

AN ANALYSIS OF HOME ADVANTAGE IN THE TOP TWO SPANISH PROFESSIONAL FOOTBALL LEAGUES¹

PEDRO A. SÁNCHEZ, TOMÁS GARCÍA-CALVO, FRANCISCO M. LEO

*Faculty of Sports Science
University of Extremadura*

RICHARD POLLARD

*Department of Statistics
California Polytechnic State University*

MIGUEL A. GÓMEZ

*Faculty of Education
Complutense University of Madrid*

Summary.—This study examines the effect of the points system on home advantage in the two top Spanish professional football divisions between the 1980–1981 and 2006–2007 seasons. From 1980–81, teams were awarded 2 points for a win. This was increased to 3 points starting in 1995–1996. Lower home advantage was expected with the 3-point system as a consequence of encouraging more attacking play from away teams. The results of an analysis of 20,992 games showed no significant differences in home advantage values between the First Division (66.3% before and 62.1% after the 3-point system) and the Second Division (65.6% before and 59.5% after). Nevertheless, there was a significant decrease in home advantage in both the First and Second Divisions after the introduction of the 3-point system. The results were compared with two similar studies of professional football in England.

Home advantage is a well-known effect which has been found many times for different team sports as well as individual sports. Schwartz and Barsky (1977) documented the superior performance of the home team at ice hockey, baseball, basketball, and American football, and since then the effect has been found and further investigated in many studies (Courneya & Carron, 1992; Nevill & Holder; 1999, Pollard, 2008). In particular for football (soccer), home advantage has been shown to exist since the beginning of the Football League in England in 1888-1889 and has continued at all levels of the professional game since then (Pollard & Pollard, 2005). The first analysis of home advantage in football was made by Morris (1981). After this work, Dowie (1982), Pollard (1986), and Clarke and Norman (1995) formulated and investigated a number of hypothetical causes. Recently, Pollard (2008) made a comprehensive review of published research of the main explanations for home advantage in football: crowd effects, travel effects, familiarity, referee bias, territoriality, specific tactics, rule factors, and psychological factors.

Following these explanations, one aspect that has been studied is

¹Address correspondence to Pedro Antonio Sánchez Miguel, Faculty of Sports Science, University of Extremadura, Avda de la Universidad, S/N, C.P/ 10071, Cáceres, Spain, or e-mail (Pedroantonio.sanchez@juntaextremadura.net).

whether the effect changes over time. Thomas, Reeves, and Davies (2004) assessed the home advantage across 19 seasons from 1984–1985 to 2002–2003 in the top level of play of professional football in England, which is the First Division of the Football League (1984–1992) and the English Football Premiership (1992–2003). They found evidence of a significant decrease in home advantage after the introduction of the 3-points-for-a-win system in 1981. In a more detailed study, Jacklin (2005) analysed long-term trends in home advantage in the top two English Football divisions from the 1946–1947 to 2002–2003 seasons and concluded that the change from 2 to 3 points for a win in 1981 had led to a reduction in the home advantage in the First and Second Divisions of the English Football League. All teams attempt to win their home games, and according to this argument, in the 2-point system, the away team often played for a draw. The increase in “cost” of drawing a game as a result of the move to 3 points for a win had an effect because it encouraged attacking play for away teams. According to these arguments, the first hypothesis predicted a reduction of home advantage after the new point system.

Some of the factors, such as crowd size, that have been suggested as causing home advantage may vary according to the standard of competition. However, Pollard (2006a) found very little difference in home advantage between the First and Second Divisions of England, Spain, Italy, Germany, and France. Furthermore, in England there was no significant difference between the top four levels of professional football, with a decline in home advantage only becoming apparent at Level 5 and below, where players are semiprofessional or amateur. Nevill, Newell, and Gale (1996) showed a similar pattern of declining home advantage in Scotland. Jacklin (2005) produced evidence of a significant difference in home advantage between the top two levels in England in a study covering over 50 years of results, with the Second Division actually having significantly greater home advantage than the First. In view of no clear pattern in these previous studies, the second part of the study simply tested the hypothesis of no difference in home advantage between the First and Second Divisions in Spain against the alternative of a difference, without predicting the direction of the difference.

Differences in home advantage between different regions, different countries, and different leagues have been studied much less. Pollard (2006b) investigated home advantage in association football in Europe and South America, as well as a selection of countries of other continents, and found clear variations in home advantage among the countries. For example, home advantage in the south of Europe, especially in the Balkans, was generally found to be greater than in northern European countries. Data comparable to the annual home advantage calculations in the

top two divisions in Spain are readily available from two studies on English football (Thomas, *et al.*, 2004; Pollard & Pollard, 2005). Our third hypothesis predicted that home advantage in Spain would be greater than in England. There were two reasons for this. First, Spain (64%) had a higher home advantage than England (61%) in the 6 years considered by Pollard (2006a). Second, Spain introduced the 3-point system in 1995, 14 years later than in England, and would thus have had less time to experience any related reduction in home advantage.

In summary, the aims of the present study were (1) to examine the effect of the change in point system on home advantage in the two top Spanish football divisions, (2) to compare the home advantage values in the Spanish First and Second divisions, and (3) to consider whether there are significant differences in home advantage between Spanish First and Second Divisions and the two comparable divisions in England.

METHOD

Sample

The sample consisted of 27 seasons from 1980–1981 to 2006–2007, comprising a total of 86 professional Spanish football teams from the First and Second Divisions. The point system in Spain changed in 1995–1996 when 3 instead of 2 points were awarded for a win, with a draw remaining at one point for each team. The sample was therefore split into 15 seasons ($n=10,808$ matches) for the 2-point win system and 12 seasons ($n=10,104$ matches) for the 3-point win system. Archival data were obtained via the web site of the Spanish professional league (www.lfp.es).

League Characteristics

In the Spanish professional football leagues, teams played each other twice each season, once at home and once away. This type of playing schedule is said to be balanced and provides the framework for an unbiased calculation of home advantage. All games from both divisions were included. The only exception was the First Division in season 1986–1987 when a playoff system was included to determine the championship. In this case, this second stage competition was excluded from the analysis, since it did not represent a full schedule of games between the teams initially involved in the league. For the 1980–1981 season, the Spanish professional league had 18 teams in the First Division and 20 teams in the Second. The numbers of teams have changed in both divisions, reaching currently 20 clubs in the First division and 22 teams in the Second, with three clubs being relegated to the Second Division and another three teams gaining promotion to the First Division each season.

Apart from the change in the point system, there are other changes

that took place in the 1990s that need to be considered. In 1992–1993, the rule limiting back passing to the goalkeeper was introduced. In 1994–1995, an all-seater stadium was initiated for safety reasons to eliminate all standing view areas, which declined the capacity of the stadium and, therefore, there are less home-team fans to support. Moreover, the Bosman ruling of the European Court in 1995 allowed football players to move freely to another team at the end of a contract; since naturalization rules were changed, players became more mobile across national boundaries.

Procedure

To quantify home advantage in the present study, we have followed the method used by Pollard and Pollard (2005) to analyse the home advantage from a historical perspective, defined as the number of points gained at home by all teams expressed as a percentage of the total number of points gained at home and away during the season. Thus, a value of 50% means that equal success is achieved at home and away and hence no home advantage. The greater the value above 50%, the greater the home advantage.

Statistical Analysis

Three statistical analyses were done to test the three hypotheses of the study. (1) To compare the home advantage values before and after the new point system, the home advantage for each season and each division is compared before and after the 3-point system modification using an independent groups *t* test, (2) to compare the First and Second Spanish Football Divisions, a paired sample *t* test was done, and (3) to test the differences between Spanish First and Second Division and English Football First and Second Divisions, a two-way analysis of variance was performed with the four leagues and the 27 seasons as fixed factors. Effect sizes were calculated using Cohen *d*. The statistical analyses were performed using SPSS software Version 13.0.

RESULTS

In Table 1, the independent groups *t* test showed that there was a significant decrease in home advantage after the 1995–1996 season when the point system changed to 3 points for a match won. In the Spanish First Divi-

TABLE 1
INDEPENDENT GROUPS *t* TEST OF THE HOME ADVANTAGE IN THE FIRST
AND SECOND DIVISIONS OF THE SPANISH FOOTBALL LEAGUE

Home Advantage	2-point System		3-point System		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
First Division	66.27	3.88	62.09	2.93	3.09	.002
Second Division	65.61	3.52	59.51	2.03	5.32	<.001

sion, home advantage was 66.3% under 2 points for a win, falling to 62.1% under the 3-point system ($t_{25} = 3.09, p = .002, d = 1.24$). The corresponding figures for the Second Division were 65.6 and 59.5% ($t_{25} = 5.32, p < .001, d = 2.14$).

Table 2 shows home advantage values in the top two Spanish professional leagues. Chi-squared analysis indicated that all 54 values for home advantage in the two divisions in the seasons between 1980 and 2007 were significantly greater than 50%. This established a home advantage each year in each division. With regards to different levels of competition, the results showed that although the mean home advantage in the First Division in Spain (64.4%) was higher than in the Second Division (62.9%), the difference was not significant based on a paired sample t test over the 27 seasons of the study ($t_{26} = 1.91, p = 0.068, d = .37$).

For a comparison of home advantage between countries, it was possible to compare the results for the 27 yr. from Spain to results over the same time period in England. It should be noted that in England the top level was called the First Division up to 1992 when it was renamed the Premier League. The former Second Division is now called the Championship and constitutes the second level. The two-way analysis of variance showed a significant difference between the four leagues ($F_{3,78} = 6.59, p = .001$) and between seasons ($F_{26,78} = 4.25, p < .001$). A *post hoc* Tukey analysis indicated that home advantage in the Spanish First Division was significantly greater than in both the top level in England ($p < .001$) and the second level in England ($p = .003$). None of the other paired comparisons was significant (all $p > .10$).

DISCUSSION

The main aim of this study was to examine the effect of the change in the point system on home advantage in the two top Spanish football divisions between the 1980–1981 and 2006–2007 seasons. It was also suggested that the level of competition might have an effect on home advantage. A comparison of home advantage in Spain was made with comparable data from England.

The first hypothesis was supported. The results showed a significant difference in home advantage in both the two top Spanish professional football leagues after the introduction of the 3-points-for-a-win system (see Table 1). This evidence of a change in home advantage is an important finding because it is consistent with large fluctuations over time, which has been shown in ice hockey and basketball as well as football (Pollard & Pollard, 2005). This is in contrast to earlier studies which generally concluded that home advantage was relatively constant over time (Courneya & Carron, 1992; Schlenker, Phillips, Boniecki, & Schlenker, 1995). This suggests that there are other factors, such as the point system, that may affect home advantage in addition to those originally proposed by Courneya

TABLE 2
HOME ADVANTAGE IN SPANISH PROFESSIONAL FOOTBALL (1980–2007)

Season*	Number of Games		Home Wins		Away Wins		Draws		Home Advantage (%)	
	First Division	Second Division	First Division	Second Division	First Division	Second Division	First Division	Second Division	First Division	Second Division
1980–81	306	380	173	213	63	61	70	106	6797	70.00
1981–82	306	380	195	200	55	70	56	110	72.88	67.11
1982–83	306	380	179	195	48	69	79	116	71.41	66.58
1983–84	306	380	169	199	56	66	81	115	68.46	67.50
1984–85	306	380	129	221	68	53	109	106	59.97	72.11
1985–86	306	380	167	216	61	70	78	94	67.32	69.21
1986–87	306	306	177	163	49	52	80	91	70.92	68.14
1987–88	380	380	197	193	81	84	102	103	65.26	64.34
1988–89	380	380	175	176	93	99	112	105	60.79	60.13
1989–90	380	380	198	184	75	77	107	119	66.18	64.08
1990–91	380	380	198	175	66	57	116	148	67.37	65.53
1991–92	380	380	208	196	77	85	95	99	67.24	64.61
1992–93	380	380	182	181	88	96	110	103	62.37	61.18
1993–94	380	380	188	185	86	85	106	110	63.42	63.16
1994–95	380	380	181	162	86	82	113	136	62.50	60.53
1995–96	462	380	211	166	121	112	130	102	60.75	57.80
1996–97	462	380	220	169	123	99	119	112	61.48	60.21
1997–98	380	462	182	211	88	107	110	144	63.69	62.56
1998–99	380	462	191	206	92	124	97	132	64.24	59.81
1999–00	380	462	182	203	86	118	112	141	64.01	60.24
2000–01	380	462	199	193	82	115	99	154	66.86	59.50
2001–02	380	462	186	193	93	127	101	142	63.43	57.96
2002–03	380	462	176	181	99	116	105	165	61.16	57.99
2003–04	380	462	172	187	113	110	95	165	58.47	59.46
2004–05	380	462	192	187	88	143	100	132	65.00	55.26
2005–06	380	462	162	213	118	118	105	131	57.10	61.35
2006–07	380	462	172	222	110	121	98	119	58.93	61.96
Total	9,906	11,006	4,961	5,190	2,260	2,516	2,685	3,300	64.41†	62.90†

*2 points for a win until 1995, 3 points thereafter. †Mean annual home advantage.

and Carron (1992) under the general headings of crowd, travel, learning, and rule factors. A more recent study by Jacklin (2005) analysed home advantage from the 1946–1947 to 2002–2003 seasons in England and concluded there had been a decline and that the most likely explanation for this decline was the introduction of the 3-points-for-a-win system which was introduced in England in 1981. As the author pointed out, this new system has lessened the incentives for away teams to settle for a draw. The present study supports this conclusion with comparable data from Spain.

There are a number of observations and other possible factors that should be taken into account and further investigated before a definite conclusion can be reached. From Table 2, it can be seen that the decline in home advantage had actually started several seasons before the change in the point system, especially in the First Division. Several changes in Spanish football took place in the 1990s, all of which might have had a small effect in home advantage. In 1992–1993, the rule limiting back passing to the goalkeeper was introduced with the intent of reducing negative defensive play, especially by the away team. In 1994–1995, all-seater stadiums became mandatory, a move which tended to reduce the noise generated by the home fans and thus lessen the intimidation experienced by away teams. In 1995–1996 there was a change in points awarded for wins. But also in 1995–1996, the Bosman ruling came into effect. This made it easier for players to change teams, and thus, footballers began to give more priority to their personal interests, often at the expense of loyalty and identity to a particular team. Finally, the longer halftime interval and the greater use of substitutes have tended to work in the direction of increasing the amount of “information transfer” over time, a factor that has been associated with home advantage (Tsonis & Tsonis, 2001; Jacklin, 2005).

With regards to the second hypothesis, there was no significant difference in home advantage between the First and Second Divisions in Spain. This is consistent with the findings of Pollard (2006a), which failed to show any substantial or consistent differences between the First and Second Divisions of the main football leagues of western Europe (England, Spain, Italy, France, and Germany), although no statistical tests were reported and the period covered was only six seasons. Dosseville (2007) confirmed the lack of a difference between the First and Second Divisions in France, while Seckin and Pollard (2008) showed that home advantage in the top two divisions in Turkey was very similar. In contrast, Jacklin (2005) found that home advantage in the Second Division in England was significantly greater than in the First Division. Although the difference was small, it was based on a long series of data covering the 58 seasons from 1946–1947.

The third hypothesis was supported. Home advantage in the First Division of Spain was significantly greater than in both the First and Sec-

ond divisions in England. This could be due to the greater length of time that the 3-point system has been in use in England, as well as to other factors that were not considered in the analysis and that are known to influence home advantage. For example, a study of the football leagues of 51 countries in Europe showed that 76.7% of the variation in home advantage between the countries could be explained by differences in geographical location, travel, and crowd effects (Pollard, 2006b). As a result, home advantage was highest in the Balkan countries of southeast Europe, lowest in the north of Europe, and somewhat above average in the other southern European countries which included Spain. Thus, the higher home advantage in Spain compared with England is not necessarily a reflection of the different years in which the 3-point system was adopted.

Due to the fact that the results of the present work are based entirely on archival data from two leagues, the extent to which findings can be generalised beyond the current data is limited. However, a decline in home advantage in Spain has been shown to have taken place. Moreover, a likely contributing factor to this decline is a change in the number of points awarded for a win which took place in 1995, supporting the findings of Jacklin (2005) and Thomas, *et al.* (2004). However, it should be noted that other changes were also occurring in Spanish football during the period under study. The difficulty in controlling for these factors suggests the need to replicate the results of the present study in different countries and leagues in order to improve our understanding of the changes that have been taking place in home advantage in football.

REFERENCES

- CLARKE, S. R., & NORMAN, J. M. (1995) Home ground advantage of individual clubs in English soccer. *The Statistician*, 44, 509-521.
- COURNEYA, K. S., & CARRON, A. V. (1992) The home advantage in sport competitions: a literature review. *Journal of Sport and Exercise Psychology*, 14, 13-27.
- DOSSEVILLE, F. E. M. (2007) Influence of ball type on home advantage in French professional soccer. *Perceptual and Motor Skills*, 104, 347-351.
- DOWIE, J. (1982) Why Spain should win the World Cup. *New Scientist*, 94, 693-695.
- JACKLIN, P. B. (2005) Temporal changes in home advantage in English football since the Second World War: what explains improved away performance? *Journal of Sports Sciences*, 23, 669-679.
- MORRIS, D. (1981) *The soccer tribe*. London: Cape.
- NEVILL, A. M., & HOLDER, R. L. (1999) Home advantage in sport: an overview of studies on the advantage of playing at home. *Sport Medicine*, 28, 221-236.
- NEVILL, A. M., NEWELL, S. M., & GALE, S. (1996) Factors associated with home advantage in English and Scottish soccer matches. *Journal of Sports Sciences*, 14, 181-186.
- POLLARD, R. (1986) Home advantage in soccer: a retrospective analysis. *Journal of Sport Sciences*, 4, 237-248.

- POLLARD, R. (2006a) Home advantage in soccer: variations in its magnitude and a literature review of the associated factors associated with its existence. *Journal of Sport Behavior*, 29, 169-189.
- POLLARD, R. (2006b) Worldwide regional variations in home advantage in association football. *Journal of Sports Sciences*, 24, 231-240.
- POLLARD, R. (2008) Home advantage in football: a current review for an unsolved puzzle. *The Open Sports Sciences Journal*, 1, 12-14.
- POLLARD, R., & POLLARD, G. (2005) Long-term trends in home advantage in professional team sports in North America and England (1876–2003). *Journal of Sports Sciences*, 23, 337-350.
- SCHLENKER, B. R., PHILLIPS, S. T., BONIECKI, K. A., & SCHLENKER, D. R. (1995) Championship pressures: choking or triumphing in one's own territory? *Journal of Personality and Social Psychology*, 68, 632-643.
- SCHWARTZ, B., & BARSKY, S. F. (1977) The home advantage. *Social Forces*, 55, 641-661.
- SECKIN, A., & POLLARD, R. (2008) Home advantage in Turkish professional soccer. *Perceptual and Motor Skills*, 107, 51-54.
- THOMAS, S., REEVES, C., & DAVIES, S. (2004) An analysis of home advantage in the English Football Premiership. *Perceptual and Motor Skills*, 99, 1212-1216.
- TSONIS, A. A., & TSONIS, P. A. (2001) Information transfer and home advantage. *Mathematics Today*, 37, 24-25.

Accepted April 27, 2009.