

The Home Advantage in Sport Competitions: A Literature Review

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A home advantage in sport competitions has been well documented. The strength and consistency of the home advantage has made it a popular phenomenon in sport today. Very little systematic research has been carried out, however, and the home advantage remains one of the least understood phenomena in sport. It appears that much of the game location research has been arbitrary, and a clear sense of direction is lacking. The purpose of the present paper is to provide a conceptual framework to organize a comprehensive review of previous game location research and provide direction for future research. The review of literature indicated that the descriptive phase of inquiry has been completed, and it is time to address the underlying mechanisms responsible for the manifestation of the home advantage. Possible methodologies and areas of inquiry are highlighted and discussed.

Home advantage is the term used to describe the consistent finding that home teams in sport competitions win over 50% of the games played under a balanced home and away schedule. The phenomenon of home advantage was well documented in the late 1970s and 1980s in a variety of sports at college and professional levels (e.g., Pollard, 1986; Schwartz & Barsky, 1977).¹ The strength and consistency of the home advantage has made it a popular phenomenon in sport today. On the basis of an informal content analysis of media reports, Edwards and Archambault (1989) concluded that more references are made to the difficulty of defeating a home team than to any other single factor, including prior record, player talent, injuries, and momentum.

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¹Baumeister and Steinhilber (1984) have suggested that a home disadvantage may exist in the final games of championship series in professional baseball and basketball, a tenuous assertion given (a) the small number of games on which it is based (cf. Heaton & Sigall, 1989), (b) the failure to replicate the findings using professional ice hockey (Gayton, Matthews, & Nickless, 1987), and (c) that excluding the perennially dominant team from each sport results in the elimination of the home disadvantage (Benjafield, Liddell, & Benjafield, 1989).

This preoccupation with the home advantage does appear warranted, however, because research has demonstrated that game location (i.e., playing at home versus away) is as good a predictor of outcome at the college and professional levels as is team quality (Schwartz & Barsky, 1977; Snyder & Purdy, 1985) or scoring first (Courneya, 1990). Yet, as Pollard (1986) and others have pointed out, despite the pervasiveness and importance of game location in predicting outcome, little systematic research has been carried out to determine its nature or causes. Thus, the home advantage remains one of the least understood phenomena in sport.

The purpose of the present paper is to provide a conceptual framework to highlight and organize the major components involved in the home advantage process. This framework is then used to guide a systematic and comprehensive review of the home advantage literature, including descriptive and explanatory research. Finally, possible directions and methodologies for future research are offered that might help clarify the nature and causes of this phenomenon.

Framework for Game Location Research

Theoretical explanations for the home advantage are many and varied (Edwards & Archambault, 1989). They range from biological-based theories of territoriality and circadian rhythm changes, to social psychological-based "drive" theories (e.g., social facilitation) and social cognitive theories (e.g., self-presentation, perceived social support), to sociological-based theories of community celebration (e.g., ritual integration). Sufficient evidence to support one theoretical explanation over another, however, does not exist at present. It is therefore more prudent to propose a framework for game location research that can incorporate constructs from many possible theoretical interpretations. A framework also has the added feature of allowing for the ultimate development of a multiple-level theoretical interpretation of the home advantage phenomenon.

The proposed framework for game location research incorporates five major components: game location, game location factors, critical psychological states, critical behavioral states, and performance outcomes (Figure 1).

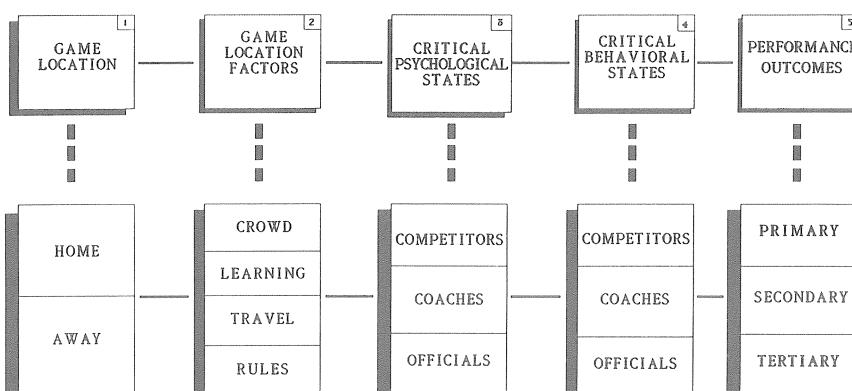


Figure 1 — Framework for game location research.

Game location (Figure 1, Box 1) is the term used to represent the location of the contest or competition. The only possible alternatives are *home* or *away*. A neutral site could exist if both teams competed away from home or if both teams used the same home facility, but in these situations the concept of a home advantage ceases to exist. Game location can potentially give rise to several game location factors.

Game location factors (Figure 1, Box 2) can be categorized under the broad rubrics of *crowd*, *learning*, *travel*, and *rule factors*. The major theoretical explanations are drawn from the various categories. Crowd factors (e.g., size, density, proximity) are intended to reflect the social support and positive reinforcement that home teams receive from their partisan crowds. Learning factors stem from the familiarity of home teams with the physical characteristics of the playing facility (e.g., surface size and texture, open vs. closed stadia). Travel factors (e.g., distance, length of road trip) take into account the possibility that physical and mental fatigue and the disruption of routine habits resulting from travel might put the visiting team at a disadvantage. Rule factors acknowledge the possibility that the rules in some sports may favor home teams (e.g., batting last in baseball, last line change in hockey). The game location factors are hypothesized to influence various psychological states.

Critical psychological states (Figure 1, Box 3) influenced by game location might vary based on the group of principals under consideration, namely, *competitors*, *coaches*, and *officials*. Some potentially important cognitive states might include self-presentational concerns, evaluation apprehension, confidence, outcome expectations, anxiety, and cohesion. Changes in affective states (e.g., enjoyment, excitement, stress, anger, depression, and pride) might also be experienced.

Critical behavioral states (Figure 1, Box 4) must ultimately be influenced if game location is to have an impact on performance. The critical behavioral states affected might also vary among *competitors*, *coaches*, and *officials*. Competitors' critical behavioral states might include amount of effort expended, persistence in the face of obstacles (e.g., trailing at some point in the contest), and level of aggressiveness. For coaches, the critical behavioral states might be strategical and tactical decisions (e.g., type of defense, substitutions), and for officials, the critical behavioral states might include subjective decisions.

Performance outcomes (Figure 1, Box 5) influenced by game location can be measured at three distinct levels: *primary*, *secondary*, and *tertiary* (Courneya & Chelladurai, 1991). The primary measures represent the first stage of performance outcome in competitions and most closely reflect fundamental skill execution (e.g., batting average, free throw percentage, penalties per game).

The secondary measures represent the intermediate stage of performance outcome in competitions and usually reflect the scoring necessary to win a contest (e.g., points scored, goals allowed) or subtle variations thereof (e.g., runs batted in, earned run average). The tertiary measures are the traditional outcome measures in that they indicate the final outcome of the contest (e.g., win/loss, point differential, and ratio of final score). All three levels of performance measures have been analyzed extensively in home advantage research (e.g., Edwards, 1979; Irving & Goldstein, 1990; Schwartz & Barsky, 1977).

Review of Game Location Research

A literature search (computer and manual) uncovered over 30 studies (including published reports, conference abstracts, and theses) that provided

direct and indirect empirical evidence regarding the effects of game location. The studies are reviewed in three major sections that follow the organization of the framework presented in Figure 1.

The first section deals with documenting the existence of a home advantage and answers the “what” question. Essentially, this category consists of research that analyzes the relationship between game location (Box 1) and performance outcomes (Box 5). The second section presents studies that have attempted to answer when the home advantage will exist. That is, the focus is on what game location factors moderate the degree of home advantage. This research is concerned with the relationship between game location factors (Box 2) and performance outcomes (Box 5). The third section consists of research addressing the underlying mechanisms of change responsible for the home advantage (i.e., why the home advantage comes to fruition). This section is subdivided into two categories: research studies analyzing the relationship between game location (Box 1) and critical psychological states (Box 3), and research analyzing the relationship between game location (Box 1) and critical behavioral states (Box 4).

The “What” of the Home Advantage (Figure 1, Boxes 1 and 5)

The seminal work on the home advantage was conducted by Barry Schwartz and Stephen F. Barsky (1977). Although bits and pieces of evidence for a home advantage had been presented in earlier newspaper articles (e.g., Koppet, 1972; Lane, 1976; Roth, 1957), Schwartz and Barsky were the first to provide a large-scale systematic documentation of its existence. Table 1 begins with the work of Schwartz and Barsky and chronologically follows the various studies that have provided documentation of a home advantage in various sports.

Table 1
Home Winning Percentages in Sport Competitions

Authors	Level of sport	Seasons	N	HWP ^a	HWP ^b
Schwartz & Barsky (1977)	Major League baseball	1947-56	12,320	—	53.0
		1971	1,880	—	52.6
	National Football League	1945	NA	NA	59.0
		1950	NA	NA	55.0
		1955	NA	NA	63.0
		1960	NA	NA	55.0
		1965	NA	NA	51.0
		1971	182	57.1	57.5
		1971-72	542	61.3	63.7
	National Hockey League	1972-73	NA	NA	66.0
		1971	910	59.1	59.2
		1971	1,485	—	+24.0 ^c
Edwards (1979)	U.S. college football	1947-72	617	—	66.9 ^d
		1952-66	288	—	55.6
	Major League baseball	1974-76	349	—	54.4
		1974-76	577	—	58.6
		1977-78	90	—	70.0
Varca (1980)	U.S. college basketball				

Table 1 (Cont.)

Authors	Level of sport	Seasons	N	HWP ^a	HWP ^b
Dowie (1982)	English Football League (soccer)	1946-51 1958-63 1976-81	NA NA NA	63.5 64.8 64.3	NA NA NA
McCutcheon (1984)	high school football high school basketball high school cross-country	1980-82 1982-83 1983	218 312 100	NA NA —	54.1 51.3 53.5
Mizruchi (1985) Snyder & Purdy (1985)	National Basketball Association	1972-82	NA	—	64.1
Pollard (1986)	U.S. college basketball Major League baseball National Football League National Hockey League National Basketball Association North American Soccer League English County Cricket English Football League (soccer)	1982-83 1982-84 1982-84 1981-84 1981-84 1982-84 1981-83 1888-1900 1900-15 1919-30 1930-39 1946-60 1960-70 1970-81 1981-84 1960-84	90 6,316 574 2,520 2,829 512 478 2,630 5,330 5,082 4,191 6,468 4,620 5,082 1,386 1,439	— 55.0 59.9 61.5 63.3 65.2 53.7 56.1 67.9 65.8 66.0 67.3 62.5 63.2 63.6 63.9 59.8	66.0 53.6 55.0 61.5 63.3 65.2 56.1 72.2 70.2 71.0 72.6 66.3 67.5 69.1 67.1 63.9 ^d
Gayton, Mutrie, & Nearn (1987)	U.S. women's college basketball U.S. women's college field hockey U.S. women's college softball	1968-85 1967-85 1975-86	257 163 141	— — —	+13.8 ^c +12.9 ^c +12.2 ^c
Silva & Andrew (1987)	U.S. college basketball	1971-81	418	—	65.8
Edwards & Archam- bault (1989)	National Basketball Association	1986-87	NA	—	67.0
Courneya (1990)	National Hockey League	1986-87	NA	60.0	61.4
Glamser (1990)	U.S. college baseball	1988	418	—	61.7
Kozub & Corlett (1990)	English professional soccer Canadian men's college basketball Canadian women's college basketball	1986-87 NA NA	462 36 36	57.7 — —	60.3 57.9 72.2
Courney & Carron (1991)	Minor League Double A baseball	1988	1,812	—	55.1
Pace & Carron (in press)	National Hockey League	1987-88	840	57.3	58.3

Note. HWP=home winning percentage, NA=not available.

^aBased on points (2 for a win, 1 for a tie, and 0 for a loss).

^bBased on decided games (i.e., tie games excluded).

^cDifference between home and away winning percentage.

^dPlayoffs.

Table 2 contains a quantitative synthesis of the studies that have examined the home advantage in the major team sports. Only those studies that provided both the home winning percentage and the sample size were used in the calculations. Effect sizes were estimated based on the *w* index provided by Cohen (1977). The *w* index is appropriate for chi-square tests with one degree of freedom. It can be interpreted in the same way as a correlation coefficient and is equal to the phi coefficient for a 2×2 contingency table.

Table 2
Composite Home Advantages and Effect Sizes for Major Team Sports

Sport	Total studies	Total games	HWP ^a	Effect size ^a	HWP ^b	Effect size ^b
Baseball	6	23,034	—	—	53.5	.07
Football	5	2,592	57.3	.15	57.3	.15
Ice hockey	4	4,322	59.6	.19	61.1	.22
Basketball	8	13,596	—	—	64.4	.29
Soccer	2	37,202	64.5	.29	69.0	.38

Note. HWP=home winning percentage.

^aBased on points (2 for a win, 1 for a tie, and 0 for a loss).

^bBased on decided games (i.e., tie games excluded).

Tests of homogeneity (Rosenthal & Rubin, 1982) were conducted to determine the tenability of combining (a) effect sizes from the same sport and level, (b) effect sizes from the same sport across levels, and (c) effect sizes across sports and levels. Heterogeneity in any instance would provide a warning that it may not be appropriate to combine and synthesize research findings at that level.

The first analysis indicated that effect sizes from the same sport and level could be aggregated without concern of heterogeneity ($p>.10$). This result can be construed as providing support for the stability of the home advantage within sports and also over time. The second analysis indicated that effect sizes could also be collapsed within sports across levels (i.e., college and professional) without violating the assumption of homogeneity ($p>.10$). This result suggests that the difference in the degree of home advantage between college and professional levels from the same sport is minimal. The final analysis, which combined effect sizes across sports, seriously violated the assumption of homogeneity, $X^2(4,N=80,746)=51.12, p<.001$. It was therefore decided to present composite home advantages and effect sizes separately for each major sport (see Table 2).

The ‘‘When’’ of the Home Advantage (Figure 1, Boxes 2 and 5)

With such thorough and unequivocal documentation of a home advantage, the obvious question of what factors moderate the degree of home advantage demanded attention. In this section, evidence that bears on each game location factor is reviewed.

Crowd Factors. The role of selective crowd support and reinforcement in contributing to the home advantage has received modest attention. In some studies this support behavior has been measured directly; in others it has been inferred through the measurement of various crowd factors (e.g., size, density).

Zeller and Jurkovac (1988) analyzed more than 35,000 Major League baseball games between 1969 and 1986. They reported that teams playing in domed stadia won 10.5% more games at home than on the road. The comparable value for teams playing in open-air stadia was 7.2%. Zeller and Jurkovac attributed this difference to the effect the domed stadia had on crowd support. "Teams perform better and win more games when they receive more enthusiastic crowd support. Since the domed stadium holds the noise . . . in the stadium, teams that play under domes . . . win more games" (Zeller & Jurkovac, 1988, p. 20).

Dowie (1982) offered evidence related to the crowd factor of absolute size by comparing the home advantage across the four divisions of the English Football League (soccer). He noted that the home advantage did not vary among the divisions even though the average crowd size varied from 2,500 in Division 4 to 25,000 in Division 1.

Pollard (1986) investigated the importance of crowd density (percent of stadium capacity) using a protocol similar to that of Dowie (1982). He compared the home advantage across the four divisions of the English Football League and found no differences even though the average crowd density varied from 20% in Division 4 to 70% in Division 1.

In contrast to these findings, Schwartz and Barsky (1977) found that the home advantage in Major League baseball increased with increases in crowd density. Specifically, the home team's winning percentage increased from 48% when crowd density was small (less than 20% stadium capacity) to 55% when crowd density was medium (20 to 39.9%) and to 57% when crowd density was large (greater than 40%). Similar results were obtained even when team quality was controlled.

Thirer and Rampey (1979) used a quasi-experimental design to test the effect of antisocial crowd behavior on the number of infractions (fouls and turnovers) committed by home and visiting college basketball teams. Antisocial crowd behavior was operationalized as collective verbal aggression (e.g., swearing, chanting obscenities), throwing objects on the court or at each other, and fighting. Infractions were recorded beginning immediately with the onset of the antisocial crowd behavior and ending after 5 minutes of running time (i.e., not actual game time). The baseline data were the number of infractions that occurred during normal crowd behavior.

The results indicated that during normal crowd behavior, visiting teams committed more infractions. During antisocial crowd behavior, however, home teams committed more infractions. Further analyses showed that the change was due to an increase in infractions by home teams during antisocial crowd behavior rather than to a decrease in infractions by visiting teams. Thirer and Rampey (1979) concluded that "anti-social behavior from the crowd had a detrimental effect on the home team" (p. 1051).

The results of this study, however, might be questioned. The sample was extremely small; only 12 basketball games were observed, and only eight instances of antisocial behavior were detected. Moreover, infractions were the

only measures of performance analyzed. Home teams might have excelled in other performance measures (e.g., points scored, field-goal percentage, rebounds, etc.), but these measures were not assessed.

Greer (1983) also used a quasi-experimental design to assess home and away performance differences but assessed the effect of spectator boozing rather than antisocial behavior. Greer recorded four measures of performance for those instances of boozing longer than 15 seconds. The performance measures were points scored, turnovers, violations (fouls plus goal tending), and a composite measure (points scored minus turnovers and violations).

During normal crowd behavior, home teams were superior on all four performance measures; during boozing behavior, the home team's superiority became more pronounced on all four performance measures, with two measures (violations and composite performance) reaching significance. Greer (1983) was undecided whether the change was attributable to a decrement in the visiting teams' performances or to referee bias resulting from intimidation by the home crowd (the majority of spectator boozing was targeted at the officials, however).

Greer's (1983) and Thirer and Rampey's (1979) studies are representative of the type of research that should be conducted to determine the crowd's role in substantiating a home advantage. As was the case with Thirer and Rampey's study, however, Greer's study also suffered from a small sample (only 15 instances of sustained spectator boozing were detected) and a limited number of performance measures.

Learning Factors. The role of familiarity in contributing to the home advantage has received scant attention, which probably reflects the difficulty of testing such an elusive concept, not its perceived importance.

Pollard (1986) noted that in the English Football League between 1981–1984, the two teams with the smallest playing areas (7,700 sq. yds.) and the two teams with the largest playing areas (9,401 sq. yds.) gained a combined 65.6% of their points at home. This point percentage was not significantly different from the rest of the league (64.9%). He also noted that the percentage of points gained at home for the only team playing on artificial turf (63.9%) and for teams playing in stadia with capacities of 40,000 or more (63.2%) did not differ significantly from other teams in the league.

More learning factors exist than those analyzed by Pollard (see Dowie, 1982). It may be that some other learning factors were present for the other teams in the league, offsetting potential differences. Moreover, control over other game location factors (i.e., crowd and travel) was not attained. Although the results provide some insight into this issue, the learning-factors explanation awaits additional research.

Travel Factors. Fatigue and disruption of routine as factors contributing to the home advantage have also received modest attention. However, fatigue and disruption of routine have not been measured directly; rather, they have been inferred through the measurement of various travel factors.

One travel factor that has been identified as potentially important to the home advantage is the time of season in which the game is played. The rationale is that the home advantage should be greater during the second half of a season, when the effects of travel begin to accumulate. There has been no consistent or significant tendency, however, for the home advantage to increase as the season progresses (Courneya & Carron, 1991; Edwards & Archambault, 1989; Pace & Carron, in press; Schwartz & Barsky, 1977).

Dowie (1982) analyzed the different times during English soccer matches that goals were scored for the 1960–1961 and 1980–1981 seasons. He reasoned that the goal differential in favor of home teams should be at its greatest toward the end of each contest (when the effects of fatigue would be most evident in the visiting team). The results indicated that the home/visitor goal differential remained constant over the duration of the game. Thus, Dowie (1982) concluded that “‘fatigue’ may not be that important” (p. 694).

Snyder and Purdy (1985) and Pollard (1986) examined the effect of distance on the home winning percentage in college basketball and professional soccer, respectively. When visiting teams in college basketball traveled less than 200 miles, the home advantage was 58.8%; when they traveled more than 200 miles, the home advantage was 84.6%. This finding should be viewed with caution, however, because of the extremely small sample size: Only 64 games were reported for teams traveling less than 200 miles, 26 games for teams traveling more than 200 miles.

Using a much larger sample (3,496 games) from professional soccer in England, Pollard (1986) found that distance traveled was unimportant. When visiting teams traveled less than 200 miles, the home advantage was 64.3%; when they traveled more than 200 miles, the home advantage was an identical 64.3%.

Perhaps the most comprehensive studies to date concerning travel factors were conducted by Courneya and Carron (1991) and Pace and Carron (in press). Using Minor League Double A baseball teams, Courneya and Carron investigated the effects of season game number, series game number, length of home stand, length of visitor’s road trip, presence of home-team travel, and presence of visiting-team travel on the home advantage. Forced entry multiple regression analyses determined that these travel factors and all two-way interactions explained less than 1.2% of the variance in win/loss outcome. Subsequent analyses revealed that the only variable remotely related to the home advantage was the length of the visiting team’s road trip. The authors concluded that “in concert, these findings provide consistent evidence that travel is not a major contributing factor to the home advantage” (Courneya & Carron, 1991, p. 48).

In a study using a similar design, Pace and Carron (in press) examined the influence of various travel factors on the home advantage in the National Hockey League. The travel factors included distance, number of time zones crossed, direction of travel (east or west), number of days between games, number of successive games at home, number of successive games on the road, and season game number. Results similar to Courneya and Carron’s (1991) study were obtained—the selected travel factors accounted for less than 1.4% of the variance in win/loss outcome.

Rule Factors. Testing the role that rule differences based on game location might play in contributing to the home advantage is limited to certain sports. One major rule factor commonly believed to provide home teams in baseball with an advantage is the opportunity to bat last. Courneya and Carron (1990) tested this proposition using recreational slo-pitch softball. Control over the other major game location factors was achieved because each meeting between teams was a double header with alternating home/visitor status (i.e., last bat/first bat). The results showed that batting last did not provide a home advantage. Furthermore, no differences were found for the moderating variables of ability level, gender, or time of season.

The "Why" of Home Advantage (Figure 1, Boxes 1, 3, and 4)

The most interesting question is why the home advantage exists. An examination of Figure 1 shows there are six potential areas of inquiry related to this question. Game location might influence (a) the competitors' psychological states, (b) the coaches' psychological states, (c) the officials' psychological states, (d) the competitors' behavioral states, (e) the coaches' behavioral states, and (f) the officials' behavioral states. To date, the only areas that have been evaluated empirically are competitors' psychological states, competitors' behavioral states, and officials' behavioral states. These areas are now reviewed.

Competitors' Psychological States. A study by Jurkovac (1985) compared college basketball players' perceptions of playing at home with their perceptions of playing away. The results of 74 surveys indicated that players felt they played better in front of a loud and active crowd both at home (97%) and away (74%). They also felt their personal statistics were better when they played at home (47%), they were more confident when playing at home (76%), and they were motivated by banners and signs of support in their home arena (89%).

Follow-up interviews with 14 players suggested that (a) crowd support was a motivational factor that led to greater confidence, (b) more prolonged support, rather than infrequent outbursts, was more beneficial, (c) playing at home created a greater pressure to win, (d) players tried to get away with more at home because they felt officials were intimidated by the crowd to award more calls to the home team, and (e) playing at home was, indeed, an advantage.

Numerous psychological states were not assessed in the Jurkovac (1985) study. More important, asking players to recall the various psychological states they experienced before and during home versus away games presents certain demand characteristics. These limitations notwithstanding, the Jurkovac study represents the type of research that may help in understanding why the home advantage exists.

Competitors' Behavioral States. Studies attempting to determine the differences in competitors' behavior at home and away have utilized various primary measures. The behavioral state that has been studied almost exclusively is aggressiveness. Some studies have concluded that visiting teams are more aggressive (Glamser, 1990; Lefebvre & Passer, 1974), others that home teams are more aggressive (Schwartz & Barsky, 1977), and still others that no differences exist (McGuire, Courneya, Widmeyer, & Carron, in press; Russell, 1983).

Varca (1980) hypothesized that home and away teams differ in the type, rather than the level, of aggressive behavior. Using college basketball, Varca selected primary measures that he felt reflected aggressive behavior: fouls, steals, rebounds, and blocked shots. These were further subdivided into functional (i.e., they increase the chances of winning) and dysfunctional (i.e., they decrease the chances of winning) aggressive behavior.

The results supported Varca's (1980) hypothesis. Home teams outperformed visiting teams in terms of functional aggression (i.e., rebounds, blocked shots, and steals); visiting teams committed more fouls, the measure of dysfunctional aggression. Varca (1980) concluded that "the salient behavioral dimension differentiating home and away play is aggressive behavior" (p. 245).

A problem with the research assessing aggression has been the selection of measures. It is doubtful if rebounds, blocked shots, and so on are representative

of aggressive behavior. Many studies may well have been measuring assertive, rather than aggressive, behavior (cf. McGuire et al., in press).

Officials' Behavioral States. A predominant behavior of interest in studying the role that officials might play in contributing to the home advantage is subjective decision making. Studies have documented that officials make more subjective decisions against visiting teams—or in favor of home teams (e.g., Glamser, 1990; Greer, 1983; Lefebvre & Passer, 1974; Sumner & Mobley, 1981; Varca, 1980). However, as Sumner and Mobley (1981) and others have noted, such evidence may not necessarily support the idea of an officiating bias in favor of home teams. Home teams may actually deserve fewer negative subjective decisions for various reasons (e.g., visiting teams spend more time on defense, generally play from behind, or are more dysfunctionally aggressive). In such a case, more subjective decisions against the visiting team would be a consequence of the home advantage, not an antecedent.

Lehman and Reifman (1987) attempted to address this problem by examining the relationships between player status (star/nonstar) and the number of fouls called on professional basketball players at home and away. They reasoned that officials might feel more pressure from fans to be lenient toward the home team's star players because these players are most likely to lead the home team to victory. They believed such a finding would provide strong evidence of an officiating bias.

Archival data from games involving the Los Angeles Lakers for the 1984–1985 season were analyzed. As predicted, significantly fewer fouls were called on star players at home than away; no differences were found for nonstars. Lehman and Reifman (1987) concluded that "this pattern may reflect officials' reacting to pressure from the home crowd" (p. 674).

Conclusions

A review of the home advantage literature leads to a limited number of conclusions but many potential experimental hypotheses. Not surprisingly, the conclusions focus on the descriptive aspects of the home advantage and are as follows: (a) a home advantage exists in major team sports, (b) there are no differences in the degree of home advantage between the college and professional levels, (c) the magnitude of the home advantage within each sport is consistent and has remained relatively stable over time, and (d) the magnitude of the home advantage varies among sports.

Some potential experimental hypotheses that emerge from the review of literature are as follows. One, the effects of travel factors on the home advantage are minimal. Two, the effects of rule factors on the home advantage are minimal. Three, absolute crowd size is not an important contributing factor to the home advantage. Four, subjective decisions by officials favor the home team. Five, competitors perceive their psychological states to be different when playing at home than when playing away. And six, no differences exist between home and away teams in aggressiveness.

Possible Future Directions

As is evident from the paucity of definitive conclusions, considerable research on the home advantage is necessary. The framework illustrated in Figure

1 and the review of literature have highlighted many issues in need of research. Some issues simply require clarification; others have been previously ignored. The following are general ideas about and possible methodological approaches to the direction that future game location research might take.

The ‘‘What’’ of the Home Advantage

The ““what” of the home advantage has received the most attention and is in many respects well documented. Verifying a home advantage is no longer a sufficient rationale for game location research. Research must assume a home advantage exists for each inquiry and focus on answering the related “when” and “why” questions.

The ‘‘When’’ of the Home Advantage

The “when” of the home advantage has been the topic of much recent research, but the importance of the various game location factors remains unclear at least. Three approaches can be taken to answer the “when” question. One approach involves selection of various game location factors (e.g., crowd size, travel distance) and assessment of the extent to which performance outcomes vary for home and away teams with different levels of each factor. Inferences can then be drawn about the importance of various theoretical explanations. Recent examples of this approach include Courneya and Carron (1991) and Pace and Carron (in press).

A second approach uses situations in which only one game location factor is present. Then, if differences in performance outcomes exist, they can reasonably be attributed to that one factor. This was the approach taken by Courneya and Carron (1990) in their study of rule factors. They suggested that “to obtain the control realized in this study, it may be necessary to continue using field settings outside the realm of professional and major college sport. In these situations, usually some home advantage variables [game location factors] are present and some are not” (Courneya & Carron, 1990, p. 316).

A third approach focuses more directly on the crowd factor explanation. It involves identification of various aspects of crowd behavior, including type (e.g., cheering, booing) and degree (e.g., intensity, length), and determination of the extent to which performance outcomes vary with such aspects of crowd behavior. Particular aspects of crowd behavior can then be identified as important to performance outcomes, and theoretical explanations can be more directly evaluated. Examples of this approach in the literature are the studies by Thirer and Rampey (1979) and Greer (1983).

The ‘‘Why’’ of the Home Advantage

Answering the question of why the home advantage comes to fruition will undoubtedly provide the most useful information in terms of furthering our understanding of the home advantage and providing empirical grounds for intervention strategies. One issue that has been given some attention is the effects of game location on the competitors’ behavioral states.

Historically, when this issue has been addressed, the approach taken has been to operationalize the behavior under question by selecting specific, representative primary measures. This approach has been used in the assessment

of aggressive behavior through the use of penalty measures. Russell and Russell (1984) have suggested that such an approach may offer a more valid measurement of aggression than do psychological assessments. A limitation in this approach, however, has been the difficulty of untangling the causal contributions of the various principals' behaviors to the performance measures in question. For example, is the greater number of fouls called on visiting teams in basketball a result of (a) frustration or aggressiveness on the part of visiting teams (competitors' behavior), (b) the use of defensive or catch-up strategies by visiting coaches (coaches' behavior), or (c) an officiating bias against the visiting team (officials' behavior)?

A second problem relates to the validity of the selected measures considered to reflect the intended construct. Much of this problem stems from definitional ambiguity (cf. Lefebvre & Passer, 1974; McGuire et al., in press). Research on game location and aggression has somewhat circumvented this problem through careful selection of penalty measures with strong face validity (e.g., Lefebvre & Passer, 1974; Russel, 1983) as well as subject-defined measures of aggression (McGuire et al., in press). However, methodological problems remain, and better measures of behavioral states are necessary.

A second area in need of research concerns the effects of game location on the psychological states of the various principals. This area of inquiry is virtually untapped. Only one study has been conducted assessing competitors' psychological states (Jurkovac, 1985). The method used, however, was a recall format (i.e., subjects were asked to recall how they typically felt before and during home and away games). This approach is susceptible to problems of memory decay and demand characteristics. A more valid approach would be to measure psychological functioning at each time of interest (i.e., before home games and before away games) and thus determine psychological differences objectively. Some potentially critical cognitive and affective states that might be assessed include anxiety, confidence, moods, and expectations.

A comprehensive study of the home advantage phenomenon might address both the descriptive (what and when) and explanatory (why) aspects of the home advantage in a single study. That is, data could be collected on the various game location factors (Box 2), critical psychological states (Box 3), critical behavioral states (Box 4), and various performance outcomes (Box 5). Such analysis should provide great insight into the nature and causes of the home advantage. Once this type of information is gained, interventions can then be designed to minimize the negative psychological impact of playing on the road and maximize the positive psychological impact of playing at home. To date, any such practical advice is predicated more on intuition than sound empirical data (e.g., Kauss, 1980; Webb, 1984).

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Acknowledgment

The authors would like to acknowledge Dr. Edward McAuley and an anonymous reviewer for their helpful comments.

Manuscript submitted: November 20, 1990

Revision received: April 2, 1991