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Goalkeeper as an outfield player: shooting chances at critical moments in elite futsal

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ABSTRACT

The aim of the present study was to identify the importance of the goalkeeper's chance to shoot at goal as an outfield player in elite futsal according to critical and situational variables. The sample consisted of 11,446 actions corresponding to 1325 matches from the Spanish Futsal League in the seasons from 2010 to 2015. Binary logistic regression and classification tree multivariate models were used to identify the best predictor variables related to the chance of shooting as a criterion of success. Results from the binomial logistic regression emphasised the success relationships when the teams played at home, against an equally ranked opponent, during balanced matches, and had up to two fouls. When the teams were drawing or losing, the actions of goalkeeper as an outfield player were unsuccessful. The classification tree results identified a greater chance of shooting in balanced matches during the playoffs, and with no more than two fouls. Negative effects were observed during the regular phase and when used by the teams in the final moments of a match. The identified trends will allow futsal coaches to recognise the most suitable situations for achieving success when using an attack with the goalkeeper as an outfield player.

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KEYWORDS
Performance analysis; goalkeeper; futsal; criticality; situational variables; chi-squared automatic interaction detection analysis

1. Introduction

The regulations of futsal that have been approved by FIFA since 2006 allow the use of the goalkeeper as an outfield player (5vs4+GK) during the game. The FIFA rules that regulate the participation of this substitute player, who changes places with the goalkeeper, consider it as an infringement when he touches the ball inside his own half of the pitch for more than four seconds (FIFA futsal law 12-fouls and misconduct), but does not consider it an infringement if he does so in the opponent's half of the pitch. That is, futsal coaches can use 5vs4+GK to carry out offensive actions in order to unbalance the number of players and increase the likelihood of generating shooting and goal scoring opportunities (Vicente-Vila & Lago-Peñas, 2016). Despite the few times that this game strategy is used considering total playing time, it is usually used in the final moments of the match as a strategic option when there is an unbalanced score (Barbosa, 2011; Ganef, Pereira, De Almeida, & Coppi, 2009;

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Newton-Ribeiro, 2011; Vicente-Vila, 2012, 2014; Vicente-Vila & Lago-Peñas, 2016; Vieira, 2010). Thus, due to the importance of this game strategy to change the match score, further studies are needed to understand the real impact of this option on the final outcome of the match (Vicente-Vila & Lago-Peñas, 2016).

Recently, some research has been developed in different team sports to study the moments in the match that are characterised by an unbalanced score. For that, researchers identified and characterised the Critical Moments (CMs) of the match (i.e. the moments in which changes in match-status or an unbalanced score occur depending on certain play time intervals in which those differences have a greater impact on the final outcome of the match) to understand how coaches, players and team behaviour changes depending on the CM (Ferreira & Volossovitch, 2013; Ferreira, Volossovitch, & Sampaio, 2014). The number of points or goal difference and the time played have definitely been highlighted by expert coaches as key variables to explain the CM of the game (Ferreira et al., 2014), to identify the game balance (Ferreira, Volossovitch, Gomes, & Infante, 2010), to identify a relationship between game incidents and scoring level (Sampaio, Lorenzo, & Ribeiro, 2006) and to characterise the margin of victory (Ferreira, 2006). In addition, fouls are other key variables that help to explain the final outcome when there is little time left at the end of the game. The appearance of CM in basketball is sometimes linked to the 4th team foul (Sampaio, Ferreira, Ibañez, & Ribeiro, 2004; Sampaio et al., 2006) which leads to a successful performance of free throws (Sampaio & Janeira, 2003). Thus the relationship among play time, match status and fouls committed is dynamic and binding throughout the match establishing the moments at which the decisive behaviours of the players are manifested (Araujo, Davids, & Hristovski, 2006) (see Figure 1).

Previous research has analysed the effect of the match status and the play time on futsal teams' offensive strategic plans. Specifically, authors have analysed how these two factors constrain coaches to adopt the 5vs4+GK game strategy. It has been observed that this game strategy is preferentially adopted when there is a scoreboard disadvantage of one goal or

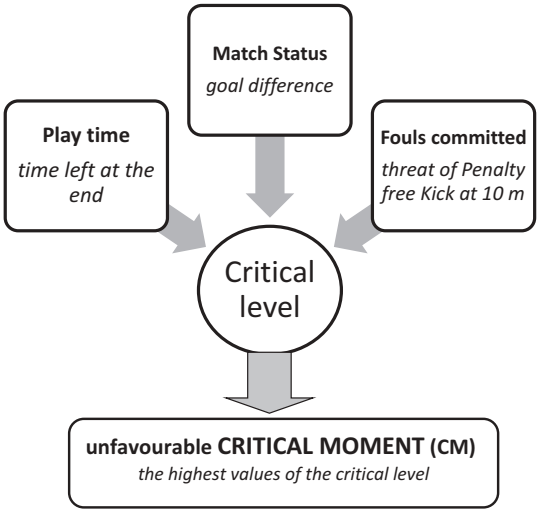

Figure 1. Critical variables constrain the match (Critical Level) and can trigger the CM

more (Barbosa, 2011; Vicente-Vila, 2014). In addition, the 5vs4+GK game strategy occurs almost in the last minutes of the match as a final ploy to reduce the goal disadvantage in a short time (Ganef et al., 2009; Newton-Ribeiro, 2011). More recently, it has been confirmed that expert futsal coaches decide to use the 5vs4+GK game strategy when unfavourable CM occur (Méndez, Gómez-Ruano, Ruiz, & Cui, 2017). Once established, it can provide a numerical and positional advantage related to more chances of shooting at goal (Ferreira-da-Silva, 2011), and shooting actions (Corrêa, Davids, Silva, Denardi, & Tani, 2014; Vicente-Vila, 2012, 2014; Vieira, 2010) or goals (Vicente-Vila, 2014; Vicente-Vila & Lago-Peñas, 2016) in the attack phase, compared to the balanced competitive scenario (GK +4vs4+GK). In tactical terms, a previous study in futsal also revealed that changes in the numerical relation between outfield players changed the tactical performance of the defending and attacking teams. Particularly, the defending teams strengthen their space occupation near the goal and in relation to goal position, due to the imbalance in the number of players in comparison with attacking team (Travassos, Vilar, Araújo, & McGarry, 2014), which could encourage the attacking team to shoot from the closer area. However, it must be said that the 5vs4+GK game strategy also presents the risk of the attacking team suffering the chance of a goal shot due to the free space in the defensive midfield of the attacking team and the absence of a specific goalkeeper in the goal.

The importance of situational variables on ball possession and on the final outcome of the match has also been studied for some time. It has been shown that variables such as match location, and the opponent's strength, can constrain game dynamics, change the effects of CM, and also the final outcome of the match (Lago-Ballesteros, Lago-Peñas, Rey, Martínez, & Domínguez, 2012; Pollard, 2008). Also, in futsal, changes in match location and opponent's strength can constrain coaches' strategies and the effectiveness of the 5vs4 +Gk game format. Specifically, the influence of match location on the futsal team's performance has revealed a huge constrain on the shooting capacity of local or away teams (Vicente-Vila, 2014). In addition, previous research has shown that when playing against weaker opponents, futsal teams were able to create a greater number of goal shooting chances from their offensive sequences (Borges, 2015).

However, the available literature exploring the relationship between situational, technical and tactical variables and the impact generated by the CM is limited (Moore, Bullough, Goldsmith, & Edmondson, 2014). This is probably due to the unpredictable and complex nature of the sport of futsal (Vicente-Vila & Lago-Peñas, 2016), and also the limited data available to analyse futsal technical and tactical behaviours. Thus, the use of multivariate statistical models, such as binomial logistic regression or classification tree analysis, have been suggested as suitable means to explore and model data related to the control of team performance indicators (Gómez, Lorenzo, Ibañez, & Sampaio, 2013; Gómez, Moral, & Lago-Peñas, 2015). Therefore, the aim of the present study was to understand how the appearance of unfavourable CM in futsal (linked with the highest values of the critical variables) and situational variables constrain the effectiveness of the 5vs4+GK game strategy to shoot at goal using multivariate analysis. It was hypothesised that the effectiveness of the 5vs4+GK game strategy for shooting at goal is constrained by critical and situational variables.

2. Method

2.1. Sample

A total of 1325 matches corresponding to the regular phase and final playoffs from the 2010–2011 to the 2014–2015 Spanish men's professional futsal league (LNFS 1st division) were analysed. The total sample was composed of 11,446 goalkeepers as outfield players (5vs4+GK), and it was observed if the team using 5vs4+GK finished its ball possession with or without a shot at goal. The Spanish Professional Futsal League (LNFS) granted the necessary permits to facilitate the images and their use for research purposes and the Local Institutional Review Board approved the study.

2.2. Data processing

The matches were analysed through systematic observation using the official league video analysis software (Astrofutsal®, www.http://astrofutsal.wixsite.com/astro-sport). Astrofutsal® software (Méndez & Méndez, 2005) is being employed for notational analysis in sports research and is currently a common tool used to analyse international futsal competitions (Paz-Franco, Bores-Cerezal, Barcala-Furelos, & Mecias-Calvo, 2014).

Two experienced observers (12 years of experience in the notational analysis of futsal events with the use of this tool) participated in the process of data reliability. To carry out the inter-observer reliability, the match between Pozo de Murcia-Inter Movistar (Playoff final series 2014–2015) was re-analysed. The two observers recorded the futsal match events and then the 5vs4+GK actions of both teams, and their records were compared using Cohen's *Kappa* index (k) (Robinson & O'Donoghue, 2007), obtaining *Kappa* values from the events of both teams of 0.91 and 0.92, respectively, and *Kappa* values of the 5vs4+GK actions of 0.89 and 0.88, respectively, which in both cases shows a very good agreement between both independent observers (Viera & Garrett, 2005).

2.3. Data notation

All the variables studied are defined in Table 1. The dependent variable was the number of ball possessions when each team used the 5vs4+GK format. A dichotomous dependent variable was established based on the previous one: successful (when the attack ended in a shot, regardless of its effects) and unsuccessful (when the attack did not end in a shot because the ball was lost, blocked or intercepted, a foul was committed, or there was any other rule violation).

The independent variables were related to critical and situational variables. The critical variables included: (i) the play time, that was defined in five sub-periods of 8 minutes (0–8, 9–16, 17–24, 25–32, 33–40, and extra time in case it was needed in playoffs); (ii) the match status (winning, drawing or losing); (iii) the fouls committed, the number of accumulated fouls by the team (0,1st, 2nd, 3rd, 4th or 5th); and (iv) the critical level (CL) of the match, considering the three previous variables, where the highest values represent the appearance of unfavourable CM (Ferreira & Volossovitch, 2013) for one of the teams (see Table 2). The *k*-means cluster analysis established three different CLs (low: cumulative values between 4 and 8; medium: values between 9 and 11, and high: values between 12 and 15).

Table 1. Distribution of relative frequencies (%) of shooting chances in attack with goalkeeper as an outfield player according to critical and situational variables (Crosstab command: Pearson's Chi-square, degrees of freedom, significance, minimum expected frequency and effect size).

	Unsuccessful n = 5754		Successful n = 5692						
Variables	%	n	%	n	χ^2	df	p	*MEF*	*ES*
Competition									
Regular phase	90.7	5219	90.8	5169	0.041	1	.840	526.13	0.00
Playoff	9.3	535	9.2	523					
Match location									
Home	39.5	2273	41.8	2377	6.045	1	.014*	2269.7	0.02
Away	60.5	3481	58.2	3315					
Opponent's strength									
Best (5vs4) vs. worst	7.6	438	8.0	458	7.165	2	.028*	445.57	0.02
5vs4 between balanced	60.0	3451	61.8	3520					
Worst (5vs4) vs. best	32.4	1865	30.1	1714					
Match type									
Balanced	52.6	3027	57.0	3247	22.755	1	.001**	2571.9	0.04
Unbalanced	47.4	2727	43.0	2445					
Play time									
1st half		186		189					
0–8	2.2	4	2.1	4	0.604	4	.978	3.97†	0.03
9–16	4.8	9	5.3	10					
17–24	10.2	19	11.1	21					
25–32	24.7	46	27.0	51					
33–40	58.1	108	54.5	103					
2nd half		5507		5458					
0–8	2.0	112	1.7	95	4.111	4	.391	103.04	0.01
9–16	3.3	182	2.8	155					
17–24	8.3	456	8.8	481					
25–32	28.1	1548	28.1	1534					
33–40	58.3	3209	58.5	3193					
Extra time		61		45					
Match status									
Losing	91.1	5243	89.1	5069	13.836	2	.001**	98.96	0.03
Drawing	7.4	424	9.0	511					
Winning	1.5	87	2.0	112					
Fouls committed									
0	3.9	224	3.4	194	12.227	5	.032*	207.87	0.03
1st	11.1	640	11.7	667					
2nd	24.2	1394	26.5	1507					
3rd	26.6	1531	25.1	1430					
4th	16.1	926	16.1	918					
5th	18.1	1039	17.1	976					
Criticality									
High (12–15)	73.5	4227	70.8	4028	14.286	2	.001**	191.95	0.03
Medium (9–11)	23.0	1324	26.0	1481					
Low (4–8)	3.5	203	3.2	183					

*$p < 0.05$; ** $p < 0.01$; MEF = Minimum expected frequency; † When MEF was less than 5 or the variable included values below 1%, the value of Fisher's Test was applied; ES = Effect Size.

The situational variables included: (i) the match location (playing at home or away); (ii) the opponent's strength, considering the 16-team ranking at the end of the regular season was measured as the end-of-season ranking differences between the two teams (Rank team A – Rank team B). Then, The *k*-means cluster analysis established three different groups (1: best ranked teams vs. worst ranked teams, 2: balanced level of opposition: best teams vs. best teams and worst teams vs. worst teams; 3: worst ranked teams vs. best ranked teams); (iii) the competition phase: regular phase or playoff (where only the first eight ranked teams

Table 2. Critical level of variables, and unfavourable CM triggering.

Critical level (cl)																		
MIN 15 2ND HALF							REMAINING TIME: 5 min				*Scoreboard*: 2–4							
Fouls Com	4		Inter Movistar				Goals	2	4	Goals		Pozo murcia					Fouls Com	3
Critical level	*1*	*2*	*3*	*4*	*5*	**CL**			*Critical level*	*1*	*2*	*3*	*4*	*5*	**CL**			
Match status	+2	+1	0	−1	**−2**	5			Match status	**+2**	+1	0	−1	−2	1			
Play time	0	9	17	25	**33**	5			Play time	0	9	17	25	**33**	5			
Fouls accum	1	2	3	**4**	5	4			Fouls accum	1	2	**3**	4	5	3			
Unfavourable CM						**Σ**	**14**								**Σ**	**9**		

participate); and (iv) the match type: balanced (with differences of up to two goals) or unbalanced (with more than two goals difference).

2.4. Statistical analysis

Firstly, a descriptive and inferential analysis was performed using Crosstab Commands. Pearson's Chi-square test was used to analyse the relationships between the chance of shooting at goal (Shot/not shot) with critical and situational variables. The effect sizes (ES) were calculated using Cramer's *V* test and their interpretation were based on the following criteria: 0.10 = small effect, 0.30 = medium effect and 0.50 = large effect (Volker, 2006).

Secondly, a binary logistic regression was used to assess the influence exerted by the interaction of the independent variables (situational and critical) on ball possession success with 5vs4+GK (Gómez et al., 2015; Vicente-Vila & Lago-Peñas, 2016). The dependent variable used in the model was converted into values 0 (1) as values for unsuccessful (successful). The independent variables included in the model were: competition phase, match location, opponent's strength, match type, match period, play time, match status and accumulated fouls (Gómez et al., 2013, 2015; Vicente-Vila & Lago-Peñas, 2016). For each variable, the odds ratios (OR) and their 95% confidence intervals (CI) were determined. The significance level was established at $p < 0.05$.

Thirdly, the exhaustive chi-squared automatic interaction detection (CHAID) classification tree analysis was used to split the sample into nodes (subgroups) in order to identify the best predictors (independent variables) on shooting chances (Gómez et al., 2015). The statistical model specifications were: (i) the significant level was set at $p < 0.05$; (ii) Pearson's Chi-square was used; (iii) the maximum number of iterations were 100–50; (iv) the minimum change in expected cell frequencies was 0.001; (v) the Bonferroni method was used to obtain the significant values of adjustment; (vi) cross-validation was carried out and, for each sub-sample, one tree was built with the remaining cases (90%); (vii) the tree had a three level maximum and (viii) the misclassification risk was calculated as a measure of the model reliability (Schnell, Mayer, Diehl, Zipfel, & Thiel, 2014). Statistical analyses were performed using IBM SPSS for Windows statistics, version 22.0 (Armonk, NY: IBM. Corp.).

3. Results

The distribution of frequencies for the success (shooting or not) of the studied variables is shown in Table 1 (percentage and case numbers). A significant relationship was found

Table 3. Results of shooting chances in attack with goalkeeper as an outfield player as a function of independent variables used.

							OR (95% CI)	
Variables	B	S.E.	Wald	df	*p*	OR	Lower	Upper
Competition	−.019	.069	.078	1	.780	.981	.857	1.123
Match location	0.79	0.39	4.191	1	.041*	1.082	1.003	1.168
Opponent's strength			4.062	2	.131			
Best (5v4) vs. worst	.033	.078	.180	1	.671	1.034	.887	1.205
5v4 between balance	.085	.043	3.934	1	.047*	1.088	1.001	1.183
Match type	.156	.040	15.001	1	.001**	1.169	1.080	1.266
Match period			1.032	2	.597			
1st half	.267	.263	1.030	1	.310	1.306	.780	2.185
2nd half	.228	.242	.892	1	.345	1.256	.782	2.018
Play time interval			3.521	4	.475			
0–8 min	−.201	.159	1.599	1	.206	.818	.599	1.117
9–16 min	−.106	.117	.815	1	.367	.900	.715	1.132
17–24 min	.067	.073	.841	1	.359	1.070	.926	1.235
25–32 min	.007	.045	.025	1	.875	1.007	.921	1.101
Match status			7.038	2	.030*			
Losing	−.222	.146	2.296	1	.130	.801	.601	1.067
Drawing	−.058	.158	.132	1	.716	.944	.692	1.287
Fouls committed			10.915	5	.053			
0 fouls	.017	.130	.017	1	.895	1.017	.788	1.313
1st	.149	.077	3.732	1	.053	1.161	.998	1.351
2nd	.135	.060	4.990	1	.025*	1.144	1.017	1.288
3rd	−.007	.059	.014	1	.904	.993	.885	1.014
4th	.051	.065	.608	1	.436	1.052	.926	1.195
Constant	−.127	.286	.199	1	.656	.881		

S.E: = standard error; CI = confidence intervals; Reference categories when OR = 1 were: (a) Regular phase; (b) Playing at home; (c) Worst 5v4 against best; (d) Balanced match, (e) Extra time; (f) Accumulated play time interval 33 min onwards; (g) Winning; and (h) 5th accumulated foul * $p < .05$.; ** $p < .01$.

between frequency of shooting and the 5vs4+GK format in the local teams, best ranked teams vs. worst ranked teams, when the match type was balanced, if the team was drawing or winning, accumulated until the 2nd foul and at a medium criticality level.

Results from the binary logistic regression analysis (Table 3) identify the relative effectiveness of ball possession (shot or not) with 5vs4+GK in relation to the independent variables. The results showed that the model was statistically significant (χ^2 = 65,667; p = .001), correctly classifying 52.7% of the cases. The model showed a greater possibility of shooting when the teams played as local (OR = 1.082), against similarly ranked teams (OR = 1.088), during balanced matches, with differences of up to two goals (OR = 1.169) and had up to two accumulated fouls (OR = 1.144). However, success decreased (less shooting chances) when the team was drawing (OR = 0.944) or losing (OR = 0.801).

Thirdly, the exhaustive CHAID classification tree shows four significantly influencing factors on the shots with 5vs4+GK (tree-stage three). Those factors led to 8 nodes (5 final nodes) of contrasting groups of 5vs4+GK success with respect to the chance of shooting; mainly established by the match type (level 1), accumulated fouls and competition phase (level 2) and play time (level 3). Figure 2 shows the categories for the dependent variable (successful–unsuccessful) and also the 8 nodes defined by the classification tree.

At level 1, the root node is split by the match type, with greater shooting chances achieved in the balanced matches (node 2: 52% successful). At level 2, it showed the importance of accumulated fouls and the competition phase. The success of the 5vs4 +GK attack was higher in teams that had not accumulated more than 2 fouls (node 5:

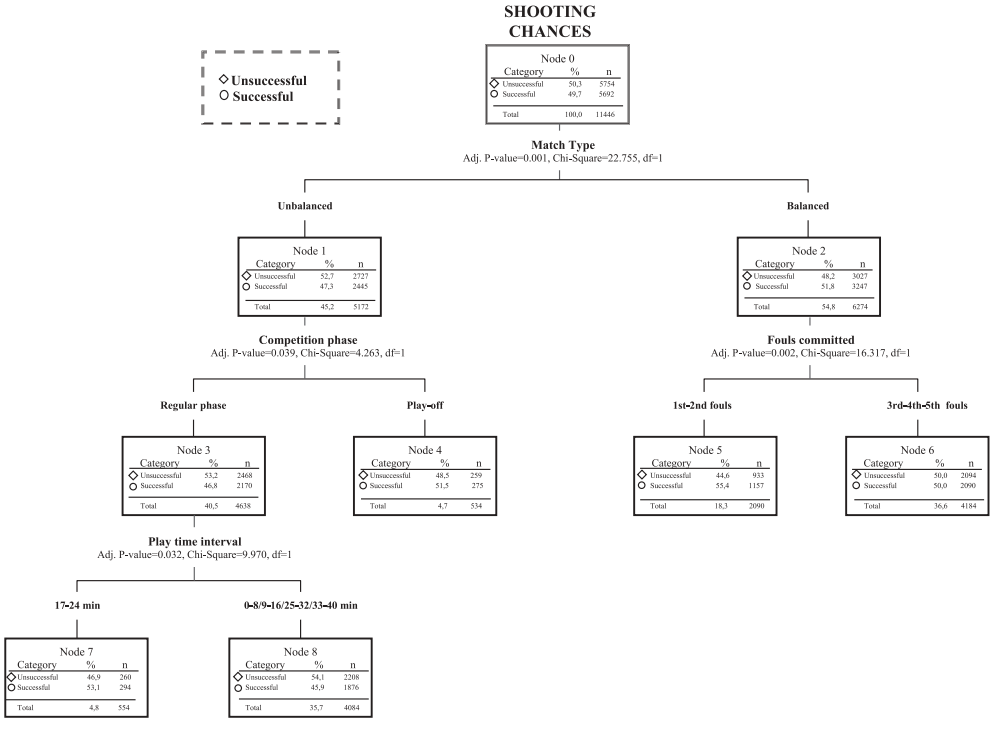

Figure 2. CHAID Classification tree analysis of shooting chances

55.4% successful), and during the playoff (node 4: 51.5%); but it conversely decreased when the strategy was used in the regular phase (node 3: 46.8%). At level 3, the tree identified significant differences with the predictor variables when play time was included. Thus, from node 3, the chance of shooting in the 5vs4+GK attack decreased in the final moments of the match (node 8: 45.9%) compared to the intermediate ones (node 7: 53.1%). This classification tree model explained 71.1% of total variance after cross-validation analysis.

4. Discussion

The aim of this study was to identify the critical and situational variables that best predict chance of shooting at goal of the 5vs4+GK game strategy. The main result of this study was that attacking with a substitute player who changes places with the specific goalkeeper did not reveal substantial differences in the likelihood of shooting or not (unsuccessful: n = 5754, 50.2%; successful: n = 5692, 49.7%). These results are in accordance with those of some authors who report a positive correlation between the 5vs4+GK scenario and the percentage of ball possessions with successful completion, establishing as a criterion of success both the achievement of a goal or a shot, compared with the balanced competitive scenario (GK+4vs4+GK). Specifically, the 5vs4+GK scenario achieves more success (up to 55%) compared to GK+4vs4+GK (up to 35%) (Vicente-Vila, 2012; Vieira, 2010). These trends seem to be in agreement with Travassos, Duarte, Vilar, Davids, and Araújo (2012)

about team dynamics in futsal, who showed that increasing the number of passing possibilities (extra outfield player with 5vs4+GK) would enhance the similarity of ball speed characteristics and passing accuracy between practice and competitive game conditions, which could play a decisive role for creating the chances of shooting at goal. Furthermore, as mentioned by Vilar, Araújo, Davids, Correia, and Esteves (2013), the numerical disadvantage of a defending team increases the distance of defenders to passing and shooting lines, increasing the passing and shooting chances of the attacking team with 5vs4+GK scenario.

The multivariate analysis established that some critical variables did predict that a 5vs4 +GK attack would be successful. Specifically, the classification tree reflected that shooting chances increased by 7% when the teams used the strategy in the intermediate play time interval of both halves, compared to the two closest intervals at the end of the match, which would be consistent with the greatest difficulty in achieving effectiveness when a CM occurs, and agrees with the criticality attributed by the scientific community to these final moments (Navarro, Gómez, Lorenzo, & Jiménez, 2013). On the other hand, the logistic regression confirmed that chances of shooting at goal were lower when the team is losing compared to winning. These results do not agree with those published by Gómez et al. (2015), who did not find that effectiveness of ball possession was dependent on the match status and match period, perhaps justified by the fact that their analysis was focused exclusively on close playoff games, which could skew the sample. In agreement, Vicente-Vila and Lago-Peñas (2016) corroborate the unexpected non-significant influence of the match status on ball possession success, which could be justified by the fact that the futsal teams with a partial disadvantage of one goal (recoverable) do not take risks playing with 5vs4+GK, foregoing a possible increase in offensive efficiency (Vicente-Vila, 2014).

In addition, the fouls variable also showed a significant relationship with successful (shot). Both the classification tree and the logistic regression confirm that the chance of shooting at goal with 5vs4+GK was somewhat better in teams that had not accumulated more than two fouls, compared to when they approached the 5th foul. The 5th accumulated foul or its proximity, and its possible consequences of a penalty free kick from the second penalty mark at 10 m (FIFA futsal law 13- Free Kicks), usually appears in the final moments of the match and a scoreboard disadvantage of the team that attacks with 5vs4+GK; hence, the present findings may suggest the worst likelihood of shooting coinciding with the occurrence of an unfavourable CM in balanced matches, and this could hinder the chance of shooting, which has been argued in other sports (Sampaio et al., 2006).

Concerning the influence of situational variables on the effectiveness of 5vs4+GK, the classification tree analysis identified the chance of shooting during the playoff phase as 5% higher compared to the regular phase. Similarly, Gómez et al. (2013) suggested that basketball teams in the regular phase use very different game strategies to those used in a playoff series, which can affect ball possession effectiveness. On the other hand, the logistic regression showed that the likelihood of shooting at goal with 5vs4+GK was higher in local teams. Conversely to expectations, the results of Gómez et al. (2015) reported that although match location was a significant factor, it adopted an unsuspected direction, with the result that ball possession effectiveness was lower for local teams compared to away. It seems then that local or away conditions would not have a strong relationship with offensive possession success in futsal (Vicente-Vila, 2014; Vicente-Vila & Lago-Peñas, 2016), which may be due,

according to Lago-Peñas (2009), to the situational variables having a unique effect on the players, teams and playing styles. In addition, the logistic regression analysis corroborates that a team attacking with 5vs4+GK vs. another of a similar level has higher chance of shooting compared to the worst ranked teams. These results are consistent with the few found in the futsal field which revealed the greater potential for the teams playing against weaker opponents in solving both attack and defence game situations in a favourable way (Borges, 2015; Brito, 2013).

In conclusion, the analysis of shooting chances with the goalkeeper as an outfield player showed the importance of some critical variables establishing the CL of the futsal matches, which can trigger the CM and constraint the teams and players' behaviour and performance. The futsal teams usually use the goalkeeper as an outfield player (5vs 4+GK) coinciding with a CM and the performance of teams that use the goalkeeper's tactic can be strongly constrained by critical and situational variables. Such information is extremely relevant for coach intervention and definition of game strategies during the game. In particular, the Spanish Futsal League performances specifically reflected the importance of the highest shooting chances in attack with 5vs4+GK in the playoff, as a local team, in balanced games, vs. equally ranked teams, when the team was winning or drawing, before accumulating the 3rd foul, and just before the last 8 minutes. Conversely, the shooting chances at goal decreased during the regular phase, in away teams, in unbalanced games, in worst ranked teams, when they tried to overcome an unfavourable score, in the last 8 minutes and with a high criticality level (see Figure 3).

The present study has some limitations that must be recognised and should be addressed in further research. Future studies must take into account the possible effects of a shot (including more categories: goal, stopped, post, outside, intercepted). In addition, the possibility given by the FIFA futsal laws to use 5vs4+GK should be studied more thoroughly, because it is currently being used by the best teams in a numerical inferiority situation by dismissal (GK+4vs3+GK) (Gómez, Méndez, Indaburu, & Travassos, 2018), and also by the weakest teams, not so much to generate shooting chances as to speculate

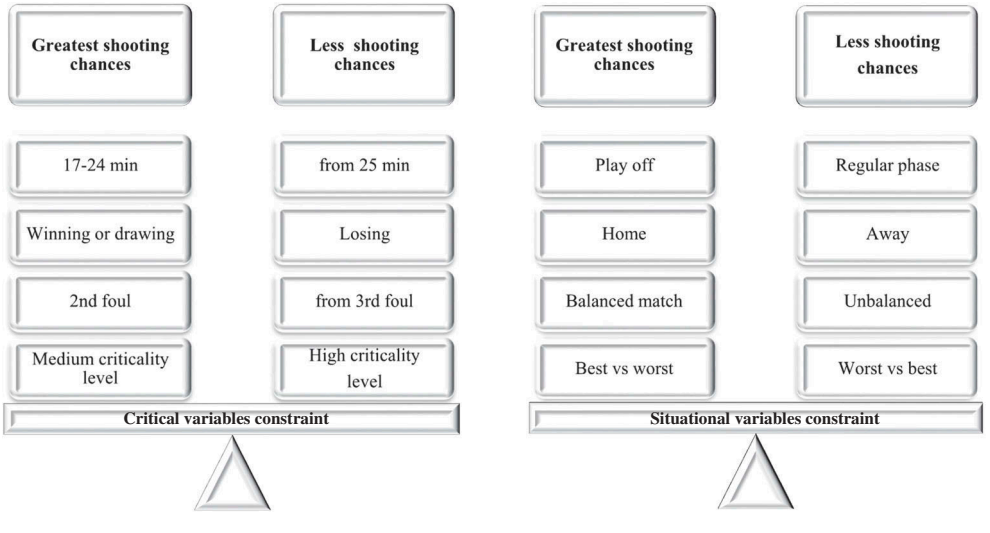

Figure 3. Critical and situational variables contraints on shooting chances.

with ball possession, which can provide new data on success. The current findings have some practical implications; the information obtained can be used by coaches to identify the most appropriate moments and the most advisable teams for its application, and with optimal training to obtain not only a greater possibility of shooting success, but also to prevent the possibility of the opponents scoring when the goal is empty.

Disclosure statement

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