

# ***Exploring the Factors Influencing Home Court Advantage in the NBA***

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**Abstract:** The purpose of this paper is to explore the factors that influence home court advantage in the NBA and to understand the impact of the home court environment on game winning percentage. Through a literature analysis method, this paper explores the factors influencing home court advantage in three parts: natural, environmental and personal factors. It was found that players' adaptation to the city, stadium and playing environment, as well as the behaviour and psychological state of spectators and referees, were the main factors influencing home advantage. However, as time passes and the quality of players improves, the impact of home advantage on match-winning percentage is decreasing. This study suggests that teams should focus more on match statistics and statistics rather than relying on home advantage to win matches. This study provides guidance to players, coaches and clubs on the proper way to view and utilise home advantage, and provides good lessons for future research on home advantage.

**Keywords:** home court advantage, NBA, influencing factors, crowd effect

## **1. Introduction**

Home-court advantage is commonly described as the home team's tendency to win over half of the games in a balanced home and away schedule for a sporting competition [1]. This phenomenon has been witnessed across a plethora of sporting arenas. Among the four primary American sports, NBA teams are the most affected by home court advantage, with the reasons for such phenomenon being multifaceted in nature. On the one hand, visiting teams usually have to travel a long way to reach the home court, which puts a physical and mental strain on them, thus increasing the home team's chances of winning. On the other hand, the familiarity of the home team's stadium environment and the superior training facilities can also have an impact on the game. A final reason is that the home team usually receives more support, including a fan-driven and psychological advantage [2]. The chanting and applause during the game inspires the home players and undermines the confidence of the opponents, making it difficult for them to perform at their best in stressful situations.

Researchers have noted that travel factors, familiarity with facilities and locations, crowd effects, referee decisions and psychological phenomena all influence home court advantage [3]. This paper will use literature analysis to explore the factors that influence NBA home court advantage and the reasons for these they arise from three parts: natural, environmental and personal factors, so that coaches, players and clubs can have a clearer understanding of home court advantage, view and use

it correctly, and provide a basis for basketball associations, coaches, players and clubs to develop appropriate measures.

## **2. Influencing Factors**

### **2.1. Natural Factors -- Season and Climate**

Seasons, climate and time of year are all natural factors that are very difficult to change. There is also such a constant truth in nature, and that is the survival of the fittest. This is also true in basketball. The right climatic conditions lead to a high level of emotion, energy and efficiency. The contrast in climatic conditions places high demands on one's mental and physical adaptability [4].

The NBA league is typically played in the winter and summer. Due to the vast size of the United States, the home courts of the NBA league clubs are far apart from each other and have a wide range of latitudes and longitudes from north to south, east to west, and have very different climatic conditions and temperature differences. The western region's high altitude has resulted in an alpine climate in certain regions. While the mountain range's western side features a narrow Mediterranean and temperate maritime climate, the subtropical high-pressure zone controls the southwestern mainland US and Mexico-connected areas, creating a year-round tropical desert climate. These sudden changes in climatic conditions can often affect the moods and mindsets of the visiting athletes, which can affect their skills on the field [5]. The home team's athletes are used to training in these conditions and are well adapted to the season, climate and time of day. They are therefore better able to perform at their usual technical and tactical level and thus win the match.

### **2.2. Environment Factors**

Players' adaptation to the city and a good match schedule will help their performance during the game. And away players who have experienced travel may suffer. A team's familiarity with the city and the venue will affect their performance. The home athletes avoid the physical and mental fatigue caused by travel, which helps maintain the good competitive condition of the home team athletes. Travel factors may have some influence on the performance of visiting team athletes, such as physiological fatigue caused by time and space changes thus affecting the best condition.

Players' familiarity with the stadium and the facilities affects how the game is played. The home court provides a familiar environment for the team, which allows the players to be more comfortable with their skills and more adaptable to various situations on the court. According to the theory of motor perception, motor perception depends to some extent on the structure of the surrounding environment, and the familiar field environment becomes the reference system for the spatio-temporal judgment of the player, while in the less familiar environment, there must be an adaptation process to establish the correct motor perception because the reference series as the spatio-temporal judgment has changed. The environmental facilities such as the shape, size, color, orientation, and background of the field's frame of reference constitute a potential influence on the performance of athletic competition ability.

Moving to a new, unfamiliar stadium led to a loss of approximately 25% home field advantage for teams, as they had a higher winning percentage in the final year before the move, according to research [6]. Each basketball court has its distinct advantages and feel. The Brooklyn Nets' court, for instance, features a unique herringbone pattern. The Charlotte Hornets' court showcases a beehive design through light and dark patches, while the Orlando Magic's court features a patchwork pattern. Many teams have two shades of color flooring. Light reflects off each floor in different ways, and players may be more accustomed to one or the other [7]. The TD Garden court used by the Boston Celtics is a departure from traditional teams' hardwood maple flooring, making it particularly unique.

In contrast, the red oak used in their floor is 12% lighter than regular maple and has a different feel and resilience. The varied surface texture requires a higher level of energy to maintain a consistent bounce, leading athletes to have personal preferences on harder or lighter surfaces. In addition, the home court can also provide a more personalized match for the players, which allows them to be more relaxed in their performance during the game. In the NBA, there are differences between cities in terms of the hardness of the floor, the resilience of the rim and rebound, and the inflation of the game ball. Some teams have specialized the above facilities according to the characteristics of their teams. The Bulls, in their heyday, had talented players like Jordan and Pippen, but their center was relatively lacking in height and ability. To ensure their team's rebounding, they fixed their home rims and rebounds extra tightly based on Rodman's lack of height but wide range of motion. This increased the elasticity of the rim and the board, making each missed basketball bounce farther than normal, so that Rodman's chances of contending for the rebound increased accordingly. There are very subtle deviations in the feel of the game due to different levels of familiarity with the court. All of these factors contribute to the play and performance of the home team and have a positive impact on the outcome of the game.

### **2.3. Personal Factors**

Petterson-Lidbom and Priks found that home court advantage is reduced when games are played in front of empty crowds, even attributed all home court advantage to crowd support [8]. The two channels through which fan support brings home field advantage are usually referee bias and the way the crowd influences and affects both the home and visiting teams.

#### **2.3.1. Crowd Effect - the Support of Spectators and Fans**

The behavior of spectators can stimulate home and visiting team athletes to a certain extent, resulting in emotional, behavioral and physiological stress reactions, thus creating a home court effect. Crowd support has long been considered the most visible favorable factor and an important feature of the home court. Research has indicated that crowds are capable of influencing the athletic performance of participating teams through social support mechanisms. Athletes playing at home are likely to exhibit increased efforts due to the positive feedback they receive from their supportive home crowd, including cheers, chants, and applause [9]. Cheering fans can generate a sense of confidence, satisfaction, and accomplishment for the home team, leading to a more passionate and powerful performance in this positive mood. A study has highlighted that the absence of spectators in the COVID-19 NBA "bubble" led to a decreased dominance of home court rebounding [10]. However, booing and distractions are not typically found to negatively affect the performance of visiting players [11]. Home court advantage is part of what the NBA is all about. The fans' active participation in the game in a variety of ways is the reason the NBA game exists and continues to grow. It is in the home court advantage and home court culture that the players' presence is valued. That is why they have always encouraged and embraced the fans' participation in the game with a variety of passionate performances. They are also the creators of home court advantage and home court culture.

#### **2.3.2. Referee Bias and Penalties**

In NBA home games, referees are the enforcers on the game court, and their calls and rulings directly affect the outcome of the game. First of all, the role expected of referees in NBA home games is to officiate the game impartially and objectively. They need to make calls and rulings based on the rules and game situation to ensure the fairness and equity of the game. Referees need to remain neutral and not be influenced by either side to ensure that the outcome of the game is fair. Second, the referee's calls and decisions have a significant impact on the course and outcome of the game. If the referee's

calls and decisions are unfair or biased, it can make the game confusing and unfair. This can lead to discontent and protests from players and fans, and can even affect the outcome of the game. However, the referee's calls and decisions may also be influenced by home field advantage.

The behavior of home spectators and other factors outside the game field invariably add pressure on the referees to show a tendency to favor the home team athletes, either consciously or unconsciously, in the adjudication process. Research has shown that referees may contribute to the advantage of playing at home. In an emotionally charged home environment, they tend to favor the home team while being stricter with calls against the visiting team. This may be due to the illuminating effect of the spectators' voices on referees' decisions. In particular, games involving subjective scoring benefited more significantly from the referee's decisions. In addition, if there is a call against the home team during the game, the spectators tend to express their dissatisfaction by booing and raising their voices to put pressure on the referee to make a call in favor of the home team.

### **2.3.3. Mental and Psychological Stabilisers for Home Players**

Athletes have different optimal psychological functional areas, and an appropriate emotional state helps athletes to play normally, while too high or too low emotional state is not conducive to athletes' performance on the court. In basketball, the mental and psychological state of athletes greatly impacts the game's outcome. Playing at home can add pressure and alter their mental state due to the spectators and environment. First, athletes usually feel more confident and comfortable when playing at home. The support and cheers of the home fans will make the athletes feel more proud and confident. In addition, home players are familiar with the environment and atmosphere of the stadium, which can make them feel more comfortable and relaxed. This confidence and relaxation will allow the athletes to focus more on the game and improve their performance level. However, there are times when playing at home can be stressful and taxing for athletes. They may feel the need to perform better at home to reward the fans for their support and expectations. This pressure may cause athletes to feel nervous and anxious, affecting their performance. In addition, playing at home may also make athletes overconfident and relaxed, causing them to lose their alertness and focus during the game.

As a result, athletes need to learn to control their emotions and stress in order to perform at their best on home turf. They can improve their mental fitness through positive mental training and preparation. For example, athletes can reduce stress and anxiety through meditation, breathing exercises and positive thinking. In addition, athletes can improve their game skills and tactics by analyzing game footage and developing individual plans. Overall, playing at home has a significant impact on the mental state of basketball players. Athletes need to learn to control their emotions and stress in order to perform at their best on the home court. Through positive mental training and preparation, athletes can improve their psychological profile to achieve better results in games.

## **3. Recommendation**

However, the home court advantage is not absolute.

First, researchers found that rest days have a significant impact on the winning percentage of NBA games [12]. Although this rest factor often favors the home team, today's visiting teams arrive early for acclimatization prior to games. Then the impact of travel fatigue on the outcome of the game is negligible. At the same time, with today's increasingly sophisticated transportation, the travel factor is not a major factor in the home field effect. It does not take much time between home and away games. Therefore, the travel factor has little impact on the players.

Second, the support and cheers of the crowd and fans may also put pressure and burden on the athletes. They may feel the need to perform better at home in order to repay the support and expectations of the spectators and fans. This pressure may cause athletes to feel nervous and anxious,

affecting their performance. Overall, the impact of spectators and fans on basketball home games cannot be ignored. Their support and cheers can inspire athletes' motivation and confidence, while negative emotions and remarks need to be avoided to negatively affect the athletes' mental state. Changes in the home atmosphere may also inhibit the athletic performance of the home team's athletes. An overly frenetic home atmosphere can easily excite athletes and can backfire, inhibiting athletes from playing at their best, to the detriment of the athletes themselves and the team's overall level of play. Spectators are important participants in sports, and by not doing this well, the home team's home court advantage is likely to turn into a disadvantage. The biggest disadvantage of home field for the home team athletes lies in the psychological pressure.

Third, with the development of technology and the rise of new media, major live streaming platforms have provided a rich and fun-filled online viewing platform for the majority of fans, and those who go to live games have been affected to some extent. Due to COVID-19, the home court advantage significantly decreases during the 2020/21 NBA season when no fans are present [13]. Previous studies have demonstrated that officiating is a factor that affects home court advantage. During the COVID-19 epidemic, researchers analyzed the changes and significant shifts in home field advantage [14]. The absence of fans rendered the atmosphere, thus reducing referee bias [14]. This could reflect, to some extent, the decreasing influence of referees as one of the factors of home-court advantage for teams playing at home and away. Overall, referees play a very important role in NBA home games. They need to remain objective and impartial to ensure the fairness and equity of the game. Referees' calls and decisions have a significant impact on the course and outcome of the game. Through good communication and cooperation with players and coaches, referees can better officiate the game and ensure that the outcome of the game is fair.

Fourth, the teams have trained for the disruption of the home fans. Visiting players can turn the home court advantage to their advantage. In some cases, the visiting players can break down the opponent's mobilization through good mentality and the ability to bounce back from adversity. At the same time, visiting players can gradually eliminate the home court advantage of home team players by constantly trying and adjusting to the environment on the field.

Overall, home-court advantage is a complex and multifaceted issue. In NBA games, home court advantage has a significant impact on the game, but it is not the only factor that determines victory or defeat. Players need to be mentally strong and battle hardened to be able to win games at home or on the road. During the game, the home team should build on the strengths and avoid the weaknesses of each influencing factor of the home court effect, and actively explore and use the home court advantage.

#### 4. Conclusion

NBA teams are motivated to achieve good results due to the advantage of playing on their home court. The positive impact of playing at home also improves the psychological preparation of some players. Several factors affect home court advantage, including natural climate, travel, game environment, spectators, referees, and players' psychological state. Natural environment, journey and playing field environment are not the main factors affecting home court advantage; spectators' and referees' behavior and players' psychological state are closely related to home court advantage. However, as time progresses, home court advantage will have less and less of an impact on performance, which means that factors like this off the court will have less and less of an impact on the performance of NBA teams. This is a good thing for the league and the fans. The outcome of games between teams is becoming fairer and the games are becoming more intense. The more unpredictable the outcome of a game, the more exciting it will be. If the home advantage makes the outcome of the game more predictable, the game is not as tense and exciting.



As reflected in the bubble season and the new crown epidemic-limited season, home court advantage is not always present or prevalent. The quality of the team remains the most important factor. The biggest factor affecting a team's performance is a team's dominance and consistent play, not another team's position or influence. The NBA bubble emphasizes that referees can make less biased calls on a level playing field, but a team's statistics have the greatest influence on winning games. Rather than relying on home court to win games, teams should focus on every stat in every game.

This study has important implications for NBA players, coaches and clubs. By having a clearer understanding and appreciation of the factors that influence home court advantage, they can better exploit it and improve their game winning percentage. At the same time, for NBA leagues and referees, this study provides insight into the importance of keeping the game fair and equitable. However, the sample in this study is only for NBA games and is not representative of all areas of sport. The study also did not consider the impact of circumstances such as epidemics on home court advantage, and further research is needed in the future.

## References

- [1] Carron, A.V., Courneya, K. S.: *Effects of travel and length of home stand/road trip on the home advantage*. *Journal of Sport & Exercise Psychology* 13, 42-49 (1991).
- [2] Jovic, A., Stancin, I.: *Analyzing the influence of player tracking statistics on winning basketball teams*. 2018 41st International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO). IEEE. (2018).
- [3] Bennett, S. N., Carré, C.G., Carter, D.S.G., Wragg, E.C.: *A longitudinal study of primary teachers' perceived competence in, and concerns about, national curriculum implementation*. *Research Papers in Education* 7(1), 53-78(2006).
- [4] Kleinert, J., Pels, F., Schfer, A.: *Effects of different coping strategies on the psychological and physiological stress reaction: an experimental study*. *European Journal of Health Psychology* 27(3), 109-123(2020).
- [5] Orchard, J. W., Powell, J. W.: *Risk of knee and ankle sprains under various weather conditions in American football*. *Medicine & Science in Sports & Exercise*, 35(7), 1118(2003).
- [6] Gregory, H., Wolf.: *Cellar dwellers: the worst teams in baseball history by Jonathan weeks (review)*. *Journal of Sport History*, 40(2), 368-369(2013).
- [7] Daub, B. D., Freitas, E., Heishman, A. D., Miller, R. M., Peak, K. M.: *Does footwear influence countermovement jump parameters used to assess performance in collegiate basketball players*. *International Journal of Kinesiology and Sports Science* 2, (2021).
- [8] Pettersson-Lidbom, P., Priks, M.: *Behavior under social pressure: Empty Italian stadiums and referee bias*. North-Holland, (2010).
- [9] Erin, E., Jon, D., Groetzinger, Smith: *Do fans matter? The effect of attendance on the outcomes of major league baseball games*. *Journal of Quantitative Analysis in Sports* 6(1), 4 (2010).
- [10] Price, M., Yan, J.: *The effects of the NBA COVID Bubble on the NBA Playoffs: A Case Study for Home-Court Advantage*, (2021).
- [11] Mukherjee, S., Ribeiro, H. V., Zeng, X.: *The advantage of playing home in NBA: microscopic, team-specific and evolving features*. *PLoS ONE* 11(3), (2016).
- [12] Entine, O. A., & Small, D. S. (2008). *The role of rest in the NBA home-court advantage*. *Journal of Quantitative Analysis in Sports*, 4, 1-9.
- [13] Childs, E. F., Hoffman, D., Leota, J., Mascaro, L.: *Travel or cheers? Examining the drivers and mechanisms of home court advantage in the 2020/2021 NBA regular season*. *Sleep Advances*, (2021).
- [14] Hill, Y., Yperen, N.V.: *Losing the home field advantage when playing behind closed doors during covid-19: change or chance?* *Frontiers in Psychology* 12, (2021).