

Association between the pattern of play and the outcome of matches during the 2015 Asian Football Confederation (AFC) according to ball possession

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Abstract:

The pattern of play is a frequently used term by coaches, sports scientists, performance analysts and the media to refer to the sports style of teams within a game. For invasion games, the game plan and strategy are crucial factors that affect the results of a match, making it essential to calculate the strategic dimensions of the game. The use of measurable methods in sports science allows one to analyse and clarify the complexities of a match. Recent studies have examined ball possession and its relation between patterns of play with the outcome of a match. This is often determined by the location of the match, the nature of the opponent and the line score since teams can use different patterns of play when ahead, level or behind. There are several reasons why one team would win a match while the other loses. Previous research found that teams who frequently possess the ball during a match will have plenty of opportunities to score goals and win the game, while the other team with fewer opportunities will lose the game. A correlational design study is conducted to determine the relationship between playing styles and the outcome of matches. A total of 42 teams (N=42) from the 2015 Asian Football Confederation have been chosen. Notational analysis is used to further understand the relevant properties. The outcomes reveal that out of 42 teams, 17 winning teams (73.9%) and 6 losing teams (26.0%) implemented an attacking pattern of play, while 4 winning teams (21.0%) and 15 losing teams used a defensive pattern of play (78.9%). The chi-square test of independence is used to determine the association between the playing styles of teams and the outcomes of matches: $\chi^2(1, n = 42) = 0.524, p = 0.001, \phi = 0.001$. The independent t-test reveals no significant difference between ball possession for winning ($M = 49.62, SD = 5.844$) or losing ($M = 49.43, SD = 5.887$); $t(40) = 0.105, p = 0.917$. It can be concluded that although there is a significant association between the playing pattern and the outcome of a match, the ball possession for both outcomes is similar.

Key Words: - Playing style, Outcome, Ball possession, Asian Football Confederation matches

Introduction

The pattern of play is a tactic mainly applied in team sports. It is frequently used by many coaches, sports scientists, performance analysts and the media when analysing performance. Football is classified as an invasion game where it is split into two divisions and the gameplay tends to be dynamic yet patterned. Having a structured game plan will allow a team to gain several advantages during a match (Balcells, et al., 2016; Yiannakos & Armatas, 2006). The presence of a sound game plan is necessary to chart the preparations, principles of play or action rules set up before a match to coordinate team operations and player interactions during the game (Hewitt, Greenham & Norton, 2016).

Previous researchers described the term 'tactic' as a method of determining the proper technique to implement simple concepts and evaluate which actions would have the best offensive and defensive outcomes (Bangsbo & Peitersen, 2000; Del Campo et al., 2011; Fernandez-Navarro et al., 2016; Seifert et al., 2016). Adopting scientific methods to understand and quantify a gameplay will help detect any vulnerabilities and even determine the possibility of manipulating opponents during a match. Quantifiable measurement methods are used every day in sports science since it allows one to analyse and identify the complexities of a match (Cintia et al., 2015).

The Asian Football Confederation (AFC) has revealed its intention to become the world's leading confederation for organising football games in Asia. The AFC Champions League competition is annually held each season, consisting of great Asian teams from top nations.

The teams who participate in this competition have significant knowledge of playing patterns to enable them to win each match, such as : ball play, passing, possession, solid defensive units and good offensive strategies.

The pattern of play is an important aspect that represents team behaviour since it determines a team's playing style. Each team has a specific style of play which can be explained by the players' individual personalities and the coach's approach (Lago-Peñas, Gomez & Pollard, 2017; Pollard, Reep & Hartley, 1988).

The method of either attacking or defending is vital for determining the playing style of a team. Most key indicators are related to the characteristics of playing (Buchheit & Laursen, 2013; Rein & Memmert, 2016). Based on previous research, several styles of play are present, such as direct play and counter-attack play (Fernandez-Navarro et al., 2016; Hughes & Franks, 2005; Tenga & Larsen, 2003).

To gain a more positive outcome, teams must enhance their ability to gain ball possession (Bell-Walker et al., 2006; Yi et al., 2019). Other factors, such as location and nature of opponents, also contribute to determining the outcome of a match (Sarmiento et al., 2014). Good offensive strategies have been characterised with high ball possession located near the attacking quadrant (Bartlett et al., 2012; Hughes et al., 2005; Hughes & Lovell, 2019).

As for other key indicators, such as passing, a winning team tends to conduct more successful passes compared to a losing team (Bate, 1996; Hatamzadeh et al., 2018; Oberstone, 2009). Although several key indicators play a role in determining the chances of winning, the ability to execute a quality action is vital in determining the final outcome.

The main purpose of football matches is the result. Currently, there is no clear evidence of the effect of ball possession on the physical and technical metrics of various playing positions. The present study examined the relationship between initial playing styles, ball possession and the match's outcome during the 2015 AFC Champions League knockout stage. The results provide objective information and guidelines for athletes and coaches, which will help determine success. It can also benefit performance analysts by presenting statistical and visual information that strengthen the coaching and managing processes. This study can further enhance the technical and tactical knowledge of athletes, enhance their decision-making and increase their self-confidence during competitions.

Materials & Methods

Participants

Purposive sampling was employed in this research. The target population was already known: football teams who participated in the 2015 AFC Champions League knockout stage. Post-match videos were used to collect and analyse the data. A total of 30 complete match videos (N=30) were selected to acquire the relevant data regarding playing styles, ball possession and match outcomes (either winning or losing). Draw matches were excluded.

Procedure and Test protocol

The present study applied notational analysis to determine the in-game or match performance. Notational analysis uses specially constructed field or court grids and various codes to mark and track each action as it occurs, thereby acquiring the necessary data. The use of Longomatch software further accelerated the data collection process. The reliability of the instrument was ($r>0.8$) and the error value was ($<10\%$).

The data collection process began with the selection of all required videos, which included 30 videos of matches collected from common sharing platforms such as YouTube and Familia.com. Based on the videos of entire matches, the sequences of playing styles and ball possessions that were either successful or unsuccessful were calculated for both winning and losing teams.

Next, the videos were transferred to the Longomatch software to calculate the data and game outcomes. The chosen videos were from the matches of 2015 AFC Champions League knockout stage. The most important element of the videos is that they were all High Definition (HD) videos. HD videos offer a more detailed view during data processing which enables researchers to examine correct information, playing styles and ball possession to qualify for the next stage. Data is then transferred to IBM SPSS Statistics version 25 for statistical analysis.

Data Collection and Analysis

Data was analysed using the independent sample t-test to determine the differences in performance indicators between the winning and losing teams. The chi-square test was used to identify any association between playing styles and the outcome of a match. The significance level was ($p<0.05$).

Results

The distribution of playing style percentage is presented in Figure 1. The data illustrates the playing style used by both winning and losing teams.

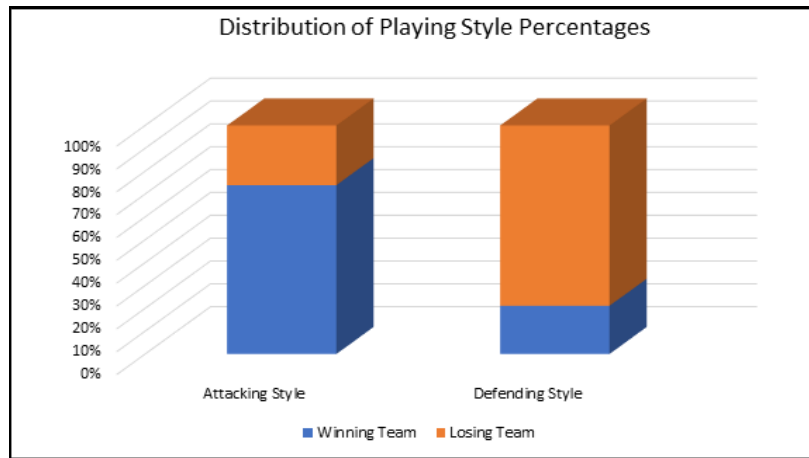


Figure 1. Playing style of both winning and losing teams

Figure 1 illustrates the playing pattern of teams and the match outcomes in each game. The teams that employed the attacking style and won the match were 17 out of 42 teams (73.9%), while the teams that employed the attacking style and lost the match were 6 out of 42 teams (26.0%). On the other hand, the teams that adopted the defensive style and won the match were 4 out of 42 teams (21.0%), while the teams that adopted the defensive style and lost the match were 15 out of 42 teams (78.9%).

Table 1. Performance indicators

Variables	Mean ± SD
Shot on target	4.05 ± 2.37
Shot off-target	4.60 ± 2.10
Passes	411.21 ± 73.28
Crosses	18.38 ± 8.99
Interceptions	16.29 ± 6.14
Blocked shots	2.43 ± 1.84
Clear ball	23.21 ± 11.66
Saved shots	2.45 ± 1.92

Table 2. Chi-square test

	Value	df	Asymptotic Significance
Pearson's chi-square	11.524	1	0.001
Continuity correction	9.524	1	0.002

Table 3. Symmetric measures

	Value	Approximate Significance
Nominal by Nominal	Phi	0.524
	Cramer's V	0.524
N of Valid Cases	42	

Table 1 depicts the total performance indicators accomplished throughout the matches of both winning and losing teams. The highest occurring actions are passing, while the lowest are blocked shots. Both actions were conducted by the keepers. A chi-square analysis was used to assess the playing styles and match outcomes. Table 2 presents the results of the test, while Table 3 displays the symmetrical measures of the test. The chi-square test for independence (with Yates correction) indicated an association between the playing styles among teams and the outcome of the match: $\chi^2(1, n = 42) = 0.524, p < 0.05, phi = 0.001$.

Table 4. Ball possession between the winning and losing teams

	Group	N	Mean	Std. Deviation	t	p-value
Ball possession	Win	21	49.62	5.844	0.105	0.917
	Lose	21	49.43	5.887	0.105	

Table 4 provides the results of the independent sample t-test. There was no significant difference in ball possession between the winning ($M = 49.62, SD = 5.844$) and losing teams ($M = 49.43, SD = 5.887$); $t(40) = 0.105, p = 0.917$ (two-tailed).

Discussion

In football, it is essential to calculate the strategic dimensions of a game, especially since simultaneous actions are taking place around the ball in a general area (Del Campo et al., 2011; Seifert et al., 2016). Coaches must shift from the traditional approach of teaching and assessing sports and place more emphasis on the sports technique. In football, the game strategy is decided by the coach prior to the game, such as ball possession, counterattacks or defensive play. To enhance gameplay, teams should rely on performance analysts to identify any vulnerabilities that their opponents may possess. This will provide an opportunity to manipulate opponents during a match by adopting new tactics. Measurement methods are daily applied in sports science, allowing one to analyse and clarify the complexities of a match (Cintia et al., 2015). With such information, teams can implement enhanced game strategies to improve their performance and correct any mistakes in tactical behaviour. This will improve their preparation strategies and team practices, making them ready to face their opponents in the next match.

Patterns of play are essential when determining team behaviour since they will reflect on the strategies used by teams to win the game. The current research outcomes revealed that the winning team usually adopts an attack pattern of play, in contrast to the losing team. Individually, each team prefers to use specific styles of play, which can be explained by the players' personalities and the coach's approach (Lago-Peñas et al., 2017; Pollard et al., 1988). Patterns of play during competition are influenced by the coach's philosophy that the players must follow. Team patterns can change throughout the game if the coach sees the need to modify the playing pattern due to current contextual details, such as score lines or player substitutions (Dobson & Goddard, 2010; Memmert et al., 2017). Studies that mainly focus on game plans and strategies are essential components that affect the result of a match (Yiannakos & Armatas, 2006). Research analyses had highlighted the influence of play styles when measuring performance indicators related to physical indicators (Buchheit & Laursen, 2013; Rein & Memmert, 2016). However, only the modes of play were listed without specifically describing the related metrics and other variables. Hence, there are insufficient details and confusion over the types of play. For instance, previous researchers (Fernandez-Navarro et al., 2016; Tenga & Larsen, 2003) described the direct play approach as attacks containing counterattacks, attacks with at least one long pass, attacks with a limit of two passes and attacks that rapidly run past and across the centre. On the other hand, Hughes & Franks (2005) considered the key performance indicator for direct playing styles as low passing outcomes. Their study was limited in its application since the focus was only on direct play instead of other styles of play. It would have been more helpful if they had incorporated a research review on different styles of play for enhanced performance.

Recent research have evaluated ball possession its relation between patterns of play with the outcome of a match, often determined by the location of the match, the nature of the opponent and the direct set plays (Sarmiento et al., 2014). Researchers noted that frequently regaining ball possession during a competition is linked to successful outcomes (Bell-Walker et al., 2006). Similarly, Yi et al. (2019) found that teams with higher ball possession performed better in terms of various variables, such as goal scoring, attacking and passing. It was previously noted that teams with ball possession near the opposition's goal indicated a good offensive play (Bartlett et al., 2012; Hughes & Lovell, 2019). Fifty percent of scored goals are from ball possession gained at the pitch closest to the opposition mark, while 58% of scored goals come from possessions received in the opposing half-pitch (Hughes & Churchill et al., 2005).

Passing, as another indicator, essentially involves receiving and giving the ball to other players (Bate, 1996; Hatamzadeh et al., 2018). Effective teams can perform successful passes to create goal-scoring opportunities, making their actions more streamlined which allows them to regularly score goals (Oberstone, 2002

2009). There is no doubt that the quality of a pass is vital to the success of football. For instance, the accuracy of passes in maintaining ball possession and progressing with a strong offensive will contribute to more opportunities to successfully score. This will limit the opponent's ball possession and scoring prospects. Previous research found that a player with higher ball possession is more likely to reach the attacking third of the field, therefore, there will be more opportunities to score a goal. However, Oberstone (2009) observed that the time during ball possession cannot predict success. The inaccurate results of previous research that examined ball possession techniques of effective and ineffective teams stem from conceptual and methodological problems.

Conclusion

The performance indicators of players during a match can lead to a higher chance of winning a game. Based on the present study, winning teams tend to play offense compared to losing teams which generally play defence. The highest number of key indicators was the action of passing the ball, while the lowest was blocked shots. All key indicators for the attacking style of play tend to show a difference between the winning and losing teams. However, the present study was unable to determine any difference between winning and losing a match in terms of ball possession. Both opposing teams had quite similar ball possession throughout the match, indicating that the playing style and action of several key indicators actually determine the outcome of a match. However, this study proved that teams cannot only depend on playing styles and ball possession to secure a win. Teams must also focus on other indicators during a match, such as situational variables, well-structured strategy, shot effectiveness and quantity of shots to lead to victory. By improving these indicators, a team can successfully win the game.

Conflicts of interest: No conflicts of interest are declared by the authors.

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