

EDN: FLZNQP  
УДК 796

## Socio-Psychological and Behavioral Factors of Home Court Advantage in Men's Professional Basketball

Vladimir I. Kolmakov\* and Svetlana N. Chernyakova

*Siberian Federal University  
Russian Federation, Krasnoyarsk*

Received 12.11.2024, received in revised form 20.01.2025, accepted 31.01.2025

**Abstract.** Home-court advantage is a key phenomenon in men's professional basketball and a topical issue for researchers. Following the global Covid-2019 pandemic, which saw a unique "natural experiment" in basketball history of playing games either without spectators or with a limited number of spectators to maintain social distancing, it became possible to study in more detail the contribution of socio-psychological and behavioral factors to home-court advantage. The article presents a comparative analysis of statistical data from matches in the National Basketball Association and leading European leagues during the pandemic and pre-pandemic seasons. Socio-psychological (the influence of fans on players and referees) and behavioral factors (fatigue from long trips and disruption of circadian rhythms in away teams' players) determined the level of home court advantage in European leagues and the NBA. During the pandemic, home-court advantage either was absent or decreased in games without spectators, compared to the pre-pandemic level. The impact of a particular socio-psychological or behavioral factor on home advantage varies depending on the geographical size of the country and the skill of the teams. The information presented in the article may be useful for players, coaches, and sports managers to apply in competitive activities.

**Keywords:** basketball, home court advantage, pandemic, socio-psychological factors, behavioral factors.

Research area: Social Structure, Social Institutions and Processes; Sport.

---

Citation: Kolmakov V.I., Chernyakova S. N. Socio-Psychological and Behavioral Factors of Home Court Advantage in Men's Professional Basketball. In: *J. Sib. Fed. Univ. Humanit. soc. sci.*, 2025, 18(2), 425–432. EDN: FLZNQP

---



## Социально-психологические и поведенческие факторы преимущества домашней площадки в мужском профессиональном баскетболе

**В.И. Колмаков, С.Н. Чернякова**

*Сибирский федеральный университет  
Российская Федерация, Красноярск*

---

**Аннотация.** Преимущество домашней площадки – важнейший феномен в мужском профессиональном баскетболе и актуальная тема для исследователей. После глобальной пандемии Covid-2019, в течение которой имел место уникальный в истории баскетбола “естественный эксперимент” по проведению матчей без зрителей и с ограниченным числом зрителей для соблюдения социальной дистанции, появилась возможность более детально изучить вклад социально-психологических и поведенческих факторов в домашнее преимущество. В статье представлен сравнительный анализ статистических данных матчей Национальной баскетбольной Ассоциации и ведущих европейских лиг в пандемию и допандемийные сезоны. Показано, что социально-психологические (влияние болельщиков на игроков и судей) и поведенческие факторы (усталость от длительных переездов и нарушение циркадных ритмов у игроков гостевой команды) определяют уровень преимущества домашней площадки в европейских лигах и НБА. В пандемию в матчах без зрителей преимущество домашней площадки отсутствовало или снижалось, по сравнению с допандемийным уровнем. Сила воздействия отдельного социально-психологического или поведенческого фактора на домашнее преимущество варьирует в зависимости от географических размеров страны и мастерства команд. Представленная в статье информация может быть полезна игрокам, тренерам, спортивным менеджерам для использования в соревновательной деятельности.

**Ключевые слова:** баскетбол, преимущество домашней площадки, пандемия, социально-психологические факторы, поведенческие факторы.

Научная специальность: 5.4.4. Социальная структура, социальные институты и процессы; 5.8.5. Теория и методика спорта.

---

Цитирование: Колмаков В. И., Чернякова С. Н. Социально-психологические и поведенческие факторы преимущества домашней площадки в мужском профессиональном баскетболе. *Журн. Сиб. федер. ун-та. Гуманитарные науки*, 2025, 18(2), 425–432. EDN: FLZNQP

---

Home court advantage or home field advantage in modern professional basketball continues to be one of the most well-known yet misunderstood sports phenomena. There are no draws in basketball games, so home advantage in round robin championships is calculated as a ratio of the number of home wins to the total number of home and away games won during the season. It is manifested by the fact that in national or international basketball

championships with a balanced schedule (home vs. away matches) home teams win more than 50 % of the games played against away teams (Courneya, Carron, 1992). Indirect indicators of home court advantage are more efficient on-court actions of home team players compared to away team ones: offensive and defensive rebounds, three-point attempts and three-points made, fouls, steals, fouls drawn, etc. (Bustamante-Sanchez et al., 2022). It

is important to note that the correct study of the home court advantage phenomenon requires the involvement of a large data set and its processing using mathematical statistics methods (Benz, Lopez, 2023).

From the start and throughout the whole existence of European and American basketball championships and leagues, their organisers have been trying to create equal conditions for all participating clubs. Despite the efforts of the organisers home court advantage occurs in all known basketball leagues in the world: NBA – 60.3 %, EuroLeague – 66.1 %, Greek National League A1–66.4 %, Italian Serie A – 66.3 %, etc. (Pollard, Gomes, 2007; Jones, 2007; Pojskic et al., 2011). In professional club basketball, five main modifying factors for home court advantage are distinguished, which can be conditionally divided into two groups: “socio-psychological” and “behavioural”. The socio-psychological factors include the bias of referees in favour of the local team under the influence of spectators from the stands (Price et al., 2012), as well as the positive noise impact of spectators from the stands on the players of the home team with a simultaneous negative impact on the players of the visiting team (Boudreaux et al., 2017). The second group of behavioural factors includes fatigue from incessant moving during the season (Nutting, 2010), disruption of the circadian rhythm of sleep and wakefulness in guest team players due to long travel to the match venue (Huyghe et al., 2018), as well as habituation of local team players to the peculiarities of the home basketball court (flooring, lighting) (Schwartz, Barsky, 1977). More recently, a so-called “hormonal” factor has been highlighted, linked to the additional release of testosterone in local team players as an evolutionarily evolved ability to mobilise functional capacity when “defending one’s territory” (Sattar et al., 2021).

In basketball, socio-psychological factors contribute more to home court advantage than in other team sports where matches are played in large stadiums (football, rugby, or American football). Although basketball arenas have a much smaller capacity than football or rugby stadiums, still the noise exposure of spectators from the stands to players, referees and coaches

is higher in basketball because the stands are very close to the playing court (Kolmakov et al., 2023). According to Boudreaux et al. (2017) the socio-psychological influence of fans from the stands can increase the probability of winning at home for individual NBA teams by up to 22.8 percentage points. On the other hand, the importance of behavioural factors, especially the accumulated fatigue, as well as incomplete physical recovery and obvious sleep disturbance in visiting team players, has been shown to influence home court advantage throughout the season (Singh et al., 2021; Wang et al., 2024). Overall, despite numerous studies, it is still unknown to what extent each of the aforementioned modifying socio-psychological and behavioural factors effects home advantage.

As a preventive measure during the global Covid-19 pandemic caused by the spread of severe acute respiratory syndrome coronavirus (SARS-CoV-2) among the world’s population, most American and European professional basketball leagues decided to play games without fans in the stands or to significantly limit their number in order to maintain a social distance. This created a “natural experiment” that home advantage phenomenon researchers took advantage of, as for the first time it was possible to study home court advantage in the absence of spectators (“ghost matches”) (Leota et al., 2022; De Angelis, Reade, 2023). A unique experiment in the pandemic was conducted on the basis of the NBA, where 22 teams were isolated in Orlando’s Disneyland, in a so-called “bubble”, and played 176 matches there (Mack et al., 2023). That is, not only were there no spectators in the stands, but also there were no long travelling times for the visiting team to the match venue. At the same time, teams were conventionally labelled as either home or away. Obviously, the comparison of statistical indicators in the matches of pre-pandemic seasons and matches in the pandemic in different formats (in a “bubble”, matches without spectators with relocations, matches with relocations and with spectators with social distance) is of interest from the point of view of determining the contribution of socio-psychological and behavioural factors to the home court advantage of professional club basketball.

One of the first articles on the level of home court advantage on the material provided by the NBA during the pandemic (McHill, Chinoy, 2020) was published in the prestigious scientific journal in the Nature series. The authors analysed the matchup statistics of 22 teams which played in the “bubble” in the absence of home court advantage, and the matchup results of the same teams in regular pre-pandemic seasons at home (63.8 % wins) and away. It was found that when the NBA team traveled to the match venue in the pre-pandemic seasons, it led to a decrease in offensive rebounding at the backboard, while long travel across time zones also decreased shot accuracy and increased ball losses by visiting players. Another article (Higgs, Stavness, 2021) also concluded that transfer of the NBA games to a “bubble” led to a lack of home court advantage, whereas travel fatigue and disruption of circadian rhythms is one of the important causes of home court advantage in American basketball. It is known that most NBA clubs rely on the skill of three or four team leaders in the game, who on average spend about 80–90 per cent of the game time on the court. For such teams, the behavioural factor of travel fatigue, especially at the end of the season, can be the main reason for away defeats.

An analytical comparison of playoff game results in the NBA from 1946 to 2020 showed that the home court advantage rate was independent of playoff stage (quarterfinals, semifinals, finals) and averaged about 65 % (Morgado, Barreira, 2023). During playoff games in the “bubble”, home court advantage was absent and free throw shooting percentage increased to an average of 79 from 75 % in the 50 NBA seasons prior to the pandemic (Markwell et al., 2023). The article by G. Morgado and J. Barreira (2023) admits a steady downward trend in home court advantage rates from 1946 to 2020, which can probably be explained by the following factors. To increase the unpredictability of match results and promote basketball, the NBA championship organisers have tried to reduce the influences of factors contributing to home court advantage by supervising the calendar and competition regulations. For example, they set an equal number of rest days for all teams between games, provide additional training and psychological prepara-

tion of referees, standardise courts for the game, etc. (Pojskic et al., 2011).

A comparison of statistical averages from 971 NBA regular season games in the 2019–2020 pre-pandemic season with 578 ghost games in the 2020–2021 regular season with social distance restrictions is presented in Lu et al. (2022). In the pre-pandemic season, home teams, compared to away teams, shot the ball more accurately, made more defensive and offensive rebounds at the backboard, received fewer fouls and attempted less long-range shots. In the ghost games, there was a reliable difference between the home and away teams for only one indicator of these – offensive rebounding.

The NBA case studies have shown that spectators in the stands are the most important inducing cause of home court advantage. According to J. Ehrlich and J. Potter (2022) home court advantage was null in ghost games without spectators. However, with relatively few fans in the stands maintaining social distance, home court advantage was not statistically significantly different from pre-pandemic seasons. The authors of the above article made an original assumption that the spectators who filled NBA basketball arenas in the pre-pandemic period and stopped attending games with social distance should be classified as an insignificant group of fans (“marginal fans”). Perhaps marginal fans are not real fans of the home team and like to watch any basketball game, but not to cheer for a particular team in the NBA.

Calculations of home court advantage in the NBA matches without spectators and matches with spectators under the circumstance of keeping reasonable social distance showed the following (Ganz, Allsop, 2022). First, in the presence of fans in the stands, home teams beat visiting teams by an average margin of 2.13 points, and without spectators – by an average margin of 0.44 points. Second, allowing 1,000 spectators in the stands in the pandemic improved the home team’s performance by an average of 1.74 points. Third, according to the predictive model, the presence of social distance fans in the stands in the pandemic added 5.7 home wins per season, compared to matches without spectators. The finding that in the NBA home games, an arena

with full or partial spectatorship (to maintain social distance) gives a marked advantage to the home team is also discussed in the article by C. Wang (Wang, 2024).

The absence or limitation of spectators due to social distance requirement in the stands did not have a statistically considerable impact on refereeing decisions in the NBA, as measured by the number of fouls of home or away players (Ehrlich, Potter, 2022). A similar finding that the number of spectators in the stands does not influence refereeing decisions is presented in H. Gong (2022), although it is specified that in the presence of spectators at the end of games, referees were 2.3 % more likely to charge fouls against visiting players on offence. In other words, we cannot completely exclude the factor of the NBA referees' bias in favour of the home team under the influence of noise from spectators in the stands.

The article by P. A. Liao et al. (2023) compared the statistics of 6394 NBA games in the pre-pandemic period (2015–2020) and 665 spectatorless ghost matches during the pandemic. Before the pandemic, home teams averaged 2.56 more points than away teams. In ghost matches in the pandemic, home teams averaged fewer points than away teams. At the same time, in games without spectators, there was a noteworthy increase in the number of fouls by home team players compared to pre-pandemic seasons. Consequently, the lack of spectators in the stands reduced both the overall home court advantage and referee bias in favour of the home team (Liao et al., 2023).

Bustamante-Sanchez et al. (2022a; 2022b; 2024) report statistics on player performance in the NBA and Spanish Liga de la Endesa (Liga Española de la Endesa) pandemic games. Players in the NBA teams that won home games in the pandemic were found to have credibly more three-point shots and blocked shots, but fewer fouls (less violations). In the Spanish league, players in the teams that won at home were more bound to intercept and rebound the ball in defence. The statistical calculations reported in Bustamante-Sanchez et al. (2022a; 2022b) may highlight the differences in defensive and offensive tactics between players in the American and Spanish basketball leagues. In American basketball, there is a belief that in order to attract spec-

tators to the stands and television (computer) screens, more emphasis should be placed on effective offensive actions and graceful defensive block shots. Bustamante-Sanchez et al (2024) compared the statistical performance of Spanish ACB winners and losers in pandemic matches at home, away and on a neutral court. It was recommended that Spanish clubs, in order to improve their sporting performance, should pay more attention to pre-shot combinations to create a better shooting position in attack and have players who specialise in defensive rebounding. Statistical analyses of the home court advantage of three Spanish leagues (first, second and third) led to the conclusion that there is a higher level of home court advantage in the first league compared to the lower leagues (Alonso Perez-Chao et al., 2024b). That is, the higher the position of teams in a league, the higher the home court advantage.

The top ten European championships ranked by the European Basketball Federation had an average 5 % decrease in home wins during the pandemic (De Angelis, Reade, 2023). The results of an analytical comparison between the home court advantage level in the 15 pre-pandemic seasons and during the pandemic are presented in the article by Alonso Perez-Chao et al. (2022) on the example of the top five European professional basketball leagues. Regardless of the country and skill level of club teams in the top European leagues, home teams had higher home court advantage levels in the pre-pandemic seasons than in the pandemic. Significant positive relationships were also detected between home court advantage and teams' sporting ability. Alonso Perez-Chao et al. (Ibid.) proposed and confirmed the hypothesis that teams in European leagues with relatively low financial and sporting capabilities (outsiders) benefited more from home court advantage in the pandemic than teams with medium and high capabilities (stable middles and leaders). Perhaps the outsider players are characterised by a higher sense of belonging to the team (team identity) and additional motivation to win on the home court, even if the matches were played without spectators.

Among the top five European leagues, the German, Spanish, and Italian leagues had the



largest decreases in home court advantage level during the pandemic compared to the pre-pandemic period (Alonso Perez-Chao et al., 2024a). Fan presence at games had the largest effect on home court advantage for top teams in the Italian league, mid-level teams in the Italian, Spanish, and Greek leagues, and outsider teams in the German and Spanish leagues. The Israeli Basketball Super League had the lowest home court advantage rate (57.8 %) among the five European leagues in the pre-pandemic period (Ibid.), and it did not experience a statistically significant decrease in home court advantage rates during the pandemic in games without spectators (Levental et al., 2022). As suggested by these authors, this result could be explained by the relatively low spectator attendance of basketball matches in the pre-pandemic seasons and the small size of the country. Players of Israeli clubs do not need to make long, multi-hour journeys to away games, so behavioural factors also have limited effect.

The home court advantage rate in the EuroLeague in the pandemic was about 61.6, of which 4.46 % was determined by the influence of spectators in the stands (Bourdass et al., 2022). The five EuroLeague clubs that won home games most frequently in the pre-pandemic period experienced reduction in the number of home wins in the pandemic (Dusmus, Gulu, 2022). Similar results for the EuroLeague are presented in R. Paulauskas et al. (2022). For example, it is shown that home court advantage fell from 70 % in the pre-pandemic period to 51 % during the pandemic.

Statistics for the VTB United League, the second strongest league in the European Basketball Federation ranking, were obtained from [championat.com](http://championat.com). From 2013 to 2020 home court advantage averaged  $56.6 \pm 0.6$  ( $M \pm m, \%$ ), while during the pandemic the rate shrank to 52 %. Consequently, the socio-psychological influence of spectators is a major, perhaps even key, factor of home court advantage in

the EuroLeague and the Russian top basketball league. The lower level of home court advantage in the VTB United League compared to the EuroLeague may be due to lower spectator attendance. In 2013–2020, EuroLeague matches were attended by an average of  $8,209 \pm 187$  ( $M \pm m$ ) spectators, while for VTB United League this number was  $2,192 \pm 107$ .

The phenomenon of home advantage is characteristic of the NBA and elite European leagues, but its level may vary depending on the geographical and national characteristics of the country, as well as the historically established sports culture of organising and conducting basketball matches. During the pandemic period, the socio-psychological factors of spectator influence on players, coaches and referees were completely absent, as a rule, in matches without spectators, or these factors were markedly reduced in matches with social distancing. In selected leagues where home court advantage persisted during the pandemic in matches without spectators, with the basketball game calendar not meaningfully different from pre-pandemic seasons, behavioural factors provided an advantage to home players over away team players. These include travel fatigue and disruption of the circadian rhythm of sleep and wakefulness in the visiting team players. This is evidenced by the lower statistical performance of the NBA and European players in terms of shooting accuracy and rebounding in away games compared to home ones.

Overall, knowledge about the factors contributing to home advantage can be of great practical importance for professional club basketball. Basketball clubs that will implement practical measures to increase the level of home court advantage in home matches and reduce the influence of home court advantage factors for away teams in away matches can improve sporting performance, gain additional financial benefits, which will lead to competitive success and positive historical consequences.

## References

Alonso Perez-Chao E., Lorenzo A., Ribas C., Gomez M. A. Impact of COVID-19 pandemic on home advantage in different European professional basketball leagues. In: *Perceptual and Motor Skills*, 2022, 129(2), 328–342. <https://doi.org/10.1177/00315125211072483>

Alonso Perez-Chao E., Nieto-Acevedo R., Scanlan A. T., Martin-Castellanos A., Lorenzo A., Gomez M. A. Home-court advantage is greater for teams competing at higher playing levels: An exploratory analysis of Spanish male basketball leagues. In: *Perceptual and Motor Skills*, 2024b, 131(5), in press. <https://doi.org/10.1177/00315125241262124>

Alonso Perez-Chao E., Portes R., Ribas C., Lorenzo A., Leicht A. S., Gomez M. A. Impact of spectators, league and team ability on home advantage in professional European basketball. In: *Perceptual and Motor Skills*, 2024a, 131(1), 177–191. <https://doi.org/10.1177/00315125231215710>

Boudreaux C.J., Sanders S.D., Walia B. A natural experiment to determine the crowd effect upon home court advantage. In: *Journal of Sports Economics*, 2017, 18(7), 737–749. <https://doi.org/10.1177/1527002515595842>

Bourdas D.I., Mitrousis I., Zacharakis E.D., Travlos A.K. Home-audience advantage in basketball: evidence from a natural experiment in Euro League games during the 2019–2021 Covid-19 era. In: *Journal of Physical Education and Sport*, 2022, 22(7), 1761–1771.

Bustamante-Sanchez A., Gomez M. A., Clemente-Suarez V.J., Jimenez-Saiz S.L. Pre-shot combinations and game-related statistics discriminating between winners and losers depending on the game location during the NBA COVID-19 season. In: *Frontiers in Physiology*, 2022a, 13, 1–10. <https://doi.org/10.3389/fphys.2022.949445>

Bustamante-Sanchez A., Gomez M. A., Jimenez-Saiz S.L. Game location effect in the NBA: A comparative analysis of playing at home, away and in a neutral court during the Covid-19 season. In: *International Journal of Performance Analysis in Sport*, 2022b, 22(3), 370–381. <https://doi.org/10.1080/24748668.2022.2062178>

Bustamante-Sanchez A., Jimenez-Saiz S.L. Game location effect in game-related statistics and pre-shot combination differences between winners and losers during the basketball ACB COVID-19 season. In: *PLoS ONE*, 2024, 19(7), 0303908. <https://doi.org/10.1371/journal.pone.0303908>

Courneya K. S., Carron A. V. The home advantage in sport competitions: A literature review. In: *Journal of Sport & Exercise Psychology*, 1992, 14, 13–27.

De Angelis L., Reade J.J. Home advantage and mispricing in indoor sports' ghost games: the case of European basketball. In: *Annals of Operations Research*, 2023, 325, 391–418. <https://doi.org/10.1007/s10479-022-04950-7>

Dusmus T., Gulu M. Comparison of the home-court performances of successful and unsuccessful teams at Euroleague before and after Covid-19 pandemic. In: *Performance Analysis in Sport and Exercise*, 2022, 1(1), 31–40.

Ehrlich J., Potter J. Estimating the effect of attendance on home advantage in the National Basketball Association. In: *Applied Economics Letters*, 2022, 11, 1471–1482. <https://doi.org/10.1080/13504851.2022.2061898>

Ganz S. C., Allsop K. A mere fan effect on home-court advantage. In: *Journal of Sports Economics*, 2022, 25(1), 30–53. <https://doi.org/10.1177/15270025231200890>

Gong H. The effect of the crowd on home bias: Evidence from NBA games during the COVID-19 pandemic. In: *Journal of Sports Economics*, 2022, 23(7), 950–975. <https://doi.org/10.1177/15270025211073337>

Higgs N., Stavness I. Bayesian analysis of home advantage in North American professional sports before and during COVID-19. In: *Scientific Reports*, 2021, 11, article number 14521. <https://doi.org/10.1038/s41598-021-93533-w>

[https://www.championat.com/basketball/\\_vtbleague/tournament](https://www.championat.com/basketball/_vtbleague/tournament)

Huyghe T., Scanlan A. T., Dalbo V.J., Calleja-Gonzalez, J. The negative influence of air travel on health and performance in the National Basketball Association: A narrative review. In: *Sports*, 2018, 6(3), 89. <https://doi.org/10.3390/sports6030089>

Jones M. B. Home advantage in the NBA as a game-long process. In: *Journal of Quantitative Analysis in Sport*, 2007, 3(4), 1–9. <http://www.bepress.com/jqas/vol4/iss2/2>.

Kolmakov V.I. Contemporary concept about the factorov home advantage in European professional football. In: *Journal of Siberian Federal University. Humanities and Social Sciences*, 2023. 16(2), 201–216.

Kolmakov V.I., Chernyakova S.N. Home Advantage in City and Same-Stadium Derbies: Evidence from European Professional Football. In: *Journal of Siberian Federal University. Humanities and Social Sciences*, 2023, 16(2), 293–302.

Leota J., Hoffman D., Mascaro L., Czeisler M.E., Nash K., Drummond S.P.A., Anderson C., Rarajatnam S.M.W., Facer-Childs E.R. Home is where the hustle is: the influence of crowds on effort and home advantage in the National Basketball Association. In: *Journal Sports Sciences*, 2022, 40, 2343–2352. <https://doi.org/10.1080/02640414.2022.2154933>

Levental O., Hazut T., Tenebaum G. Is home advantage diminished when competing without spectators? Evidence from the Israeli football and basketball leagues. In: *Physical Culture and Sport. Studies and Research*, 2022, 97, 1–11. <https://doi.org/10.2478/pcssr-2022-0019>

Liao P. A., Zheng Y. L., Jane W. J. Home court advantage and referee bias: Evidence from NBA games amid the COVID-19 pandemic. In: *Asian Journal of Applied Economics*, 2023, 30(2), 120–140. <https://ageconsearch.umn.edu/record/344188>

Lu P., Zhang S., Ding J., Wang X., Gomez M. A. Impact of COVID-19 lockdown on match performances in the National Basketball Association. In: *Frontiers in Psychology*, 2022, 13, 951779. <https://doi.org/10.3389/fpsyg.2022.951779>

Mack Ch.D., Merson M.H., Sims L., Maragakis L.L., Davis R., Tai C.G., Meisel P., Grad Y.H., Ho D.D., Anderson D.J., LeMay Ch., DiFiori J. The “Bubble”: What can be learned from the National Basketball Association (NBA)’s 2019–20 season restart in Orlando during the COVID-19 Pandemic. In: *The Journal of Applied Laboratory Medicine*, 2023, 8(6), 1017–1027. <https://doi.org/10.1093/jalm/jfad073>

Markwell L. T., Singh H., Strick A. J., Porter J. M. The effects of spectators on National Basketball association free throw performance. In: *Journal of Motor Learning and Development*, 2023, 12(1), 90–101 <https://doi.org/10.1123/jmld.2023-0023>

McHill A.W., Chinoy E. D. Utilizing the National Basketball Association’s COVID-19 restart “bubble” to uncover the impact of travel and circadian disruption on athletic performance. In: *Scientific Reports*, 2020, 10, 21827. <https://doi.org/10.1038/s41598-020-78901-2>

Morgado G., Barreira J. Home advantage in basketball: a longitudinal analysis of the NBA playoffs (1946–2022). In: *Retos*, 2023, 47, 691–694. <https://recyt.fecyt.es/index.php/retos/index>

Nutting A. W. Travel cost in the NBA production function. In: *Journal of Sports Economics*, 2010, 11, 533–548.

Paulauskas R., Stumbras M., Coutinho D., Figueira B. Exploring the impact of the Covid-19 pandemic in Euroleague Basketball. In: *Frontiers in Psychology*, 2022, 13, 979518. <https://doi.org/10.3389/fpsyg.2022.979518>

Pojksic H., Separovic V., Uzicanin E. Modelling home in basketball at different levels of competition. In: *Acta Kinesiologica*, 2011, 1, 25–30.

Pollard R., Gomes M. A. Home advantage analysis in different basketball leagues according to team ability. In: *Iberian Congress on Basketball Research*, 2007, 4, 61–64.

Price J., Remer M., Stone D.F. Subperfect game: Profitable biases of NBA referees. In: *Journal of Economics & Management Strategy*, 2012, 21, 271–300. <https://doi.org/10.1111/j.1530-9134.2011.00325.x>

Sattar S., Tabassum Y., Junaid S., Khan Sh., Gul F., Butt M.Z.I., Roohi N. Effects of home advantage on hormonal responses of inter-university basketball players. In: *Linguistica Antverpiensia*, 2021, 2, 4551–4559. <https://www.hivt.be> ISSN:0304-2294.

Schwartz B., Barsky S.F. The home advantage. In: *Social Forces*, 1977. 55, 641–661.

Singh M., Bird S., Charest J., Huyghe T., Calleja-Gonzalez J. Urgent wake up call for the National Basketball Association. In: *Journal Clinical Sleep Medicine*, 2021, 17(2), 243–248. <https://doi.org/10.5664/jcsm.8938>

Wang Ch. The effect of NBA attendance on teams’ performance. In: *Science and Technology of Engineering, Chemistry and Environmental Protection*, 2024, 1(8), 1–10. <https://doi.org/10.61173/7bfxp829>

Wang X., Zhang Sh., Gasperi L., Robertson S., Ruano M.A.G. Rest or rust? Complex influence of schedule congestion on the home advantage in the National Basketball Association. In: *Chaos, Solitons and Fractals*, 2023, 174, 113698. <https://doi.org/10.1038/s41598-020-78901-2>