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The Role of Throw-ins in the UEFA Champions League: A Tactical Analysis

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ABSTRACT

Background: This study investigates the tactical role of throw-ins during the 2022–2023 UEFA Champions League season, focusing on their impact on attacking productivity across multiple parameters such as field zone, direction, length, and body targeting method.

Method: A total of 2,855 throw-ins were analysed using logistic regression to assess their effectiveness based on variables like throw-in location (zone), direction, and the body height they targeted.

Results: Short, upward-directed, and backward-passing throw-ins in the final third significantly increased the likelihood of a positive outcome (e.g. shot, corner, goal kick) ($p < 0.05$). Throw-ins targeting above the waist were 3.51 times, and those in the final third 1.93 times, more likely to yield positive results. Advancing teams had a higher rate of successful throw-ins compared to eliminated teams.

Conclusion: Throw-ins function as strategic micro-tactical tools rather than simple restarts, contributing to possession, attack initiation, and positional advantage. Their effective use appears to correlate with team success, addressing a key gap in the literature.

Keywords: soccer, tactic, match analysis, set pieces

1. INTRODUCTION

Football has undergone a significant evolution over the years, not only in terms of physical performance but also in tactical flexibility, in-game variations, and micro-strategic implementations. In today's game, decisive factors extend beyond players' quality and ball possession rates, encompassing set-piece effectiveness, transition play, and success in moments when the game is restarted. In this context, throw-ins represent a strategic element, often overlooked, yet capable of decisively influencing the course of play when used effectively (Lees et al., 2019; Sunjic et al., 2025).

In modern football, throw-ins are not merely a method of reintroducing the ball but serve as tools to break down defensive blocks and establish positional dominance (Calabuig et al., 2024; Stone et al., 2025). Studies have demonstrated the effectiveness of throw-ins—especially in the attacking third—in accelerating gameplay, disrupting defensive organisation, and establishing positional advantage (Zhao & Zhang, 2021; Plakias et al., 2024). Practical applications by experts such as Thomas Grønnemark further affirm this perspective. Elite clubs like Liverpool FC treat throw-ins as structured set-pieces and incorporate them into specialised training programmes (Tojo et al., 2023).

Empirical analyses in the literature have emphasised multiple dimensions of throw-ins, particularly the zone of execution, the throw's length (short, medium, long), and player positioning. A comprehensive study by Stone et al. (2025), involving 2,658 throw-ins from Europe's top five leagues, highlighted that short throw-ins in the attacking third are more likely to lead to rapid offensive transitions. The Danish national team, for instance, effectively

utilised systematic throw-in strategies during the 2021 European Championship. Similarly, the 2018 FIFA World Cup saw 12% of attacking sequences initiated by throw-ins result in goals, underscoring their direct contribution to scoring (Lago-Peñas et al., 2022). These findings provide valuable tactical insights, particularly for teams employing high pressing and positional play.

Zhao and Zhang (2021) argue that stoppages in play—including throw-ins, corners, and fouls—constitute critical moments influencing tactical diversity. They identify a positive correlation between efficient use of these restarts and the generation of scoring opportunities. Echoing this view, Calabuig et al. (2024) modelled team defensive structures during throw-ins and analysed these sequences using metrics such as "pressure intensity". In addition, Sunjic et al. (2025) explored the relationship between throw-ins and "second ball" strategies, asserting that throw-ins are instrumental not only at the moment of initial contact but also in determining control over the second ball—particularly important for aerially dominant teams. In this sense, throw-ins function as an integral link in dynamic attacking chains.

The contribution of throw-ins to offensive efficiency manifests not only in the opponent's half but also during transitions from defence to attack. Short and rapid throw-ins play a key role in maintaining possession and increasing tempo (Hughes & Bartlett, 2022). Conversely, long throw-ins act similarly to set-pieces by initiating physically contested sequences (Casal et al., 2023). In high-level competitions such as the UEFA Champions League, where tempo, pressing intensity, and technical execution are paramount, throw-ins become even more impactful. As a tournament featuring the world's top players and coaches, the Champions League demonstrates how micro-tactical details can yield significant competitive advantages. Hence, timing, coordination, and variation in throw-in execution are essential for elite performance (Sarmento et al., 2014; O'Donoghue & Beckley, 2023).

Despite the increasing attention, studies that systematically compare throw-in outcomes based on field zones—particularly within the UEFA Champions League—remain limited. Effects on in-game performance metrics such as ball possession duration, attack initiation density, passing chains, and expected goals (xG) are still underexplored. This study aims to address this research gap by examining the tactical impact of throw-ins in the Champions League with a focus on field zones (defensive, middle, attacking) and throw-in length (short, medium, long), ultimately aiming to propose refined strategic recommendations for this critical yet under-studied phase of play.

2. METHODS

Sample

The sample of this study consists of 32 teams that competed in the UEFA Champions League during the 2022–23 season. A total of 96 group stage matches played by these teams were included in the study. A total of 2,855 throw-ins were analysed. The following throw-ins were excluded from the study:

- The match ended or the half-time break occurred immediately after the throw-in.
- A foul occurred right after the throw-in, causing the game to stop.
- The ball was thrown directly out of bounds without being touched by any player.
- The ball was deliberately thrown to the opponent in accordance with fair play.
- The camera did not capture the throw-in position at the moment of execution.
- The ball hit the referee immediately after the throw-in.

The ethical approval for this study was obtained from the Ethics Committee of a national university (no.2024/06).

Procedure

The data for the study were collected through notational analysis. Match analysis was carried out using the Mathball Posiscope software, a tactical analysis tool developed to evaluate positional and event-based data in football (Ağyol, 2024). The software allows analysts to code actions such as passes, throw-ins, and shots based on field zones, direction, and outcome, providing structured and customisable outputs for performance analysis. The footage of the 96 matches included in the study was obtained from the Wyscout platform (https://wyscout.hudl.com). The analysis criteria of the study were determined by three coaches holding a UEFA A coaching license and the matches were analysed based on these criteria (Stone et al., 2021). The analysis criteria are shown in Figure 1 and Table 1.

The independent variables were defined as the zone from which the throw-in was taken, the angle of the throw-in, and the throw-in length (Figure 1). Depending on these independent

variables, the dependent variables were identified as the success of the throw-in, the condition of the first player to contact the ball after the throw-in (stationary or moving), and the targeted body area; lower (LE) and upper (UE) extremity. The outcomes of the attacks following positive throw-ins were recorded as shot, goal kick, corner, penalty, foul, or goal. Based on these criteria, such attacks were categorised as positive attacks. Attacks resulting in goals were additionally analysed. The teams' success levels were categorised as follows: those that did not advance from the group stage (last 32), those that advanced from the group stage (last 16), quarter-finalists, semi-finalists, finalists, and the champion team(s).

Figure 1. **Classification of independent variables**

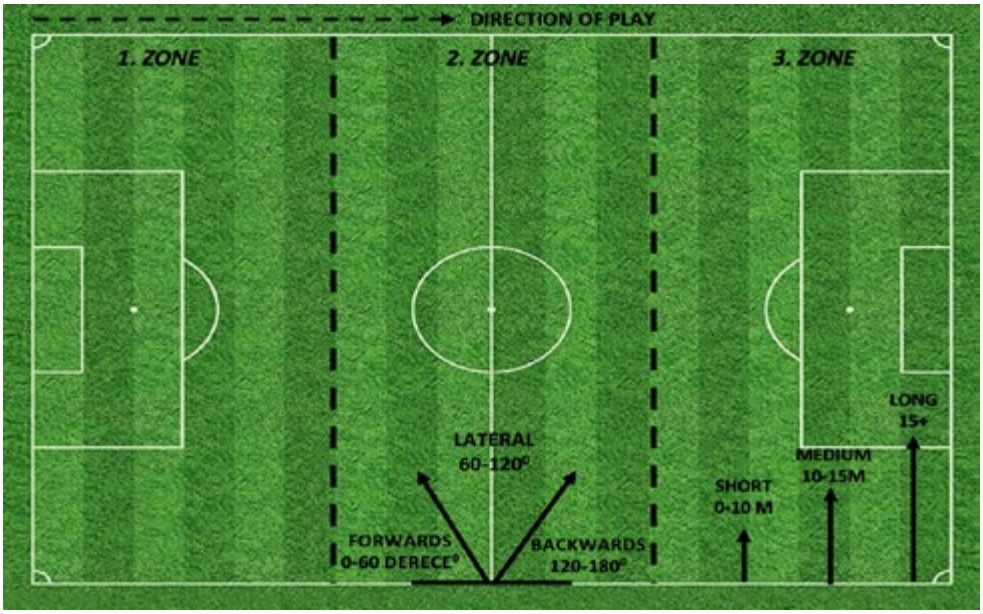

Table 1. **Definition and classification of dependent variables**

Category	Definition
Throw-in success	A throw-in is considered positive if, following a successful first contact, two successful passes are made.
Condition of the first player to contact the ball	**Moving:** The player who first touches the ball receives and controls it while moving to escape the opponent. **Stationary:** The player who first touches the ball receives and controls it in a stationary, fixed position.
Targeted body area	**Upper extremity:** Control of a throw-in directed above the waist. **Lower extremity:** Control of a throw-in directed below the waist.
Outcome of attack	An attack following a positive throw-in is considered positive if it results in any of the following after a shot on goal: - On-target shot - Goal kick or corner kick - Penalty - Goal - Or a foul won in the final third.

Data and statistical analysis

For the statistical analysis of the research data, IBM SPSS 23 (Statistical Package for the Social Sciences) software and Microsoft Excel 2010 were used. To test whether the data met the assumption of normal distribution, the Kolmogorov–Smirnov test was applied. The Chi-Square Test of Independence was used to assess the independence of categorical variables. The Spearman Correlation Coefficient was used to evaluate the relationships between qualitative variables. Logistic Regression Analysis was employed to examine the relationships between dependent and independent variables.

3. RESULTS

The findings indicate that throw-in outcomes significantly vary according to the field zone from which they are taken. Throw-ins from Zone 3 (attacking third) produced more positive outcomes compared to those from Zone 1 (defensive third) ($p < 0.05$). The correlation between zone and outcome, though weak ($r = 0.06$), was statistically significant. Similarly, throw-in direction was associated with outcome ($p < 0.05$), with forward-directed throws resulting in significantly more negative outcomes than lateral or backward throws ($r = 0.106$).

Table 2. **Comparison of throw-in variables by throw-in outcomes**

Outcome of the throw-in										
Variables	**Group**	**Positive**		**Negative**		**Total**		**r**	**Chi Square**	**p**
		n	**%**	**n**	**%**	**n**	**%**			
Throw-in zone	First	438[a]	64.79	238[a]	35.21	676	100.0	0.06	9.441	**.009**
	Second	594[a, b]	59.10	411[a, b]	40.90	1,005	100.0			
	Third	522[b]	57.36	388[b]	42.64	910	100.0			
	Total	1,554	59.98	1,037	40.02	2,591	100.0			
Throw-in direction	Forward	558[a]	67.39	270[a]	32.61	828	100.0	0.106	29.185	**<.001**
	Lateral	492[b]	57.88	358[b]	42.12	850	100.0			
	Backward	504[b]	55.20	409[b]	44.80	913	100.0			
	Total	1,554	60.00	1,037	40.00	2,591	100.0			
Throw-in length	Short	623	58.17	448	41.83	1,071	100.0	–0,14	5.51	0.06
	Medium	449	63.60	257	36.40	706	100.0			
	Long	482	59.21	332	40.79	814	100.0			
	Total	1,554	60.0	1,037	40.0	2,591	100.0			
Movement status	Stationary	0.06	60.45	479	39.55	1,211	100.0	0.09	0.208	.648
	Moving	822	59.57	558	40.43	1,380	100.0			
	Total	1,554	60.0	1,037	40.0	2,591	100.0			
Targeted body area	LE	414	70.89	170	29.11	584	100.0	0.12	37.726	**<.001**
	UE	1,137	56.74	867	43.26	2,004	100.0			
	Total	1,551	59.9	1,037	40.1	2,588	2,588			

[a, b]: there is no significant difference between groups sharing the same letter; r: Spearman Correlation; p: tested at 0.05 significance level; LE: lower extremity; UE: upper extremity.

Throw-in length (short, medium, long) and the player's movement state (stationary or moving) showed no statistically significant relationship with outcomes ($p > 0.05$). However, the position of the throw relative to the targeted body area showed statistical significance: throws directed at upper extremity were more likely to result in positive outcomes than those directed at lower extremity ($p = 0.01$), with a weak but meaningful correlation ($r = 0.12$).

Table 3. **Comparison of throw-in variables by throw-in zones**

Outcome of throw-in											
Variables	**Zone**	**Group**	**Positive**		**Negative**		**Total**		**r**	**Chi Square**	**p**
			n	**%**	**n**	**%**	**n**	**%**			
Throw-in zone	First	Forward	230[a]	73.02	85[a]	26.98	315	100.0	0.166	18.957	**<.001**
		Lateral	123[b]	60.29	81[b]	39.71	204	100.0			
		Backward	85[b]	54.14	72[b]	45.86	157	100.0			
	Second	Forward	198[a]	63.26	115[a]	36.74	313	100.0	0.03	4.495	0.106
		Lateral	152[a]	54.68	126[a]	45.32	278	100.0			
		Backward	244[a]	58.94	170[a]	41.06	414	100.0			
	Third	Forward	130[a]	65.00	70[a]	35.00	200	100.0	0.107	10.52	**0.01**
		Lateral	217[a, b]	58.97	151[a, b]	41.03	368	100.0			
		Backward	175[b]	51.17	167[b]	48.83	342	100.0			
Throw-in length	First	Short	180	62.28	109	37.72	289	100.0	–0.06	2.866	0.238
		Medium	109	63.37	63	36.63	172	100.0			
		Long	149	69.30	66	30.70	215	100.0			
	Second	Short	206	57.87	150	42.13	356	100.0	0.07	2.75	0.253
		Medium	204	62.77	121	37.23	325	100.0			
		Long	184	56.79	140	43.21	324	100.0			
	Third	Short	237[a]	55.63	189[a]	44.37	426	100.0	–0.02	6.737	**0.03**
		Medium	136[b]	65.07	73[b]	34.93	209	100.0			
		Long	149[a]	54.18	126[a]	45.82	275	100.0			
Movement status	First	Stationary	215	66.36	109	33.64	324	100.0	0.31	0.668	0.231
		Moving	223	63.35	129	36.65	352	100.0			
	Second	Stationary	295	58.30	211	41.70	506	100.0	–0.16	0.273	0.602
		Moving	299	59.92	200	40.08	499	100.0			
	Third	Stationary	222	58.27	159	41.73	381	100.0	0.16	0.22	0.639
		Moving	300	56.71	229	43.29	529	100.0			
Targeted body area	First	LE	157	75.85	50	24.15	207	100.0	0.155	16.128	**<.001**
		UE	280	59.83	188	40.17	468	100.0			
	Second	LE	119	66.85	59	33.15	178	100.0	0.07	5.487	**0.02**
		UE	473	57.33	352	42.67	825	100.0			
	Third	LE	138	69.35	61	30.65	199	100.0	0.128	14.956	**<.001**
		UE	384	54.01	327	45.99	711	100.0			

[a, b]: there is no significant difference between groups sharing the same letter; r: Spearman Correlation; p: tested at 0.05 significance level; LE: lower extremity; UE: upper extremity.

Further zone-based comparisons revealed that throw-in outcomes in Zone 3 were significantly related to throw-in length ($p = 0.03$), though the correlation was weak and negative ($r = –0.02$). In Zones 1 and 2, throw-in outcomes were independent of throw-in length ($p > 0.05$). Additionally, the effectiveness of throws varied by targeted body area across zones: LE throws were more effective in Zone 1 ($p = 0.01$), whereas UE throws were more effective in Zones 2 and 3 ($p = 0.02$ for both).

Group-stage success was also found to be associated with throw-in performance. Teams that progressed to the knockout stage (Last 16) had significantly more positive throw-in outcomes than those eliminated (Last 32) ($p = 0.04$). However, the team that reached the final had more negative outcomes compared to other classifications. According to the binary classification of team success, throw-in outcome was not independent of success status ($p = 0.00$). According to the Chi-Square Test results ($p = 0.00$), a statistically significant association was found between the outcome of throw-ins and team success. This finding suggests that more successful teams tend to execute throw-ins more effectively, resulting in advantageous outcomes such as shots, corners, or continued possession. Therefore, throw-in performance can be considered one of the micro-tactical factors contributing to overall team success in elite-level football.

Table 4. **Comparison of throw-in outcomes by team success**

Outcome of throw-in										
Variable	**Group**	**Negative**		**Positive**		**Total**		**r**	**Chi Square**	**p**
		n	**%**	**n**	**%**	**n**	**%**			
Success	Last 32	794	62.82	470	37.18	1,264	100.0	0.056	8.29	**.004**
	Last 16	760	57.27	567	42.73	1,327	100.0			
	Total	1,554	59.98	1,037	40.02	2,591	100.0			
Success 2	Last 32	794[a, b]	62.82	470[a, b]	37.18	1,264	100.0	0.256	181.219	**<.001**
	Last 16	443[b]	66.42	224[b]	33.58	667	100.0			
	QF	176[a]	56.23	137[a]	43.77	313	100.0			
	SF	59[c]	28.64	147[c]	71.36	206	100.0			
	Final	70[d]	92.11	6[d]	7.89	76	100.0			
	Champion	12[c]	18.46	53[c]	81.54	65	100.0			
	Total	1,554	59.98	1,037	40.02	2,591	100.0			

[a, b]: groups sharing the same letter (a, b) do not significantly differ; p: tested at 0.05 significance level; QF: quarterfinal; SF: semifinal.

Logistic regression analysis identified throw-in zone and targeted body area as significant predictors of throw-in success. Compared to Zone 1, the odds of a positive outcome were 1.31 times higher for throw-ins from Zone 2 and 1.93 times higher for those from Zone 3. UE throws were 3.51 times more likely to result in a positive attacking outcome than LE throws. While throw-in direction and movement state were included in the multivariate model, they did not show significance ($p > 0.05$).

Table 5. **Logistic regression analysis results**

Dependent variable: Outcome of attack		**Univariate analysis**					**Multivariate analysis**				
Independent variable		**B**	**S.Dev**	**Wald**	**p**	**Ex-p(B)**	**B**	**S.Dev**	**Wald**	**p**	**Ex-p(B)**
Throw-in zone	First zone										
	Second zone	–0.71	0.11	40.88	**0.00**	0.49	0.27	0.12	5.51	**0.02**	1.31
	Third zone	–0.34	0.10	13.04	**0.00**	0.71	0.66	0.12	32.09	**0.00**	1.93
	Constant	–0.70	0.04	260.13	**0.00**	0.50					
Throw-in direction	Forward										
	Lateral	0.34	0.11	10.20	**0.00**	1.40	–0.05	0.11	0.20	0.66	0.95
	Backward	0.35	0.10	11.60	**0.00**	1.42	–0.07	0.12	0.35	0.55	0.93
	Constant	–0.66	0.04	250.69	**0.00**	0.51					
Throw-in length	10 m*										
	15 m	–0.18	0.10	3.05	0.08	0.83					
	20 m	–0.06	0.10	0.32	0.57	0.95					
	Constant	–0.67	0.04	247.02	0.00	0.51					
Movement status	Stationary*										
	Moving	0.33	0.08	15.23	**0.00**	1.39	0.18	0.09	3.62	0.06	1.19
	Constant	–0.67	0.04	252.69	**0.00**	0.51					
Targeted body area	LE*										
	UE	1.28	0.12	106.85	**0.00**	3.59	1.26	0.13	90.80	**0.00**	3.51
	Constant	–1.06	0.06	292.39	**0.00**	0.35	–1.09	0.06	296.06	**0.00**	0.33

**: reference group; p: tested at 0.05 significance level; Nagelkerke R2: 0.089; LE: lower extremity; UE: upper extremity; S.Dev: standard deviation.*

The overall model's explanatory power was modest. According to the Nagelkerke R^2 test, 8.9% of the variation in attack outcome was explained by the throw-in variables included in the model. This suggests that the remaining 91.1% of variance may be attributed to other tactical, technical, or contextual factors.

Detailed numerical results and further breakdowns of these findings can be observed in the corresponding Tables and Figures presented in the results section.

4. DISCUSSION

The aim of this study was to investigate the tactical implications of throw-ins in the UEFA Champions League in relation to field zones (first, second, third) and throw-in length (short, medium, long). As highlighted by Barrera et al. (2025), throw-ins remain underrepresented in football literature despite their significant tactical potential. This research addresses a notable gap by reconceptualising throw-ins as strategic set-pieces and

analysing their contribution to offensive organisation. Stone et al. (2025) similarly found that short and backward throw-ins, especially in the attacking third, are more effective in destabilising the opponent's defence and generating positional advantage. Our findings confirm this within the context of the Champions League, revealing that short, LE, and backward throw-ins in the attacking third significantly enhance ball retention and offensive output.

Our data align with Casal et al. (2023), who demonstrated that throw-in direction and pressure intensity shape pass outcomes, with forward throw-ins under pressure more likely to result in turnovers. This supports our observation that forward throws, even in advanced zones, often lead to negative outcomes. Plakias et al. (2024) further noted that possession-based teams prefer short and controlled throw-ins, while direct-play teams lean toward longer throws. In parallel, we found that teams progressing to later stages of the tournament employed short, upward, and backward-directed throw-ins more frequently. These results are reinforced by O'Donoghue & Beckley (2023), who emphasised the organisational value of quickly executed throw-ins in sustaining possession and accelerating attack formation.

Additional insight is provided by Deuker et al. (2023), who found that tight spaces reduce players' decision-making time, increasing reliance on backward passes—a trend supported by our data showing higher success rates for backward throws in the final third. This is consistent with the findings by Epasinghege Dona & Swartz (2024), who showed that backward throw-ins can generate shot opportunities. Although Leontijević et al. (2021) reported that only 24% of goals in the Champions League stem from set-pieces and that throw-ins had the least contribution, our findings suggest that throw-ins—while not directly leading to goals—serve as valuable initiators of positive offensive sequences, resulting in outcomes such as shots, corners, and fouls. This underlines the need for coaches to develop more nuanced throw-in strategies to boost attacking productivity.

The relationship between team success and throw-in efficiency is further evidenced by Yi et al. (2019), who emphasised the importance of consistency in set-piece execution. In our study, teams reaching the quarterfinals and semifinals performed more positive throw-ins. Moreover, throw-in success was directly associated with group stage advancement. This reinforces the link between tactical discipline, set-piece efficiency, and overall tournament success. Supporting Nieto (2023), our logistic regression results confirmed that throw-ins from Zone 3 were 1.93 times more likely to result in positive outcomes than those from Zone 1, and throws aimed at UE were 3.51 times more effective than those below. Although the model's explanatory power was modest (Nagelkerke $R^2 = 0.089$), the identified patterns validate the importance of zone and body-targeting variables in throw-in effectiveness.

Finally, the study emphasises the relevance of body control and initial player positioning post-throw. Consistent with Pedersen (2016), we observed that players receiving the ball in motion produced more positive outcomes than stationary recipients. Hassan et al. (2024) also identified that short, upward-directed throws are biomechanically more precise and controllable. Furthermore, our findings echo Eusebio et al. (2025), who identified the "throw-in → two passes → switch → shot" pattern as the most effective sequence in the attacking third. While long throw-ins toward scoring areas occasionally yield success, both our data and prior literature suggest lower efficiency rates. Importantly, the timing and game context (e.g. scoreline, phase of play) may modulate throw-in effectiveness, as opponent formation and defensive structure can shape the outcome. Hence, future research should examine throw-ins across different temporal and tactical contexts and include broader datasets from multiple elite competitions.

5. CONCLUSIONS

This study analysed 2,855 throw-ins from the 2022–2023 UEFA Champions League season using tactical parameters such as field zone, direction, length, body targeting, and outcome. The findings highlight the micro-strategic importance of throw-ins in elite football. In particular, short, upward-directed, and backward throw-ins in the attacking third were significantly more likely to result in positive offensive sequences. These types of throw-ins were found to increase possession duration, facilitate passing chains, and initiate goal-directed attacks.

Logistic regression analysis demonstrated that throw-ins targeting above the waist were 3.51 times more likely to yield positive outcomes compared to those targeting below. Moreover, throw-ins taken from the attacking third were approximately 1.93 times more effective than those from the defensive third. While backward throw-ins were not

independently significant in regression models, the overall analysis, supported by existing literature, suggests that such throw-ins are beneficial in retaining possession under pressure.

Another notable finding is the direct association between throw-in effectiveness and team success. Teams that progressed beyond the group stage, especially those reaching the semifinals, demonstrated significantly higher rates of positive throw-ins. This reinforces the notion that throw-ins should not be regarded solely as game restarts but as integral tactical tools for maintaining positional advantage and offensive continuity.

Based on the study's findings, the following tactical recommendations are proposed for practitioners aiming to optimise throw-in effectiveness:

- **Develop specialised set-piece routines** focused on short and upward-directed throw-ins in the attacking third to increase offensive output and positional advantage.
- **Design positional structures** that facilitate players' ability to perform environmental scanning before receiving the ball, enhancing their decision-making and action readiness.
- **Strategically vary throw-in execution** based on different match scenarios—particularly during draw situations or when trailing—by prioritising quick, short, and backward-oriented sequences to maintain possession and build attacks.

Compared to the existing literature, this study offers a distinctive contribution by being among the first systematic analyses of throw-ins in the UEFA Champions League. Its incorporation of multiple tactical variables—field zone, direction, length, and body targeting—enhances its methodological depth. Additionally, the emphasis on the first 10 seconds following a successful throw-in provides a valuable micro-tactical perspective. Future research could expand this framework across different tournaments, age groups, or within women's football to further enrich the academic discourse.

REFERENCES

Ağyol, M. A. A. (2024). The importance of goals in soccer: A comparison of goals scored in the last five World Cups in terms of different parameters. *International Journal of Sports Engineering and Biotechnology*, *2*(1), 8–16. https://doi.org/10.5281/zenodo.12600272

Anwar, M. Q. H. K., Jamaludin, M., Razali, M. R., Talip, N. K. A., & Ismail, Z. (2022). Offensive and defensive team performances: Relation to successful participation in UEFA Champions League 20/21. *Journal of Physical Education and Sport*, *22*(11), 2649–2654. https://www.efsupit.ro/images/stories/noiembrie2022/Art%20336.pdf

Barrera, J., Sarmento, H., Afonso, J., Gouveia, É. R., Ordoñez-Saavedra, N., & Field, A. (2025). Unlocking the power of set pieces in men's professional football – A scoping review. *Sports Medicine – International Open*. https://doi.org/10.1055/a-2563-0323

Calabuig, J. M., Catalán, C., García-Raffi, L. M., & González-Sala, F. (2024). A mathematical model to study defensive metrics in football. *Mathematics*, *12*(23), 3854. https://doi.org/10.3390/math12233854

Casal, C. A., Armatas, V., Losada, J. L., & Mitrotasios, M. (2023). Effects of tactical dimension and situational variables in throw-ins on the offensive performance in football. *PLoS ONE*, *18*(11), e0294317. https://doi.org/10.1371/journal.pone.0294317

Deuker, A., Memmert, D., & Scholz, B. (2023, May 23–26). *Analyzing the effect of reduced field sizes on tactical behaviour in football* [Conference proceeding]. World Congress of Performance Analysis of Sport, Groningen, the Netherlands.

Epasinghege Dona, N., & Swartz, T. B. (2024). Causal analysis of tactics in soccer: The case of throw-ins. *IMA Journal of Management Mathematics*. https://doi.org/10.1093/imaman/dpad022

Eusebio, P., Prieto-González, P., & Marcelino, R. (2025). Unlocking dynamics of goal-scoring: Direct vs. indirect transition goals across football leagues. *Biology of Sport*. https://www.termedia.pl/Journal/-78/pdf-54701-10

Hassan, M., Azzam, M., & Salem, W. (2024). Kinematic release indicators to four types of throw-ins for junior soccer players: A cross-sectional study. *International Journal of Human Sport and Exercise*. https://www.researchgate.net/publication/383559873

Hughes, M., & Bartlett, R. (2022). Throw-ins as a strategic element in possession play. *European Journal of Sport Science*, *12*(5), 315–328.

Lago-Peñas, C., Lago-Ballesteros, J., & Rey, E. (2022). Tactical analysis of set-pieces in elite football. *European Journal of Sport Science*, *12*(3), 195–203.

Lees, A., Nolan, L., & Lake, M. (2019). Biomechanical aspects of the football throw-in. *Journal of Sports Sciences*, *37*(4), 410–420.

Leontijević, B., Tomić, L. D., Šmrkić, M., Nikolić, D., & Janković, A. (2021). Analysis of attack tactics of football teams in the Champions League for the period from 2014 to 2019. *Physical Culture*, *74*(2), 165–172. http://www.fizickakultura.com/fk/7402en_b_leontijevic_210906.pdf

Nieto, S. (2023). *Identifying optimal throw-in strategy in football using logistic regression* [Master's thesis, Uppsala University]. *DiVA portal*. https://www.diva-portal.org/smash/get/diva2:1761883/FULLTEXT01.pdf

O'Donoghue, P., & Beckley, S. (2023). Possession tactics in the UEFA Women's EURO 2022. *International Journal of Performance Analysis in Sport*. https://doi.org/10.1080/24748668.2023.2206273

Pedersen, D. N. (2016). *World-class football players' visual exploratory behaviour: A close-up video analysis in UEFA Champions League matches* [Master's thesis]. Norwegian School of Sport Sciences. https://nih.brage.unit.no/nih-xmlui/handle/11250/2400395

Plakias, S., Tsatalas, T., Armatas, V., & Tsaopoulos, D. (2024). Tactical situations and playing styles as KPIs in soccer. *Journal of Functional Morphology and Kinesiology*, *9*(2), 88. https://doi.org/10.3390/jfmk9020088

Sarmento, H., Anguera, M. T., Pereira, A., Marques, A., Campaniço, J., & Leitão, J. (2014). Patterns of play in the counterattack of elite football teams – A Mixed method approach. *International Journal of Performance Analysis in Sport*, *14*(2), 411–427. https://doi.org/10.1080/24748668.2014.11868731

Stone, J. A., Kubayi, A., & Smith, A. (2025). Analysis of throw-ins strategy on performance metrics in five men's European football leagues. *International Journal of Performance Analysis in Sport*. https://doi.org/10.1080/24748668.2025.2481697

Stone, J. A., Smith, A., & Barry, A. (2021). The undervalued set piece: Analysis of soccer throw-ins during the English Premier League 2018–2019 season. *International Journal of Sports Science & Coaching*, *16*(3), 830–839. https://doi.org/10.1177/174795412199144

Sunjic, I., Pavlinovic, V., & Skomrlj, J. (2025). The undervalued set piece: Analysis of soccer throw-ins. *International Journal of Performance Analysis in Sport*. https://doi.org/10.1080/24748668.2025.2462399

Tojo, Ó., Spyrou, K., Teixeira, J., Pereira, P., & Brito, J. (2023). Effective playing time affects technical-tactical and physical parameters in football. *Frontiers in Sports and Active Living*, *5*, 1229595. https://doi.org/10.3389/fspor.2023.1229595

Yi, Q., Gómez, M. Á., Liu, H., & Sampaio, J. (2019). Variation of match statistics and football teams' match performance in the group stage of the UEFA Champions League from 2010 to 2017. *Kinesiology*, *51*(2), 170–181. https://doi.org/10.26582/k.51.2.4

Zhao, Y., & Zhang, H. (2021). Game interruptions across the Big-5 European football leagues: Tactical and contextual implications. *International Journal of Performance Analysis in Sport*, *21*(1), 85–101. https://doi.org/10.1080/24748668.2020.1865688

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