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Supporters Are Not Necessary for the Home Advantage:
Evidence from Same-Stadium Derbies and Games Without an Audience

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Abstract

The home advantage is the phenomenon in sports whereby the home team wins more often than the visiting team. The current data shows that home crowd support is not a necessary precondition for the home advantage. In soccer games where no audience was present, the home team still had a home advantage. Furthermore, in some same-stadium derbies (games played between two teams that share a stadium, such as AC Milan versus Internazionale in soccer), the home team always has more crowd support, but in these games no home advantage existed. Together, these findings suggest that crowd support is not a necessary condition for a home advantage to occur, and the phenomenon might thus be much broader than assumed so far.

Keywords: sports, home advantage, crowd support

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A well known phenomenon in sports is that the home team has a better chance to win the game than the visiting team has, which is called the home advantage (Schwartz & Barsky, 1977). The home advantage exists in various sports such as American football, baseball, basketball, ice hockey and soccer (Courneya & Carron, 1992), but also in individual sports such as speed skating (Koning, 2005). Sport spectators generally believe that their support is causing the home advantage (Smith, 2005; Wolfson, Wakelin, & Lewis, 2005), but reviews of empirical studies on the home advantage concluded that more factors are likely to have an influence on this phenomenon (Courneya & Carron, 1992; Nevill & Holder, 1999).

The first review on the home advantage concluded that playing at home is likely to influence four game location factors, which influence the home advantage (Courneya & Carron, 1992). These four factors are the crowd (the home team generally has more supporters in the crowd), learning/familiarity (the home team is more familiar with the facility), travel (the visiting team might suffer from travel weariness) and game rules (rules in some sports potentially favor the home team). In the current article, we will investigate whether crowd support is a necessary condition for the home advantage to occur, or whether one can exist without.

In the first study on the home advantage, Schwartz and Barsky (1977) found that teams with larger crowds win more at home and they concluded from this that crowds are therefore important. However, better teams generally draw larger crowds and the causality is unclear; instead of crowd size influencing performance it is also likely that better performance leads to increased crowd sizes. Agnew and Carron (1994) found no direct effect of crowd size on the home advantage, but only a very small ($r^2 = 0.01$) effect of crowd density (occupied seats/total seats). Pollard (1986) did not even find any effect of crowd size

or crowd density on the home advantage. Furthermore, Clarke and Norman (1995) found a similar home advantage in all four professional soccer leagues in England. As the teams in the highest league have more supporters and higher crowd densities, but similar home advantages as those in the lower leagues, they concluded that the size of the crowd has no effect on the home advantage.

It is not yet clear, however, whether this suggests that crowds have no influence, or that they have no influence once they reach a certain size. Only one study so far tried to investigate whether crowd support is necessary for a home advantage. Moore and Brylinsky (1993) analysed the results of two basketball teams that had no crowd support due to a measles epidemic. They found a slight increase in the performance of individual athletes when no crowd was present, but because the authors could only analyze eight games and had no strong control condition, these results should be interpreted carefully. On specific aspects of the game, however, crowds do appear to have an influence. Referees are somewhat biased in favor of the home team, partly due to the crowd noise (Boyko, Boyko, & Boyko, 2007; Johnston, 2008; Nevill, Balmer, & Williams, 2002; Nevill, Newell, & Gale, 1996). However, crowds can also exert a negative influence on performance when they misbehave (Thirer & Rampey, 1979) and by making choking under pressure more likely (Baumeister & Steinhilber, 1984; Wallace, Baumeister, and Vohs, 2005).

To summarize, the results concerning the influence of crowds on the home advantage are mixed. However, it is still unclear whether crowd support is actually necessary for the home advantage to occur, as many supporters and athletes believe it to be, or whether one can also exist without crowd support. To investigate this, we analyzed games played without an audience. If crowd support is necessary for the home advantage, it should not appear in these games.

Games played without an audience

Twenty¹ games in the Italian soccer leagues were played without a crowd in the 2006-2007 season (7 in the Serie A, 13 in the Serie B; Stadiapostcards.com, 2007), because the stadiums of the home team at that time did not comply with the safety rules. We compared the home advantage in these games to the home advantage against teams that were of equal quality as the opponent that was played without a crowd. To select teams of equal quality, the final league standing of that season was used as a measure of team quality, and the team closest to the standing of the other team was selected for the comparison. For example, the game Livorno – Messina was played without a crowd. Messina accumulated 26 points during the season, and therefore Ascoli (with 27 points) was selected as the comparison team. The results of Livorno – Messina were therefore compared to those of Livorno – Ascoli².

In the games used for control, a normal home advantage existed as the teams won more points per game at home (1.75) than on the road (1.15, paired- $t(19) = 1.63$, $p = .110$, $d = 0.37$)³. In the home games these teams played without a crowd, a normal home advantage existed as well, with 1.60 points per game at home and only 0.80 on the road, paired- $t(19) = 2.26$, $p = .032$, $d = 0.52$. Their performance at home was similar, regardless of whether a crowd was present, paired- $t(19) = 0.37$, $p = .707$, $d = .09$. This is a first and clear indication that crowd support is not a necessary precondition for the home advantage.

To further investigate whether the home crowd influences the home advantage, a number of same-stadium derbies were analyzed whereby the home and away teams share the same venue, but the home team has the greater crowd support (as they sell the tickets). Thus, if crowds are important, a home advantage should still exist in same-stadium derbies, but if crowds are not critically important, the home advantage should disappear.

Same-Stadium Derbies

We investigated the interesting same-stadium derbies AC Milan versus Internazionale and AS Roma versus Lazio Roma. For these derbies, the home team has by far the most

supporters, as many tickets are owned by season ticket holders. For example, if AC Milan plays Internazionale only one of the short sides of the stadium is reserved for Internazionale fans, while the two long sides and the other short side are reserved for the AC Milan fans. If crowd support is a main cause of the home advantage, the home team should have an advantage over the visiting team in same-stadium derbies. If other aspects (e.g., familiarity with the stadium) are actually more important, the performance is expected to be equal, regardless of whether one is the home or visiting team in a same-stadium derby.

The data used for the analysis were the results of games in the regular competition (the Italian Serie A) of AC Milan, Internazionale, AS Roma, and Lazio Roma in the seasons 1988-1989 until 2003-2004⁴. Of these four teams, the home advantage in the same-stadium derbies was compared to the home advantage against one specific other team that was of equal quality as the same-stadium team in each season (to control for team quality, as we discussed in the previous analysis). Table 1 shows the average results of home and away games, for same-stadium derbies and the games against the teams selected for the comparison.

In the normal games against the teams that were of equal strength as the ones that share their stadium, a clear home advantage existed. Overall, the two Milan-based and the two Roma-based teams accumulated 0.73 points more at home than on the road. For same-stadium derbies, however, no home advantage existed whatsoever, as there was no difference between playing at home or away. Because the home team still has the most supporters, the finding that the home advantage completely disappears indicates that crowd support is not a necessary factor for the home advantage.

General Discussion

The current data show that 1) a home advantage exists for teams that play in their own stadium, regardless of whether a crowd is present; and 2) no home advantage exists in games

in which the visiting team is equally familiar with the stadium as the home team is, even if the home team has the most crowd support. This suggests that crowd support is not a necessary precondition for the home advantage.

Although there seems to be no overall effect of crowd support on the home advantage, crowds do seem to influence some aspects of the game. However, these effects exist in both directions. They can both be positive for example when crowd noise makes the referees unconsciously favor the home team (Nevill, Balmer, & Williams, 2002) and negative for example because a higher risk of choking under pressure exists in home games (Wallace, Baumeister, & Vohs, 2005). Thus, earlier research already found that crowd support influences the performance of home teams in positive as well as in negative ways, and the current research shows that a crowd is not necessary for a home advantage to occur.

Of the four factors thought to have an influence on the home advantage (Courneya & Carron, 1992), three can be discarded as necessary preconditions. In this research we find support for the idea that crowds are not necessary. Nevill and Holder (1999) already concluded that travel factors can not be a necessary precondition, because the home advantage also exists if hardly any distance is covered. They also discarded rule factors as a decisive cause, as many sports do not have rules that favor the home team. This only leaves familiarity as a potential necessary cause for the home advantage.

One possible way to test the importance of familiarity, is by measuring players psychological and physiological pre-game state in same-stadium derbies. A number of studies (Bray, Jones, & Owen, 2002; Carré, Muir, Belanger, & Putnam, 2006; Terry, Walrond, & Carron, 1998) already found that players reported to feel less anxious and more self-confident before a game at home than on the road. If familiarity would matter most, one would for example predict that the “visiting” players in a same-stadium derbies would not

differ in their pre-game state compared to the “home” team in those games, because they can still prepare for the game in their familiar environment.

If the home advantage in sports can indeed exist without crowd support, the phenomenon could potentially be much broader than has been assumed (and investigated) so far. There are not many situations in which a crowd is chanting to support someone, but there are many occasions in which someone is more or less familiar with the location where an action is performed. Consider for example a negotiation. Usually, one of the persons in the negotiation is more familiar with the location than the other person. If it is indeed the case that a person feels more self-confident and less anxious when negotiating at “home”, a home advantage seems likely. Although this is a purely hypothetical example that needs to be examined empirically before strong conclusions can be drawn, it seems plausible that in situations like this, a home advantage due to familiarity (or an away disadvantage due to being unfamiliar) could exist.

To conclude, the current findings suggest that crowd support is not a necessary precondition for the home advantage and points to three areas of interest for further research. First of all, it raises the question what is the most important cause of the home advantage, with familiarity being a likely candidate. Second, the current finding that supporters do not have an overall effect on the home advantage, combined with the findings that supporters can have both positive and negative effects on athletes’ (and referee) performance, indicates the further need to investigate *when* the influence will be positive or negative. Finally, the home advantage is a robust finding in the domain of sports, but could potentially be a much broader phenomenon than has been assumed (and studied) so far if crowd support is not necessary for it to occur.

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Footnotes

1. Eight more games were played without an audience, all of which were originally home games of Calcio Catania, the club of which the supporters had misbehaved. As a punishment for this, Calcio Catania played the remaining home games in the stadium of their opponent, without an audience present. These eight opponents thus played Calcio Catania twice in their home stadium, once with a crowd present and once without (the original home game of Catania). In these games, the home team had an advantage in regardless of whether a crowd was present: with a crowd they won on average 2.13 points, without a crowd this was 1.88 points. Note that this number of games was insufficient for statistical analysis as these scores are highly unreliable.
2. If we would instead use the overall home advantage of the teams over the entire season as the control group, the results are similar in all analyses in this article. We chose to select a single comparison team based on team quality, to effectively control for team quality.
3. Teams receive 0 points for a loss, 1 for a draw, and 3 for a win. Although not all results are normally distributed, we chose for t-tests and anova's to make the data easier to interpret. Non-parametric tests (Wilcoxon's) show similar results throughout all results. Note that the home advantage in the control condition is only a marginally significant result, but because it is so consistent with earlier work and because it is a medium sized effect it is assumed that this closely reflects a normal home advantage.
4. The seasons 2004-2005 and 2005-2006 were not taken into account, because several teams were punished for match-fixing in those seasons. This potentially influenced the results, and therefore these seasons were excluded from the analysis. Including those seasons does not change any of the current findings.

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Table 1. Home and Away Results of Same-Stadium Derbies and Results against Teams of Equal Quality as the Team that Shares the Stadium (Normal Opponent)

Opponent	Points per Game for Home Team	
	Home	Away
	M (SD)	M (SD)
Normal Opponent	1.64 ^c (1.34)	0.91 ^a (1.15)
Same-Stadium Derby	1.14 ^b (1.13)	1.42 ^{bc} (1.17)

$F(1, 63) = 9.93, p = .002, \eta_p^2 = .14$

Note. Data consists of 64 same-stadium derbies (64 home results, and thus also 64 away results), plus 64 home and 64 away games against selected comparison teams. Winning a game provides 3 points, a draw 1, and losing 0. Means with a different superscript differ significantly from each other at $p < .05$, tested with paired t-tests. Note that the home and away results of the derbies are logically the exact reversal of each other, as the home game for one team is the away game for the team that shares the stadium. To be able to perform paired analyses comparing the derbies to the “control” games, these were treated as separate results.