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HOME ADVANTAGE ACROSS MEN'S AND WOMEN'S TEAM SPORTS IN POLAND OVER THE LAST DECADE

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Przewaga własnego boiska w sportach drużynowych mężczyzn i kobiet w Polsce w ostatniej dekadzie

Streszczenie

Przewaga własnego boiska jest dobrze udokumentowanym zjawiskiem w sporcie, odnoszącym się do lepszej gry drużyn występujących na własnym terenie w porównaniu z drużynami grającymi na wyjeździe. Chociaż efekt ten został opisany w licznych dyscyplinach, okresach i krajach, niewiele badań jednocześnie analizowało wiele dyscyplin oraz obie płcie w ramach jednego kontekstu krajowego. Celem niniejszego badania było przeanalizowanie przewagi własnego boiska w męskich i żeńskich dyscyplinach zespołowych w Polsce w ciągu ostatniej dekady oraz porównanie jej wielkości przed i po pandemii COVID-19. Dane zostały zebrane z 11 męskich i 7 żeńskich lig najwyższego szczebla w Polsce. Przewaga własnego boiska została oszacowana za pomocą metody Pollarda, wyrażonej jako procent punktów zdobytych przez drużyny gospodarzy w stosunku do wszystkich możliwych punktów. Istotna przewaga własnego boiska została zaobserwowana w większości dyscyplin zarówno wśród mężczyzn, jak i kobiet, przy czym wyższa przewaga własnego boiska występowała częściej w męskich rozgrywkach. Wyniki te są zgodne z wcześniejszymi badaniami. W niektórych dyscyplinach wystąpiły zauważalne różnice pomiędzy dwoma badanymi okresami. Oprócz wpływu pandemii COVID-19, zmiany w przepisach sportowych oraz modyfikacje struktur ligowych mogły wpłynąć na zmiany przewagi własnego boiska w czasie w różnych dyscyplinach sportowych, zarówno w męskich, jak i żeńskich ligach w Polsce.

Słowa kluczowe: koszykówka, piłka nożna, piłka ręczna, hokej, rugby, piłka siatkowa, piłka wodna.

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Abstract

Home advantage is a well-established phenomenon in sports, referring to the superior performance of teams playing at home compared to those playing away. Although this effect has been documented across numerous sports, time periods, and countries, few studies have examined multiple disciplines and both sexes simultaneously within a single national context. The present study aimed to analyse home advantage across men's and women's team sports in Poland over the last decade and to compare its magnitude before and after the COVID-19 pandemic. Data were collected from 11 men's and 7 women's top-tier team sports leagues in Poland. Home advantage was quantified using Pollard's method, expressed as the percentage of points earned by home teams out of all possible points. Significant home advantage was observed in most sports for both men and women, with higher home advantage observed in most men's competitions. These findings align with previous research. Substantial differences between the two time periods were observed in certain sports for both sexes. In addition to the impact of the COVID-19 pandemic, recent changes in sports rules and modifications to league structures may have influenced changes over time in home advantage across various sports in both men's and women's Polish leagues.

Keywords: basketball, football, handball, hockey, rugby, volleyball, water polo.

Introduction

Home advantage is a well-documented phenomenon referring to the performance benefit teams experience when competing on their home ground. This effect has been discussed in the scientific literature since the 1970s (Schwartz & Barsky, 1977; Edwards & Archambault, 1979; Courneya & Carron, 1992) and remains a relevant topic of study in the 2020s (Gómez-Ruano et al., 2021). Historical records indicate that home advantage has existed as far back as the late 19th century in the English men's soccer (football) league (Pollard, 1986).

Multiple factors are known to contribute to home advantage, including crowd support, rule changes, and psychological aspects (Pollard, 2008). Moreover, contextual variables such as country (Pollard & Gómez, 2014a), sport discipline (Jamieson, 2010), level of competition (Prieto et al., 2013), and gender (Pollard & Gómez, 2014b) may influence the magnitude of this effect.

Most research on home advantage has focused on men's soccer across various countries (mainly in Europe) and time periods (Pollard, 2006; Pollard & Gómez, 2009, 2014a). However, the phenomenon has also been examined in other team sports, including basketball (Pollard & Gómez Ruano, 2013; Alonso Pérez-Chao et al., 2024), volleyball (Yu et al., 2020) and handball (Marquina Nieto, 2025), but predominantly in men's competitions.

Despite this extensive body of research in men's sport, home advantage has also been documented in women's sports. It has been studied primarily in separate disciplines and often simultaneously with men's results (Pollard & Gómez, 2012, 2014b; Prieto et al., 2013; van Meurs et al., 2023). While most studies report a greater home advantage in men's competitions, significant effects have

also been observed in women's sports. Gender differences in home advantage have been hypothesised to stem from variations in crowd size and intensity, professionalisation of leagues and social-psychological factors such as responses to pressure – factors that systematically differ between men's and women's competitions (Courneya & Carron, 1992; Pollard, 2008).

In recent years, research on home advantage has focused on the unique circumstances created by the COVID-19 pandemic. The absence or reduction of crowd support during that period has provided a valuable opportunity to better understand the influence of fans (Almeida & Leite, 2021; Arboix-Alió et al., 2021; Jaguszewski, 2021; Sedeaud, 2021; Dellagrana et al., 2023; van Meurs et al., 2023; Alonso Pérez-Chao et al., 2024; Jaguszewski et al., 2025).

Only a few studies have analysed home advantage in multiple team sports (Pollard, 1986; Pollard & Pollard, 2005; Jamieson, 2010; Gómez et al., 2011). However, these investigations were conducted exclusively on men's competitions and were limited to leagues from North America, England, and Spain. To date, only one study has presented home advantage data for both men's and women's team sports simultaneously across multiple countries (Pollard et al., 2017), highlighting the need for further research in this area.

Despite extensive empirical evidence for home advantage, theoretical understanding of how contextual factors such as national sport systems and gender shape home advantage across multiple team sports remains limited, even in European countries. Therefore, the aim of the present study is to examine the magnitude of home advantage in men's and women's team sports in Poland over the past decade, within a theoretical framework that considers crowd support as a key component of home advantage. Based on the existing literature and the identified research gaps, the following hypotheses were formulated:

- H1: A significant home advantage exists in top-level Polish men's and women's team sports leagues.
- H2: The magnitude of home advantage may vary across different team sports in Poland for men's and women's competitions.
- H3: The magnitude of home advantage differs between Polish men's and women's leagues within individual team sports.
- H4: The magnitude of home advantage does not differ between the periods before and after the COVID-19 pandemic, in matches played with crowd support, analysed separately for Polish men's and women's leagues.

Materials and methods

Materials and data

The inclusion and exclusion criteria for data collection followed those used in previous studies (Pollard & Gómez, 2014a; Pollard et al., 2017), with the pri-

mary exclusion criterion being the lack of data for at least two full seasons within the study period (especially no data at all). Unusual exclusion criteria included inconsistencies in sources (e.g., when the sum of individual match results did not match the league table) and the absence of home games, e.g. in softball matches were played only at selected neutral venues. Sports with very few teams in Polish leagues (e.g., women's field hockey) or seasons with fewer than 15 matches were excluded due to the disproportionate impact a single team could have on home advantage outcomes. Walkover matches (games awarded by default) were also excluded, as no actual competition took place. Finally, only regular season games – typically played in a round-robin format – were included in the analysis. Playoff matches were excluded because they are not consistently implemented across all sports, and in cases where they are used, the allocation of home and away games is often unequal between teams. Such an imbalance may undermine the consistency of the data set and affect the reliability of home advantage assessment.

Data were primarily collected from the Flashscore website (Flashscore, 2025), which provides results for multiple sports. Flashscore has been widely used in previous academic studies as a reliable source of historical match results. When data were unavailable on Flashscore, supplementary sources, including Wikipedia (Wikipedia, 2025) and websites dedicated to Polish leagues in less popular sports, were consulted (Polish floorball, 2025; Polish water polo, 2025; Regional football, 2025; Regional sport; 2025). Overall, data from 11 team sports were gathered for men's competitions and from 7 team sports for women's competitions. The dataset covers two distinct four-season periods: the pre-COVID-19 pandemic Period 1 (2015/2016 to 2018/2019 seasons in most sports) and the post-pandemic Period 2 (2021/2022 to 2024/2025 seasons), when fan attendance returned to normal. Results are presented separately for men's and women's sports within these periods, as well as combined across the entire eight-season timeframe.

Methods

Home advantage was calculated using Pollard's method (Pollard, 1986), which presents the percentage of home teams' wins or points earned out of all possible wins or points. Home advantage calculated according to this method was denoted as HA in this work. An HA value amounting to 50% denotes no home advantage; values above 50% signify home advantage, while values below 50% (which are rare) indicate a home disadvantage.

To further explore differences in home advantage between the two examined periods and between men's and women's results, two indexes were introduced: Home Advantage Difference (HA_D) and Home Advantage Relative Differ-

ence (HA_{RD}). Home Advantage Difference measures the difference between two HA values as it was also calculated as follows:

$$HA_D(\%) = HA_1 - HA_2$$

where HA_1 and HA_2 represent home advantage values for two different results (e.g. men's vs women's leagues or different time periods). HA_D provides a straightforward measure of the difference in home advantage, expressed in percentage points (p.p.), and is useful for direct comparisons between two values. Meanwhile Home Advantage Relative Difference measures the difference between two HA values relative to the baseline of no home advantage ($HA = 50\%$). It is calculated as follows:

$$HA_{RD}(\%) = \frac{|HA_1 - HA_2|}{\max\{HA_1, HA_2\} - 50\%},$$

where HA_1 and HA_2 represent home advantage values (calculated by Pollard's method) for two different results, e.g. for men's and women's leagues or for different time periods. The HA_{RD} index yields positive values only when at least one HA value exceeds 50%, which is typical in empirical research on home advantage. Additionally, if both HA values are above 50%, HA_{RD} remains below 100%, which is very likely in practice, as most home advantage values in team sports exceed 50%. The interpretation of HA_{RD} is that values greater than 50% indicate a substantial difference in home advantage, implying that the 'real' home advantage was at least twice as large in one case compared to the other.

Validity and reliability

The construct validity of the home advantage (HA) measure is supported by its widespread use in previous research across multiple sports and countries (Pollard, 1986; Gómez et al., 2011; Pollard et al., 2017), ensuring that it accurately reflects the phenomenon of home advantage. HA_D and HA_{RD} indexes, developed for this study to compare HA between sexes and across time periods, are conceptually consistent with HA and allow meaningful relative comparisons and clearer results' description.

Reliability is ensured through the use of official league results and the application of standardized calculation procedures across all included sports and seasons even though scoring systems differ between sports. Table 1 summarizes how home advantage was calculated in each investigated sport, highlighting consistency with prior studies and comparability between disciplines.

Table 1

Calculation of home advantage (HA) across different team sports, including outcome measures and scoring systems

Sport	Outcome measure	Scoring system	Definition of home advantage (HA)
American foot-ball, basketball	Win/loss	Binary outcome; overtime included	HA (%) = Number of home teams' wins divided by total number of matches
Futsal, soccer/football	Points	Loss = 0 pts; Draw = 1 pt; Win = 3 pts	HA (%) = Number of home teams' points divided by total number of points
Rugby	Points	Loss = 0 pts; Draw = 2 pts; Win = 4 pts	HA (%) = Number of home teams' points divided by total number of points
Volleyball	Points	Loss in three or four sets = 0 pts; Loss in five sets = 1 pt; Win in five sets = 2 pts; Win in three or four sets = 3 pts	HA (%) = Number of home teams' points divided by total number of points
Field hockey, floorball, handball, ice hockey, water polo	Points	Regulation loss = 0 pts; Overtime/shootout loss = 1 pt; Overtime/shootout win = 2 pts; Regulation win = 3 pts	HA (%) = Number of home teams' points divided by total number of points

Statistical methods

Home advantage results across the eight examined seasons for both men's and women's sports in Poland are presented in a bar chart. Also HA, HA_D and HA_{RD} values, along with comparisons between sexes and time periods for each sport, are summarized in tables.

To test H1, i.e. if home advantage exists (HA is statistically significantly greater than 50%), a one-sided test for one proportion (Greń, 1978) was applied separately for men's and women's competitions across the entire eight-season period. This test compares the observed HA value and the number of games played against the baseline of 50% (no home advantage). The test yields a *u* statistic and corresponding *p*-value.

Differences between sports (H2) were examined descriptively by reporting HA values separately for men's and women's leagues, without formal statistical testing, in order to provide an overview of variation across disciplines.

Differences between men's and women's competitions (H3) and between the two examined periods separately for men's and women's leagues (H4) across team sports in Poland were tested using a two-sided test for two proportions (Greń, 1978). The test produces a *u* statistic and *p*-value.

Statistical analyses were performed using TIBCO Software Inc. (2017, Statistica data analysis software system; version 13; available at <http://statistica.io>). The significance level was set at $p < 0.05$.

Results

Among the examined sports in the top Polish leagues with crowd support over the eight-season period, men's soccer showed the highest home advantage (HA = 57.92%), while volleyball had the highest home advantage (HA = 55.79%) among women's sports. The lowest home advantage results in Poland were noticed for American football (HA = 52.61%) in men's sports and in ice hockey (HA = 52.17%) in women's sports.

Overall across all 11 men's sports and 7 women's sports analysed in the best Polish leagues, HA exceeded 50%, indicating the presence of this phenomenon. Statistical testing using the test for one proportion confirmed a significant home advantage ($p < 0.05$) in 9 out of 11 men's sports and 4 out of 7 women's sports. No significant home advantage was detected ($p > 0.05$) in men's field hockey and American football, as well as in women's futsal, floorball, and ice hockey. These sports exhibited relatively small sample sizes (≤ 314 games), which were lower than those of the other sports analysed (Table 2, Figure 1).

Table 2

Home advantage in the top Polish men's and women's leagues across different sports in matches with crowd support in years 2015–2025, its significance and comparison between sexes

Sport	Men			Women			Comparison between sexes		
	HA	n	p^1	HA	n	p^1	HA _D (p.p.)	HA _{RD}	p^2
American football	52.61%	230	0.2148						
Basketball	56.20%	2016	<0.0001	55.12%	996	0.0006	1.08	17.42%	0.5744
Field hockey	53.87%	224	0.1230						
Floorball	53.73%	510	0.0465	52.44%	314	0.1949	1.28	34.46%	0.7185
Futsal	56.01%	1543	<0.0001	52.78%	242	0.1949	3.23	53.73%	0.3471
Handball	55.66%	1494	<0.0001	55.30%	1184	0.0001	0.36	6.35%	0.8523
Ice hockey	54.68%	1624	0.0001	52.17%	216	0.2611	2.51	53.63%	0.4865
Rugby	56.19%	557	0.0018						

Table 2 (cont.)

Sport	Men			Women			Comparison between sexes		
	HA	n	p ¹	HA	n	p ¹	HA _D (p.p.)	HA _{RD}	p ²
Soccer/football	57.92%	2408	<0.0001	54.03%	1176	0.0029	3.89	49.08%	0.0274
Volleyball	55.00%	1720	<0.0001	55.79%	1134	<0.0001	-0.79	13.65%	0.6778
Water polo	53.91%	447	0.0495						

Notes: HA – home advantage, n – number of games, p¹ – p value obtained from a one-sided test for one proportion (testing significance of home advantage), p² – p value obtained from a two-sided test for two proportions (comparing two HA results), HA_D – Home Advantage Difference – difference between HA in men’s and women’s sport (HA_{Men} – HA_{Women}), HA_{RD} – Home Advantage Relative Difference. Bolded p values indicate statistical significance (p < 0.05).

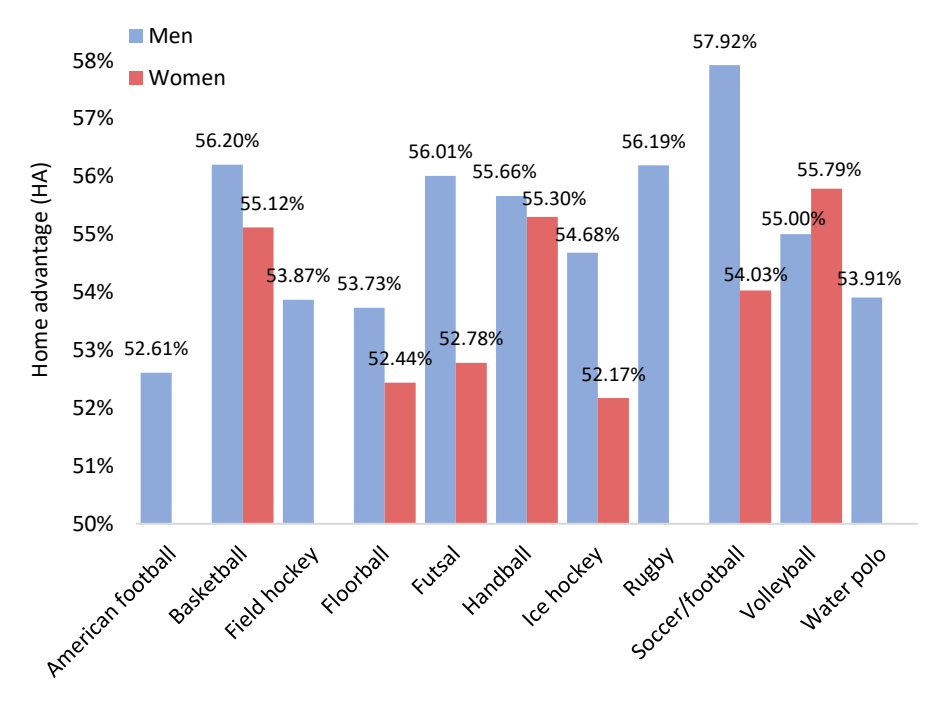


Figure 1
Home advantage across different team sports in top Polish men’s and women’s leagues during matches with crowd support between 2015 and 2025

Home advantage was higher in women’s competition than in men’s only in volleyball, by 0.79 p.p.. In the other six sports with results available for both sexes, home advantage was higher in men’s competitions. The largest difference

favouring men was observed in soccer, with a difference of 3.89 p.p. and a HA_{RD} value of 49.08%, which was statistically significant ($p = 0.0274$). Substantial differences ($HA_{RD} > 50\%$) favouring men were noted in futsal (3.23 p.p., $HA_{RD} = 53.73\%$) and ice hockey (2.51 p.p., $HA_{RD} = 53.63\%$), although these differences were not statistically significant ($p > 0.05$). In the remaining sports, differences between men's and women's home advantage did not exceed 1.28 p.p., were not substantial ($HA_{RD} < 50\%$), and were not significant ($p > 0.05$) (Table 2, Figure 1).

Home advantage in men's sports was higher in Period 1 than in Period 2 in 4 of the 10 sports where comparisons were made. In men's basketball, HA decreased significantly over time by 9.05 p.p. ($p = 0.0001$), representing a substantial change ($HA_{RD} = 86.11\%$). Conversely, substantial, but not significant ($p > 0.05$) increases in HA were observed in men's American football (by 2.69 p.p., $HA_{RD} = 72.12\%$) and floorball (by 3.18 p.p., $HA_{RD} = 57.71\%$). In the remaining men's sports, changes between periods were neither substantial ($HA_{RD} < 50\%$) nor significant ($p > 0.05$) (Table 3).

Table 3

Home advantage in men's and women's Polish leagues across different team sports compared between two time periods

Sport	2015-2019 (Period 1)		2021-2025 (Period 2)		Comparison between periods		
	HA	n	HA	n	HA_D (p.p.)	HA_{RD}	p
Men							
American football	51.04%	96	53.73%	134	-2.69	72.12%	0.6870
Basketball	60.51%	1056	51.46%	960	9.05	86.11%	0.0001
Field hockey			53.87%	224			
Floorball	52.33%	286	55.51%	224	-3.18	57.71%	0.4747
Futsal	57.90%	613	54.77%	930	3.13	39.62%	0.2255
Handball	56.29%	766	55.08%	728	1.21	19.24%	0.6379
Ice hockey	54.46%	904	54.95%	720	-0.49	9.90%	0.8438
Rugby	54.94%	233	57.10%	324	-2.16	30.42%	0.6123
Soccer/football	57.80%	1184	58.05%	1224	-0.25	3.11%	0.9011
Volleyball	55.54%	818	54.51%	902	1.03	18.59%	0.6681
Water polo	53.82%	231	54.01%	216	-0.19	4.70%	0.9679
Women							
Basketball	54.17%	576	56.43%	420	-2.26	35.15%	0.4788
Floorball	54.53%	184	49.49%	130	5.04	111.26%	0.3784
Futsal			52.78%	242			
Handball	57.81%	676	52.49%	508	5.32	68.12%	0.0683

Table 3 (cont.)

Sport	2015-2019 (Period 1)		2021-2025 (Period 2)		Comparison between periods		
	HA	n	HA	n	HA _D (p.p.)	HA _{RD}	p
Ice hockey			52.17%	216			
Soccer/football	54.66%	648	53.27%	528	1.39	29.83%	0.6343
Volleyball	57.01%	628	54.28%	506	2.73	38.94%	0.3575

Notes: HA – home advantage, n – number of games, HA_D – Home Advantage Difference – difference between HA in two examined periods (HA_{Period1} – HA_{Period2}), HA_{RD} – Home Advantage Relative Difference, p – p value obtained from a two-sided test for two proportions (comparing two HA results). Bolded p values indicate statistical significance (p < 0.05).

Home advantage in women’s sports was higher in Period 1 than in Period 2 in 4 of the 5 sports compared. Substantial decreases in HA over time were observed in women’s floorball (by 5.04 p.p., HA_{RD} = 111.26%) and handball (by 5.32 p.p., HA_{RD} = 68.12%), with a trend toward statistical significance in the latter (p = 0.0683). In women’s soccer, volleyball, and basketball, changes between periods were neither substantial (HA_{RD} < 50%) nor significant (p > 0.05) (Table 3).

Discussion

In this study, the highest home advantage (HA) in men’s sports was observed in soccer (HA = 57.91%), which aligns with findings from previous research (Pollard, 1986; Jamieson, 2010). The second- and third-highest HA values were recorded in men’s basketball (HA = 56.20%) and rugby (HA = 56.19%). Both sports have also demonstrated high HA values (HA > 60%) in other studies (Jamieson, 2010; Gómez et al., 2011; Pollard et al., 2017). In contrast, the lowest HA values in men’s sports in this study (HA < 54%) were found in field hockey, American football, floorball, and water polo. Similar patterns were observed in earlier research, where HA in these sports never exceeded 57.30% (Pollard, 1986; Gómez et al., 2011; Prieto et al., 2013; Pollard et al., 2017). Overall, these results indicate that HA varies between sports as these differences persist across different time periods and countries.

The difference between men’s and women’s soccer was statistically significant, amounting to 3.89 p.p. in the present study. This finding is consistent with previous literature, which also demonstrated a higher HA in men’s compared to women’s soccer in all examined European countries, with an average difference of 5.80 p.p. from 2004 to 2010 (Pollard & Gómez, 2014b) and 2.79 p.p. across 65 countries between 2011 and 2015 (Pollard et al., 2017). In other sports, differences between sexes were also generally in favour of men (Pollard et al.,

2017; van Meurs et al., 2023), consistent with the patterns observed in the present work.

Although no significant difference between the two examined periods was observed in men's soccer in this study, it is noteworthy that the home advantage in the Polish men's soccer league (HA = 57.92% in 2015-2025) has decreased compared with earlier periods reported in previous research (HA = 63.29% in 1998-2004 (Pollard; 2006); HA = 61.47% in 2006-2012 (Pollard & Gómez, 2014a)). Similar decline in HA over time has also been documented in other European countries (Pollard, 1986, 2006; Pollard & Gómez, 2014a), suggesting that this may represent a global trend worthy of further investigation. In contrast, in women's soccer, the home advantage in the Polish league over the last decade (HA = 54.03%) was similar to that reported from 2004 to 2010 (HA = 53.49%) (Pollard & Gómez, 2014b).

The present findings highlight some meaningful differences in how home advantage has evolved over time across the sports analysed and between sexes. One major global factor coinciding with the analysed periods is the COVID-19 pandemic, which affected both everyday life and the sporting environment (Wang & Boros, 2021; Dambrun et al., 2023), including home advantage (Arboix-Alió et al., 2021; Alonso Pérez-Chao et al., 2024). Although crowd effects were not directly analysed in the present study, as only seasons with full fan attendance were included, the pandemic may nevertheless have contributed to the observed fluctuations in home advantage through broader and more complex mechanisms. In this context, the discussion focuses on interpreting the significant (or at least substantial) changes over time in home advantage within the individual sports analysed.

The largest difference in home advantage (HA) between the two examined periods (exceeding 9 p.p.) was observed in men's basketball. An unusually high HA value of 60.51% in Period 1 (2015-2019) significantly decreased to just above 50% in Period 2 (HA = 51.49%). This significant decline is not immediately explainable, but recent rule changes may have played a role. Modifications implemented by FIBA over the past decade (FIBA, 2025), such as the expansion of video review and the introduction of automatic unsportsmanlike fouls during the final two minutes of the game and overtime, could have affected referee decisions and game dynamics. Also changes in relegation rules and the reduction of league size from 17 to 16 teams starting from the 2018/2019 season in the Polish men's basketball league, may also have contributed. In contrast, HA in women's Polish basketball league remained relatively stable, suggesting that rule changes may impact men's and women's competitions differently.

A substantial increase in home advantage was observed in men's American football. However, this finding should be interpreted with caution due to the limited sample size (data only from two seasons in Period 1). Additionally, the

current league was newly established in 2021 through the merger of two former leagues. With the league still evolving in terms of the number of teams and competition format, (Flashscore, 2025; Wikipedia, 2025) alongside rising professionalism and popularity, these factors may explain the observed increase in home advantage over time.

In men's floorball HA increased substantially over time, whereas in women's floorball it decreased below the threshold indicating no home advantage (49.49%). Recent rule modifications, such as allowing play with the stick above knee level under safe conditions and applying 5-minute penalties without contact for dangerous stick movements, may have contributed to these trends. Moreover, the league format in both men's and women's Polish leagues changed in the 2019/2020 season from a group stage format to a single-league structure (Flashscore, 2025; Polish floorball, 2025). These factors combined with relatively small sample sizes likely influenced the observed changes in home advantage.

In women's handball, a substantial decrease in HA was observed between the examined periods. Rule changes introduced in 2022, such as the allowance of resin-free balls and the reduction of the passive play limit from 6 to 4 passes (IHF, 2025), may have influenced home advantage. Additionally, the league format was modified in 2022/2023 season in the Polish women's league, splitting teams into a championship and a relegation league after the round-robin phase to determine the final standings. These structural adjustments may also have contributed to the observed decrease in HA.

Limitations and future research directions

Limitations of the study include the unavailability of data for certain, less popular sports, as well as differences in league structures and sample sizes across analysed sports and seasons. Ideally, more uniform competition formats and comparable number of matches would have allowed for more reliable comparisons both within and between sports. However, achieving such consistency was not feasible and remained beyond the authors' control.

Another limitation is that the study period encompassed the COVID-19 pandemic, which likely affected home advantage in ways that could not be fully controlled. To minimise this impact, data from the 2019/2020 and 2020/2021 seasons, when competitions were disrupted by pandemic, were excluded from the analysis.

Future research should expand the presented approach to other countries and, where possible, to additional sports, in order to enable cross-national comparisons of home advantage across multiple team sports. It would also be valuable for future studies to investigate specific mechanisms underlying home ad-

vantage, such as crowd size, officiating, and psychological responses to pressure, with particular attention to potential sex differences. Collecting more standardised data across sports and seasons would strengthen comparative analyses and improve understanding of how home advantage evolves in modern team sports.

Practical implications

The results of this study demonstrate that the influence of playing at home varies across sports and between sexes, with important implications for coaching and performance planning. Coaches and performance staff should take these sport- and sex-specific differences into account when preparing for matches, managing player rotation, and setting performance expectations for home and away teams. In sports where home advantage is consistently high, leveraging familiar environments and crowd support may be particularly beneficial, whereas in sports with lower home advantage, performance strategies may be more consistently applied across different venues.

The observed changes in home advantage over time suggest that modifications to competition formats, rule changes, and increasing professionalism may all contribute to shifts in results. Understanding how structural factors, such as league size, scheduling, and relegation systems, influence home advantage can help support more informed decision-making aimed at maintaining fairness and spectator interest in team sports. Policymakers should also consider the broader competitive implications of rule changes, particularly when implementing reforms across different sexes and sports.

Summary

This study examined home advantage across team sports in Poland, considering differences between sexes and temporal variation. The findings indicate that home advantage is not a uniform phenomenon, but varies systematically across competitive contexts and over time. These results contribute to the literature by identifying sex and sport as important dimensions in understanding home advantage. From a broader perspective, the findings underscore the relevance of contextual and structural factors when interpreting performance outcomes in team sports.

DECLARATION OF CONFLICTING INTERESTS

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AUTHORS' CONTRIBUTIONS

Maciej Jaguszewski: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Data Curation, Writing – Original Draft, Writing – Review & Editing, Visualization, Supervision, Project administration.

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