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MODERN PERSPECTIVES ON MATCH OUTCOMES IN FOOTBALL: BLOCKED SHOTS

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ABSTRACT

The aim of this study is to examine the impact of blocked shots on match outcomes in football matches. In the 2023-24 season, the total number of shots, blocked shots, and blocked shot ratios of winning (WT) and losing (LT) teams in the top-tier football leagues of Germany, England, Spain, Italy, Turkey, Argentina, and Brazil were compared and analyzed using one-way analysis of variance (ANOVA). The findings indicate that LT generally had higher blocked shot percentages (BS%) compared to winning teams, while their average number of blocked shots (BS) was lower. The differences in BS% were found to be statistically significant ($p<0.05$) in the leagues of Germany, England, Spain, Italy, Turkey, and Argentina, whereas no significant difference was observed in the Brazilian league ($P=0.69$). Regarding BS averages, a statistically significant difference was found only in the Argentine league. Additionally, winning teams were generally found to have a higher total number of shots. This study is the first to evaluate the blocked shot parameter in football in the context of winning and losing from an offensive perspective. It is suggested that teams with lower BS% ratios may have more strategic shot selections, allowing them to bypass defensive blocks more effectively. In this context, blocked shots are not only an indicator of defensive success but also a reflection of the attacking team's deficiencies in positioning and shot quality. Previous literature has primarily considered blocked shots as a result of defensive success. However, this study is the first to reveal that the shots of winning teams were less frequently blocked by losing teams. It is suggested that attacking teams should develop more effective passing organizations and fast passing combinations to minimize the success of the opposing defense in blocking shots.

Key words: Blocked shots. Football. Shot statistics. Defensive strategies. Victory.

RESUMO

Perspectivas modernas sobre os resultados das partidas no futebol: chutes bloqueados

O objetivo deste estudo é examinar o impacto dos bloqueios nos resultados das partidas de futebol. Na temporada 2023-24, o número total de chutes, bloqueios e taxas de bloqueios dos times vencedores (WT) e perdedores (LT) nas ligas de futebol de primeira linha da Alemanha, Inglaterra, Espanha, Itália, Turquia, Argentina e Brasil foram comparados e analisados usando análise de variância unidirecional (ANOVA). Os resultados indicam que a LT geralmente teve maiores porcentagens de bloqueios (BS%) em comparação com as equipes vencedoras, enquanto seu número médio de bloqueios (BS) foi menor. As diferenças em BS% foram consideradas estatisticamente significativas ($p<0,05$) nas ligas da Alemanha, Inglaterra, Espanha, Itália, Turquia e Argentina, enquanto nenhuma diferença significativa foi observada na liga brasileira ($p=0,69$). Em relação às médias de BS, uma diferença estatisticamente significativa foi encontrada apenas na liga argentina. Além disso, as equipes vencedoras geralmente tiveram um número total maior de chutes. Este estudo é o primeiro a avaliar o parâmetro de bloqueios no futebol no contexto de vitórias e derrotas, sob uma perspectiva ofensiva. Sugere-se que equipes com menores índices de BS% podem ter seleções de bloqueios mais estratégicas, permitindo-lhes contornar bloqueios defensivos de forma mais eficaz. Nesse contexto, bloqueios não são apenas um indicador de sucesso defensivo, mas também um reflexo das deficiências de posicionamento e qualidade de chute da equipe atacante. A literatura anterior considerou principalmente bloqueios como resultado do sucesso defensivo. No entanto, este estudo é o primeiro a revelar que os chutes de equipes vencedoras foram menos frequentemente bloqueados por equipes perdedoras.

Palavras-chave: Bloqueios. Futebol Americano. Estatísticas de chutes. Estratégias defensivas. Vitória.

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INTRODUCTION

Football is a sport in which individual skills and tactical organization come together, with outcomes influenced by numerous variables. In modern football, performance analyses are widely used to identify key factors that affect a team's likelihood of winning. One of these factors is a team's shooting performance.

The number of shots shot quality, and the rate of shots blocked by the defense are critical elements that determine a team's offensive efficiency and ability to achieve results (Lepschy et al. 2018).

In football, it is crucial for the attacking team to successfully complete an offensive move. Shots taken on goal are classified based on their outcomes (goal, on target, off target, or blocked shots), execution location (from the goal area, penalty area, or outside the penalty area), and trajectory (high shots or low shots) (Pertsukhov et al., 2020).

A shot directed towards the opponent's goal that is cleared within the goal area by the goalkeeper or by a defending player positioned closer to the goal line than the goalkeeper is considered an on-target shot.

A shot that is prevented from reaching the goal by a defending player, excluding the goalkeeper, is defined as a blocked shot (URL-1). Not all shot attempts are equally effective. Factors such as shot accuracy, distance from the goal, shooting angle, and, most importantly, the individual shooting ability of the player directly influence the outcome.

Additionally, the defensive team's ability to block shots also affects shot outcomes. Blocked shots are considered an important indicator of a team's defensive resilience and positioning skills (Lago-Penas et al., 2010).

If an attacking team has a high number of blocked shots against a defensive opponent, it may indicate difficulties in creating shooting opportunities, forcing them to take shots from unfavorable positions or rely on players with lower shooting proficiency. Alternatively, it could also reflect the defensive team's successful organization.

However, considering that winning teams generally demonstrate higher offensive efficiency, it can be assumed that shots are taken by the right players in the right positions.

A skilled attacking player is unlikely to take a shot on goal when one or more defenders are actively trying to block them. On the other hand, shots taken at the wrong time and by the wrong players are more likely to be blocked by the opposition, potentially leading to fast-break opportunities for the defending team. In such cases, the attacking team would need to make a defensive transition by either tracking back quickly or attempting to defend in their own zone, requiring additional physical effort.

A football team's consistent attempts at shooting towards the opponent's goal may indicate offensive dominance. However, a high total number of shots alone may not be sufficient for securing a victory. Factors such as shot accuracy, goalkeeper performance, and the effectiveness of the defensive line's interventions significantly influence match outcomes (Castellano et al., 2012).

Blocked shots provide insights into the defensive strategies of the opposing team while also aiding in the evaluation of the attacking team's shot selection. A high frequency of blocked shots by the opponent's defense may suggest a lack of creativity in attack or an inability to overcome defensive blocks.

This study aims to examine the relationship between the total number of shots, blocked shot ratio, and match outcomes in football matches. A review of the literature reveals that existing studies primarily focus on general shot statistics and expected goals (Wheatcroft and Sienkiewicz, 2021; Raudonius and Seidl, 2023).

However, no research has been found that evaluates blocked shots in football from the perspective of the attacking team in the context of winning or losing.

Considering current research protocols in sports sciences, studies on enhancing the contribution of energy systems to athletic performance, athletes' focus, strategy development, stress management, and modern football playing styles, we hypothesize that blocked shots could be a crucial parameter in assessing team performance and winning strategies.

The findings of this study support this hypothesis. In this context, the study's results are expected to contribute both to coaches' tactical planning and to football data analysis research.

A detailed analysis of shot performance can help teams make more informed strategic

decisions against their opponents and shape their game plans more effectively.

MATERIALS AND METHODS

This study analyzes the total number of shots, blocked shots, and blocked shot ratios of winning and losing teams in the 2023-2024 season of the Premier League (England), La Liga (Spain), Bundesliga (Germany), Serie A (Italy), Süper Lig (Turkey), Série A (Brazil), and the Argentine Primera División (Argentina) using data from the Maçkolik statistical database (OPTA Client System). Maçkolik provides comprehensive football data, including information on wins, losses, successful and unsuccessful passes, ball possession percentages, shots, fouls, yellow and red cards, and various other match events (https://arsiv.mackolik.com/Teams/OptaList.aspx).

In the OPTA database, which serves as the data source for this study, a blocked shot is defined as an attempt to score that includes the following (URL-1):

An attempt on target Blocked by an outfield player, where other defenders or a Goalkeeper are behind the Blocker.

Incorporates shots Blocked unintentionally by the shooter's own teammate. Clearances off the line by an opposition player (last line Blocks) are classified as Shots on Target and not as a Blocked Shot.

Statistical analyses

All results are presented as the means±standard error of the mean (SEM). Statistical comparisons were made using the SPSS 25. statistical software (SPSS, Inc., Chicago, IL).

The normality of the data was tested with one-sample Kolmogorov–Smirnov test before analyses. After verifying that data were normally distributed, one-way analysis of variance (ANOVA) was performed. For all statistical tests, $p<.05$ was considered statistically significant

RESULTS

In this study, the variables of Blocked Shot Percentage (Blocked Shot %), Total Shots (Total Shot), and Blocked Shots (Blocked Shot) were analyzed and compared based on match outcomes (win or loss) in the top-tier football leagues of Germany, England, Spain, Italy, Turkey, Argentina, and Brazil during the 2023-24 season.

The analysis results for Germany indicate that the blocked shot percentage in losses (28.79%) is higher than in wins (23.67%) ($p=0.00$).

Similarly, in England, Spain, and Italy, the blocked shot percentage was observed to be higher in losses compared to wins ($p<0.05$).

For Turkey and Argentina, this difference was also found to be statistically significant ($p=0.001$ and $p=0.00$, respectively). However, in Brazil, no significant difference was detected in terms of blocked shot percentage (Table 1, Fig. 1; $p=0.69$).

Regarding the number of blocked shots, a statistically significant difference between winning and losing teams was observed only in England and Argentina (Table 1, $p=0.001$ and $p=0.009$, respectively). In other countries, no significant difference was found in the number of blocked shots.

An analysis of total shot statistics revealed that winning teams generally attempted more shots compared to losing teams. In Germany, the average number of shots in losses was 12.19, while in wins, it increased to 15.68 (Table 1, $p=0.00$). Similarly, in other countries, the total number of shots was found to be significantly higher in winning matches ($p<0.05$).

The averages of total shots and blocked shots by league are illustrated in Figures 2a and 2b. In conclusion, winning teams tend to take more shots, and their blocked shot percentage is generally lower. However, the impact of the number of blocked shots varies across different countries.

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Table 1 - Shot Parameter Findings Based on Match Outcomes by League.

Leagues / Parameter		Result	N	Mean	SD	SEM	p
Bundesliga (Germany)	BS%	Lose	225	28.79	15.167	1.011	0.00
		Win		23.67	11.552	0.770	
	TS	Lose	225	12.19	5.429	0.362	0.00
		Win		15.68	5.874	0.392	
	BS	Lose	225	3.62	2.378	0.159	0.196
		Win		3.92	2.568	0.171	
Premier Lig (England)	BS%	Lose	299	28.44	16.273	0.941	0.01
		Win		25.38	12.378	0.718	
	TS	Lose	299	11.62	5.437	0.314	0.00
		Win		15.98	5.995	0.348	
	BS	Lose	299	3.51	2.663	0.154	0.001
		Win		4.22	2.635	0.153	
La Liga (Spain)	BS%	Lose	273	25.34	14.894	0.901	0.045
		Win		22.94	12.892	0.780	
	TS	Lose	273	11.47	4.915	0.297	0.00
		Win		13.01	4.890	0.296	
	BS	Lose	273	2.95	2.109	0.128	0.612
		Win		3.04	2.103	0.127	
Serie A (Italy)	BS%	Lose	268	28.24	14.475	0.884	0.006
		Win		25.12	11.474	0.700	
	TS	Lose	268	11.78	4.347	0.266	0.00
		Win		14.02	4.875	0.298	
	BS	Lose	268	3.42	2.192	0.134	0.414
		Win		3.57	2.137	0.131	
Süper Lig (Türkiye)	BS%	Lose	272	26.12	15.886	0.963	0.001
		Win		21.89	12.679	0.768	
	TS	Lose	272	11.66	4.817	0.292	0.00
		Win		14.35	5.557	0.337	
	BS	Lose	272	3.11	2.303	0.140	0.512
		Win		3.24	2.276	0.138	
Premier (Argentina)	BS%	Lose	250	25.89	15.017	0.949	0.00
		Win		20.43	12.242	0.774	
	TS	Lose	250	11.40	4.913	0.311	0.003
		Win		12.70	4.824	0.305	
	BS	Lose	250	3.12	2.336	0.148	0.009
		Win		2.62	1.840	0.116	
Serie A (Brasil)	BS%	Lose	278	24.33	13.46	0.80	0.69
		Win		23.90	11.64	0.69	

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	TS	Lose	278	12.29	4.893	0.293	0.00
		Win		14.15	4.836	0.291	
	BS	Lose	278	3.17	2.092	0.125	0.082
		Win		3.48	2.069	0.124	

BS%: Percentage of blocked shots TS: Total Shot BS: Blocked Shot

The data generally indicate that the BS% values of winning teams are lower compared to losing teams.

This suggests that winning teams either allowed their opponents fewer effective shots or performed better defensively. In the leagues of Germany, England, Italy, and Turkey, a statistically significant decrease in BS% values was observed for winning teams, while no significant difference was found in Brazil. In Argentina, this difference is the most pronounced, suggesting that winning teams significantly limited their opponents' shot effectiveness.

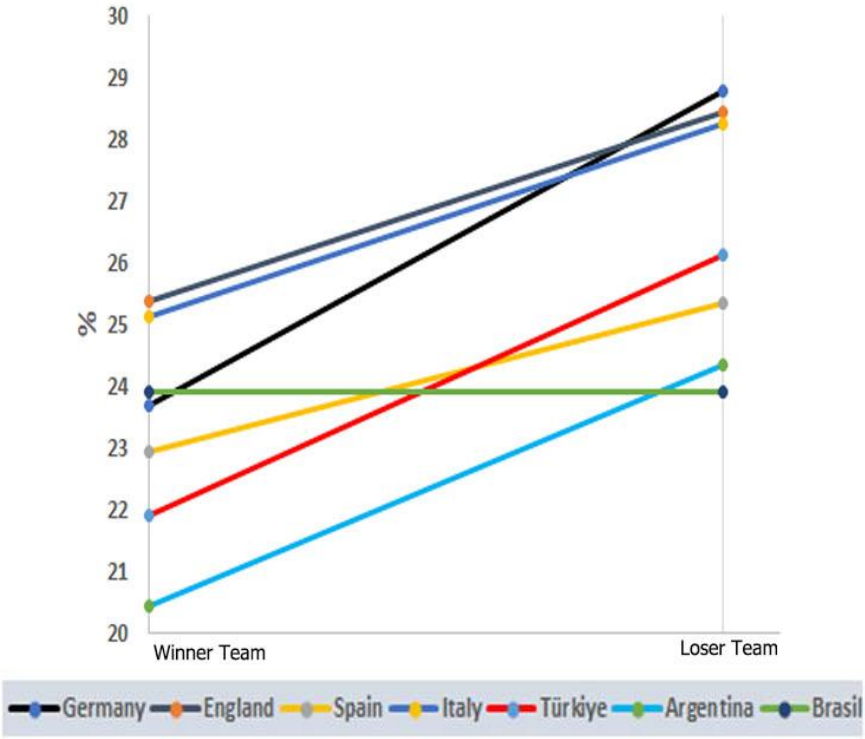

Fig 1. Blocked Shot of the Leagues.

The figure shows the blocked shot percentages for winning and losing teams by league. A similar distribution of this parameter is observed across all leagues. Unlike the other leagues, in the Brazilian league, no difference in blocked shot percentages between winning and losing teams is observed.

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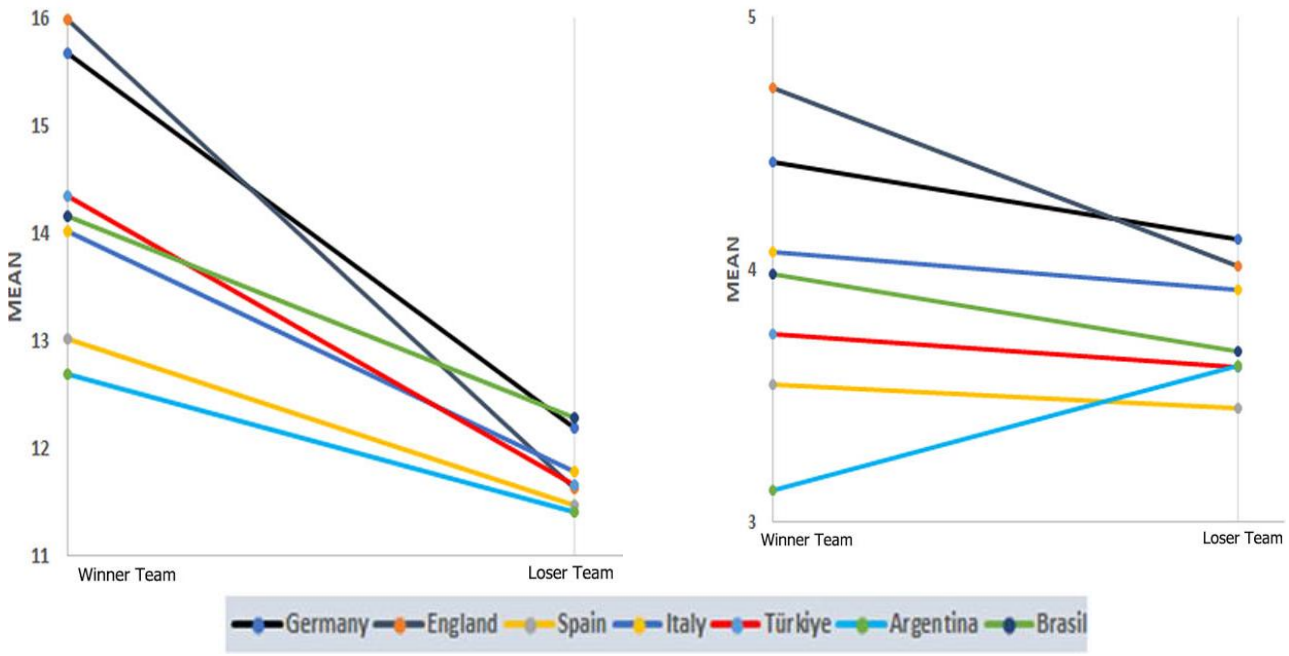

Fig 2. a) Total Shot of The Leaues b) Blocked Shot Means of The Means

Figure 2 presents the averages of blocked and total shots by league. In terms of total shots, winning teams generally have a higher number of shots across all leagues. However, in blocked shot averages, unlike the other leagues, it was found that only in the Argentine league, losing teams had higher averages of blocked shots.

DISCUSSION

In this study, the blocked shot parameter is examined for the first time as an attacking strategy. The research findings show that teams with a high blocked shot percentage tend to lose the match.

This result was not statistically significant only in the Brazilian league.

However, this value is contrasted by findings related to the average number of shots. In general, it was determined that winning teams had higher shot averages across all leagues.

Football, as a dynamic game, contains many tactical variations, and the skills and moment-to-moment performance of the players directly impact match outcomes (Pruna et al., 2018).

Among the key factors determining match results are teams' attacking efficiency, defensive errors, and in-game strategic choices (Anderson and Sally, 2013; Modric et al., 2023).

According to our research findings, the higher the percentage of blocked shots for losing teams, the more their attempts to score from shots are limited by the winning team.

Additionally, a shot blocked by the opponent in the attacking area presents a valuable fast-break opportunity for the defending team. In this scenario, the attacking team is caught off guard in defense. This moment represents an undesirable situation for the attacking team.

Furthermore, the battle to regain possession of the ball after giving it away results in additional energy loss. Such unexpected turnovers can significantly impact the outcome of the match.

Analyses conducted in the Bundesliga show that fast breaks have a higher probability of resulting in goals. Shots taken during a counterattack, when the opposing team's defensive organization is not fully established, have a higher success rate (Modric et al., 2023).

In essence, many factors affect the outcome of a football match. These include parameters such as the number of accurate

shots, possession rate, passes, crosses, cards, and the number of duels won (Lago-Peñas et al., 2011; Bai et al., 2023).

Successful teams show higher intensity and total running distances, more short-pass-based plays, as well as a higher number of dribbles and interventions compared to less successful teams (Rampinini et al., 2009). Another study found that the rates of ball interceptions, clearances, and aerial duels won were higher in winning teams (Taylor et al., 2008).

In the Spanish league, Lago-Peñas et al., (2010) identified the most influential variables in match outcomes as total shot attempts, accurate shots, whip crosses, and possession rate. In a previous study, we determined that possession rate was a key parameter for match victories (Albay et al., 2025).

A direct relationship was found between the number of shots on goal and winning; not only the number of shots but also their accuracy and how many resulted in goals are critical determinants. A study on Premier League matches indicated that pass accuracy and possession time were related to match outcomes (Modric et al., 2023).

In the present study, it was found that the average total shots had a significant impact on victories. However, in our research, no significant difference was observed in the blocked shot percentage between the winning and losing teams in the Brazilian league.

The tactical offensive plans of the team taking the shot, as well as the shooting abilities and preferences of the players, are also crucial. In limited studies on blocked shots, it was found that, in some leagues, blocked shots had a significant effect on match outcomes, although this effect was not present in all leagues (Hughes and Franks, 2005).

While some studies consider a high number of blocked shots as a sign of defensive success (Bauer and Anzer, 2021), as shown in the present study, factors such as poor shot quality or shots taken from incorrect positions by the attacking team are just as important as defensive success.

In the present study, it was found that blocked shots had an impact on match outcomes in elite leagues.

This can be explained by differences in playing styles and tactical variations among the leagues. Identifying the relationship between blocked shots and match outcomes is crucial for developing both defensive and offensive strategies.

Specifically, in modern football, it has been observed that relatively weaker teams, with high-pressing player structures and defensive strategies, force their opponents, often seen as favorites, into difficult positions, thus reducing the quality of their shots, which leads to an increase in the number of blocked shots (Loutfi et al., 2023).

Future research will contribute to a deeper examination of this relationship and the detailed differentiation of effects according to league dynamics.

CONCLUSION

Offensive teams need to develop faster passing combinations and exhibit movement that disrupts the positioning of the opposing defense in order to reduce the number of blocked shots. It is recommended that players position themselves before taking shots, create one-on-one situations with the goalkeeper, and establish quick passing traffic to unbalance the defense.

Teams that can quickly respond to counterattacks and close shooting lanes more effectively have been observed to have a positive impact on match outcomes. To create more shooting opportunities within the penalty area, game plans based on short passing traffic should be developed.

Limitation of the Study

This research is the first to examine the relationship between blocked shots in the offensive context and team victories. While the findings of the study are original and have high novelty value, the study does have some limitations.

The scope of the research, which covers the 2023-24 season and includes only the top leagues from 7 countries, and the fact that findings from different categories were not tested, are considered limitations of the study. However, by including some of the world's most important leagues, this research demonstrates that blocked shots could be an important and significant parameter to consider when evaluating a team's victory.

Conflict of Interest

None.

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