2024, Retos, 55, 922-930

Successful attack behaviours of the finalist teams of the UEFA Champions League 2020-2021: Analysis using Polar Coordinates

Comportamientos de ataque exitosos de los equipos finalistas de la UEFA Champions League 2020-2021: Análisis mediante Coordenadas Polares

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Abstract. Knowing which technical-tactical actions are most effective in football is essential to improve training processes and performance in competition. The aim of this study was to analyze the patterns of play linked to the finishing actions of the finalist football teams in the UEFA Champions League 2020-2021, Chelsea F.C. and Manchester CityF.C. For this purpose, game behaviors were recorded using Hoisan software from an observation tool consisting of 8 criteria and 59 categories. Subsequently, the recorded behaviors were analyzed using the polar coordinates technique. In the polar coordinates analysis, the passing action from the midfield position, the finishing action from the striker position, the unopposed header and the counterattack action were established as categories of interest (focal behaviors), that were related to other categories (conditional behaviors). The results showed that the behavior of the midfielder has an influence on the attacking actions for both teams, that in the flow of behaviors that determine the finishing actions the participation of different players is appreciated, and the decisive intervention of the striker role in the finishing plays.
Keywords: Observational Methodology; polar coordinates analysis; football; attack behaviors.

Resumen. Conocer qué acciones técnico-tácticas son más efectivas en el fútbol es fundamental para mejorar los procesos de entrenamiento y el rendimiento en competición. El objetivo de este estudio fue analizar los patrones de juego vinculados a las acciones finales de los equipos de fútbol finalistas de la UEFA Champions League 2020-2021, el Chelsea F.C. y Manchester City F.C. Para ello, se registraron comportamientos de juego utilizando el software Hoisan a partir de una herramienta de observación que consta de 8 criterios y 59 categorías. Posteriormente, los comportamientos registrados fueron analizados mediante la técnica de coordenadas polares. En el análisis de coordenadas polares, la acción de pase desde la posición de mediocampo, la acción de remate desde la posición de delantero, el cabezazo sin oposición y la acción de contraataque se establecieron como categorías de interés (comportamientos focales), que se relacionaban con otras categorías (comportamientos condicionales). Los resultados mostraron que el comportamiento del mediocampista influye en las acciones de ataque de ambos equipos, que en el flujo de comportamientos que determinan las acciones de finalización se aprecia la participación de diferentes jugadores y la intervención decisiva del rol de delantero en la finalización. obras de teatro.
Palabras clave: Metodología observacional: análisis de coordenadas polares; fútbol; juego ofensivo.

Fecha recepción: 20-02-24. Fecha de aceptación: 22-04-24
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Introduction

Collective sports are classified as collaborative-opposition modalities and are characterized by presenting game dynamics with high motor interaction and variability in the game actions (Gonçalves et al., 2017). Therefore, analyzing the specific game situations and understanding the effective ways of acting becomes highly relevant to the competition (Prudente et al., 2017; Sanfiz-Arias, and López-Alonso, 2024). The evaluation of performance in cooperative-opposition sports is an area of research that has undergone a significant evolution, specifically in football (Tassi et al., 2018). Moreover, in recent decades, the analysis and tactical knowledge of teams has improved, which has increased the demands in competition. This has required exploring and better understanding the demands required during matches to achieve optimal performance (Martínez-Sánchez et al., 2023; Sarmento et al., 2018).

The individual technical-tactical and collective tactical analysis in football requires identifying the actions and patterns of play that are developed, as well as their effectiveness (Mackenzie and Cushion, 2013). Scientific research has amply demonstrated the influence of the different patterns of play that can be developed by football teams (Lago-Peñas et al, 2010). For this, it is necessary to identify the behavioral flows that occur during matches, evaluating those that generate better results. To achieve this goal, observational methodology (OM) has been shown in recent decades as an optimal way for these issues (Maneiro and Amatria, 2018). In fact, it has proven to be an effective procedure to explore and determine the factors that determine sport performance (Guerra-Echavarría and Valencia-Sánchez, 2022; Ortega-Toro et al., 2019).

Observational Methodology (OM) can be defined as a scientific procedure that allows the study of perceptible behaviors in usual contexts (Anguera and Hernández-Mendo, 2015). For this purpose, ad hoc tools are built, to extract the necessary information. These tools are specific for each situation and require to be able to analyze the behavior of athletes in an exhaustive way and provide objective information (Anguera and Hernández-Mendo, 2014). In addition, the instruments developed to record observations must meet the relevant reliability and validity requirements, providing adequate data (Anguera and Hernández-Mendo, 2013).

Specifically in football, research has provided answers to various technical-tactical questions, facilitating the understanding of game dynamics and favoring the tactical preparation of the team (Tapia, 2010). Among the most relevant situations in football, the one that has attracted great

interest among researchers has been the finishing action, due to the impact that they can have on the outcome of matches (Sarmento et al., 2018). In this context, several factors have been analyzed, such as offensive transition zones, defensive play patterns, player behaviors in specific positions, or the effect of ball recovery in offensive transitions, among others (Amatria et al., 2019; Maneiro, and Amatria, 2018).

OM has two characteristic analysis techniques: Delay Sequential Analysis (and Markov chains) and Polar Coordinate Analysis (PC) (Garay Plaza and Hernández-Mendo and Morales-Sánchez, 2007). The latter is one of the most relevant techniques in the context of OM, and has its origin in the work of Sackett (1980), later optimized with genuine retrospectivity by Anguera (1997). This technique allows estimating the relationships between different target behaviors, known as focal behaviors, and the rest of the behaviors, known conditional behaviors.

Polar coordinate analyses have been widely used in recent years to analyze game behaviors in sports (e.g., Morillo-Baro et al., 2021, 2022; Vázquez-Diz et al., 2019). In football, this technique has been used to study the continuity in ball possession developed by teams in different interaction contexts (Castellano and Hernández Mendo, 2003); or to identify technical-tactical characteristics of players depending on their location on left or right wing (Amatria et al., 2019), explored finishing behaviors (Morillo-Baro et al., 2022) or the attacker and goalkeeper behaviors in penalty kick (Prieto-Lage et al., 2020).

Thus, with the purpose of improving the understanding of the game in football, the aim of this research was to analyze successful attack behaviours of the finalist teams of the Champions League football (2020-2021), using as focal behaviors the passing action from the midfield position, the finishing action from the striker position, the unopposed header and the counterattack action.

Material and Method

Design

The observational design used is located in quadrant IV (Anguera et al., 2011) and is defined as nomothetic, follow-up and multidimensional. It is considered nomothetic since several teams are observed; follow-up, since there is a temporal continuity of the different matches throughout the qualifying phases; and multidimensional, since there are several dimensions associated with the different criteria that make up the observational instrument.

Participants

The finishing actions of the two finalist teams of the men's football Champions League in the 2020/2021 season - Chelsea F.C. and Manchester City F.C. - have been recorded and analyzed.

A total of 134 offensive actions were recorded fromthirteen matches for each team (Round of 16, quarterfinals, semifinals and final match). The videos used were publicly available, so according to the Belmont Report[1] it is not necessary to obtain the informed consent of the participants. The authors of the observation tool used (Morillo-Baro et al., 2022), previously determined that the minimum number of observation sessions (complete matches) estimated to generalize accurately would be seven for each team (with a generalizability coefficient of 0.87).

Instruments

For the present investigation, the observation instrument created and validated by Morillo-Baro et al. (2022) was used, which is an ad hoc tool designed through the combination of field format and exhaustive and mutually exclusive category systems (E/ME). This observation instrument is composed of eight criteria and 59 categories (Table 1). The delimitation zones used for the criterion "Finishing area" are shown in Figure 1. The unit of observation was the sequence of the finishing situation, defined in this study from the moment the attacking player makes the last pass until the shot takes place.

Table 1.
Criteria, categories and coding of the observational tool.

Criteria	Codes	Categories
1. Last pass of	UPPO	Goalkeeper
	UPCE	Central
	UPLD	Right lateral
	UPLI	Left lateral
	UPPIV	Pivot

[1]Our work does not need to be submitted to the ethics committee for the following three reasons:

a. According to the Belmont Report (VVAA.1978a) and the competing standards (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979), because the videotapes that were analyzed for this study are in the public domain, it is not necessary to obtain informed consent from participants. The Belmont Report describes basic ethical principles and guidelines concerning ethical issues in human research. According to the guidelines, images of public behavior can be used for research without the informed consent of athletes

b. This study does not require review by a research ethics committee or written informed consent for the following reasons.

(b1) involves the observation of people in public places (stadium);
(b2) the individuals or groups being observed do not have a reasonable expectation of privacy;
(b3) does not involve any staged intervention by the researcher or direct interaction with individuals.

Table 1.
Criteria, categories and coding of the observational tool.

Criteria	Codes	Categories
	UPMED	Midfielder
	UPMEP	Half tip
	UPEXD	Right end
	UPEXI	Far left
	UPDE	Forward
	UPNO	No last pass
2. Finisher	FIPOR	Goalkeeper finisher
	FICE	Central finisher
	FILD	Finishing right back
	FILI	Left side finisher
	FIPIV	Pivot finisher
	FIMED	Finishing midfielder
	FIMEP	Half-tip finisher
	FIEXD	Right-hand end finisher
	FIEXI	Left end finisher
	FIDE	Forward finisher
3. Finisher area	ZF1	Inside the rival area
	ZF2	Between the rival area and the center of the field
	ZF3	Right side of the field
	ZF4	Left side of the field
	ZF5	Home field
4. Launch type	LPSIOP	Unopposed kicking
	LPCOP	Kicking with opposition
	LCSIOP	Uncontested header
	LCCOP	Header with opposition
	LTRON	Throwing with the upper part of the trunk
5. Result of the launch	GOL	Goal
	NGDE	Rejects on a defender
	NGPA	Rejects at the post
	NGFU	Exits outside
	NGPO	Goalkeeper save
	NGPE	Missed penalty
6. Match time	M0-15	From start to 15 minutes
	M16-30	Between minute 16 and 30
	M31-45	Between the 31st and 45th minute
	MAD1	Time added to the first half
	M46-60	Between the 46th and 60th minute
	M61-75	Between the 61st and 75th minute
	M76-90	Between the 76th and 90th minute
	MAD2	Second half added time
	PRG	Extension
	MPEN	Penalty shootout
7. Marker	EMP	Tie
	GA1	Winning by one goal
	GGA+2	Winning by 2 or more goals
	PI1	Losing by one goal
	PI+2	Losing by two or more goals
8. Tactics	TLIB	Free kick
	SADE	Corner
	CONT	Counterattack
	JELB	Elaborated game
	BLAR	Intentional long ball
	DESP	Clearance
	PEN	Penalty

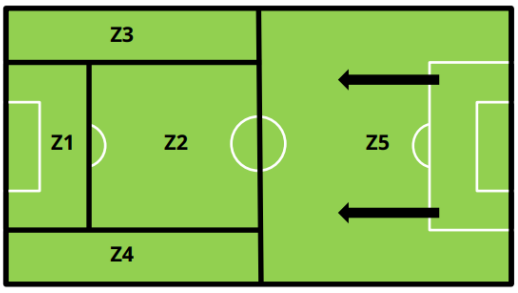

Figure 1. Analysis areas

Procedure

After collecting the videos, two observers were trained in order to become familiar with the observation tool and the protocol proposed by Morillo-Baro et al. (2022). Data quality and generalizability analyses were performed. Inter and intraobserver reliabilitywas estimated by calculating Cohen's and Pi's Kappa concordance indexes and Kendall's, Pearson's and Spearman's Tau-B correlation coefficients.

To explore the research objectives, the following focal behaviors were selected for polar coordinate analysis: (a) last pass from the midfield position (UPMEP); (b) forward finishing (FIDE); (c) unopposed header (LCSIOP); (d) counterattack (CONT).

Data analysis

To process the observed data, the Polar Coordinate Analysis technique was used. This technique makes relevant contributions to the whole of OM, such as: (1) the ability

to drastically reduce the data without loss of information; and, (2) the vector representation of the interrelationships established between the categories that constitute the proposed taxonomic system (Hernández-Mendo and Anguera, 1999). This technique is performed based on the z-values obtained in both a prospective (Sackett, 1980) and a retrospective (Anguera, 1997) sequential lag analysis. It is performed in the following seven phases (see formula 1 to 7).

Zsumprospective (X)= Sum of the adjusted residuals from lag 1 to 5.

$$Z_{sumx} = \frac{\sum z}{\sqrt{n}}$$

Zsumretrospective (Y)= Sum of the adjusted residuals from lag -1 to -5.

$$Z_{sumy} = \frac{\sum z}{\sqrt{n}}$$

Vector quadrant= Quadrant in which the mating category will be placed according to the positive or negative value of the Zsum of the X and the Y. The characterization of each quadrant is as follows (Hernández-Mendo and Anguera, 1999):

Quadrant I [+,+]: mutually excitatory focal and conditional behavior.

Quadrant II [-,+]: inhibitory focal behavior and excitatory conditional behavior.

Quadrant III [-,-]: mutually inhibitory focal behavior and conditional behavior.

Quadrant IV [+,-]: excitatory focal behavior and inhibitory conditional behavior.

Modulus or length of the radius = Square root of the sum of the square of the Zsum of the X and the square of the Zsum of the Y.

$$\text{Modulus} = \sqrt{Z_{sumx}^2 + Z_{sumy}^2}$$

Ratio = Zsum of the Y divided by radius lenght.

$$\text{Radius} = \frac{Z_{sumy}}{\text{Radius length}}$$

Initial angle: ϕ = Arcsine Y/Radius.

$$\phi = \frac{\text{Arcsine Y}}{\text{Radius}}$$

Transformed vector angle. According to the above and depending on whether Z_{sumx} and Z_{sumy} are positive or negative the following indications are established: (a) If the vector is located in quadrant I (+,+) the angles correspond to $0º < \phi < 90º$, then the angle will be = ϕ. (b) If the vector is located in quadrant II (-,+) the angles correspond to $90º < \phi < 180º$, then the angle will be = $180º - \phi$. (c) If the vector is located in quadrant III (-,-) the angles correspond to $180º < \phi < 270º$, then the angle will be = $180º + \phi$. (d) If the vector is located in quadrant IV (+,-) the angles correspond to $270º < \phi < 360º$, then the angle will be = $360º - \phi$.

It is important to note that the Z $parameter_{sum}$ has a distribution with $\dot{X}=0$ (mean equal to 0) and an $S_x = 1$ (standard deviation equal to 1). Next, after obtaining the values, the interrelational map of behaviors, or polar coordinates map, is constructed (Gorospe and Anguera, 2000).

The computer software Hoisan (Hernández-Mendo et al., 2012) was used to perform the observational record, estimate the Data Quality and perform the Polar Coordinates analysis. The generalizability analysis, complementary to the Data Quality analysis, was performed using the SAGT software (Hernández-Mendo et al., 2016). The plotting of polar coordinates was performed through the algorithm in R HOISAN_to_R_2022 (Rodríguez-Medina et al., 2019).

Results

Data Quality and Generalizability Analysis

The following correlation coefficients and concordance indexes were calculatedto determine intraobserver and interobserver reliability: Pearson, Spearman, Kendall Taub, Kappa Cohen and Phi. To determine these values, one match (Club Atlético de Madrid vs. Chelsea F.C.) was used, analyzing the first half and the second half separately. Theresults were satisfactory in all cases (0.90-0.99). Also, generalizability analyses were performed (Blanco-Villaseñor et al., 2014) using a two-facet design (categories and observers = C/O) to determine observer reliability and differentiating between the first and second part of the observed match.

The results of the intra and interobserver analysis in the first half of the match show that most of the variability is associated with the categories facet (54.05%), being 0 for the observers facet and 45.95% for the interaction of the categories/observers facets. In addition, the results show an index of 0.87, both for the relative G coefficient and for the absolute G coefficient. Likewise, the results obtained in the analysis of the second part show that, in this case, an even higher percentage of the variability is associated with the categories facet (interobserver= 97.42%; intraobserver= 99.99%), being 0 for the observers facet, as well as 2.57% (interobserver) and 0 (intraobserver) for the interaction of the categories/observers facets. In addition, values of 0.98 (interobserver) and 0.99 (intraobserver) are obtained for both the relative G coefficient and the absolute G coefficient.

Polar coordinates analysis

The following focal behaviors were selected for the polar coordinate analyses: (1) half forward as last passer (UPMEP), (2) forward finisher (FIDE), (3) unopposed header (LCSIOP), and (4) counterattack (CONT). These focal behaviors were related to the other conditional behaviors.

First, regarding the UPMEP. For Chelsea F.C., there were significant and mutually excitatory associations with FIMED (midfielder as finisher) and LCCOP (midfielder as finisher) in the first quadrant. Also, there were significant and mutually inhibitory associations with LCSIOP (unopposed header) and NGPA (stick shot) in the third quadrant. Likewise, it also had a significant relationship with M46-60 (match minutes between 46 and 60), GA1 (victory by one goal) and SADE (corner kick) in the second quadrant, as well as with EMP (tie), in the fourth quadrant (table 2, figure 2).

For Manchester City F.C., there were significant and mutually excitatory associations with FIDE (forward finisher) and LCSIOP (unopposed head shot), in the first quadrant. Also, there were significant and mutually inhibitory associations withPI1 behavior (losing by one goal) in the third quadrant. In addition, it also had a significant relationship with GGA+2 (winning by two goals or more) in the second quadrant, as well as with GOL (finishing with a goal) and EMP (tie result) in the fourth quadrant (table 2, figure 2).

Second, regarding the FIDE. For Chelsea F.C., there were significant and mutually excitatory associations with ZF2 (finishing zone number 2) and EMP (result in a draw) in the first quadrant. Also, there were significant and mutually inhibitory associations withZF1 (end zone number one), LCSIOP (unopposed header) and GA1 (score with winning result by one goal) appear in the third quadrant (table 2, figure 2).

For Manchester City F.C., there were significant and mutually excitatory associations withUPMEP (half forward as the last passer), ZF3 (end zone number three), M76-90 (minute of the match between 76 and 90) and MAD2 (added time of the second half) in the first quadrant. Also, there were significant and mutually inhibitory associations withLPSIOP behavior (finishing with the foot without opposition), in the third quadrant. In addition, significant relationships stand out with LPCOP (opposing foot shot), LCSIOP (opposing head shot), M0-15 (minutes of the match between kick-off and 15) and GA1 (winning by one goal) in the second quadrant, as well as with GOAL (goal completion) and EMP (draw) in the fourth quadrant (table 2, figure 2).

Third, regarding the LCSIOP. For Chelsea F.C., there were significant and mutually excitatory associations with-UPMED (midfielder as the last passer), FICE (central defender as finisher), NGPA (shot at the post) and TLIB (free kick) in the first quadrant. Also, there were significant and mutually inhibitory associations withUPMEP (midfielder as last passer) and FIDE (forward finisher) in the third quadrant. Likewise, it also had a significant relationship with both M16-30 (minutes between 16 and 30 of the match) and EMP (tie result) in the second quadrant, as well as with NGFU (shot out), M46-60 (minute of the match between 46-60) and GA1 (victory by one goal) in the fourth quadrant (table 2, figure 2).

For Manchester City F.C., there were significant and mutually excitatory associations with UPMEP (midfielder as last passer), UPDE (striker as last passer) and GGA+2 (win by two or more goals) in the first quadrant. In addition, significant relationships stand out with M0-15 (match minutes between kickoff and 15) in the second quadrant, as well as with FIDE (forward finisher) and GA1 (win by one goal) in the fourth quadrant (table 2, figure 2).

Fourth, regarding the CONT. For Chelsea F.C., there was asignificant and mutually excitatory associations with LPCOP (opposing foot finishing) in the first quadrant. For Manchester City C.F., there were significant and mutually excitatory associations withFIEXD (right winger as finisher) and GGA+2 (victory by two or more goals) in the first quadrant. In addition, significant relationships stand out with M46-60 (match minutes between 46 and 60), in the second quadrant, as well as with FIEXI (left winger as finisher), M16-30 (match minutes between 16 and 30) and MAD1 (added time of the first half), all of them in the fourth quadrant (table 2, figure 2)

Table 2.
Significant relationships in each quadrant between focal behaviors and conditional behaviors in the two teams.

Focal behavior	C	CHELSEA F.C.			MANCHESTER CITY F.C.		
		Conditional behavior	Module Vector	A.T.	Conditional behavior	Module Vector	A.T.
UPMEP	I	FIMED	2.01	79.55	FIDE	2.27	4.53
		LCOP	2.93	34.2	LCSIOP	4.01	3.34
	II	M46-60	2.38	79.55	GGA+2	5.01	115.38
		GA1	2.27	157.19			
		SADE	2.38	128.28			
	III	LCSIOP	3.05	226.21	PI1	2.48	259.83
		NGPA	2.69	235.03			
	IV	EMP	2.21	334.01	GOAL	2.32	288.28
					EMP	2.03	289.36
FIDE	I	ZF2	2.01	64.28	UPMEP	2.27	85.47
		EMP	2.73	70.81	ZF3	2.72	15.77
					M76-90	2.1	37.32
					MAD2	2.3	33.09
	II				LPCOP	2.36	121.92
					LCSIOP	2.32	107.23
					M0-15	2.19	137.62
					GA1	2.34	112.9
	III	ZF1	2.01	244.28	LPSIOP	2.8	303.9
		LCSIOP	2.03	250.44			

Table 2.
Significant relationships in each quadrant between focal behaviors and conditional behaviors in the two teams.

Focal behavior	C	CHELSEA F.C.			MANCHESTER CITY F.C.		
		Conditional behavior	Module Vector	A.T.	Conditional behavior	Module Vector	A.T.
LCSIOP		GA1	2.54	257.65			
	I	UPMED	3.47	74.2	UPMEP		86.66
		FICE	4.1	14.32	UPDE	3.2	19.5
		NGPA	3.13	60.94	GGA+2	2.15	63.32
		TLIB	2.77	5.93			
	II	M16-30	1.97	145.55	M0-15	2.33	106.1
		EMP	3.59	163.65			
	III	UPMEP	3.05	223.79			
		FIDE	2.03	199.56			
	IV	NGFU	2.02	295.26	FIDE	2.32	342.77
		M46-60	2.7	324.47	GA1	2.09	311.64
		GA1	3.68	346.18			
CONT	I	LPCOP	2.31	11.68	FIEXD	2.19	77.53
					GGA+2	2.61	38.16
	II				M46-60	2.5	104.48
	III						
	IV				FIEXI	2.05	281.57
					M16-30	2.73	278.26
					MAD1	2.02	300.48

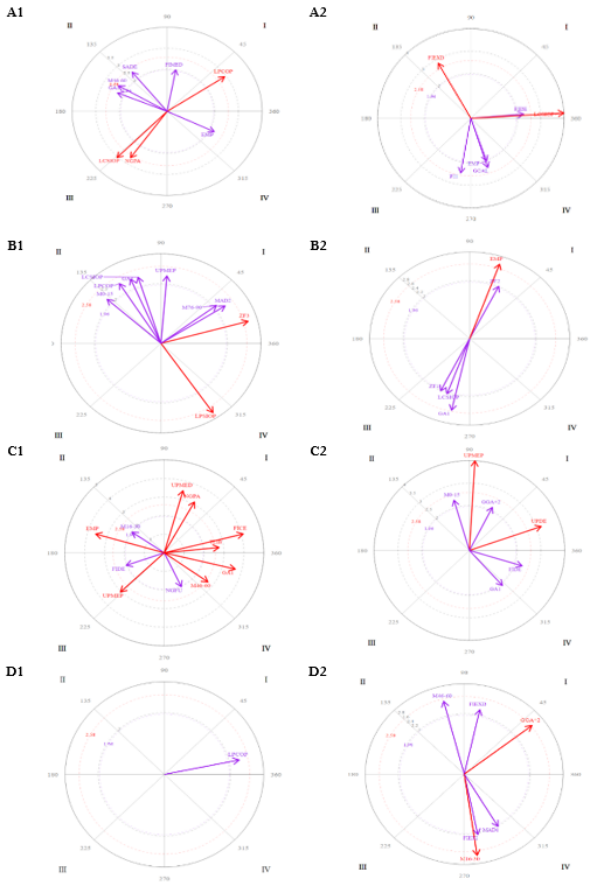

Figure 2. Graphical representation of the polar coordinates analysis of the different categories for the focal behaviors in each team. *Note.* Focal behaviors: A= Half forward as last passer (UPMEP); B= Forward finisher (FIDE); C= Unopposed header (LCSIOP); D= Counterattack (CONT). Teams: 1= Chelsea F.C.; 2= Manchester City F.C.

Discussion

The aim of the present study was to analyze the finishing actions in the finalist teams of the UEFA Champions League 2020-2021. For this purpose, the passing action from the midfield position, the finishing action from the striker position, the uncontested header and the counterattack action were used as focal behaviors. Thirteen matches corresponding to the different phases played by these teams in the competition were observed for each team. The results obtained showed that: (a) the observation tool used presents a high level of reliability and accuracy, and (b) statistically significant relationships between the selected focal behaviors and other mating behaviors.

First, in both teams, the significant influence of players occupying the midfield position in finishing actions is highlighted. This issue has been previously observed in studies by Korte et al. (2019), which indicated the relevance of this position for attacking performance in football. Specifically, players Mason Mount and Kevin De Bruyne manifest great efficiency in decision making and present a great technical-tactical skill, which is a determining characteristic in this position. These virtues would translate into a great ability to provide goal assists, which would be reflected in the data found in the study. Currently, defensive systems are very solid, so this specific role becomes important to destabilize the defensive lines. In fact, this role generates a direct link between the lines of midfielders and forwards, so its role is essential for the fluidity of offensive play. This suggests the need to have in such demarcation's players with great individual technical-tactical skills and the ability to interpret the offensive game, given that they are determinant for the team's performance (Castellano, 2018).

Secondly, the analyses show that wide players play a relevant role in offensive actions for both teams. The data indicate that not only the midfield position, but also the winger positions, are vital to generate assistance and finish plays. This issue coincides with what was observed by Mclean et al. (2018) in a previous study. Thus, players in these areas serve as a link with those further forward, which allows both teams to have an important variety of offensive

resources, greatly hindering the defensive work of the opposing team (Sarmento et al., 2018). This requires an effective association between lines, which highlights the need for skillful players with adequate technical ability to enable these associations between these areas of the field of play, as López-Gajardo et al. (2022) had previously highlighted.

Thirdly, the results highlight the importance of counter-attacking in these teams. In fact, a greater performance is observed in offensive transition plays than in elaborate plays. This could be due to the pressure exerted in modern football between lines and in advanced areas, which favors greater success in this type of play and less in positional attacking situations (Hughes, and Lovell, 2019. These results are supported by previous research such as those of Altarriba-Bartés et al. (2019), who point out that counterattack situations are less frequent than positional ones, show greater effectiveness in the face of goal and arrival in the finishing area. This circumstance requires the presence in the squad of players who, in addition to having an important technical-tactical ability, are fast and can provoke effective defense-attack transitions (Simón and Ortega,2022). In the teams analyzed in this study, there are players who meet these characteristics and who are considered to enable this type of fast and effective transitions, such as Kai Havertz and Riyad Mahrez.

Fourthly, it should be noted that Chelsea F.C. presents a very compact 1-3-4-2-1 system of play, in which the defense of three central defenders, two wingers and two mobile midfielders accompanying the striker stand out. On the other hand, Manchester City F.C. usually presents a 1-4-2-3-1 system of play, with very unbalanced wingers, a false striker and, above all, the influence of their attacking midfielder, Kevin de Bruyne. When interpreting the coordinate maps of the respective teams, it can be seen that both give great importance to play on the wings, albeit with different styles. Chelsea F.C. use more the figure of the winger, with a great run on the wing, while Manchester City F.C. tend to use the figure of the classic winger with more assiduity. This can be seen in the results obtained, in which Manchester City F.C. tries to connect with their wingers to go on the counterattack, taking advantage of their speed and the defensive imbalance of the opposing team, while Chelsea F.C. uses the wingers to surprise on the flanks in positional attacks.

This work has some limitations. First, no patterns have been generated for either team in relation to the specific behavior of finishing, which was the focal behavior used by the original study (Morillo-Baro et al., 2022). This could be due to the fact that both teams have numerous offensive resources, which allow them to generate a wider range of possibilities, without the incidence in any of them being widely highlighted over the others. However, the analyses have offered specific and interesting data in relation to other performance indicators, such as the main passers and finishers. Second, it takes into account the momentary score of the match being observed, but not the total score of the match, which could be interesting to contemplate in future work to explore its possible influences. Third, the tool considers the goals scored by the players of the selected team; however, although this was not the case in any of the sessions analyzed in this study, it is possible that the goal was scored in own goal, which could be interesting to study the play prior to the goal.

As prospective research, in addition to studying the finishing actions, it could be convenient to evaluate the defensive systems, since this aspect could interact with the offensive actions. Likewise, for a more in-depth analysis of the observed sessions, the type of pressure used to regain possession or the influence of numerical superiority after a sending-off could be recorded.

In conclusion, it is clear that the analysis of the tactical situations of the game has acquired relevance, due to the need to propose solutions that adapt to the dynamism and uncertainty of the environment that characterize the competition. Therefore, as a result of the need to develop new research techniques and instruments that guarantee the quality of the information obtained, the Observational Methodology stands out for its flexibility and rigidity. Furthermore, in relation to the tool used in this study, the results obtained demonstrate its high level of validity and reliability.

Funding

This research received no external funding.

Declaration of Competing Interest

None.

Data availability

Data will be made available on request.

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