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Daniel Lapresa [a], Leandro Álvarez [b], Javier Arana [a], Belén Garzón [a] & Valvanera Caballero [b]

[a] University of La Rioja, Department of Educational Sciences, Logroño, Spain
[b] International University of La Rioja, Faculty of Education, Logroño, Spain
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Observational analysis of the offensive sequences that ended in a shot by the winning team of the 2010 UEFA Futsal Championship

DANIEL LAPRESA[1], LEANDRO ÁLVAREZ[2], JAVIER ARANA[1], BELÉN GARZÓN[1], & VALVANERA CABALLERO[2]

[1]*University of La Rioja, Department of Educational Sciences, Logroño, Spain, and* [2]*International University of La Rioja, Faculty of Education, Logroño, Spain*

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Abstract
This article analyses the offensive phase of the national team than won the 2010 UEFA Championship. More specifically, the observational sampling includes all plays in which the Spanish national futsal team managed to "shoot" in the competition in question. This data was obtained by adapting an observational and recording tool typically used for football to the technical specifications of futsal; the SOF-CODER (Jonsson et al., 2006). Two types of analysis have been performed. One statistical analysis using the SPSS programme, version 15.0, the most relevant results from which refer to the significant differences found on linking: the zone from which the shot is made and the type of shot ($\chi^2 = 55.821$, $P = 0.006$); and the contact surface used and the type of shot ($\chi^2 = 30.293$, $P = 0.017$). And another, using the Theme programme, version 5.0, through which regular behaviour structures (temporal patterns) have been detected within the plays that include shooting. The temporal patterns obtained – in addition to elaborating on the relationship between the area from which the shot is made, the contact surface used and the type of shot – enable a tactical interpretation of the technical actions that support the development of the offensive phase of futsal.

Keywords: *futsal, observational methodology, temporal patterns, shot, 2010 UEFA Championship*

Introduction

According to Amaral and Garganta (2005), research into Futsal is still poor, even more so if compared to the sport it originated from, football. We shouldn't forget that the sport known as futsal is relatively new. To date, FIFA has organised World Championships for national teams in 1989, 1992, 1996, 2000, 2004 and 2008; and UEFA has organised European Championships in 1996, 1999, 2001, 2003, 2005, 2007, 2010 and 2012.

Most of the research studies carried out on this sport mainly focus on biomedical aspects, e.g. Álvarez, Corona, Jiménez, and Manonelles (2002), Dantas and Filho (2002), Barbero-Álvarez, Andrin, and Méndez-Villanueva (2005), Doğramac and Watsford (2006), García, Lozano, Lozano, Soto, and Zabala (2006), Barbero-Álvarez, Soto, Barbero-Álvarez, and Granda (2008), Rodrigues et al. (2011). Confirming the existence of very few works related to the analysis of the game, e.g. Martín (2009), Amaral and Garganta (2005), Jovanovic, Sporis, and Milanovic (2011), Travassos, Araújo, Vilar, and McGarry (2011). That is why this research work focuses on studying the offensive phase of the winning team for the 2010 UEFA Championship, specifically regarding the play sequences that include shots.

For this research study, in order to record, analyse and interpret the offensive phase of the Spanish Selection in the 2010 UEFA Futsal Championship, we have adapted an instrument for observation and recording specifically for football: the SOF-CODER, created by Jonsson et al. (2006), which enables the detection of regular structures in the game; in our case, temporal patterns using the Theme software.

The contribution of the temporal patterns to the sport, using the Theme program, is proving to be extraordinarily productive both in football (Anguera & Jonsson, 2003; Bloomfield, Jonsson, Polman, Houlahan, & O'Donoghue, 2005; Borrie, Jonsson, & Magnusson, 2001, 2002), and in other areas of physical activity and sports (Castañer, Torrents, Anguera, Dinušová, & Jonsson, 2009; Fernández, Camerino, Anguera, & Jonsson, 2009; Lapresa, Ibañez, Arana, Garzón, & Amatria, 2011).

With this paper we intend to determine, on the one hand, the suitability of the adapted observational

Correspondence: Daniel Lapresa, University of La Rioja, Educational Sciences, Edificio Vives s/n, Logroño, 26004 Spain. E-mail: daniel.lapresa@unirioja.es

tool to the specificity of futsal, as well as the relevance of the technical-tactical information provided by the temporal patterns detected. On the other hand, we also intend to determine how the results obtained by the two analysis techniques used (Pearson's Chi-square test and temporal patterns detection), contribute to shaping a model of sporting excellence as regards the technical-tactical characteristics of the execution of the shot; and more specifically, the relationship between the zone from which the shot is made, the contact surface used and the result obtained from the shot (shot type).

Method

The method used in this study was observational methodology (Bakeman & Gottman, 1987). The observational design is, according to Anguera (2003), follow-up (the participation of the winning team in the 2010 UEFA Futsal Championship), nomothetic (because this study focuses on the group of players that, as a team, comprise the National team in question), and multidimensional (as it takes into account proxemic conducts as well as gestural ones).

The level of participation is non-participative observation, given that the observer does not interact with the observed players and the degree of perceptivity is complete, direct observation.

Observational tool

This observational tool feeds mainly off the SOF observation tool created by Jonsson et al. (2006). It is a combination of field format and system of categories, given that the general approach of the criteria is field format but most of them are broken down in a system of categories.

The tool maintains the "Plays" criterion, considered to be a field format; and the criteria "Action commencement area", "Action conclusion area", "Contact with the ball", "Interruptions", "Interceptions", and "Shot", corresponding to a system of categories structure. It is worth highlighting that the "Contact with the ball" criterion presents a tangible difference compared to its origin, given that the technical bases with ball are specified taking into account the theoretical framework that is present in futsal. Also, the "Contact surface" criterion has been added as a system of categories.

The core criteria that comprise the observational tool used in this research work, are shown in Table I.

Set out below, in Figure 1, is the division into areas of the pitch used, with the dimensions corresponding to each of its areas. This zoning is done adjusting to the particular nature of the futsal pitch.

Recording and coding

The matches played by the championship team in the 2010 UEFA Futsal were broadcast by a public television channel. The recording and coding of the data was carried out using the corresponding digital video recordings.

The five matches played by the winning team, represent the maximum number of matches that a team could play within this championship. Each

Table I. Summarised description of the variable criteria within the observational tool.

Nº	Criterion	Categories
1	**Play number**	1, 2, 3… n
2	**Action commencement area**	CZ10, CZ20, CZ30, CZ40, CZ50, CZ60, CZ41, CZ51, CZ61, CZ70, CZ80, CZ90
3	**Action conclusion area**	EZ10, EZ20, EZ30, EZ40, EZ50, EZ60, EZ41, EZ51, EZ61, EZ70, EZ80, EZ90
4	**Technical skills with the ball**	Ball control (CON), Handling the ball (HAN), Pass (PAS), Clear / mistaken pass (MIS), Conduction (CND), Dribbling (DRI), Other contacts (OTH)
5	**Contact surface**	Sole of the foot (CSO), Instep of the foot (CNS), Inside edge of the foot (CIN), Outside edge of the foot (COU), Heel of the foot (CHE), Toe of the foot (CTE), Combination of different contact surfaces (CCO), Contact with the head (CHD), Other contact surfaces (COT)
6	**Interruptions**	- In favour / In (FI): Free kick in favour of the observed team (FIFK), Strike off (FISO). - In favour / Out (FO): Throw-in in favour of the observed team (FOTI), Corner kick in favour of the observed team (FOCK), Goal kick in favour of the observed team (FOGK). - Against / In (AI): Free kick against the observed team (AIFK), Strike off (AISO). - Against / Out (AO): Throw-in against the observed team (AOTI), Corner kick against the observed team (AOCK), Goal kick against the observed team (AOGK).
7	**Interceptions**	Losing the ball (L), Recovering (R), Occasional interception with continuity (OIC)
8	**Shot**	Shot with goal scored (GS), Shot that does not score a goal and causes the intervention of a player from the other team, that is not the goalkeeper (IS), Shot hitting one or several goalposts without scoring a goal (PS), Shot sent outside the goal (OS), Shot blocked or cleared by the goalkeeper (KS).
9	**Time**	Real time, expressed in frames -1/25 of a second, from the start of every action
10	**Duration**	Real time, expressed in frames, elapsed between the start of two consecutive actions.

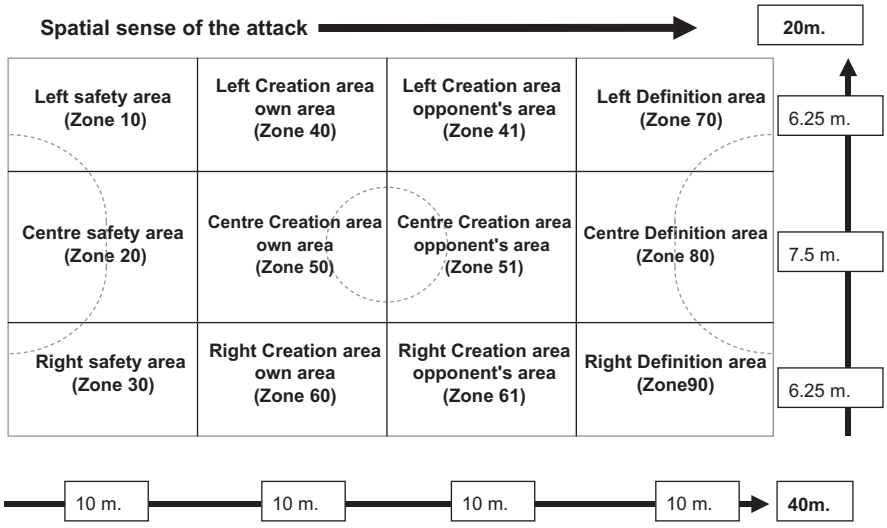

Figure 1. Area division used.

match to be recorded is composed of a specific number of plays and each play is formed, in turn, by a certain number of actions, which means a minimum recording unit.

During these five matches, the national team performed a total of 237 shots, of which 27 ended in goal (with an efficacy ratio of 11.39%). The observational sampling with which we have searched for temporal patterns includes all of the plays recorded that include a shot. Table II specifies the observational sampling carried out.

To perform the recording, on the basis of the constructed observational tool, the interactive video coder SOF-CODER has been used, taking into account the works of Jonsson et al. (2006).

According to Bakeman (1978), the type of data we handle are concurrent in time-base (Type IV). That is, the data we use are of order and duration and concur, they overlap, which is coherent with the multidimensional nature of the design.

If we take into account the typology of the data used by Bakeman and Quera (1996), these are multi-event, given it is a multidimensional design and it uses the combination of field format and system of categories as an observational tool. The different multi-events recorded amounted to 516; the total number of multi-events recorded being 2380.

Table II. Observational sampling of plays that include shot.

Opponent	N° of plays	*Order of plays*
Belarus	52	*1–52*
Portugal	40	*53–92*
Russia	47	*93–139*
Czech Republic	38	*140–177*
Portugal (Final)	27	*178–204*
	Total = 204 plays	

Consistency between observations

In order to guarantee the quality of the data, for this research study we have made use of the Generalisability Theory (GT), initially designed by Cronbach, Gleser, Nanda, and Rajaratnam (1972). This constitutes an attempt to extend the classical approach towards reliability by applying Variance Analysis techniques. The aim of this is to reduce the error by controlling all sources of variation. Specifically, the consistency between observations has been obtained, within the theoretical framework of the GT, by means of the Intraclass Correlation Coefficient (ICC).

With regard to this, it should be mentioned that a second observer has recorded the first five minutes of each of the matches. The design is comprised of three facets: match (with five levels), category (with 58 levels) and observers (with two levels). The match (M) and category (C) facets have been placed in the differentiation facet and observers (O) have been placed in the instrumentation facet. This way the design formulates: MC/O. A design has been created within the General Linear Model (GLM), from which the Type III data have been selected, given that the data has not been gathered randomly.

The analysis of the generalisability coefficients in this design structure reveal an extremely high consistency between both records, obtaining an ICC of 0.955, which is not affected by the variability that could be caused by the other facets and their interactions.

Using ICC, Bland and Altman (1986, 1990) and Nevill and Atkinson (1997), recommended

reporting an interval known as the "limits of agreement", based on the standard deviation of the differences between measurements. Assuming the differences are normally distributed, the limits should contain 95% of such differences. In our case, the mean difference (d) is 0.025. The standard deviation of the differences (s)= 0.261. The standard error of d is 0.009. The limits of agreement (d-2s and d+2s) are: -0.494 y 0.545. For the 95% confidence interval we have 2261 degrees of freedom and t = 1.98. The 95% confidence interval for the lower limit of agreement is -0.494 -(1.98 x 0.009) to -0.494 +(1.98 x 0.009), giving -0.504 to -0.484. The 95% confidence interval for the upper limit of agreement is 0.545 -(1.98 x 0.009) to 0.545 +(1.98 x 0.009), giving 0.535 to 0.555.

Data analysis

Two different types of analysis have been carried out, one statistical analysis using the SPSS program, version 15.0, and another for detecting temporal patterns using the Theme program, version 5.0.

With regard to the statistical analysis, the intention was to determine the dependence or independence between the following nominal variables: the area from which the shot is taken and the type of shot; the type of shot and the contact surface; and the contact surface of the shot and the area of the shot. To this end we turned to Pearson's Chi-square test.

For detecting temporal patterns, we have used the Theme software, which is based on a powerful algorithm developed by Magnusson (1996, 2000), and which enables the detection of regular structures – temporal and sequential – in a data package. A temporal pattern is essentially a combination of events which occur in the same order with temporal distances between each other that remain relatively invariant in relation to the null hypothesis that each component is independent and is distributed randomly in time. According to Magnusson (2000, p. 94), "that is, if A is an earlier and B a later component of the same recurring temporal pattern then after an occurrence of A at t, there is an interval [t+d1, t+d2] (d2≥d1≥d0) that tends to contain at least one occurrence of B more often than would be expected by chance".

There have been two phases that make up the detection process. To begin with, an attempt has been made to isolate the most relevant temporal patterns that include the specific multi-events of making the shot; to perform this initial search, the parameters selected have been the following (for further information see Reference Manual; PatternVision Ltd & Noldus Information Technology bv, 2004):

a. Significance level: $P < 0.005$.
b. Simulation filter: This filter makes randomisations for each critical interval relationship detected, before accepting it as such. The number of randomisations depends on the level of significance established – in our specific case: 2000 times (i.e. 1/0.005 x 10). The temporal pattern detected will be accepted if Theme finds, among all of the randomly generated relationships, n relationships (with (n/2000) < 0.005) of critical interval with internal intervals of the same size or smaller than those of the tested relationship.
c. Comparison with randomised data: Theme compares the properties of the patterns detected in the real data set and in the packages obtained through randomisation of these data. The results have been validated by randomising the data on five occasions and only accepting the patterns in which the probability of the randomised data coincide with the real data being equal to 0%.
d. Minimum occurrences: determining a rate of occurrence the same as or higher than 6, which corresponds to a percentile of at least 80%. That is, the rate of occurrence of at least 80% of all the event-types falling below the selected occurrence.

Subsequently, with the aim of examining in greater depth the behaviour preceding that reflected in the temporal patterns detected with the aforementioned search parameters, a second search has been carried out setting out as a requirement a frequency of occurrence the same as or higher than 3 (at least 70% of all the event-types, fall below the occurrence selected).

Results

Statistical analysis

Area from where the shot is taken and type of shot. As shown by the result of the Chi-square test, there are significant differences with regard to the type of shot and the area from where it is taken (χ^2 = 55.821, df = 32, P = 0.006).

With regard to the area from where the shots originate, see Table III, it is worth highlighting that in 35% of the cases, these are taken from area 80 and in 21.9% of the cases they are from area 51. While 13.5% correspond to area 70 and 12.2% to area 90.

In relation to the consequences of the shot, see Table III, we highlight that 30% are blocked or cleared by the goalkeeper, while 28.3% are sent out, 27.8% of the shots are related to the

Table III. Contingency table of the relationship between the area from where the shot is taken and the type of shot.

		AREA FROM WHERE THE SHOT IS TAKEN									
		CZ20	CZ40	CZ41	CZ50	CZ51	CZ61	CZ70	CZ80	CZ90	Total
TYPE OF SHOT	GS	0.4%		0.4%		0.8%		0.8%	8.9%		11.4%
	IS		0.4%	3.0%		8.0%	2.5%	4.6%	6.3%	3.0%	27.8%
	PS					0.8%		0.8%	0.8%		2.5%
	OS		0.4%	1.3%	0.8%	3.4%	4.2%	3.4%	9.7%	5.1%	28.3%
	KS	0.4%	0.4%	1.7%	0.4%	8.9%	0.8%	3.8%	9.3%	4.2%	30.0%
Total		0.8%	1.3%	6.3%	1.3%	21.9%	7.6%	13.5%	35.0%	12.2%	100.0%

intervention of a player from the opponent team that is not the goalkeeper, and that 11.4% of them achieved the ultimate aim of scoring a goal.

In relation to the 11.4% of the shots ending in a goal, it is worth highlighting that, of this percentage, 8.9% relate to shots taken from area 80 and that less than 1% of the goals are scored from each of areas 20, 41, 51 and 70, see Table III.

Type of shot and contact surface. Significant differences are also found when comparing the type of shot and the contact surface with which the shot is taken (χ^2 = 30.293, df = 16, P = 0.017).

Table IV includes the relationship that exists between the contact surface used for the shot and the type of shot. The contact surfaces which are used the most in shots are the instep (75.9%), the toe (15.6%) and the inside edge (5.9%).

Of the 11.4% of the shots that ended in goal, 6.3% are taken using the instep of the foot, 2.5% are with the inside edge, 1.7% with the toe and 0.4% are taken using each of the heel and the head.

Contact surface of the shot and area of the shot. As seen from the result of the Chi-square test, we are on the verge of significant differences when relating the contact surface with which the shots are taken with the area from where the shots are taken (χ^2 = 44.872, df = 32, P = 0.065).

Table V describes the relationship between the contact surface used for shots to goal and the area from which the shot is taken. It is worth highlighting the use of the instep in shots taken from all of the areas specified in Table V. Also, the inside edge of the foot is only used in the three areas belonging to the definition sector, areas 70, 80 and 90, while the

Table IV. Contingency table of the relationship between the type of shot and the contact surface.

		TYPE OF SHOT					
		GS	IS	PS	OS	KS	Total
CONTACT SURFACE	CNS	6.3%	21.9%	1.7%	21.5%	24.5%	75.9%
	CIN	2.5%	1.3%		0.4%	1.7%	5.9%
	CHE	0.4%			0.8%	0.8%	2.1%
	CTE	1.7%	4.6%	0.8%	5.5%	3.0%	15.6%
	CHD	0.4%					0.4%
Total		11.4%	27.8%	2.5%	28.3%	30.0%	100.0%

Table V. Contingency table of the relationship between the contact surface used for the shot and the area from where the shot is taken.

		CONTACT SURFACE					
		CNS	CIN	CHE	CTE	CHD	Total
AREA FROM WHERE THE SHOT IS TAKEN	CZ20	0.8%					0.8%
	CZ40	1.3%					1.3%
	CZ41	5.5%			0.8%		6.4%
	CZ50	1.3%					1.3%
	CZ51	19.9%			1.7%		21.6%
	CZ61	4.2%			3.4%		7.6%
	CZ70	8.9%	1.3%		3.4%		13.6%
	CZ80	25.0%	4.2%	2.1%	3.4%	0.4%	35.2%
	CZ90	8.9%	0.4%		3.0%		12.3%
Total		75.8%	5.9%	2.1%	15.7%	0.4%	100.0%

toe is used in the definition sector as well as in the three areas that correspond to the creation sector of the opponent's area of the pitch.

Temporal patterns

Of the temporal patterns detected that comply with the search parameters set out, due to their relevance, we have focused on the analysis of those which include the specific multi-event that reflects the shot. These temporal patterns correspond with those reflected in Table VI, with the order numbers 1, 2, 3, 4 and 5. This table sets out, for each temporal pattern, its length, occurrence, chain format and plays in which it takes place. Furthermore, in Figure 2, a graphical representation has been made of the information provided by the constituent multi-events. Remember that, at a spatial level, the highest precision obtained by the observational tool designed refers to "the area".

Later, in a second search, temporal patterns have been found (with occurrence the same as or higher than 3) that present behaviour preceding that reflected in the temporal patterns with order number 1 and 2. The temporal pattern 1.1 is related to temporal pattern 1; while temporal patterns 2.1 to 2.7, relate to temporal pattern 2. Moreover, in Table VI, the order number of the plays in which the previous relationship was produced appears underlined. In Figure 3, a graphic representation

Table VI. Temporal patterns that include multi-event with shot, detected using the pre-established search parameters.

Nº	Length	Occurrences	Chain format pattern	Play / Observational sampling
1	2	15	(cz80,ez80,os,cns cz80,ez80,aogk)	44-54-97-117-118-128-133-153-158-161-162-169-170-171-184
1.1	3	3	(cz70,ez80,pas,cin (cz80,ez80,os,cns cz80,ez80,aogk))	54-97-184
2	2	10	(cz51,ez80,ks,cns cz80,ez80,l)	6-36-72-77-103-120-135-147-190-193
2.1	4	3	(cz50,ez41,pas,cin ((cz41,ez41,con,cso cz41,ez41,han,cns) cz51,ez80,ks,cns))	6-17-120
2.2	3	3	((cz50,ez41,pas,cin cz41,ez41,con,cso) cz51,ez80,ks,cns)	17-103-120
2.3	4	3	(cz60,ez60,con,cso ((cz41,ez41,con,cso cz41,ez41,han,cns) cz51,ez80,ks,cns))	6-55-120
2.4	3	6	((cz41,ez41,con,cso cz41,ez41,han,cns) cz51,ez80,ks,cns)	6-17-53-55-91-120
2.5	4	4	(cz41,ez41,con,cso (cz41,ez41,han,cns (cz41,ez51,cnd,cns cz51,ez80,ks,cns)	17-53-91-120
2.6	2	5	(cz70,ez51,pas,cin cz51,ez80,ks,cns)	36-103-104-177-188
2.7	3	3	(cz90,ez90,foti (cz90,ez51,pas,cin cz51,ez80,ks,cns))	121-147-193
3	2	6	(cz61,ez80,os,cns cz80,ez80,aogk)	66-76-96-102-113-203
4	2	6	(cz90,ez80,os,cns cz80,ez80,aogk)	37-129-155-176-199-201
5	2	6	(cz51,ez80,os,cns cz80,ez80,aogk)	16-50-56-106-159-197

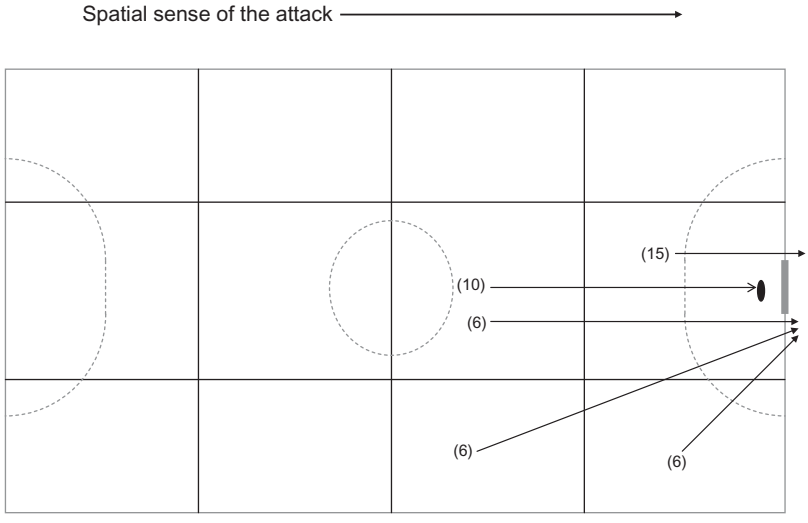

Figure 2. Graphic representation of the temporal patterns with order number 1, 2, 3, 4 and 5; where: (nº) = number of occurrences of the temporal pattern; ► = including play finish multi-event; and ⬬ = goalkeeper.

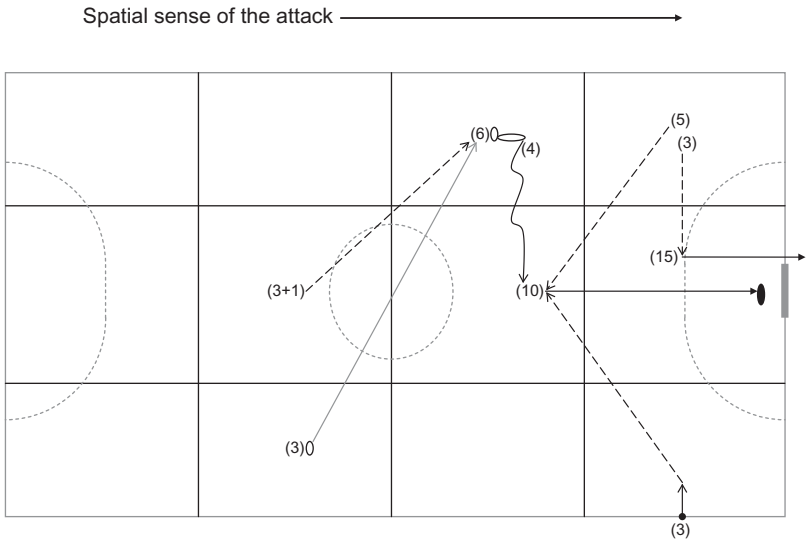

Figure 3. Graphic representation of the temporal patterns with order number 1 and 2, and of the related temporal patterns: 1.1, and 2.1 to 2.7; where: (nº) = number of occurrences of the temporal pattern; (nº + n) = temporal patterns that lead to the same graphic representation; •⟶ = including play start and finish multi-event; - -▶ = Pass; ∿⟶ = conduction; 0 = control; ⬭ = handling; ⬬ = goalkeeper; and → = Multi-event not included in the temporal pattern.

shows the information provided by these temporal patterns.

Discussion

In this work, an observational tool designed for studying the offensive phase of football has been adapted to futsal. The adaptation carried out has enabled us to obtain regular behaviour structures (temporal patterns) consistent with the specific characteristic of futsal, which provide relevant technical-tactical information, see Figures 2 and 3.

This research work pays special attention, making reference to the efficacy of the Spanish National Futsal Team in the matches played during the 2010 UEFA Championship, to the plays that originate a shot. The most noteworthy results obtained arise from the relationship between the area from which the shot was made, the result obtained, and the contact surface used for the shot.

Significant differences have been found when analysing the relationship between the area in which the shot is taken and the type of shot. In so far as interpreting the shots that end in goal, we highlight that of the 11.4% of the shots that achieved this, 8.9% were taken from area 80. This result is coherent with the results obtained from the analysis of the temporal patterns detected, as well as those referred to by Álvarez, Manero, Manonelles, and Puente (2004) where of the 1,771 goals analysed, in the Spanish National Futsal League, 90% were taken from a similar area (the one determined by 10 metres in length and width from the goalkeeper's area), Martín (2009) where 79% of the shots that achieved a goal came from the last 12 metres, and Alves (2010) where of the 53 goals scored during the 10 matches analysed from the last Futsal World Championship, 80% originated in the last 10 metres. Also, with the pre-established search parameters, no temporal patterns that include shots ending in goal have been found.

On the other hand, it is worth highlighting that the area from which the second most frequent shots are taken is area 51, located between 10 and 20 metres from the opponent's goal, widely reflecting the temporal patterns presented. This fact is coherent with the results obtained by Amaral and Garganta (2005), who, from the study of one-on-one actions in matches played in the Portuguese National Futsal League, highlight that after these one-on-one actions (in the area equivalent to the creation sector of the opponent's area of the pitch and definition sector), the most recorded behaviour was the shot.

With regard to the surface used to make the shots, remember that significant differences have been found in so far as the type of shot and the contact surface. Álvarez et al. (2004), focusing on the shots that end in goal, reflected relatively different results to those obtained in this work. In their study, they obtained results showing that the inside edge of the foot was the most used surface (42%), followed by the instep (36%) and the toe (13%); while this work shows that the instep (55.26%) has been the most used surface for shots ending in goal, followed by the inside edge (21.9%) and the toe (14.91%).

With regard to the contact surface used for the shot depending on the spatial situation from where the shot is taken, we confirm the coherence between

what has been included in theoretical manuals (Facchin, Seno, & Osimani, 1999) and the results obtained in this research work. More specifically, the instep has been used for shots taken from any of the areas of the futsal pitch; the inside edge of the foot (characteristically of increased precision and lower output speed of the ball) has only been used for shots taken from the definition sector; and the toe (less precision, but more output speed of the ball) has been used in the definition sector as well as in the creation sector of the opponent's area of the pitch. It should be added that all of the temporal patterns that include a shot reflect that the shot has been made using the instep as the contact surface.

Conclusions

The adaptation carried out on the observation tool and recording of the offensive phase of football (SOFCODER; Jonsson et al., 2006), allows the detection of regular structures (in this case, temporal patterns) that enable the tactical interpretation of the performance of the technical fundamentals specific to futsal (type of technical action and contact surface).

On the basis of the designed observational tool, the development of the offensive phase of the Spanish Futsal Selection has been studied in those plays in which a shot was achieved, in the matches corresponding to the 2010 UEFA Futsal Championship.

Among the most relevant results obtained, based on the statistical analysis and the information gleaned from the detected temporal patterns, the following are particularly noteworthy:

- Significant differences have been found when analysing the relationship between the area in which the shot is taken and the type of shot. The shots taken from area 80 are the ones which have the probability of obtaining the highest efficacy and they are the ones which have the highest rate of occurrence and are widely reflected in the temporal patterns detected. Also highlighted is the high rate of occurrence of shots from area 51, despite its poor efficacy.
- Significant differences have been found in so far as the type of shot and the contact surface used for the shot. More than three quarters of the shots are taken using the instep (the contact surface used for all the shots reflected in the temporal patterns), and these take place from all of the areas of the pitch (defensive, creation own area of pitch, creation opponent's area, definition). The next most used surfaces are the toe and the inside edge. The efficacy obtained with the inside edge is highlighted, pointing out that in all of the cases recorded the shot has been taken from the definition sector.

Following completion of this study, on the basis of those plays that have culminated in a shot (as a reference of effectiveness), successive work will aim to analyse the totality of the offensive phase in the game of futsal. In particular, we intend to analyse the relationship between the technical fundamentals specific to futsal and the spatial evolution of the game (focusing on depth and width).

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