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## Technical-Tactical Analysis of The Players of the Left and Right Wing in Elite Soccer

by

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In today's soccer, teams are increasingly better trained both physically and tactically, hence different game styles can be identified and differences between them reduced. However, without an exhaustive analysis of reality, the view can lead to the extraction of erroneous conclusions, and what seems to be a team with a marked offensive profile is a mere illusion, resulting to be a team that develops a perfectly balanced game. In this paper, an analysis of technicaltactical performance of players who occupied both wings in an elite team was made, taking as reference the Spanish national soccer team as the model of international game to imitate in the last decade. The development of this paper was located within the observational methodology, using the polar coordinates technique for the analysis of the obtained data. The results showed how, despite identifying offensive profiles within technical-tactical performance of players that occupied the outer wings or lanes of the playing field, their tactical means and orientations diverged from each other. The results showed a more offensive profile and with higher technical complexity of players that occupied the left wing, while players that held the right wing showed a more defensive and recuperative profile, indicating a less vertical and complex style of play at a technical level with the forward as an offensive reference.

Key words: polar coordinates technique, performance, field position, team sport game.

#### Introduction

Soccer is one of the team sports that arouses the most interest in the scientific community, with many thematic areas that investigate it, all of them complementary (Amatria et al., 2017).

Thanks to the observational methodology, studies referring to technicaltactical aspects of soccer are increasingly becoming more relevant (González-Víllora et al., 2015). However, study of tactics, despite generating considerable interest, also entails great difficulty of measurement in this sport (Serra-Olivares et al., 2016), not only for the fact of attending the organization and identification of situations that do not exist at the individual level (Lago and Anguera, 2002), but also it is necessary to carry out a sequential study of game actions, in chronological order, in such a way that they are recognized as tactical chains (Garganta, 2009). Within game analysis, the increase of studies oriented towards the analysis of technical-tactical performance in soccer may be observed (Sarmento et al., 2018), developing studies at the individual (Maneiro and Amatria, 2018) as well as at the collective level considering different styles of play (Fernández-Navarro et al., 2016).

Of all the styles, it stands out for its enormous influence on current soccer, the one deployed in the last decade by the Spanish national soccer team, due to its high plasticity, definition, and efficiency, combining the collective game with individual brilliance (Sarmento et al., 2013). Within this style of play, where the inner game and the short pass acquire a significant presence and relevance in their development, it

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seems that progression by the wings (Dellal et al., 2015) becomes less important in benefit of the inner game during the development of the offensive action.

For the study of tactics, it is not only about evaluating the technique (Ric et al., 2016). It is also important to include aspects such as the place and the moment of the situation, which players develop it, the type of the offensive action in question, etc. generating a massive volume of data of high complexity of analysis (Rein and Memmert, 2016). It is for this reason that the use of the polar coordinate technique, which is a technique of recent use in sports sciences (Anguera and Hernández-Mendo, 2015), acquires significant relevance due to its high capacity to reduce redundant data (Anguera and Hernández-Mendo, 2015; Maneiro and Amatria, 2018).

The use of strategic space (Echeazarra et al., 2015) in soccer's tactical development is important as any situation of tactical instability leads to the generation of new opportunities for the opposing team to take advantage of the disorganized moments. The objective of this study was to analyse and compare technical-tactical performance of players that occupied the wings of a team with an elite mixed style of play using the polar coordinates technique.

#### Methods

This paper has been developed within the observational methodology with a specific design and an intrasessional, multidimensional and idiographic follow-up (Anguera et al., 2011), to emphasize that the observation was carried out following the criteria of scientificity, the events observed were fully perceivable and the observer had a non-participatory role.

#### Participants

For the selection of participants, purposive sampling was carried out (Anguera et al., 2011), with the Spanish Soccer Team as the object of study, throughout its participation in the 2012 European Championship. This work fulfills the following requirements of the intersessional record: the size of the playing field, the playing time, the type of the ball (number 5), the zone division, the players within the team's template, and the allocation of numbers.

#### Measures

In this procedure, the ad hoc observation

instrument proposed by Maneiro and Amatria (2018) was used, which is a combination of the field format and category systems (Anguera et al., 2007), where each of the category systems, nested in the different field format, is exhaustive and mutually exclusive (Figure 1).

#### Design and Procedures

Lince software, version 1.2.1 was used to record the data (Gabin et al., 2012). It allows to obtain type IV data that are concurrent and timebased (Anguera et al., 2011).

Subsequently, a sequential analysis of delays was carried out using the Gseq v5.1 computer program (Bakeman and Quera, 2011), and then *Hoisan* software version 1.2 (Hernández-Mendo et al., 2012), where the data obtained in *Gseq* were introduced and analysed to obtain polar coordinates.

The quality control of the data was carried out quantitatively, comparing the records made by both the first and the second observer. Note that the record of the last observer is composed of at least 10% of the plays of each of the parties that constituted the observational sampling of 7 complete games plus an extension in one of them. In order to determine the reliability of the data, Cohen's Kappa was used for nominal classifications, in which there was no graduation order between the different categories (Cohen, 1960). This statistical coefficient was used to quantify the degree of agreement between correcting observers, the random factor, mathematically explained as follows: Kappa = (Po-Pe) / (1-Pe) for each of the categories and codes, where "Po" was the observed percentage and "Pe" was the expected percentage by chance.

The Kappa calculation was carried out using GSEQ software, version 5.1., taking into account the recommendations of Bakeman and Quera (2011), reaching an inter-observer concordance value of 0.95, *almost perfect* (Landis and Koch, 1977).

#### Statistical Analysis

The use of the polar coordinate technique applied in performance analysis is quite novel (Anguera and Hernández-Mendo, 2015). The technique of Polar Coordinates is based on the Zsum by Cochran (1954) which, in turn, takes as a basis the statistic Zsum (Sackett, 1980). This technique, elaborated by Sackett (1980) and evolved by Anguera (1997), allows to identify the

excitation or inhibition relation of the focal behaviour (conditioning behaviour) with respect to the rest of the behaviours of the taxonomic with which system (behaviours the focal behaviour is related) that are intended to be studied. Analysis is performed both prospectively, taking into account the delays from +1 to +5, and retrospectively, including the delays between -1 to -5 both inclusive. Results obtained from this analysis show a vector with a radius and an angle determined for each of the conditioned behaviours related to focal behaviour. That is why, depending on the degree of the angle obtained, the vectors can be grouped in 4 quadrants (Figure 2). Each quadrant relates the focal behaviour and the conditioned behaviour in a concrete way, considering both inhibition and activation. The vectors that occupy the first quadrant (Quadrant I) reveal that the focal behaviour and the conditioned behaviour are mutually activated. The vectors that occupy the second quadrant (Quadrant II) indicate that the focal behaviour inhibits the conditioned behaviour, while the conditioned behaviour activates the focal behaviour. The vectors that occupy the third quadrant (Quadrant III) reveal that both behaviours, focal and conditioned, are inhibited mutually. Finally, the vectors that occupy the fourth quadrant (Quadrant IV) indicate that the focal behaviour activates the conditioned behaviour, while the conditioned behaviour inhibits the focal behaviour. (insert Figure 2 here)

#### Results

In order to carry out the analysis of the polar coordinates, it was necessary to previously carry out a sequential analysis of delays. The obtained results were related to three aspects of the game developed by players that occupied the left wing (JBI) and the right wing (JBD) throughout the analysed competition:

a) The relationship of players of both wings with the rest of players.

b) The relationship of players of both wings with a developed technical action.

c) The relationship of players of both wings with situations of the game, i.e. regulatory interruptions and interceptions.

# The relationship of players of both wings with the rest of players:

Focal behaviours JBI and JBD were related to the rest of the categories that constituted the squad of the team (J0, J1, J2, J3, J4, J5, J8, J9, J10, J11, J12, J14, J15, J16, J19, J20, and J23) as well as to the category that corresponded to a rival player (JR). Next, the relationship between wing players and other soccer players, either from their team or from the opposing team was examined.

Regarding quadrant I, results indicated JBI focal behaviour (Table 1 and Figure 3a) presented JBI criteria categories with a radius of 11.84 and an angle of 45°, and J14 with a radius of 2.68 and an angle of 71.99°. On the other hand, results established also as focal behaviour JBD (Table 1 and Figure 3b), that presented the categories criterion JBD with a radius of 7.47 and an angle of 45°; J10 with a radius of 2.34 and an angle of 20.48° and JR with a radius of 3.28 and an angle of 54.6°.

Looking at quadrant II and results indicating JBI focal behaviour (Table 1 and Figure 2a), the category observed was J16 with a radius of 2.33 and an angle of 166.76°. On the other hand, no significant results were observed in this quadrant corresponding to the JBD category established as focal behaviour (Table 1 and Figure 3b).

In reference to quadrant III, the corresponding results establishing JBI focal behaviour (Table 1 and Figure 3a) show the presence of the mating category J1 with a radius of 3.84 and an angle of 209.61°; the category J3 with a radius of 6.97 and an angle of 233.16°; the category J9 with a radius 3.086 and an angle 259.55°; the category J20 with a radius of 4.66 and an angle of 225.58°; and the JBD category with a radius of 8.74 and an angle of 228.94°. On the other hand, establishing the JBD category as the focal behaviour, the J11 was with a radius of 2.68 and an angle of 235.04°; the J15 with a radius of 6.97 and an angle of 233.16°; the category J9 with a radius of 4.24 and an angle of 229.61° (Table 1 and Figure 3b).

Finally, considering quadrant IV, results indicated JBI as a focal behaviour (Table 1 and Figure 3a), with categories J4 and JR, with radios of 2.5 and 2.91, as well as angles of 322.33° and 336.43°, respectively. On the other hand, based on

the results obtained by establishing the JBD category as the focal behaviour, the categories J1 and J16, were characterized by radios of 2.51 and 3.19, and angles of 283.49° and 356.63°, respectively (Table 1 and Figure 3b).

## The relationship between players of both wings with a developed technical action:

To carry out this analysis, the JBI and JBD focal behaviours were related to the mating categories according to the established technical actions (C1, C12, C2, C23, C24, C3, C4 and C5). Then, the type of technical action was studied considering players who occupied the outer zones of the field (Table 2, Figures 3c and 3d).

Regarding quadrant I, the corresponding results establishing JBI as focal behaviour, present the criterion categories C4 with a radius of 3.17 and an angle of 29.6° and C1 with a radius of 2.85 and an angle of 10.83°. On the other hand, no significant results were observed in this quadrant with regard to the JBD category established as focal behaviour.

Looking at quadrant II, no significant results related to the JBI category established as focal behaviour were observed. However, results corresponding to the JBD focal behaviour, presented the criterion category C3 with a radius of 4.43 and an angle of 99.11<sup>o</sup>.

In reference to quadrant III, results corresponding to the JBI focal behaviour showed the mating category C24, C3 and C5 with a radius of 2.13, 3.19 and 2.65 and an angle of 242.52°, 184.5° and 225.14°, respectively. In this quadrant, there were no significant results corresponding to the JBD category established as focal behaviour.

Finally, in quadrant IV, results indicated JBI as focal behaviour (Table 2 and Figure 3), category C23 with a radius of 2.54 and an angle of 288.88° was found. On the other hand, results related to the JBD focal behaviour, presented categories C1 and C5 with a radius of 3.23 and 2.41 and angles of 272.93° and 327.11°, respectively.



C. Foc.	Category	Quadrant	P. Prospective	P. Retrospective	Ratio	Radio	Angle
	JO	IV	0.89	-0.9	-0.71	1.26	314.43
	J1	III	-3.34	-1.9	-0.49	3.84 (*)	209.61
	J3	III	-4.18	-5.58	-0.8	6.97 (*)	233.16
	J4	IV	1.98	-1.53	-0.61	2.5 (*)	322.33
	J8	Ι	0.01	0.75	1	0.75	89.31
	J9	III	-0.56	-3.03	-0.98	3.08 (*)	259.55
	J10	III	-1.24	-0.4	-0.31	1.31	197.94
JBI	J11	IV	0.03	-1.01	-1	1.01	271.52
	J14	Ι	0.83	2.54	0.95	2.68 (*)	71.99
	J15	Ι	0.91	1.67	0.88	1.9	61.44
	J16	II	-2.27	0.53	0.23	2.33 (*)	166.79
	J20	III	-3.26	-3.33	-0.71	4.66 (*)	225.58
	JBI	Ι	8.37	8.37	0.71	11.84 (*)	45
	JBD	III	-5.74	-6.59	-0.75	8.74 (*)	228.94
	JR	IV	2.67	-1.16	-0.4	2.91 (*)	336.43
JBD	JO	III	-1.19	-1.39	-0.76	1.83	229.26
	J1	IV	0.59	-2.44	-0.97	2.51 (*)	283.49
	J3	Ι	0.23	1.84	0.99	1.86	82.81
	J4	III	-1.6	-0.34	-0.21	1.64	191.99
	J8	Π	-0.23	1.62	0.99	1.64	98.17
	J9	Ι	0.42	0.06	0.15	0.43	8.38
	J10	Ι	2.19	0.82	0.35	2.34 (*)	20.48
	J11	III	-1.54	-2.2	-0.82	2.68 (*)	235.04
	J14	II	-0.51	0.9	0.87	1.04	119.22
	J15	III	-2.75	-3.23	-0.76	4.24 (*)	229.61
	J16	IV	3.19	-0.19	-0.06	3.19 (*)	356.63
	J20	II	-0.28	0.18	0.55	0.33	146.52
	JBI	III	-6.59	-5.74	-0.66	8.74 (*)	221.06
	JBD	Ι	5.28	5.28	0.71	7.47 (*)	45
	JR	Ι	1.9	2.67	0.82	3.28 (*)	54.6

Table 2

C. Foc.	Category	Quadrant	P. Prospective	P. Retrospective	Ratio	Radio	Angle
	C1	Ι	2.8	0.54	0.19	2.85 (*)	10.83
	C12	I	0.17	0.13	0.6	0.21	37.12
	C2	Π	-0.2	0.56	0.94	0.59	109.8
JBI	C23	IV	0.82	-2.41	-0.95	2.54 (*)	288.88
	C24	III	-0.98	-1.89	-0.89	2.13 (*)	242.52
	C3	III	-3.18	-0.25	-0.08	3.19 (*)	184.5
	C4	Ι	2.75	1.57	0.49	3.17 (*)	29.6
	C5	III	-1.87	-1.88	-0.71	2.65 (*)	225.14
	C1	IV	0.17	-3.23	-1	3.23 (*)	272.93
	C12	IV	0.23	-0.93	-0.97	0.95	284.1
	C2	Ι	0.32	0.6	0.88	0.68	62.08
JBI	C23	III	-0.5	-0.3	-0.51	0.58	210.74
	C24	III	-0.36	-1.52	-0.97	1.57	256.64
	C3	Π	-0.7	4.38	0.99	4.43 (*)	99.11
	C4	III	-1.24	-0.26	-0.21	1.27	192.02
	C5	IV	2.03	-1.31	-0.54	2.41 (*)	327.11

to the situations of the game (regulatory interruptions and interceptions).							
C. Foc.	Category	Quadrant	P. Prospective	P. Retrospective	Ratio	Radio	Angle
	GTO	IV	1.16	-0.97	-0.64	1.51	320.15
	FKTO	IV	0.63	-2.13	-0.96	2.22 (*)	286.5
	ОТО	IV	0.84	-0.35	-0.39	0.91	337.1
	TITO	Ι	1.07	7.21	0.99	7.29 (*)	81.57
	СКТО	IV	0.46	-0.28	-0.52	0.53	328.7
	GKTO	III	-1.99	-3.73	-0.88	4.23 (*)	241.9
	FKATO	III	-1.5	-0.01	-0.01	1.5	180.3
	OATO	Ι	3.08	0.29	0.09	3.09 (*)	5.39
JBI	TIATO	IV	0.03	-0.49	-1	0.49	273.15
	GKATO	III	-0.84	-0.16	-0.18	0.85	190.6
	NK	IV	0.25	-0.79	-0.95	0.83	287.65
	NC	Ι	0.75	0.29	0.36	0.8	21.27
	EFH	IV	0.94	-1.23	-0.79	1.55	307.5
	EM	II	-1.41	0.47	0.32	1.49	161.4
	LB	III	-1.62	-2.35	-0.82	2.86 (*)	235.4
	RB	II	-1.63	0.1	0.06	1.64	176.3
	OIC	Ι	1.86	0.47	0.24	1.92	14
	GTO	Ι	0.62	0.34	0.48	0.7	28.52
	FKTO	IV	0.32	-4.93	-1	4.94 (*)	273.6
	OTO	III	-1.36	-2.65	-0.89	2.98 (*)	242.7
	TITO	II	-3.61	5.49	0.84	6.57 (*)	123.3
	СКТО	IV	0.62	-4.18	-0.99	4.23 (*)	278.4
	GKTO	IV	0.55	-1.6	-0.95	1.69	288.9
	FKATO	IV	0.31	-0.98	-0.95	1.03	287.73
	OATO	Ι	0.59	0.61	0.72	0.85	46.06
JBD	TIATO	III	-0.58	-0.17	-0.28	0.6	196.4
	GKATO	III	-2.86	-0.77	-0.26	2.96 (*)	195.04
	NK	Ι	2	0.66	0.31	2.11 (*)	18.28
	NC	III	-0.81	-1.32	-0.85	1.55	238.5
	EFH	III	-1.55	-0.03	-0.02	1.55	180.99
	EM	IV	0.37	-0.98	-0.94	1.05	290.70
	LB	Ι	0.83	1.34	0.85	1.57	58.12
	RB	IV	1.02	-1.85	-0.88	2.12 (*)	298.9



# The relationship of players of both wings with the situations of the game (regulatory interruptions and interceptions):

In order to carry out this analysis, JBI and JBD were related as focal behaviours, with the mating categories related to the categories that made up regulatory interruption situations as well as different interceptions that occurred in play. A tendency of appearance of interruptions and interceptions developed by players in zones of wing players, was analysed.

In relation to quadrant I, results indicated JBI as focal behaviour (Table 3 and Figure 3e), and showed criterion categories TITO with a radius of 7.29 and an angle of 81.57°; and OATO with a radius of 3.09 and an angle of 5.39°. On the other hand, the results corresponding to the JBD focal behaviour showed the criterion categories OIC with a radius of 4.32 and an angle of 81.12°; and NK with a radius of 2.11 and an angle of 18.28° (Table 3 and Figure 3f).

Looking at quadrant II, showing the JBI focal behaviour (Table 3 and Figure 3e), the category of FFSP (favour outside of the door) with a radius of 4.23 and an angle of 241.92°, and the LB category with a radius of 2.86 and an angle of 235.46° were observed. On the other hand, results corresponding to the JBD focal behaviour indicate the presence of the TITO with a radius of 6.57 and an angle of 123.33° (Table 3 and Figure 3f).

In reference to quadrant III, results related to the JBI focal behaviour (Table 3 and Figure 3e) show the category of GKTO with a radius of 4.23 and an angle of 241.92°, and the LB category with a radius of 2.86 and an angle of 235.46°. On the other hand, results corresponding to the JBD focal behaviour (Table 3 and Figure 3f) indicate categories of GKATO and OTO with a radius of 2.96 and 2.98 and an angle of 195.04° and 242.74°, respectively.

Finally, in quadrant IV, the results obtained, establishing JBI as a focal behaviour (Table 3 and Figure 3e), show the FKTO with a radius of 2.22 and an angle of 286.5°. On the other hand, the results corresponding to the JBD focal behaviour (Table 3 and Figure 3f), show the category FKTO with a radius of 4.94 and an angle of 273.69°; the category CKTO (corner kick for team being observed) with a radius of 4.23 and an angle of 278.4° and the category RB with a radius of 2.12 and an angle of 298.95°.

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#### Discussion

In order to respond to this research goal, polar coordinates were used as an analysis technique, since it is a technique capable of maintaining a high information capacity by reducing data, to analyse the relationship between players of the left and right wings of the Spanish national soccer team and their teammates, different technical-tactical behaviours developed and the relationship established with different situations of play interruptions and interceptions. The polar coordinate technique made it possible to develop vector maps of the relationships between each of the focal behaviours (JBI and JBD) and the different categories of mating designed ad hoc, prospectively and retrospectively, within the development of the game.

With a clear objective to be able to make the comparison between both categories JBI and JBD, the discussion was structured to relate to the sections presented in the results heading.

The results of the first point, the relationship of players of both wings with the rest of the players of the national team, show how in both wings a significant relation of activation is established. That is, left wing players are activated by left end wing players and vice versa, as it happens with players that occupy the right wing and the extreme right wing, which shows a constant support work among players that occupy the same wing. A relationship was also established with midfielders closest to wing players. These results are consistent with those obtained by Sarmento et al. (2017) considering the intervention by midfielders when developing collective actions of an offensive nature. On the other hand, our results highlight the presence of the J10 category, a player who occupied the demarcation of the centre forward during the championship, in quadrant I, which manifests another type of associative game where these players connect with the forward to develop the offensive action. These results are consistent with Clemente et al. (2016).

The inhibition between players of the left wing (JBI) and players of the right wing (JBD) shows that the connection between players of opposite wings does not occur, and the transfer of the ball from one side of the field to the other is a task entrusted to the midfielders who occupy interior positions. Meanwhile, outside players provide width and breadth to the game, facilitating the attack in depth and forcing defending players to separate and occupy a greater space, favouring the execution of a greater number of passes in depth, which are most effective for achieving the goal (Tenga et al., 2010). These results are consistent with those obtained by Maneiro and Amatria (2018) and Amatria et al. (in press) where changes of orientation on the part of the midfielders were examined.

Finally, the appearance of the category JR in different quadrants indicated that players of the right wing have a recovery profile more accentuated than those of the left wing, and that left wing players, due to their more offensive profile, activate rival players during their offensive sequence.

Paying attention to this second section of analysis, i.e. the relationship of players of both wings with the technical action that develops, the results show, in the case of players of the left wing, the presence in quadrant I of the contact type C1 and C4, which are contacts that show the offensive projection of players making use of a single touch to develop walls as well as dribbling as means to overcome the defensive lines. These results are consistent with those of Tenga et al. (2017), where these technical-tactical elements were acknowledged as relevant methods to overcome rival defences.

In relation to the type of contact played by players on the right wing, we may see how the type of contact C1 appears in quadrant IV, which denotes a use of this type of contact as a means of safety and conservation (Fernández-Navarro et al., 2016). In the same quadrant, the contact type C5 reinforces the idea of conservation and defence on the part of players of the right wing as they intervene in air duels.

Results of the third section, the relationship of the players of both wings with the situations of the game (regulatory interruptions and interceptions), show how the presence of the category FFSB in quadrant II is important, with regard to players from the left wing, and in quadrant I, with regard to players of the right wing. This responds to the fact that there are players who occupy the outer zones of the playing field, closest to the bands and are in charge of resuming the game through this type of interruptions. A similar situation occurs with the category FFSE. Players who develop their technical-tactical performance close to the lines that delimit the playing field both on the sides and in the backdrops, are more inclined to relate with both situations of the game. It is noteworthy to mention the significant presence of category R in quadrant IV by players on the right wing, but not players on the left wing. These results reinforce the idea of tactical differences between players who occupy the outer lanes of the field (Maneiro and Amatria, 2018). In our study, left wing players had a more offensive tactical profile, while right wing players had a more defensive profile.

In short, left wing players experience support relationships with their closest peers on the field, through the execution of different technical actions that lead to situations of throwins or corners in favor. These aspects denote a more attacking profile that fits within a marked style of offensive play (Fernández-Navarro et al., 2016; Tenga et al., 2017). With regard to right wing players, relationships exist between inside players and forwards. The development of offensive actions connects most advanced positions of the team, making use of technical actions with a clear defensive nature, security passes and head shots, and offensive section, centres to the area. These aspects are coherent with the type of situations with which they are related in a significant way, such as throw-ins and corners in favour, as well as with the recovery of possession of the ball, being an indicator of performance (Santos et al., 2017).

The objective of the present study was to and compare technical-tactical analyse performance of wing players of a team with an elite mixed style of play using polar coordinates. In light of the results obtained, it can be concluded that technical-tactical performance of players occupying outside positions of an elite team is different when comparing each wing in a specific way. Left wing players develop rather an offensive character, while right wing players present a more conservative and defensive profile. This defensive profile provides balance to the game and develops two different yet complementary roles.

The analysed aspects and reached conclusions have practical relevance for soccer

coaches of any category, either professional or of formative stages that could use this information in training. Future studies should focus on the investigation of new relationships between specific positions, to present new tactical alternatives to coaches.

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