

The effect of home advantage in professional futsal

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ABSTRACT

Introduction. Home advantage is an important factor to consider within the competitive sport and lets you know what effect it has to compete at home or away in the outcome of sporting competitions. **Aim of Study.** The objective of this study is to analyze the effect of home advantage in professional futsal, making an analysis and comparison between the 10 major national leagues in the world. **Material and Methods.** In total, 1.439 games were analyzed in 8 national futsal leagues. The results were obtained through the website Resultados and/or the websites of respective national federations. To quantify the home advantage, the methodology of percentage points was used. **Results.** According to the results, only at Italian futsal league did not present positive result, percentage of points gained above 50% in favour of the teams that play at home. The average percentage found in this study for home advantage was $56.15 \pm 6.15\%$ of the total accumulated points. **Conclusions.** We can conclude that to play at home in the main futsal leagues of the world presents advantage for the outcome of the matches.

KEYWORDS: futsal league, team sport, match location, indoor soccer, performance analysis.

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Introduction

When we try to analyze sport performance in any modality, we always seek explanations, variables, situations, among other demonstrative factors that can help us to understand a better or worse performance of the team and/or the athlete [6].

In all professional team sports, the team playing at home derives an advantage [20]. The advantage of playing at home is an important factor to consider in the competition sport that allows us to know what effect it has, competing at home or away from home, on the outcome of sports competitions [28]. Complex in nature, it has been portrayed since the first contests of English football from the late nineteenth century [22] and it remains being portrayed today [28].

Nowadays, home advantage is a phenomenon studied in different collective modalities, standing out, for example, studies in modalities such as Football [4, 5, 17, 18, 20, 22, 23, 25], Basketball [13, 26, 29], Handball [10, 11, 19], Ice hockey [1, 20, 29], Volleyball [14, 15], Futsal [3, 6, 27, 28], among others.

Pollard [21] states that match location, whether at home or away, remains an important factor to consider in the outcome of the matches. In a very consensual way, home advantage is one of the factors that most influence the final outcome of sports competitions [5, 13, 26, 29]. The home advantage concept is represented by the consistency that the teams win more than 50% of matches played at home, provided that they make the same number of home and away matches, facing the same opponents [5].

According to the literature, several potential mechanisms may offer this advantage in favour of the local team:

the crowd [18, 20]; the familiarity with the field [4, 5, 20]; the arbitration favouritism [18]; the effect of the displacement travels of visitors teams [4, 20, 23]. Other aspects such as changes in testosterone levels as territorial defence indicator (territoriality) in the principals, especially for goalkeepers [16]; type of ball provided by the contracting authority [8]; and the adoption of more defensive tactics and cautious by the visiting team, which may provide territorial advantage for the local team [20, 23]; can also contribute to the advantage of playing at home.

Psychological aspects have also been recommended, considering that the players believe in the existence of the advantage of playing at home, then it is likely to increase their confidence and, consequently, contributes to the existence of this phenomenon [17, 23]. The magnitude of this advantage depends on how beliefs are reinforced by feelings generated by players and coaches [21, 23]. Some studies have also shown that the geographic location and the occupation history of the countries can also offer differential in the advantage of playing at home (e.g. in Europe, home advantage in the Balkan countries, especially Bosnia and Albania, is much higher than other countries; in South America, home advantage is high in the Andean countries and lower elsewhere) [21].

The aim of this study is to analyse the effect of home advantage in professional futsal, making an analysis and comparison between the 10 major national leagues of the world. By observing certain teams patterns of behaviour in a given competition, as the characteristics of the home advantage, it is allowed to gather information that, if it is analyzed in successive repetitions, it will allow us to search and develop strategies and more realistic match tactics for a team in search of positive outcomes [30].

Material and Methods

We analysed all matches of the 10 major national futsal leagues in the 2015-2016 season. As a parameter, FIFA's ranking was used (consulted on February 8, 2017), with the top 10 being: Brazil, Spain, Russia, Argentina, Italy, Iran, Portugal, Ukraine, Kazakhstan and Azerbaijan, respectively. No data were found for the leagues of Kazakhstan and Azerbaijan. In this way, these leagues have been replaced by the leagues of Croatia and Slovenia.

After analyzing the data, it was decided to exclude the Brazilian and Russian leagues. Although in these 2 leagues the total number of matches at home and away is similar, only the tournaments where the teams face each other in an league system, i.e., where all the teams

face each other 2 times, one in the his field and other in the opposite field [28]. In the new Brazilian futsal league, each team faces opponents only once, being this match at home or away. In the Russian league, each team faces opponents 3 times, 2 home matches and 1 away match, or 2 away matches and one match at home. In total, 1.439 matches were analyzed in 8 national futsal leagues. The results were obtained through the website "Resultados" (www.resultados.com) and/or the websites of the respective national federations. To verify the reliability of the data found on the Resultados website, we analyzed data from 2 randomly selected leagues and compared with the official website of the national federation. The result of this analysis showed exactly equal data.

As quantification method, we used the procedure introduced by Pollard [20] for calculating the home advantage, during a league in a full season for sports in which the draw is a possible result of a match. The home advantage is calculated as the number of points earned by the principals teams, including draws, expressed as a percentage of total points earned at home and away. There is advantage to play at home when you get a value bigger than 50% of this ratio, which indicates that earns the most points playing at home than away. There is no advantage to play at home when they get an equal or lesser value of 50%, what indicates that they can gain equal to or less points at home or away from home.

All data were analyzed using the statistical package for PC SPSS 20.0. (Lead Technologies Inc, USA). Non parametric chi-square (χ^2) analysis was used to determine the statistically significant differences and the level of significance was set at $p < 0.05$.

Results

Table 1 shows the distribution of the matches and the percentage calculation of the home advantage in the main national futsal leagues in the 2015-2016 season. According to the obtained results, almost all the leagues presented advantage in favour of the teams that play at home: Argentina (55%), Croatia (57%), Italy (50%), Iran (62.3%), Portugal (55.7%), Slovenia (53.8%), Spain (52.1%), Ukraine (51.6%),

Discussion

According to the results of the table 1, the mean percentage found in this study for the home advantage was $56.15 \pm 6.15\%$ of the total accumulated points. Of the leagues analyzed, only the Italian futsal league did not have an advantage in favour of the teams that play at home, 50% proficiency index; all other leagues presented

Table 1. Distribution of matches in futsal leagues and calculation of home advantage

Leagues	Matches	Home wins	Draws	Away wins	Home advantage (%)
Argentina	320	150	50	120	55.0
Croatia	141	72	16	53	57.0
Italy	156	60	36	60	50.0
Iran	157	81	31	45	62.3
Portugal	201	98	27	76	55.7
Slovenia	97	46	12	39	53.8
Spain	272	121	51	100	54.1
Ukraine	95	44	10	41	51.6

positive results, indexes above 50%. Of the national leagues that showed positive results, the highest result was found in the Iranian futsal league, proficiency index of 62.3%; the lowest achievement rate was found in the Ukrainian league, 51.6%. According to home advantage definition proposed by Bray [2], it is considered that there is an advantage to play at home when the percentage of home wins minus the percentage of away wins is bigger than 5%. Thus, although the Ukrainian league presents a positive result (above 50%), this home advantage is not statistically significant.

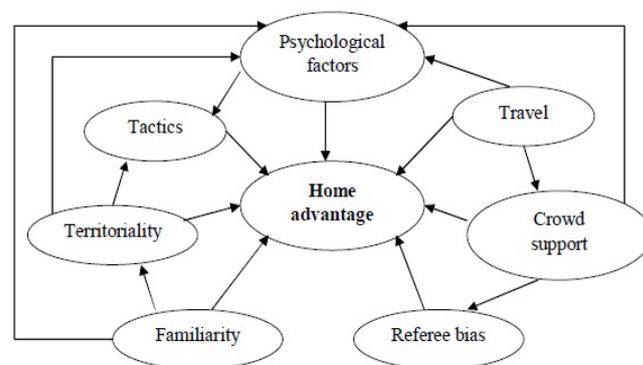
In football, the home advantage is widely studied, not being so in futsal [9, 27, 28], only 5 studies were found on the specific theme of calculating this advantage in this modality. The found studies analyzed the same league in several seasons, none of these analyzed and/or compared to multiple leagues. Sampedro and Pietro [27], analyzing the Spanish futsal league in the 1995-96 to 2009-10 seasons (3.940 matches), found that the home advantage value was 61.54%. Sampedro and Pietro [28], as well as Gómez, Pollard and Pascual [9], studied, among others sports, the home advantage in the Spanish national futsal league in the 2005-06 to 2009-10 seasons (1.170 matches) and verified that the home advantage factor was 62.3%. Dickel [7] analysed the matches of Brazilian futsal league in the 2008 to 2012 seasons (1.360 matches) and verified that the effect of home advantage was 63.4%. Campos et. al [3] studied the Brazilian futsal league in 3 seasons, 2012, 2013 and 2014 (532 matches). The authors verified that the home advantage was 63.8%.

The results in the cited studies present data superior to those found in the present study. Maybe it is happening in futsal the same trend that is occurring in football,

a reduction of home advantage over time [20, 25]. However, this is still a hypothesis, more studies are needed to infer more conclusive results.

Some other studies carried out in futsal investigated only the influence of the crowd in the performance of the players of the modality [6, 12]. However, this is only one of the factors that influence the home advantage (Figure 1).

Thus, according to Figure 1, we can perceive that home advantage is a multivariate phenomenon, influenced by several aspects that interact with each other. These aspects directly influence the performance of the players and, consequently, of the teams; influencing the outcome of the matches.

**Figure 1.** Inter-relationship of causes of home advantage [9]

According to the literature, among the aspects that most influence home advantage, the 3 major are:

Familiarity

It is considered by the technicians and athletes as the most important aspect, being able to reflect up to 24% of the home advantage [20]. Allows a more effective orientation/reorientation in the actions arising and required in the match [5, 17]. The knowledge of certain specific conditions, such as wind influence, sun positions and acquired visual references, can bring benefits [8, 20, 23]. There is some evidence that familiarity with local climatic conditions and altitude may also have an effect in favor of the local team [24].

Crowd Effects

Schwartz and Barsky [29] argue that the larger the crowd of a match, the greater the chance of winning in favor of the local team, with this advantage reaching 12%. Other studies have found a greater influence on home advantage in that it increases local crowd [17, 18], whereas behaviors are altered by the presence

of observers [26]. The results of most of the studies converge to the idea that the support of the public to the local team is a factor that positively influences the performance of these teams, as well as psychologically harm the opposing team and exert influence on the decisions of the referees.

Travel Effects

Clarke and Norman [4] found evidence that the advantage of playing at home increased as a function of the distance between teams playing against each other. Perhaps only in continental competitions, where there may be large displacements, this fact may generate physical wear and tear caused by travel and the drop in performance at the end of matches, as reported in some studies [2, 24].

Conclusion

The present study sought, instead of investigating a single league in several consecutive seasons, to analyze several leagues in the same season; Analyzing the current effect of home advantage on the major national futsal leagues of the world and comparing the results between these leagues.

We can conclude that the location influences the final outcome of the match. According to the data found in this study, of the national futsal leagues studied during the 2015-16 season, only the Italian league did not present a positive result for the home advantage. Although the Ukrainian league showed a positive result, i.e. above 50%, the difference between points obtained at home and away was not statistically significant (>5%). All other leagues showed positive and significant results in favour of home-grown teams. Thus, playing at home in these futsal leagues is an advantage to the final outcome of the matches.

We can also conclude that although this topic is well researched in other collective sports, in futsal there is still a shortage of studies in this specific area. Further studies should be performed so that more results, comparisons and possible conclusions can be inferred.

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