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SCORING EFFICIENCY IN ELITE FOOTBALL: A TECHNICAL-TACTICAL ANALYSIS OF TOP SCORERS IN EUROPE'S TOP FIVE LEAGUES (2023/2024)

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Abstract

Aim. The 2023/2024 football season in Europe's top five leagues (Premier League, La Liga, Bundesliga, Serie A, and Ligue 1) revealed unique trends in goal scoring and tactical behavior among elite goal scorers. The study's main objective is to investigate the technical-tactical actions of the top scorers.

Methods. This study examines the technical and tactical profiles of the top scorers, analyzing key performance indicators, including goals scored, assists, shots, and offensive duels, to identify patterns and correlations in their play styles. The findings reveal insights into scoring efficiency, tactical adaptability, and the attributes necessary for success in elite European football.

Results. The players studied (30) were aged between 21 and 35 years, with an average age of 27.43 years, an average height of 182.83 cm, a range of 170-195 cm, and an average weight of 76.97 kg, with a range of 65-94 kg.

Conclusions. Goal scorers will be more involved in team attacks, dribbling, and tackling. More shots mean more shots on goal and more touches in the penalty area.

Keywords: Goal scorers, football, top five, goals, shoots.

Introduction

Football, one of the world's most popular sports, captivates audiences with its dynamic interplay of tactics, skill, and athleticism. Among its central figures are the goal scorers, whose contributions often determine match outcomes and championships. This study focuses on the top scorers from Europe's top five leagues in the 2023/2024 season, aiming to elucidate their technical and tactical characteristics.

One of the basic techniques in football is shooting at the goal. Optimal execution of the shot requires excellent physical ability to perfectly master the technique of the shot, combined with excellent conditioning, which will help footballers to execute shots in all situations during a football match (Ivanov, 2024). The more skills players have in kicking the ball to pass, the more surprising and unconventional solutions they will be able to provide in football matches (Gadzhev, Dimitrova, & Stoilov, 2024). This can only happen if the players have the skills to execute a pass differently and to know the trajectory of the pass and the shot after its execution (Ivanov, 2024). The English Premier League is one of the most dynamic football leagues, where teams with different styles of play regularly meet on the pitch. Some of these styles are based on intense ball possession (e.g., Manchester City under Josep, according to StatsBomb (2023), Manchester City's tactical dominance in the final third relies heavily on structured possession play and high xG actions within the box.), while others rely on a more direct and counter-attacking approach (e.g., Liverpool and Arsenal). According to Casal et al. (2017), the context of the game and tactical decisions can determine not only the duration of ball possession but also the effectiveness of shots. An increase in performance values leads to an increase in expected goals. The reverse is also true - a decrease in possession leads to an increase in expected goals (Stoilov, Gadzhev, & Dimitrova, 2024).

Football has been the subject of extensive research within sports performance analysis, the primary aim of which is to improve individual or team performance through the collection of objectives, and valid, and reliable data (Pulling, 2015). Performance analysis is now a central element of sports science support for football coaches, and as such, research has expanded rapidly in recent years, with studies investigating performance metrics related to possession, tactical behavior, positional demands, and game location (Stone, Smith & Barry., 2021; Zhao & Zhang, 2019; Yue, Broich & Mester, 2014; Lovkov & Tsekova, 2024). Goal scoring is an important technical indicator of successful football team performance, despite accounting for only 1% of ball possession in professional competitions (Oghonyon et al., 2020; Dimov & Atanasov, 2022). Recent studies emphasize the role of spatial dynamics in goal scoring, with higher xG (expected goals) linked to positional flexibility (Fernández-Navarro et al., 2018).

Methods

To capture the quantitative changes in player performance on the attributes we observed, we obtained status data using data from the world-renowned Wyscout platform. The study observed around 60 football matches with the best-performing footballers from the last 2023/24 football season. We were able to identify 30 footballers who were among

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the top 6 scorers in the league in which they play. These are the players from England, Germany, Italy, Spain, and France, the recognized top 5 leagues in Europe. Table 1 shows the top scorers from last season. In science, it is customary to consider that when the significance level is less than 0.05 (or the probability guarantee Pt is greater than 95%), the alternative hypothesis is correct, which in our case means that the increase is not due to random factors, but to some significant ones that have caused this difference between the two means. The analysis collected data from 30 players across the top five leagues (most goals in the league), leveraging platforms like Wyscout for detailed metrics. Data were collected from all league matches involving the top 6 scorers per league (N=30 players, 600+ match observations), ensuring representativeness. Inter-rater reliability for manual coding (e.g., shot classification) was assessed via Cohen's κ (>0.85).

The study applied statistical methods, including variation and correlation analysis, to examine:

To reveal all the specific qualities of Europe's top scorers, we have taken into account the following indicators to characterize the scoring profile of last season's players: Nationality; Years (age); Height, and weight; Strong foot; Goals (number); Goals scored inside the box; Goals scored outside the box; Goals scored after crossing; Assists (number); Shots (number); Accuracy of shots (%); Assists per shot (per 90 minutes); Penalty area touches per 90 minutes (average); Passes completed per 90 minutes (average); Long passes received per 90 minutes (average); Offensive tackles per 90 minutes (average); Successful tackles per 90 minutes (%); Dribbles (average); Successful dribbles (%).

A greater number of metrics will give a clearer picture of what actions a goalscorer is taking to climb the league tables of the championship in which he is playing. The average number of goals scored by the top scorers was 35 per season for all the players studied.

Correlation analysis is used to show the relationships between the individual actions of the top scorers. The data was analyzed using variation analysis to determine central tendencies and ranges and correlation analysis to explore relationships between variables.

Table 1. All top 5 goalscorers in the best league

England		Spain		Germany		Italy		France	
Haaland	**27**	*Dovbik*	**24**	*Kane*	**36**	*Martinez*	**24**	*Mbappe*	**27**
Palmer	**22**	*Sørloth*	**23**	*Guirassy*	**28**	*Vlahovic*	**16**	*Lacazette*	**19**
Isac	**21**	*Bellingham*	**19**	*Openda*	**24**	*Osimen*	**15**	*David*	**19**
Solanke	**19**	Budimir	**17**	*Undav*	**18**	*Giroud*	**15**	*Aubameyang*	**17**
Watkins	**19**	*El-nesiri*	**15**	*Baier*	**16**	*Guðmundsson*	**14**	*Ben Yadder*	**16**
Foden	**19**	*Griezmann*	**16**	*Kramaric*	**15**				

Results

Anthropometric and Demographic Profiles (Table 2):

- Age: Players ranged from 21 to 35 years, with an average age of 27.43 years.
- Height: The average height was 182.83 cm, with a range of 170-195 cm.
- Weight: The average weight was 76.97 kg, with a range of 65-94 kg.

Table 2. Variance analysis of age, height, and weight of Europa's top scorers

	n	X min	Xmax	R	`C	S	V	As	Ex
Age	30	21	35	14	27,43	4,01	14,60	0,417	-0,845
Height	30	170	195	25	182,83	7,22	3,95	-0,079	-1,200
Weight	30	65	94	29	76,97	7,22	9,38	0,902*	0,512

Figure 1 shows the height in centimeters of some of Europe's most prolific goal scorers. Phil Foden is the shortest at 171cm, Ben Yader is the tallest at 170cm and Erling Holland is the tallest at 195cm.

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Figure 1. The height of some of the players tested

Performance Metrics

- Goals: The average number of goals scored was 28.73, with 76% scored inside the penalty area (inside in PB), 15% following crosses, and 9% from outside the penalty area (outside PB) (Table 3).
- It is interesting to note that 76% of goals were scored from inside the penalty area, 15% from crossing, and only 9% from outside the penalty area.

Table 3. Variance analysis of scored goals

	n	X min	Xmax	R	`C	S	V	As	Ex
Goals	30	18	53	35	28,73	8,84	30,76	1,410 *	1,917 *
Inside in PB	30	13	38	25	21,87	6,04	27,62	1,095*	0,867
Outside PB	30	0	8	8	2,50	1,94	77,73	1,133*	1,354
After crossing	30	0	10	10	4,23	2,27	53,61	0,259	0,58

Table 4 shows the results for assists, shots and shot accuracy (%) for the top scorers. It is worth noting that they average X = 4.73 assists per season. As far as shots are concerned, we can see that a goalscorer takes an average of X=135.67 shots on goal per season, and there is data to support our practical interest in the 54 shots on goal that a player takes at the top of the scorers' list. The highest value of shots on goal for the 2023/2024 season is Xmax = 259.

Shooting accuracy is an essential metric to determine the quality of strikers. The average value of the analysed players is X = 48.27, which proves that every second shot is on target. The most accurate striker in terms of shots on goal has a coefficient of Xmax = 68.5, while the least accurate has a coefficient of Xmin = 33.3.

Table 4. Analysis of Variation of Assists, Shots, and Shot Accuracy (%)

	n	X min	Xmax	R	`C	S	V	As	Ex
Assist	30	1	10	9	4,73	2,79	58,96	0,284	-1,199
Shoots	30	54	259	205	135,67	43,37	31,97	0,553	0,923
Accurate shoots %	30	33,3	68,5	35,2	48,27	6,81	14,12	0,480	2,063 *

Correlation Findings

After the correlation analysis, we found the following dependencies for the goalkeeper's play in the 2023/2024 season. A strong correlation between assists received and team-mates' shot assists. A moderate correlation between touches in the penalty area per 90 minutes and team-mates' shot assists per 90 minutes, as well as offensive duels with the same indicator. The other indicators have a weak correlation and are not the subject of our study (Table 5).

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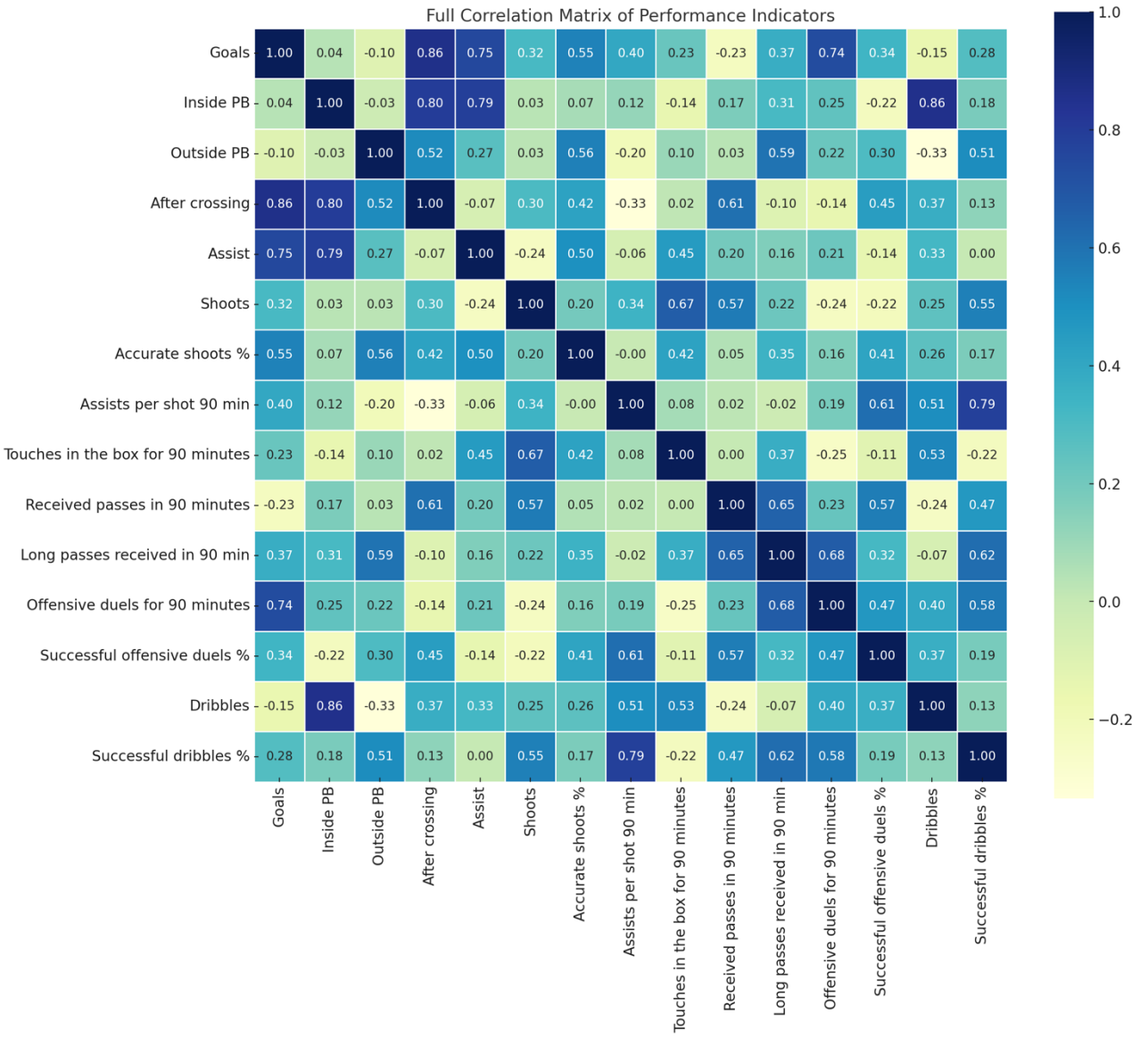

Figure 2. Correlation analysis of all actions

Figure 2 shows the correlations between all the scoring indicators examined for the 2023/2024 season in the top 5 European leagues. There is a strong correlation between the number of shots and the number of goals scored. The coefficient of assists per shot and touches in the penalty area is 0.772**. There is also a strong correlation between successful dribbles and tackles won, which is logical given the actions of players with the ball at their feet.

There is a moderate correlation between many metrics. The more shots you take, the more goals you score both inside and outside the penalty area. The correlation coefficients for these two metrics are .582** and .509**.

Players who receive the most passes and dribble the most per 90 minutes also shoot the most (.475**; .474**).

There is also a moderate correlation between successful tackles and dribbles and shots on goal (.433* and .485**). Dribbling is also correlated with touches in the penalty area, with a coefficient of .558**.

Discussions

The data highlights the importance of efficiency and adaptability in scoring. While physical attributes such as height and weight vary, technical skills, tactical awareness, and offensive positioning significantly influence goal-scoring success. Players such as Erling Haaland and Kylian Mbappé demonstrated exceptional consistency, combining physicality with tactical intelligence.

The correlation between touches in the penalty area and goals scored suggests that positioning and off-the-ball movement are crucial for scoring opportunities. Similarly, the relationship between assists and dribbles emphasizes the dual role of top scorers as creators and finishers. A similar emphasis on movement and spatial utilization was found in

Bulgarian Second League players, where total distance covered and high-intensity efforts correlated with attacking effectiveness (Gutev, Dimova & Ivanov., 2021). Similar trends are observed in UEFA's technical reports, where top scorers are frequently involved in high-intensity movements and quick finishing actions inside the penalty area (UEFA, 2023).

Taking all the indicators into account, we were able to create a profile of the striker for the 2023/2024 season (Figure 3). This gives us an idea of what we should be aiming for when training attacking players in modern football. Our findings align with research showing that 80% of goals in elite leagues originate from possessions lasting ≤10 seconds (Lago-Ballesteros et al., 2012).

Figure 3. Profile of goal scorer for 2023/2024

The average height of U-17 elite football players was reported to be 175.2 cm, with a standard deviation of 6.8 cm, while the average body mass was 63.4 kg. The BMI values reflected a generally normal weight status, making these parameters useful for monitoring physical development in youth players (Dimitrov et al., 2019).

Conclusions

Based on the literature and a detailed examination of the data analyzed for the indicators studied, we can draw the following conclusions:

- The average height of goalscorers is about 183 cm the average weight is about 77 kg, and the average age is almost 28 years;
- The 76% of goals from inside the penalty area suggest that training should prioritize quick decision-making in tight spaces, simulating high-pressure scenarios (e.g., small-sided games with constrained time);
- Every second shot taken by the players studied was on target (around 49%);
- Goal scorers are involved in building attacks, receiving the ball an average of 18 times and very rarely making long passes, an average of 2 times per game;
- When dribbling, they manage to beat an opponent 50% of the time and win tackles 35% of the time;
- Logically, the more shots they take on goal, the more goals the top scorers will score;
- To create more opportunities for their team-mates, top scorers need to spend more time with the ball in the penalty area;
- Most assists by top scorers come after a successful dribble.

This study provides a comprehensive analysis of the technical and tactical profiles of Europe's top scorers in the 2023/2024 season. By identifying key performance indicators and their interrelationships, the findings offer valuable insights for coaches, analysts, and players aiming to enhance scoring efficiency. Future research should explore longitudinal trends and the impact of tactical systems on individual performance.

Practical recommendations

In the light of these conclusions, we would like to make the following recommendations:

- From a selection point of view, height and weight should not be a major factor in selecting a goalscorer.
-To enhance the qualities of an effective goal scorer, it is essential to design training scenarios that replicate in-game situations within the penalty area—specifically incorporating crossing actions, first-touch finishing, and rapid decision-making following short passes.
- The all-round development of the goalkeeper is fundamental, and he should be involved in building attacks in training.
- It is not advisable to play long passes for finishing attacks.
- Improving ball-handling skills, tackling, and winning tackles in 1v1 situations will increase shooting success rates and create goal-scoring situations for teammates and assist counts.

- Coaches can use GPS tracking to monitor strikers' penalty area entries and design drills that replicate game-like crosses (e.g., 3v2 scenarios with timed deliveries).

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