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Factors Leading to Goal Scoring in the Spanish and Italian Soccer Leagues

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Abstract

The purpose of this study was to analyse the goal-scoring attacks made by the top four teams in the final standings of the Spanish and Italian 2017–2018 Football League tables. One of the objectives of the study was to compare the match behaviours leading to goal scoring, demonstrated by the aforementioned teams. The sample of the study comprised 606 goals, 316 scored in the Spanish League and 290 in the Italian League, and 280 matches. The phases were recorded using the SportScout coaching tool. The studied parameters were: time frame in which the goals were scored, type of final attempt, type of play that resulted in a goal, type of attack, mode of set play, goal-scoring zone, zone of the final pass, starting zone of the attack, and number of passes. The data were statistically processed using the Crosstabs analysis and the Chi-square significance test. The results showed that the two leagues differed in the type of attack and in the offensive zone. The observed differences were possibly due to the different approach to the game in the two leagues, with the Spanish teams relying more on organized combination play, while the Italians showed a greater diversity in their offensive play.

Keywords: *offensive tactics, elite leagues, video analysis*

Introduction

In general, performance in football depends on several factors, such as technique, tactics, as well as the mental and physical fitness of the players (Stolen, Chamari, Castagna, & Wisloff, 2005). As far as in-game behaviour is concerned, the game analysis relies on objective observation and the recording and evaluation of technical-tactical actions occurring during a match. The result of these actions (a complete attack that may or may not result in goal scoring) can delineate the playing strategy of the team (Carling, Williams, & Reilly, 2005). However, it has been known for many years that a goal may lead to a radical shift in a team's tactical play, depending on the impact it has on the final score (Palomino, Rigotti, & Rustichini, 1998).

Moreover, some studies highlight the link between goal scoring and factors, such as the number of shots taken in relation to the number of passes during each ball possession, and the teams' style of play (Fernandez-Navarro, Fradua, Zubillaga, Ford, & Allistair, 2018; Hughes & Franks, 2005). Other studies focus on the time of goal scoring (Campos, Drezner, & Cortez, 2016; Leite, 2017; Njororai, 2014), showing that most goals are scored in the last 15–30 minutes of a game.

At the same time, several studies deal with a specific type of goal scoring: set plays (Bar-Eli, & Azar, 2009; Link, Kolbinger, Weber, & Stöckl, 2016; de Baranda, & Lopez-Riquelme, 2012). Set plays area vital part of the offensive as well as the defensive tactics of teams, as it appears to be one of the types of play that are most likely to result in goal scoring by the attacking team (Armatas, Giannakos, & Hatzimanouil, 2007).

Furthermore, as success in football means scoring at least one goal more than theopponent does, great emphasis is placed on parameters contributing to goal scoring, as well

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as creating goal-scoring opportunities (Mitrotasios, Gonzalez-Rodenas, Armatas, & Aranda, 2019; Wright, Atkins, Polman, Jones, & Sargeson, 2011). Diachronic analysis of goal-scoring ways, mainly in the case of top teams, may still result in new factors and game styles that could help coaches in different divisions improve specific offensive tactics that are better suited for their teams.

The results of the present study are expected to be of particular interest, due to the diametrically opposing views on football adopted in the two leagues, as Italian teams are expected to focus more on defensive tactics, whereas Spanish teams adopt a more attacking approach. According to the findings of a recent studyon goal-scoring opportunities, Italian teams played with shorter offensive sequences, while Spanish teams adopted long and combinative attacks (Mitrotasios et al., 2019).

The objective of the present study was to analyse the offensives that led to goal scoring by the top four teams of the Spanish and Italian Leagues in the 2017–2018 season. One of the objectives was to compare the match behaviours displayed by the teams of the two leagues in the case of goal scoring. Studying these two leagues is expected to be of particular interest due to their radically conflicting views on football. In Italy, the teams appear to focus more on defensive tactics; therefore, their style of play could be described as conservative. In contrast, Spanish teamsseem to focus mainly on attacking play, which results in a more spectacular display. Finally, the centralresearch hypothesis of the present study is that the styles of play resulting in goals in the two leagues differ from each other.

Method

Sample

The sample of the study consisted of 606 goals and 208 football matches played in Italy and Spain. More precisely, all goals scored by the top four teams of the Spanish and Italian Leagues in the 2017–2018 season were recorded and studied. Each of the teams participated in 38 games in its respective league. The reason that we opted to study these two leagues was the participation of some of the top European clubs such as Inter, Napoli, Roma, Juventus, Atletico Madrid, Barcelona, Valencia, and Real Madrid.

Data collection measuring instruments

The parameters studied were the following (Table 1):

1) League, 2) Time frame of goal scoring, 3) Type of attack, 4) Type of set play, 5) Starting zone of attack (Figure 1), 6) Actions leading to goal scoring, 7) Type of final action, 8) Zone of final pass, 9) Goal-scoring zone (Figure 2), 10) Number of passes.

Table 1. Categories of analysis and their parameters

Category	Parameters	Definition of Parameters
Time frame of goal scoring	00:01–15:00	
	15:01–30:00	
	30:01–45:00	
	first-half added time	
	45:01–60:00	
	60:01–75:00	
	75:01–90:00	
	second-half added time	
Type of attack	Organized attack	An attack of more than 3 passes resulting in goal scoring
	Counter-attack	An attack of 0–3 passes resulting in goal scoring
	Direct attack	An attack of 0–3 passes resulting in goal scoring, after recovering possession of the ball. As a direct attack was also considered the type of attacking play characterized by speed in the attacking third of the pitch
	Set play	Goal scoring from corner-kick, free-kick, penalty or any other situation where the ball is returned to open play following a stoppage (throw-in, goal-kick, off-side kick
Type of set play	Corner-kick	Throw-in, goal-kick, off-side kick
	Free-kick	
	Penalty	
	Other	
Starting zone of attack	Defending zone	
	Central zone and	
	Attacking zone	
Actions leading to goal scoring	Combination play with 3 or more players involved	i.e. wrong save
	Individual action,	
	Opponent turnover	

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Category	Parameters	Definition of Parameters
Type of final action	Header Shot Other	i.e. tackle, back-heel kick
Zone of final pass and goal-scoring zone	The penalty box1 The central area outside the penalty box2 The right area outside the penalty box3 The left area outside the penalty box4	All three areas outside the penalty box extend beyond the centreline of the pitch
Number of passes	0–3 passes 4–6 passes More than 7 passes	

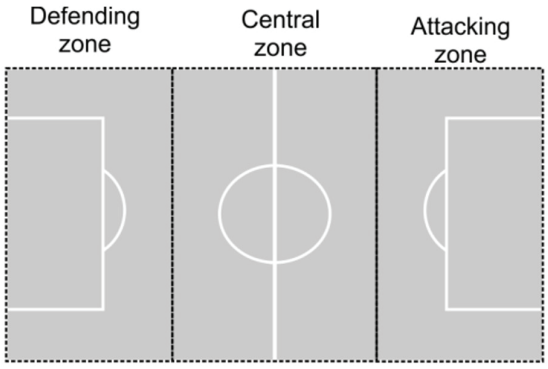

FIGURE 1. Field zone, starting zone of attack

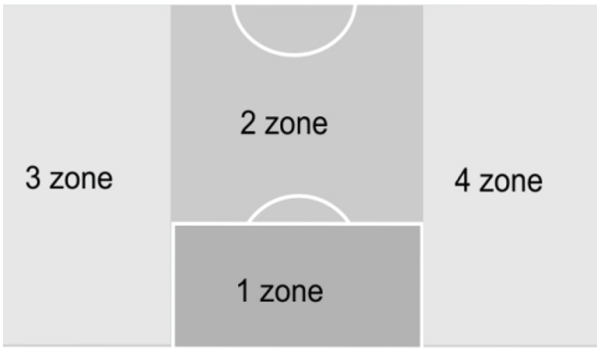

FIGURE 2. Field zone, Goal-scoring

Data analysis of every goal-scoring attack, along with the relevant parameters, was performed using the Sportscout video-analysis software; the recording of each attempt started when a player gained possession of the ball and ended when the ball passed over the goal line.

The observation protocol was drawn up with the assistance of a high-level football trainer who instructed the observer in recognizing the necessary parameters during match observation. The reliability of the recorded data was checked using the intra-observation agreement, with which both the trainer and the observer recorded 60 random goal-scoring attacks separately, using the same analysis parameters. As shown by Cohen's Kappa value, the parameters were recorded correctly by the observer (k=1.000 for all parameters). Consequently, to ensure that the observer would register all the attacks correctly, another 60 selected goal-scoring attacks were observed. After one week, the same observation was repeated. In both cases, Cohen's Kappa value was exceptionally high (k=1.000).

Data analysis

The data were analysed using the SPSS statistical analysis software. The type of analysis used was the Crosstabs analysis and the criterion of the Chi-square test significance value $p<.05$. The purpose of the analysis was to determine whether the parameters contributing to goal scoring were different between the two leagues. Additionally, in cases in which even one of the expected values was lower than 0.5 (i.e., the conditions of statistical analysis were not met), the value of the Fisher method (Fisher's exact test) was taken into account.

Results

According to the results (Table 2), as far as differences between the two leagues in goal-scoring attacks are concerned, they were significant only in the type of attack (Chi-square=14.540, $p<0.05$) and the attack-starting zone (Chi-square=9.321, $p<0.05$). More specifically, the Spanish teams studied appeared to utilize counter attacks more often than the Italian teams did (65% to 35%) while the latter tended to use direct attacks more frequently (58% to 42%). Concerning the starting zone of attack (Figure 4), it was found that the Spanish teams started their attacks from the defending zone (63% to 37%) and the central zone (54% to 46%) more frequently.

The Italian teams, in contrast, started their attacks mainly from the attacking zone (54% to 36%). However, due to the marginal value of p, it could be said that there was a small mismatch between the 75th and the 90th minutes, when more goals were scored in by the Spaniards than the Italians (59% and 41%, respectively). Furthermore, the number of goals scored by the Spanish teams between the 30th and the 45th minutes of the game was slightly higher (60% and 40% respectively). In contrast, the Italian teams tended to score more goals between the 45th and the 60th minutes (53% and 47% respectively).

Table2. Percentages of goal scoring parameters (Italian and Spanish league)

Category	Parameters	Italy	Spain
Time frame of goal scoring	00:01–15:00	52%	48%
	15:01–30:00	48%	52%
	30:01–45:00	40%	60%
	first-half added time	100%	0%
	45:01–60:00	53%	47%
	60:01–75:00	48%	52%
	75:01–90:00	41%	59%
	second-half added time	58%	42%
Type of attack (p<0.05)	Organized attack	44%	56%
	Counter-attack	35%	65%
	Direct attack	58%	42%
	Set play	53%	47%
Type of set play	Corner-kick	53%	47&
	Free-kick	64%	36%
	Penalty	45%	55%
	Other	42%	58%
Starting zone of attack (p<.05)	Defending zone	37%	63%
	Central zone and	46%	54%
	Attacking zone	54%	46%
Actions leading to goal scoring	Combination play with 3 or more players involved	46%	54%
	Individual action,	39%	61%
	Opponent turnover	50%	50%
Type of final action	Header	56%	44%
	Shot	45%	55%
	Other	55%	45%
Zone of final pass	The penalty box1	46%	54%
	The central area outside the penalty box2	44%	56%
	The right area outside the penalty box3	47%	53%
	The left area outside the penalty box4	56%	44%
Zone of goal scoring	The penalty box1	47%	53%
	The central area outside the penalty box2	48%	52%
	The right area outside the penalty box3	0%	0%
	The left area outside the penalty box4	100%	0%
Number of passes	0–3 passes	50%	50%
	4–6 passes	41%	59%
	More than 7 passes	41%	59%

Discussion

As mentioned, the aim of the present study was both to analyse the goal-scoring attacks by the top four Spanish and Italian teams andto draw a comparison between the respective football leagues.

According to the findings, it appears that all teams scored goals within the same time frames, with most goals scored mainly during the second half. There was a small, if insignificant, differentiation in the case of the Spanish teams, as they scored more often during the last fifteen minutes of the game, as well as during the timebetween the 30th and the 45th minutes. Similar goal-scoring behaviour was also observed in other studies in lower-level national leagues, such as in Greece, Brazil, and Ethiopia (Armatas, Giannakos, Papadopoulou, & Skoufas, 2009; Campos et al., 2016; Chekol, 2016) as well as in national-teams competitions, like the European Cup and the World Cup (Çobanoğlu, 2019; Leite, 2013; Tousios, Michailidis, Mandroukas, Mikikis, & Metaxas, 2018), leading to the conclusion that goal-scoring occurs more often during these specific periods of a football match. This outcome is further reinforced by the findings in the research by Leite (2017), who analysed an exceptionally large sample of matches and goals (8,200 goals and 3,100 matches), focusing his methodology solely on the moment of goal scoring. Moreover, most

of the goals in the second half might have been a result of the teams of the present study taking advantage of the opponent's fatigue and psychological deterioration, which are usually evident among the players during the last minutes of a game (Leite, 2017).

As far as the types of goal-scoring attacks are concerned, the most popular ones with the teams of the sample were mainly organized attacks, and set plays. A similar conclusion was drawn in EURO 2012 (Leite, 2013), thereby confirming that the above-mentioned match behaviour has been adopted for at least several years, even by teams at different levels, which could be attributed to the nature of the sport itself. Specifically, extended ball possession and (the need for) the best possible organized attack might be a consequence of the size of the pitch and the presence of 20 players on it. The fact that the Spanish teams scored more goals than the Italian teams did through organized attacks or counter-attacks highlights their renowned game style that is dominated by extended passing game and powerful counter-attacks.

In the case of the Italian teams, their famously tough defence may be the reason for their being awarded more free kicks than the Spanish teams. As already mentioned, the set plays analysed in the current research resulted in 25–30% of the total number of goals, with similar results appearing in the international literature (Durlik & Bieniek, 2014; González-Rodenas, López-Bondia, Calabuig, Pérez-Turpin, & Aranda, 2017). The external validity of these results is significantly reinforced by the research of Cerrah, Özer and Bayram (2016), in which it was reported that during the last five seasons of the Turkish league (2006 to 2011), 102 goals were scored from set plays, accounting for 28% of the total number. Even though most studies focusing on set plays attempt to identify their most effective type (free kick or corner kick), the fact remains that they pose a severe threat to the defending team, provided they are taken by good set-play kickers.

As for the starting zones of the goal-scoring attacks, it appears that the teams from both leagues in the sample scored most of their goals when their attacks were initiated mainly in the attacking zone, followed by those starting in the central zone and last from the defensive zone. As a result, the attacking third of the pitch appears to be the starting zone of the most successful attacks performed by top teams (similar results were recorded in the study by Vergonis et al., 2019), which could be due to the pressure applied by these teams on their opponents in this specific area in order to gain possession of the ball.

Furthermore, from the results of the present study, it could be concluded that, compared to their Italian counterparts, the Spanish teams initiated their successful attacks from the defensive and the central zone more frequently, once again as a result of their passing-game style of play. The fact that the Italian teams started their successful attacks mainly from the attacking zone may be attributed to the adoption of a defensive tactical profile while on defence as well as when applying pressure on their opponents in the attacking third of the pitch.

Concerning the attacks made, there was no significant difference between the teams of both leagues. However, their primary attacking tactic was combination play with three or more players involved. The higher percentage of goal-scoring resulting from combination play is partially explained by the fact that most of the times when top teams are required to deal with tight defensive formations, they resort to this style of play in order to break them and create spaces. Correspondingly, it is understandable that many goals are scored from individual actions, as some of the players in those teams are among the best (or even the best) worldwide, with the Spanish teams scoring more goals from individual actions, a feature for which their players are particularly known. An identical parameter among the teams in both leagues was the ability to capitalize on the opponent turnovers by turning them into goals, mainly thanks to the ability possessed by top teams to take advantage of even the minor errors of their opponent.

Moreover, the numbers of successful final attempts by the teams in both leagues were also identical. Shots were the most frequent type of final attempt, which has also been confirmed by other studies, providing indisputable evidence that shot is the technical action resulting in the higher number of goals. Concerning the fact that Spanish teams tend to score goals from shots, it may be due to their implementation of fast combination game in their attacks, which requires the ball to be on the ground for the most significant part of an attack resulting in more shots than headers. Accordingly, the higher percentage of goal-scoring headers by the Italian teams may be attributed to their relatively higher number of crosses or even set plays (especially free kicks and corner kicks).

Another variable related to the build-up of successful attacks is the zone of the final pass resulting in goal scoring. According to the results of the present study, most of the final passes of all the teams studied were initiated in the central areas of the pitch and, more specifically, the central area outside the penalty box. This tactic seems to be employed not only by the top teams in their national leagues but also in football competitions like the World Cup of 2018, in which, according to Çobanoğlu (2019), 61% of the assists were made from the central areas of the field.

Additionally, we could conclude from the above that it is necessary to examine the different types of goals-scoring, as they could ultimately help teams, and especially their attacking players, score more goals than their opponents. For this reason, the attackers must be at the right place at the right time, which is why the goal-scoring zone appears to be a significant parameter, as it represents the most probable areas of goal-scoring. Based on the results, in both leagues, more than 80% of the goals came from within the penalty area, a fact that was confirmed in all studies that examined this specific variable (Njororai, 2013; Chekol, 2016; Wright et al., 2011; González-Ródenas et al., 2019).

As for the number of passes leading to goals, it is mentioned in the international literature that the successful attacks of high-level teams (English Premier League and 2010 World Cup) usually consist of up to three or in some cases four passes (González-Rodenas, López-Bondia, Calabuig, & Aranda, 2015; Wright et al., 2011). More specifically, as indicated by the results of these studies, most of the goal-scoring opportunities were created, while in possession of the ball, after up to three or, in several cases, four passes. The present study resulted in similar findings with slight variations, once again reflecting the profile and the coaching philosophy of both leagues. With reference to their results, the Spanish teams appear to make up to six or more passes during a substantial number of their successful attacks.

At this point, we would like to call attention to the possibility that some or even all of the studied parameters leading to goal-scoring may also occur in unsuccessful attacks. It is al-

most certain that goal scoring is affected by other factors, such as a mistake in the final attempt, a save by the goalkeeper, a good shot gone wide, or a foul committed by the opponent. However, the sample dynamics (four of the best teams in top leagues), as well as the substantial number (606) of goal-scoring attacks that were observed, justifies the suggestion that the resulting parameters be used in creating better goal-scoring situations.

Although the top teams studied from the Spanish and Italian league adopted a similar goal-scoring playing profile, certain dissimilar aspects confirm their different playing styles. The Spanish League, on the one hand, was characterized by passing and the fact that the attacks tend to initiate even behind the centre of the field; on the other hand, one of the features of the Italian teams was the defensive style of play and the overall tendency to start the attacks mainly from the attacking zone and score goals from set plays. Although the above aspects are derived from different coaching philosophies, they could be incorporated in a common coaching principle that could be adopted by rising teams at the same or different levels in order to improve their match performance.

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Conflict of Interest
The authors declare the absence of conflict of interest.

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