zone. Of those 38 matches, only one match ends goalless, namely between Tunas Muda Ubud versus Undiksha FC. During the league run, 439 shots (52.9%) and 67 goals (48.2%) are scored in the first half. In the second half, including extra time, there are 391 shots (47.1%) and 72 goals (51.8%). According to the distribution of shots that occur based on the period or playing time (15 minutes), it can be seen that the highest number of shots occurred in the 15-30 minute period, 158 shots (19%). While the highest number of goals created occurred in the period or time of 30-45 minutes, namely 29 goals (20.9%). Figures 2 and 3 present the number of shots and goals scored based on the period or time of the game.
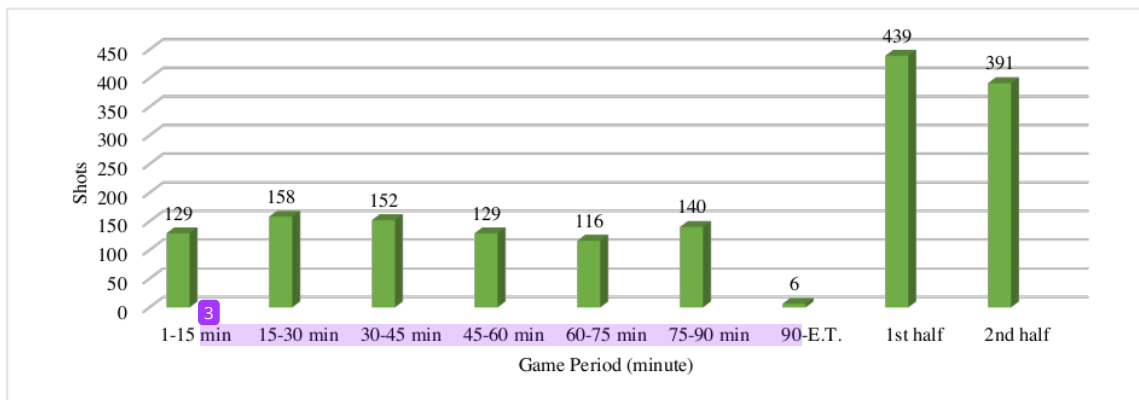

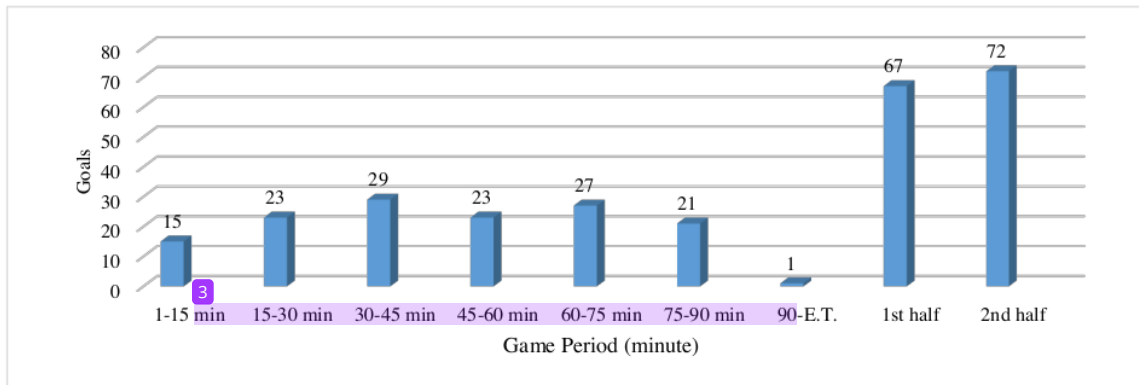**Figure 2. Total Shots According to Game Period**

Figure 3. Total Goals According to Game Period

Furthermore, in Figure 4 it can be seen that the most shots (78%) and goals (77%) occurred through open play. Among the open play, it turns out that the highest number of shots come through direct attack (33.1%), followed by positional attack (37.9%), and counter attack (29.1%). Although the highest number of shots come through direct attacks, something different happened in the number of goals scored. The highest number of goals occurred through positional attacks (41.1%), followed by direct attacks (36.4%), and counter attacks (22.4%). While the shots that come from set play, starting with the most being free kicks (53%), corner kicks (37.2%), and throw-ins (4.9%) and penalty kicks (4.9%). If the highest number of goals is calculated based on the set play process, then free kicks (43.8%) are the highest, then corner kicks (25%), penalty kicks (28.1%) and throw-ins (3.1%).
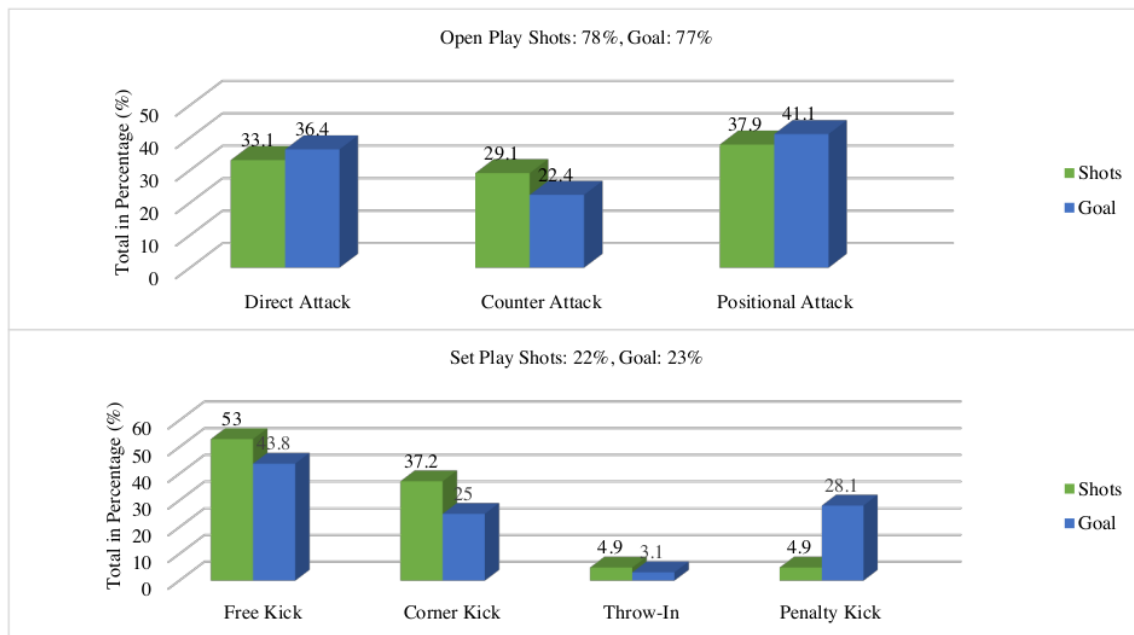

Figure 4. Total Shots and Goals for Every Type of Play

Total of passes before shots and goals can be seen in Table 1. Attacking process with less total of passes which can create chance to get shots and goals are more happened between 0-4 passes, specifically 61.2%

shots and 64.7% goals. Then, 25.5% shots and 20.9% goals are created between 5-8 passes. Smallest number occured when total passes are more than 8, specifically 13.3% shots and 14.4% goals. In more detail, when 0 pass is the best shot (13.5%) and goal (19.4%).

Table 1. Passing Sequence Before Shots and Goals

Passes	Shots		Goals	
	N	%	N	%
0	112	13.5	27	19.4
1	98	11.8	17	12.2
2	108	13	16	11.5
3	104	12.5	15	10.8
4	86	10.4	15	10.8
0-4	508	61.2	90	64.7
5	54	6.5	7	5
6	51	6.1	7	5
7	56	6.7	5	3.6
8	51	6.1	10	7.2
5-8	212	25.5	29	20.9
8+	110	13.3	20	14.4
Total	830	100	139	100

The distribution of football actions that lead to shots and goals can be seen in table 2 and table 3. In open play, more shots (45.4%) and goals (54.4%) occurred from control+dribble+shot that comes from the positional attack process. In set play situations, especially free kicks, the most shots (63.9%) occurred through shots (one touch) and goals are also created through shots (one touch) namely 85.7%. Furthermore, the playing positions of players who shoot and score goals are presented in table 4. Midfielders record the highest number of shots (34.5%), followed by wingers (28.9%), strikers (27.5%), and lastly defender (9.2%). Meanwhile, more goals are scored by players in the striker position (39.6%), followed by wingers (33.8%), midfielders (22.3%) and the least scored by defenders (4.3%).

Table 2. Action Lead to Shots Based on Type of Play

Action lead to shots	Type of Play				
	Open play N (%)	Free kick N (%)	Corner kick N (%)	Throw-in N (%)	Penalty N (%)
Shot (one touch)	59 (9.1%)	62 (63.9%)	25 (36.8%)	0	7 (77.8%)
Control+dribble+shot	294 (45.4%)	7 (7.2%)	4 (5.9%)	3 (33.3%)	0
Control+shot	242 (37.4%)	21 (21.6%)	12 (17.6%)	7 (77.8%)	0
Header	47 (7.3%)	3 (3.1%)	34 (50%)	3 (33.3%)	0

Table 3. Action Lead to goals Based on Type of Play

Action lead to goal	Type of Play				
	Open play N (%)	Free kick N (%)	Corner kick N (%)	Throw-in N (%)	Penalty N (%)
Shot (one touch)	11 (10.2%)	12 (85.7%)	0	0	9 (100%)
Control+dribble+shot	49 (45.4%)	0	0	0	0
Control+shot	36 (33.3%)	0	2 (25%)	1 (100%)	0
Header	10 (9.3%)	2 (14.3%)	7 (87.5%)	0	0

Table 4. Total Shots and Goals Scored Based on Player Position

Position	Shots	%	Goal	%
Striker	228	27.5	55	39.6
Winger	240	28.9	47	33.8
Midfielder	286	34.5	31	22.3
Defender	76	9.2	6	4.3

The next part that analyzed is the number of shots and goals scored based on the attacking zone as presented in table 5 and table 6. Shots made in the ultra-offensive zone (55.2%) are more than in the offensive zone (44.8%). Shots that occur in the ultra-offensive zone and the offensive zone are dominant in the central zone (77.8%). Meanwhile, more goals are scored in the ultra-offensive zone (76.3%) than in the offensive zone (23.7%), and each also occurred in the central zone (91.4%).

Table 5. Initiation Zone of Attack Which Lead to Shots

Name of Zone	Ultra-Offensive Zone		Offensive Zone		Total	
	N	%	N	%	N	%
Right zone	45	5.4	42	5.1	87	10.5
Central zone	363	43.7	283	34.1	646	77.8
Left zone	50	6	47	5.7	97	11.7
Total	458	55.2	372	44.8	830	100

Table 6. Initiation Zone of Attack Which Lead to Goal Scoring

Name of Zone	Ultra-Offensive Zone		Offensive Zone		Total	
	N	%	N	%	N	%
Right zone	2	1.4	2	1.4	4	2.9
Central zone	99	71.2	28	20.1	127	91.4
Left zone	5	3.6	3	2.2	8	5.8
Total	106	76.3	33	23.7	139	100

The main purpose of this study is to identify and describe the number of shots and goals created during the 2021 League 3 of Indonesia Bali Zone. Based on the observations of the 38 matches, a total of 830 shots are recorded with an average of 22.4 shots per match and 139 goals are created with an average of 3.8 goals per match. When compared with the average goals scored during the 2006 to 2018 editions of the FIFA World Cup, there are more goals scored in the 2021 League 3 of Indonesia Bali Zone. In the 2006 FIFA World Cup in Germany an average of 2.30 goals per match, the FIFA World Cup 2010 in South Africa 2.27 goals per game (Njororai, 2013), the 2014 FIFA World Cup in Brazil average 2.67 goals per game (Kubayi & Toriola, 2019), and in the 2018 FIFA World Cup in Russia an average of 2,64 goals per game. Based on the period per 15 minutes, it can be seen that the highest number of shots occurred in the 15-30 minute period and the 30-45 minute game time is the highest number of goals scored during the league. There are also more goals scored in the second half (51.8%) than in the first half (48.2%). This is reaffirmed by previous findings in Europe's top five leagues (Alberti et al., 2013) and in the 2016 European Cup and 2016 Copa America (Lastella et al., 2018). The increase in the number of goals scored in the second half is due to various factors. Physiologically, the high intensity of the competition and the long time are one of the causes of the emergence of differences in the level of player fatigue, which has an impact on the decrease in the ability of the players and the increase in the error rate of the players (Coutinho et al., 2016). Fatigue in the second half, especially at the end of the second half, making it difficult for the players to concentrate and put on a maximum performance (Pullinger et al., 2019). The decline in the physical and mental conditions of the players causes poor performance (Muhamad et al., 2013). Therefore, it is important for players to improve their physical condition so that they can play with high intensity for a long time.

In this study, it is found that the shots taken and the goals created are dominant through open play, especially positional play. This result reaffirms the 75.9% goals scored through open play during the 2016-2017 UEFA Champions League (González-Ródenas et al., 2020). During this decade, efforts to score goals until goals created are still dominated by positional attacks. Goals created from positional attacks in the 2012 European Cup Championship are 60% (Mitrotasios & Armatas, 2012). The 2006 FIFA World Cup edition to the 2014 FIFA World Cup also shows that the highest shot values come from positional play (Kubayi & Toriola, 2019). The 2018 FIFA World Cup in Russia also recorded the highest number of shots coming from positional play (Kubayi, 2020). The 2019 FIFA Women's World Cup in France was the same (Wang & Qin, 2020). Positioning attack is defined as an attack development stage with strong ball possession and control

(Kostiukevych et al., 2020). The goal of a team using a positional attack method is to maintain possession of the ball over the opponent by applying many low-risk passes, pulling the opponent out so that there are gaps that can be exploited (Muhamad et al., 2013). To implement this tactic, a team must need technically prepared players.

The result of this study also shows that shots (53%) and goals (43.8%) are created from set play, especially free kicks, are more than corner kicks and penalty kicks. Free kick is another option in scoring goals other than through open play. This is reinforced by findings which state that the 2014 FIFA World Cup in Brazil shows 89% of goals from free kicks which also have an impact on the team getting valuable points (Dios et al., 2017). Free kick if analyzed biomechanically can be divided into six phases, namely approach, backswing, hip flexion, knee extension during downward movement, foot contact with the ball, and follow-through (Barfield, 1998). Meanwhile, the speed of the kick is influenced by several factors such as the speed of the foot before contact with the ball, body position at the time of the momentum of kicking the ball, the length of the momentum and the angle of the kick (Barfield et al., 2002; Meamarbashi & Hossaini, 2010; Dörge et al., 2002).

Furthermore, most shots are taken (43.7%) and goals scored (71.2%) are detected in the central ultra-offensive zone. In the 2016-2017 UEFA Champions League, a similar thing happened (González-Ródenas et al., 2020). The number of shots and goal scoring that occurred in the central ultra-offensive zone indicated that the attack process during the league is mostly through the process of crosses. A cross is sending the ball from the wide zone to the 18 yard box of the opponent's defense (Vecer, 2013). Even during the open play process, crosses have been shown to contribute (13%) to the goals scored in the 2006 and 2010 FIFA World Cups, and 28% contributed to the 2002 FIFA World Cup (Mara et al., 2012; Smith & Lyons, 2017). The distance between the penalty area and the goal makes the opportunity to shots or score goals in the penalty area is always greater than doing it outside the penalty area. It is emphasized that the majority of goal scoring ranging from 81-83% occurred in the penalty area (Janković et al., 2011; Wright et al., 2011; Armatas & Pollard, 2014). The player in the midfield position has the most shots (34.5%) but the player in the striker position is still the highest scorer (39.6%). Similar findings are made at UEFA-EURO 2012 (Muhamad et al., 2013) and the 2018 FIFA World Cup (Çobanoğlu, 2019). Although the number of shots by the midfielder are more than the striker during this 2021 League 3 of Indonesia Bali Zone, the striker's goal effectiveness is still better. For this reason, it is important in the next training process for each team to train shot accuracy from the midfielder so that more goals can be created from outside the penalty area.

CONCLUSION

The result of the findings of this study include: (1) The number of goals created in the second half is more than in the first half, which indicates the decline in physical and mental condition of players; (2) How to play open play, especially positional attack, has the highest value in producing goals; (3) The penalty zone is the area where the most shots and goals are scored, and (4) The striker position is the top scorer throughout the league. The findings of this study can provide information for coaches in seeing the scoring pattern of all teams playing in the Indonesia League 3 Bali Zone. Therefore, it has implications for the way the coach prepares a tactical training program that focuses on how to goal scoring. The limitation of this study is that it has not identified the part of the goal area that produces score. Does the ball go into the bottom corner or the top corner or something else. It is important further to examine the part of the goal area where the ball is often conceded or scored by the opponent, so that the data obtained is more complete in order to read the playing style and how to score for the teams from Indonesia League 3 Bali Zone.

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CONFLICT OF INTEREST

The author guarantees that there is no conflict of interest in this paper.

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