

Use and effectiveness of fly goalkeepers in European futsal

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Abstract

Using a fly goalkeeper (FG) is one of futsal's most specific offensive strategy and gives leverage over the opponent to change the game's final result. This study will analyze the goals obtained from the use of a FG and relate them to the score momentum variable and others in order to offer a better understanding and to establish if there are differences between main European futsal leagues. Sample made from all offensive situations that lead to a goal while using FG scheme (n=673) during 2014-2015 Spanish, Russian and Italian pro futsal leagues. Observational, nomothetic and multidimensional study. Statistical analysis using the SPSS v22 for inferential and descriptive statistics. Chi-square relation for categorical variables and Spearman's Rho to establish non parametrical bi-varial correlations for ordinary variables, establishing significant differences $p < 0.05$. FG strategy obtains 15.33% of the total goals. The league's behaviour very similar, except in the Italian league, which scores more goals with their attack than against its defence, making differences between goals scored as local and visitor both in attack and defence.

Key words: Futsal, fly goalkeeper, goal, performance, observational analysis.

Introduction

During 2006-2007 futsal season and for handball's 2016 Rio de Janeiro's Olympic games the rules were modified allowing to use the goalkeeper as a field player or substitute it for another field player (Alvarez, Murrillo & Garcia, 2018; Beiztegui, Oliver & Sosa, in press). For futsal this strategy is called fly goalkeeper (FG) and in handball it is named fake goalkeeper and for both sports it will cause the most significant change in the game's structure, providing it its own character (Vicente-Vila & Lago-Peñas, 2016)

The structure and dynamics of a FG oscillates between an offense of five players on the opposite field to score a goal against a defensive scheme of 4 players folded close to their own goal (Mendez, Gomez, Ruiz & Cul 2017; Vicente-Vila & Lago-Peñas, 2016). The only rule restriction is the FG player can't touch the ball longer than 4 seconds is his own side of the field, with no time limit on the opposite side (Gomez, Mendez, Indaburu & Travassos, 2018).

This strategy has a double aim: increase offense efficiency or chew the clock without scoring with ball control. The latest trend is to also use FG when the team is in numerical disadvantage due to exclusion with the purpose of maintaining equal conditions in an attack-offense situation, as handball does (Mendez, Gomez, Ruiz & Travassos, 2019).

The use and importance of the FG has increased over time due to its high probability of varying the scoreboard. Its presence is common and symptomatic of the constant evolution of the game, generating a specific, systematic and organized sub-phase (Travassos, Araujo, Vilar & McGarry, 2011; Vicente-Vila & Lago-Peñas, 2016; Méndez et al., 2019) that requires a specialized training that will offer a numerical and positional leverage which, if well executed, will offer more opportunities of scoring a goal and therefore alter the final score of the game. (Côrrea, Davids, Silva, Denardi & Tani, 2014; Vicente-Vila & Lago-Peñas, 2016).

Studies with FG's scheme as a subject have evolved over time:

Descriptive studies of obtained goals. Results show similar value between goals scored with FG strategy and goals received defending FG strategy (Álvarez, Puente, Manero & Manonelles, 2004; Fukuda & Santana, 2012; Cassita, 2015; Da Cunha, Goncalves & Gomes, 2016; Giani, Faria & Da Silva, 2018; Göral, 2018; Méndez et al., 2019).

Comparative studies between the chances of scoring a goal on a symmetric or an asymmetric scenario. FG strategy is effective in order to increase offensive sequences compared to a symmetric scenario,

because the numerical disadvantage in the defenders causes them to stretch and therefore giving more space for and attacking player to pass and shoot (Vilar, Araújo, Davids, Correia & Esteves, 2013; Córrea et al., 2014; Vicente-Vila, 2012, 2014; Vicente-Vila & Lago-Peñas, 2016; Mendez et al., 2019). Méndez et al. (2019) establishes a 55% increase and Vicente-Vila & Lago-Peñas (2016) concludes goal opportunities using FG is 3.6 time higher than on equal conditions.

Studies about the most important variables to input FG strategy. Mendez et al. (2017) through questionnaires given to futsal coaches establish three main variables: team is losing, with a maximum difference of two goals, remaining time on the clock, being the last 8 minutes of the match and cumulative fouls, being two. Méndez et al. (2017, 2019), with the biggest sample used up to date, 11466 offensive sequences in 1325 Spanish league (LNFS) games between 2010-2015 seasons tries to determinate shooting possibilities with FG strategy and how coaches, players and teams behave according to the time on the clock, scoreboard result, fouls and other situations which can affect the final result.

As futsal scientific studies are quite scarce, only 13% are published in scientific magazines (Agras, Ferragut & Abalde, 2016; Moore, Bullough, Goldsmith & Edmondson, 2014) and even fewer compare different leagues (Göral, 2018; Gómez et al., 2018; Álvarez, Ramirez & Murillo, 2019) and taking into account that FG strategy is futsal's most specific, this study intends to, following previous research, analyze goals obtained due to the use of FG, both attacking and defending, and relate them to scoring momentum and any other scenarios which can lead to a better understanding of this strategy and to determine if there's any difference between the main European leagues.

Main research questions are:

- Which percentage of total amount of goals were scored using FG?
- Are the goals scored with FG strategy an advantage or a disadvantage?
- Which is the most critical moment when scoring a goal using FG?
- Which partial scoreboard is the most adequate to use FG?
- Are there any differences between using it at home or as visitor?
- Are there any differences between the goals scored using FG in the main European leagues?

Material and methods

Participants

Sample made with all offensive sequences that end up in a goal using FG strategy (n=673) during 2014-2015 futsal's pro leagues of Spain, Russia and Italy.

Table 1. Sample characteristics.

League	Teams	Matches	Goals	FG Goals
Calcio a5-Italy	11	109	695	131 (18.84)
Superleague-Russia	14	273	1975	317 (16.05)
LNFS-Spain	16	240	1719	225(13.08)
Total	41	619	4389	673 (15.33)

Spanish, Italian and Russian leagues have been chosen for being the best ones in Europe, according to UEFA European championships between 1996-2015 (Spain 7 wins, Italy 2 wins, Russia one win) (Goral, 2018).

Procedure

Games were analyzed using official highlights offered by the leagues via free internet platforms. The professional futsal leagues granted the necessary permits to facilitate the images and their use for research purposes and the University of Zaragoza's review board approved the study.

This observational, punctual, nomothetic and multidimensional study with non participative intervention and with a full perceptivity grade (Anguera & Hernández-Mendo, 2013) used an ad hoc designed instrument named Observational Analysis of Futsal (OAF-I) based on a review of previous research (Lapresa, Arana, Anguera & Garzón, 2013; Álvarez, Murillo, García & Parra, 2018) with the purpose of using it to analyze offensive sequences that end up in a goal from any league following UEFA-FIFA rulebook. The sample used were 4716 offensive sequences that ended in goal during 2014-15 Spanish, Italian and Russian seasons.

The instrument combines field formats and a system of categories, with exclusivity requirements (Sarmiento, et al., 2016) forming 26 fields and 324 categories. The unit of analysis are the offensive sequences that end in a goal, based on Pollard & Reed (1997) criteria. An offensive sequence starts when a player of the observed team (the attacker) gets possession of the ball and finishes the play with a goal. The tools used for the questionnaire validation was software package Microsoft Office Excel 2010. Lince, version 1.2.1 was used to register and code the data. GSEQ, version 5.1 was used to obtain the coefficient Kappa de Cohen. Values >0.8 were established as adequate as indicated by Landis & Koch (1997).

To establish validity and reliability of the tool Anguera, Magnusson & Jonsson (2007) criteria were followed. The creation and validation of the questionnaire was carried out by a board of five experts who met

experience and formation requisites (Anguera et al., 2007): futsal's national certification and been an acting coach or team staff member on at least one of the last five seasons in Spanish LNFS. Experts agreement were over 80% in all cases proving content's validity. Data reliability were done through two experienced observers (with a science degree in physical activity and sport). Reliability inter-intra observer obtained Kappa >0.9 value, through a test-retest of all league goals from week 2 (n=150 goals) and total observation's concordance.

Study's variables:

- Dependent: Number of goals using FG strategy. Dichotomous: Team attacking using FG strategy scores a goal (FGa) and team defending from FG strategy scores a goal (FGd)
- Independents: (i) moments: eight sub-periods of five minutes (m1: 0-5', m2: 5'01"-10', m3: 10'01"-15', m4: 15'01"-20', m5: 0-5', m6: 5'01"-10', m7:10'01"-15', m8: 15'01"-20') following the latter studies (Göral, 2018) time is divided in five minute intervals because when playing with a stopped clock it is considered to be a big enough interval for the purpose of the study, losing specificity when longer (ii). Previous result (win, draw, loss) (iii) partial scoreboard; goal differential at the time of the goal with FG (iv) match location (local or visitor).

Statistical analysis

Statistical package SPSS version 22.0, for inferential and descriptive statistic in search of associations between categorical variables. Data given in frequencies, averages and percentages and inferential stats given through contingency charts using non-parametrical tests Chi-square to establish a correlation between categorical variables in crossed charts and to base Spearman's Rho non-parametrical bi-varied correlations to establish the relation between two ordinal categories basing significant differences when value is $p < .05$.

Results

Goals using FG. Scenario type: Offense (FGa) defence (FGd)

Table 2. Goals obtained with FG strategy.

	GFG (n) (%)	FGd (%)	FGa (%)	%FGd goal/league	%FGa goal/league	p
3 leagues	673 (15.33)	334 (49.62)	339 (50.38)	7.60	7.72	.081
Russia	317 (16.05)	160 (50.50)	157 (49.50)	8.10	7.94	
Italy	131(18.84)	54 (41.20)	77 (58.80)	7.76	11.07	
Spain	225 (13.08)	120 (53.30)	105 (46.70)	6.98	6.10	

GFG: Goals Fly Goalkeeper; FGd: Goals defending FG; FGA: Goals using FG in attack; $p < 0.05^*$; $p < 0.01^{**}$

15.33% (673) of the total amount of goals are obtained by using FG, a 50.38% on FGA and 49.62% on FGd representing a 7.60% and a 7.72% of the total number of goals. When FGA and FGd are compared between leagues, there are significant statistical differences between the Italian and Spanish league (.025).

Moment of scoring the goal

Table 3. Timings of FG's goals.

		m1 Goals (%)	m2 Goals (%)	m3 Goals (%)	m4 Goals (%)	m5 Goals (%)	m6 Goals (%)	m7 Goals (%)	m8 Goals (%)	Total	p
3 leagues	FGd	1(0.3)	1(0.3)	2(0.6)	10(3.0)	6(1.8)	14(4.2)	66(19.8)	234(70.1)	334	
	FGa	0(0.0)	1(0.3)	2(0.6)	10(2.9)	5(1.5)	17(5.0)	62(18.3)	242(71.4)	339	
	Total	1(0.1)	2(0.3)	4(0.6)	20(3.0)	11(1.6)	31(4.6)	128(19.0)	476(70.7)	673	.979
Russia	FGd	0(0.0)	0(0.0)	2(1.3)	3(1.9)	4(2.5)	9(5.6)	29(18.1)	113(70.6)	160	
	FGa	0(0.0)	0(0.0)	1(0.6)	4(2.5)	4(2.5)	8(5.1)	27(17.2)	113(72.0)	157	
	Total	0(0.0)	0(0.0)	3(0.9)	7(2.2)	8(2.5)	17(5.4)	56(17.7)	226(71.3)	317	.989
Italy	FGd	1(1.9)	1(1.9)	0(0.0)	3(5.6)	1(1.9)	1(1.9)	14(25.9)	33(61.1)	54	
	FGa	0(0.0)	1(1.3)	0(0.0)	3(3.9)	1(1.3)	5(6.5)	14(18.2)	53(68.8)	77	
	Total	1(0.8)	2(1.5)	0(0.0)	6(4.6)	2(1.5)	6(4.6)	28(21.4)	86(65.6)	131	.621
Spain	FGd	0(0.0)	0(0.0)	0(0.0)	4(3.3)	1(0.8)	4(3.3)	23(19.2)	88(73.3)	120	
	FGa	0(0.0)	0(0.0)	1(1.0)	3(2.9)	0(0.0)	4(3.8)	21(20.0)	76(72.4)	105	
	Total	0(0.0)	0(0.0)	1(0.4)	7(3.1)	1(0.4)	8(3.6)	44(19.6)	164(72.9)	225	.832

m1: 0-5'; m2: 5'01"-10'; m3: 10'01"-15'; m4: 15'01"-20'; m5: 0-5'; m6: 5'01"-10'; m7:10'01"-15'; m8: 15'01"-20'; FGd: Goals defending FG; FGA: Goals using FG in attack; $p < 0.05^*$; $p < 0.01^{**}$

The behaviour of different leagues is very similar on both FGA and FGd, without obtaining significant differences. 70.7% of the goals are on m8 period, followed by m7, with a 19%. When comparing m8 with the rest of the moments together significant differences are obtained .000.

Previous result before scoring a goal (winning/draw/losing)

Table 4. Previous result before scoring a goal using FG strategy.

		FGd (%)	FGa (%)	Total	<i>p</i>
3 leagues	V	311 (93.11)	12 (3.53)	323	
	L	14 (4.19)	35 (10.32)	49	
	D	9 (2.69)	292 (86.13)	301	
	Total	334	339	673	.000**
Russia	V	144 (94.11)	9 (5.89)	153	
	L	9 (34.61)	17 (65.38)	26	
	D	7 (5.07)	131 (94.93)	138	
	Total	160	157	317	.000**
Italy	V	51 (98.08)	1 (1.92)	52	
	L	2 (25.00)	6 (75.00)	8	
	D	1 (1.41)	70 (98.60)	71	
	Total	54 (41.22)	77 (58.80)	131	.000**
Spain	V	116 (96.7)	2 (1.9)	118	
	L	3 (2.5)	12 (11.4)	15	
	D	1 (.8)	91 (86.7)	92	
	Total				.000**

FGd: Goals defending FG; FGa: Goals using FG in attack; V: victory; L: loss; D: draw; $p < 0.05^*$; $p < 0.01^{**}$

There are significant differences (.000) in all cases. In 86.13% of the goals scored with FGa the scoreboard was against, 10.32% a draw and 3.53% when the team is winning. With FGd 93.11% of the goals are scored with a favourable scoreboard, 4.19% a draw and 2.69% against.

Goal difference (goal difference when using FG)

Table 5. Difference in the number of goals on the parcial scoreboard before scoring with FG.

Dif goals	FGd (%)	FGa (%)
0	5 (1.49)	78 (23.14)
1	16 (4.79)	112 (33.23)
2	69 (20.65)	66 (19.58)
3	84 (25.14)	33 (9.79)
4	73 (21.85)	31 (9.19)
5	44 (13.17)	9 (2.67)
6	20 (5.98)	2 (0.59)
7	12 (3.59)	3 (0.89)
8	5 (1.49)	1 (0.29)
9	2 (0.59)	0 (0.00)
10	1 (0.29)	1 (0.29)
11	2 (0.59)	1 (0.29)
12	1 (0.29)	0 (0.00)
13	0 (0.00)	0 (0.00)
14	0 (0.00)	0 (0.00)
15	0 (0.00)	0 (0.00)
Total	334	337
Rho Spearman	-.843	-.952
<i>p</i>	.000**	.000**

Dif: Goals: difference in the number of goals on the parcial scoreboard before scoring with FG; FGd: Goals defending FG; FGa: Goals using FG in attack. $p < 0.05^*$; $p < 0.01^{**}$

The highest percentage of goals with FGa are obtained with one goal differential (33.23%), followed by a draw with 23.14% and two goals with 19.58%. a very significant inverse relationship is obtained $-.952^{**}$ and $p = 0.000$.

With the use of FGd the highest percentage of goals are obtained with a difference of 3 goals (25.14%) followed by a difference of 4 (21.85%) and a two (20.65%). A very significant inverse relationship is obtained -0.843^{**} and $p < .000$.

Match location (local/visitor)

Table 6. Location of match and goals scored using FG.

		PJd (%)	PJa (%)	p	
3 leagues	L	191(55.5)	153(44.5)	344	
		% Type of play	57.2	45.1	51.1
	V	143(43.5)	186(56.5)	329	
		% Type of play	42.8	54.9	48.9
	Total	334(49.6)	339(50.4)	673	.002*
Russia	L	94 (55.0)	77 (45.00)	171	
		% Type of play	58.75	49.0	
	V	66 (45.2)	80 (54.8)	146	
		% Type of play	41.25	51.0	
	Total	160	157	317	.092
Italy	L	32 (50.8)	31 (49.2)	63	
		% Type of play	59.25	40.25	
	V	22 (32.35)	46 (67.65)	68	
		% Type of play	40.75	59.75	
	Total	54	77	131	.035*
Spain	L	65 (59.1)	45 (40.9)	110	
		% Type of play	54.2	42.85	
	V	55 (47.8)	60 (52.2)	115	
		% Type of play	45.8	57.15	
	Total	120	105	225	.109

FGd: Goals defending FG; FGa: Goals using FG in attack; L: local; V: visitor; $p < 0.05^*$; $p < 0.01^{**}$

Significant differences are found (.002) in the global results of three leagues between the number of goals scored using FGd as locals (55.5%) and those scored as a visitor (43.5%), also for those scored using FGa as a local (44.5%) and those scored as a visitor (56.5%). The results from the Italian league gave significant differences (.035). As locals with FGd they scored 59.25% of the goals and as visitors 40.75%, while with FGa they scored 40.25% as locals and 59.75% as visitors.

Discussion

Scores using FG: type of play: offense (FGa), defense (FGd)

Which percentage of the total number of goals are scored using a FG strategy?

15.33% of the goals are scored using FG strategy, not finding significant differences. These results match the ones obtained by Gianni (2018) for 2015-2016 Spanish league season, in which 15% of the goals were obtained with FG's strategy (Table 2). The results obtained by Méndez et al. (2019) are lower, 10.7% during seasons 2010-2015 including not only the regular league but also playoffs, where the results from other studies show that the use of FG is different (Gómez et al., 2018; Méndez et al., 2019; Álvarez et al., 2019).

Are the goals scored with FG strategy an advantage or a disadvantage?

Results show great parity between FGa goals 50.38% (7.72% of the total number of goals) and FGd with 49.62% (7.60% of the total number of goals). No significant differences have been found, neither globally nor analysing each league individually. Thus showing a great balance between FGa and FGd. This balance is explained by the changes in strategy that come from using a FG. The defending team, in numerical disadvantage, remains near its goalposts, easing for long shoots and increasing opposing team to finalize sequences, and the attacking team leaves their goal unprotected, making any loose ball become a clear scoring opportunity against them (Méndez et al., 2017; Vicente-Vila & Lago-Peñas, 2016; Travassos, Vilar, Araújo & McGarry, 2014; Méndez, 2019).

Results are quite similar to those obtained by Giani et al. (2018) during Spanish 2014-2015 regular season with 9% with FGa and 6% with FGd. The different samples, phases and championships used, and the studies' methodological process used in another studies make the comparison of results to be approached with caution (Gómez et al., 2018; Méndez et al., 2019; Álvarez et al., 2019). Da Cunha et al. (2016) obtained with FGa a 14.2% and 8.6% with FGd, but it's a sample which analyses 58 matches and 35% of the 2014 Brazilian

league's total number of goals, but without specifying which phase of the league they belonged to. Cassita (2015) obtains during the second leg of 2013 Brazilian season a 13.9% with FGa without knowing the data for FGd goals, as he considered them counter-attack goals. Fukuda and Santana (2012), also from the Brazilian league, obtain higher values (21.8%) for FGa, but those values belong to the knockout format, which may lead to changes in the tactics used and therefore the use of FG (Giani et al., 2018). Méndez et al. (2019) obtains a 5.1% using FGa and a 5.6% using FGb including the regular league and playoffs.

The Italian league is the only one which obtains higher percentages with the use of FGa (58.8%) over FGd (41.2%). An offensive strategy beats a defensive one, making significant differences between the Italian and Spanish leagues (.025). It's difficult to explain these results, as they could be due to other variables that should be analysed profoundly, as Mendez et al. (2019) says, team performance is very conditioned by the skill differential between teams, the time remaining on the clock and the changing scenarios throughout the game.

Moment of scoring goal

Which is the most critical moment when scoring a goal using FG?

The leagues' behaviour is very similar in the moment of goal when using FGa and FGd, without obtaining significant differences (Table 3).

Comparing m8 with the rest of the moments all together there are significant differences .000 becoming the game's most critical moment, in which 70.7% of these type of goals are scored. Between m8 and m7 it's an 89.7% of the goals using FG. These results coincide with those obtained by Abdel-Hakim (2014) and Fukuda y Santana (2012). These results confirm Mendez's et al. studies (2017, 2019), who said FG strategy is focused exclusively in the last 8 minutes of the game. Cassita (2015) achieved similar values during the Brazilian 2013 season (during the 2nd leg). In this case he divides time into periods of 10 minutes and concludes that 6.9% of FGa goals are scored during the 1st, 2nd and 3rd periods each and 79.3% of the goals in the 4th period. There's no reference for FGd as he includes them as counter-attack goals. Mendez et al. (2019) mentions the efficiency in the use of FGa concluding that the last minutes (32'-40') are the worst as they contain 92.8% of the attacks without ending in goal and increasing the chances of being scored by 10.7%.

When speaking about the causes of the goals scored using FG, the explanation offered by numerous authors about mental and physical fatigue to explain the increase of the total amount of goals during the game (Fukuda & Santana, 2012; Silva et al., 2012; Cassita, 2015; Abdel-Hakim, 2014) must be taken into consideration, but if such fatigue is well managed through player substitutions, coaches' general perception is that the efficiency, both attacking and defending FG, is based mostly on their decision making skills with the pressure felt during the final moments of the game, which is a differential factor (Vilar et al., 2013; Mendez et al., 2017; Ferreira, Volossovitch & Sampaio, 2014). Kacem, Guemri, Naffeti & Elloumi (2016), in their 2012 European cup's study, shows how fatigue has a low impact at the end of the game in elite players. This affirmation must be cautiously approached as it was meant for national teams, with the best players of a country, homogeneous teams, which differ from the reality of a local team, even in premier league, where managing fatigue through player substitutions, must be even more important when the team's potential is low and the heterogeneity in the team is great (Álvarez, Manonelles, Giménez & Nuviala, 2009).

Scoreboard before scoring (winning, draw, losing)

The obtained results show three FGa possibilities according to scoreboard. 86.13% of the goals are scored when the scoreboard is against, confirming its use when losing, with an intention to even the scoreboard (Méndez et al., 2017; Méndez et al., 2019; Ganef, Pereira, De Almeida, & Coppi, 2009; Newton-Ribeiro, 2011; Vicente-Vila, 2012, 2014; Vicente-Vila & Lago-Peñas, 2016). 10.32% of the times it is used with a draw, assuming the risks to get a win (Méndez et al., 2017, 2019). Only a mere 3.35% is used when winning, and its objective could be the augmentation of number and duration of ball possession, trying to keep the game's pace without intentionally scoring a goal (Gómez et al., 2018; Méndez et al., 2019) (Table 4).

The winning team folds due to being in numerical disadvantage, waiting for an attacker's mistake. As a result 93.11% of FGd goals are scored with scoreboard advantage, 4.19% with a draw and 2.69% when losing.

Partial scoreboard (Goal differential scoring with FG)

Which partial scoreboard is the most adequate to us FG scheme?

The highest goal percentage with FGa is obtained when there is one goal difference with 33.23%, followed by draw with 23.14% and two goal differential with 19.58%. There's a significant inverse relationship -.952** and p .000, being a bigger goal difference the lesser use of the FG, keeping it with a four goal range and leaving their use up to six goals, proving previous author's studies in which they said FGa scheme is used only when a comeback is possible (Vicente-Vila & Lago-Peñas, 2016; Méndez et al., 2017; Méndez et al., 2019).

The highest goal percentage with FGa (33.23%) has been obtained with one goal of difference in the partial scoreboard, which differs from other authors, who show a significant association for FG when scoring disadvantage is more than one goal. Fukuda & Santana (2011) studied FG's use during 13 Brazilian youth cup team games and established that FG scheme appeared in 100% of analyzed ball sequences when the partial

scoreboard was in disadvantage with one or more goals and didn't appear in case of been winning or drawing. Vicente-Vila (2014) studied the use of FG of a team during Spanish pro futsal 2010-2013 seasons, and it appeared in 58.9% when losing for more than one goal, 28.9% when losing by one goal, and 10.4% in the case of a draw, and none when winning for the analyzed team. Also, this offensive strategy happened during the final moments of the match with the purpose of reducing scoreboard difference (Ganef et al., 2009; Newton-Ribeiro, 2011) explanation for this present study as it refers to goals scored with FG while other studies mentioned talk about their global use.

Teams during a draw, or losing by one or two goals, seem to opt for other strategies that allow them to carry initiative of the game to win, without the risks of using FG. (Ganef et al., 2009; Vicente-Vila & Lago-Peñas, 2016; Méndez et al., 2019) (Table 5).

The results obtained for FGd show that the highest goal percentages are obtained when the scoreboard is plus three goals with 25.14%, followed by four 21.85% and 20.65% with two goal lead. A very significant inverse relationship is obtained - .843** and p .000.

Game location (home / visitor)

Are there any differences between using FG strategy at home or as visitor?

The number of goals scored using FG are slightly higher when playing at home with 51.1% against a 48.9% as visitor. No significant differences have been found in total results nor between the leagues, obtaining similar results as other studies (Ganef et al., 2009; Vicente-Vila, 2016; Mendez et al., 2019) indicating that the specificity of this strategy is not determined by the location of the match eliminating the phenomenon of playing at home named "Home Field Advantage" (HFA). Jamieson's (2010) metaanalysis confirms HFA exists in team sports, presenting values around 60%. The few existent futsal research on this topic offer the same results, between 61-63% (Campos et al., 2015; Sampedro & Prieto, 2011). HFA includes situational factors as travel fatigue, home crowd pressure for visitor team, group support, the feeling of belonging, referees, field knowledge, etc. for the local team. (Nevill & Holder, 1999; Sutter & Kocher, 2004) (Table 6). Alvarez et al. (2019) with this same sample did not find differences between total number of goals scored as locals (54.12%) and as visitors (45.8%).

Vicente-Vila (2014) shows a bigger shooting capacity as a local than as a visitor, but not in effectiveness.

Similar to what happened when comparing goals scored using FGa and FGd, where differences were found between the Spanish and Italian league. When those goals were linked to the game's location significant differences have been found in global results (.002) and in the Italian league (.035). FG as a local: 44.5% global, 40.62% Italian; as visitor: global 56.5%, Italian 59.74%; FGd as local: global 55.5%, Italian 59.26% and as visitor: global 43.5%, Italian 40.74%. HFA playing at home could explain more offensive sequences with an scoring advantage, which explains a lesser use of the FGa but it has to be defended more, obtaining more goals as local with FGd than with FGa and as a visitor more with FGa than FGd.

Are there any differences between the goals scored using FG in the main European leagues?

All results indicate a very similar behaviour in all leagues without significant differences with the exception of the Italian league, which obtains more goals using FGa than FGd. This could indicate that the FG strategy work in this league outscores the defensive work. These results match other sports when comparing big leagues concluding they show very similar behaviours with small particularities (Martínez & González, 2019)

Conclusions

The use of Flying goalkeeper's strategy gets 15.33% of the total goals. There's no difference between goals scored attacking 7.60% and those scored defending 7.72%. The most critical moments are the last five minutes of the game with 70.7%, upping to 89.7% in the last ten minutes. Its main use is with an adverse scoreboard, so in 86.13% of the times there's a goal with FG there is an adverse scoreboard, 10.32% with a draw and 3.53% when winning. Its use remains until there is a four goal difference in the scoreboard obtaining a significant reverse relationship. No difference found between goals scored at home and away. The league's behaviour very similar, except in the Italian league, which scores more goals with their attack than against its defence, making differences between goals scored as local and visitor both in attack and defence.

Disclosure statement

No potential conflict of interest was reported by the authors.

Limitations

This present study has limitations that must be acknowledged and dealt with in future investigations. It focuses on the number of goals scored, not its global use or effectiveness, which requires a different type of study (Méndez et al., 2019).

Practical applications

Obtained results can help coaching staff to design strategies that are more realistic to competition, also to determinate when its use is more adequate.

FG strategy is a possibility defined in the rulebook, so coaches must work on it to be ready to face it in any competition and not only during the last minutes of a match with and unfavourable scoreboard. Practice must be duly structured during training sessions, both in offense and defence, trying to replicate at its best game conditions, even more for higher levels, where scoring results are more even, due to globalization and opponents scouting (Abdel-Hakin, 2014) and where games are decided by strategies and/or details for which the opponent team is unprepared.

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