

Chapter 32. HOME ADVANTAGE IN PARA-SPORT

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Summary

This chapter will discuss the current knowledge and awareness of how the phenomena of Home Advantage (HA) impacts Para sport performers. The word “Para” is a prefix from the Greek meaning of “alongside”. More recently, “Para” has been used interchangeably with “disability”, extending beyond sports solely associated with the Paralympic Games. For the purposes of this chapter, “Para” will be used to define all sports that are competed by individuals who are unable to participate in able-bodied sports due to an impairment. The first part of this chapter will explore the current research that has focused on HA in Para-sports through the means of counting medals and the need for more specialised knowledge and expertise presented. After that, Carron et al.'s (2005) revised HA conceptual framework is drawn on, acknowledging the challenges surrounding player classification in team sport, to critically examine the phenomenon within blind football and wheelchair basketball.

The current understanding of HA in Para-sport

Elsewhere in this book the phenomenon of HA in able-bodied sports has been examined and builds on the generally well-established body of academic literature. In contrast, HA in Para-sport has received limited attention to date. Wilson and Ramchandani (2017b, 2017a) examined whether HA existed in both the Summer Paralympic Games (1960-2016) and Winter Paralympic Games (1976-2014). Through analysing each nation's average home performance when hosting a Games with its own average away performance, a measure of HA in the term of a market share could be calculated. During the Summer Paralympics, only para-athletics, para-table tennis and wheelchair fencing returned statistically significant HA differences. Whilst during the Winter Paralympics, only para-alpine skiing and para-cross-country skiing reported a significant HA effect (Wilson & Ramchandani, 2017b). The remaining Summer and Winter Paralympics sports provided weak or inconclusive evidence of a HA effect.

It is important to note that these associations between HA and performance extend to returning any coloured medal. For example, in the para-alpine skiing category, Canada achieved a total of five medals (one Gold, two Silver and two Bronze) at the 2006 Winter Paralympic Games held in Italy. When hosting the 2010 Winter Paralympic Games, they won a total of 13 medals (six Gold, four Silver and three Bronze), whereas, at the following 2014 Winter Paralympics in Russia, Canada won a total of eight medals (two Gold, one Silver and five Bronze). Whilst this demonstrates an insight into the number of medals collected immediately pre-, during and post-hosting a major competition, Wilson and Ramchandani's (2017b, 2017a) work collectively analysed data from 11 competitions spanning five decades and therefore does not necessarily indicate the phenomena but a measure of a nation's ability to continuously achieve medal success in particular sports. Furthermore, Pettigrew and Reiche (2016) argue if a small HA does exist for hosting, host nations enter a greater number of events and it is largely due to this increase in participation rates for a higher return of medals rather than a large HA effect. These factors, to name a few, potentially affect our knowledge and understanding of HA across these sports.

Carron et al.'s (2005) revised HA conceptual framework has provided a useful catalyst for avenues of investigation within able-bodied sports regarding potential factors, however, its purpose is not for Para-sport populations. Of particular note, Kohe and Peters (2017) highlight the importance of developing specialised knowledge and expertise, due to a Para-sport athlete's highly individualised and complex bio-medical, medical, physical, physiological and psychological characteristics, in comparison to able-bodied athletes. In addition, the multiple events within both individual and team sports, sometimes across 23 classification classes, adds further complexity to our understanding. Therefore, by acknowledging elements of classification and the intricacies of Para-sport in addition to the elements within the revised framework, further knowledge and understanding could be gained.

HA in Blind Football

Blind football is an adapted version of futsal for people with severe sight loss or who are recognised as being totally blind. The sport is played by four outfield players who are registered as B1 (completely blind) and one goalkeeper who can be sighted or partially sighted per team (International Blind Sports Federation, 2017a). The outfield players visual acuity ranges from no light perception up to light perception with an inability to recognise the shape of a hand. All outfield players are required to wear eye shades to guarantee equal levels of visual impairment. The two teams typically compete on an outdoor futsal pitch with angled sideboards to allow the ball to remain in play but also to act as an acoustic board. The reverberations from the boards and the outside environment improve acoustics, assisting players in determining their own location as well as that of their team-mates and opponents (Velten et al., 2016). The modified ball contains panels with metal shards or ball bearings stitched into it. As the ball travels across the field of play, noise is created that further aids players ability to locate the ball (Magno E Silva et al., 2013). A final adaption, to minimise excess auditory levels, is the requirement for the crowd to remain silent when the ball is in play.

On the surface, the adaptations made to level the playing field could be argued to provide an advantage to the home team. Primarily, the familiarisation and orientation of the playing environment and the noise distractions within said playing location could be argued to be of profound importance. In particular, understanding how the acoustic levels are affected in the environment, as well as the ability for an individual to gain knowledge of the distances and directions between surroundings to aid spatial relationships, is essential (Wiener et al., 2010). However, many of the domestic blind football competitions do not follow a traditional league competition with home and away fixtures due to the need for specialist playing venues. For example, seven teams in the Spanish Blind Football League compete at six different locations over seven months. Within the 2018-19 season, the top three teams demonstrated a HA effect, recording a winning percentage of more than 75%. The remaining teams when competing at home or in neutral venues recorded a winning percentage of less than 46% (Federación Española de Deportes para Ciegos, 2018). These results demonstrate some supporting evidence for the existence of HA. However, an argument could be made that team quality has a larger impact on the game outcome. This is due to the three top Spanish club teams recording a positive goal difference in comparison to the other teams recording a negative goal difference. In support of this notion, internationally the Brazilian national team have achieved gold medals at eight out of the 10 previous Paralympic Games or World Championships, achieving a silver and bronze medal on the two other occasions (see Table 32.1.). It is important to note that only on three occasions has the host nation

obtained a gold medal, and a further three occasions whereby the host has gained a silver or bronze medal, indicating that the phenomenon of HA may not be prevalent at major competitions and less so in more recent times.

Table 32.1. Summary of top three teams and competition location for the International Blind Sports Federation’s Blind Football World Championships (WC) and the International Paralympic Committee’s Paralympic Games (PG) from 1998 to 2018.

Year	Host Country	Gold	Silver	Bronze
1998	Brazil (WC)	Brazil*	Argentina	Spain
2000	Spain (WC)	Brazil	Argentina	Spain*
2002	Brazil (WC)	Argentina	Spain	Brazil*
2004	Greece (PG)	Brazil	Argentina	Spain
2006	Argentina (WC)	Argentina*	Brazil	Paraguay
2008	China (PG)	Brazil	China*	Argentina
2010	England (WC)	Brazil	Spain	China
2012	England (PG)	Brazil	France	Spain
2014	Japan (WC)	Brazil	Argentina	Spain
2016	Brazil (PG)	Brazil*	Iran	Argentina
2018	Spain (WC)	Brazil	Argentina	China

Note: *Medal won by the host nation.

At these major competitions, attendance figures have been significantly less than at an able-bodied equivalent competition. For example, the 2018 Blind Football World Championships hosted in Madrid was played at a school with temporary stands allowing for a maximum capacity of 400 people (International Paralympic Committee, 2018). In comparison, the 2018 Football World Cup, was played across several football stadiums in Russia, having a seating capacity between 33,061 and 78,011 dependent on the stage of the competition (Statista, 2018). Whilst able-bodied sports have inferred a positive relationship between crowd size, noise and HA (e.g. Unkelbach & Memmert, 2010), the limited attendance figures combined with the crowd noise restrictions may provide further supporting evidence as to why a HA effect may not be found in blind football. However, blind players can isolate specific noises and block out certain distractions through improved auditory spatial tuning (Mieda et al., 2019). Therefore, inferring the effects of crowd and crowd noise does not affect blind player’s performances, but this could be due to the imposed rules for spectators to comply with and not necessarily a factor associated with HA in blind football.

Vose et al. (2010) highlighted blind players express a degree of anxiety when travelling to and practising in new and unfamiliar facilities. Aiding athletes through this familiarisation and orientation enables them to focus their energy solely on performance. This may be a reason why blind football competitions are largely held at neutral venues that are used multiple times, enabling players to orientate with the playing environment. However, for major competitions, ‘new’ bespoke facilities are erected a few days before the start of the competition. For example, the 2017 European Blind Football Championships was played in a public park in the centre of Berlin (International Paralympic Committee, 2016). Not only are these venues unfamiliar, they are also required to play on a newly laid temporary pitch with a brand new ‘edition’ of a blind football ball.

Pitch surfaces have been found to affect the speed of the ball, movement of players and style of play within able-bodied football, with pile length and type of infill being contributing factors (Sánchez-Sánchez et al., 2018). If the speed of the ball is affected,

due to differing pile length, the auditory levels generated would also be directly affected. Subsequently, this would impact a player's ability to locate not only the ball but the movement and speed of other players. For example, at the 2018 Blind Football World Grand Prix, the tournament was played on a baseball pitch that had a long pile (International Blind Sports Federation, 2017b). Subsequently, the speed of the ball, the ability for blind players to locate loose balls and control the ball was adversely affected. Thus, if teams have not trained on the pitches before competing, the orientation and familiarisation of how the surface affects the ball speed and auditory levels are unknown. It could be argued that every competing team are placed on an even playing field having had no previous experience of these new surfaces, providing further supporting evidence that HA in blind football is not present. An additional contributing factor to HA within major competitions is the aspects of the competition schedule (Rosa et al., 2016). Host nations can consider and organise the competition order following the allocation of teams into pools or groups. However, as indicated by the results presented in Table 1, the host nation only won on three occasions. Furthermore, major competitions for blind football see nations typically playing four games in a five or six-day period.

Blind football players have been found to work at a greater intensity than 11-a-side football (Souza et al., 2016), requiring additional time to recover from performances compared to that of able-bodied football players. However, unlike able-bodied football's advisory minimum 48 hours between competitive (Ndlec et al., 2012), suitable recovery time is not provided to allow physical and psychological recovery at major competitions. Host nations also avoid the need to often travel across multiple countries and time zones to compete. Individuals who have no light perception have been found to take longer to acclimatise their circadian rhythm to new time zones due to the inability to regulate light (Lockley et al., 2007). Thus, in this situation, the host nation could be deemed to have an advantage over other competing nations. However, all individuals with loss of sight are more susceptible to experiencing continual circadian desynchrony (Lockley et al., 2007), once again levelling the playing field and providing inconclusive evidence towards HA. Further to this argument regarding inconclusive evidence of HA, Brazil had a greater probability than expected of being successful at converting shot attempts at both the 2014 World Championships in Japan and the 2016 Paralympic Games in Brazil (Gamonales Puerto et al., 2018, 2019). However, the importance of familiarisation of venue was reinforced in this analysis of shooting metrics in blind football. Whereby there is some evidence to infer that players from teams who can construct a mental map of the field quickly, can capitalise on a broken field and convert possession into points (Suarez, 2014). Therefore, if a team and the players are familiar with their playing environment, regardless of the quality of team and opponent, there is some supporting evidence to HA. However, further research is needed to examine how HA affects players and teams, both nationally and internationally, in blind football.

HA in Wheelchair Basketball

Wheelchair basketball is played by individuals with a lower limb impairment who are unable to play running basketball. The two teams consist of players with a range of disabilities, which may include amputations, birth defects, cerebral palsy, paralysis and spina bifida. Each player within the team is assigned to a specific class dependent upon their functional capacity to complete core skills (pushing, pivoting, shooting, rebounding, dribbling, passing and catching) rather than their medical diagnosis (Perriman, 2014). The current classification system comprises of eight sport classes (1.0, 1.5, 2.0, 2.5, 3.0, 3.5,

4.0 and 4.5), with those players with a Class 4.5 having trunk movement in all three planes, whilst a Class 1.0 player has no trunk movement in vertical and sideways planes and little or no trunk movement in the forward plane.

During the game, each team must not exceed 14 points on the court at any time. That is, a team may choose to have two players who are classified as 4.5, two who are classed as 2.0, and one player who is classed as 1.0 to ensure they stay below the 14-point threshold. The classification system has been devised to level the field of play, ensuring the game outcome is directly related to athlete ability and not the degrees of impairment. However, at times, research has found that mid-point players are under-classified in terms of the actions they complete and may provide a performance advantage (e.g., Francis et al., 2019). Therefore, establishing line-up efficiency, around the total classification points, appears to be a significant contributing factor to the outcome of a game.

Within professional wheelchair basketball club competitions in Germany (Rollstuhlbasketball Bundesliga, 2019), Italy (Federazione Italiana Pallacanestro in Carrozzina, 2020) and Spain (Basket Silla Ruedas, 2019), the team crowned league champions in each league has dominated throughout the season regardless of playing at home or away. The effect of HA at either the Paralympic Games or World Championships follows a similar trend, with the hosts winning a gold medal on two occasions and returning a silver or bronze medal on three occasions (see Table 32.2.). However, what is noticeable is the ability for teams to stay in medal contention for several years. For example, since hosting in 1994, Canada have gone on to finish in the top three on eight out of ten occasions. Similar performance patterns have also been apparent with Australia, Great Britain, and the USA. This pattern provides further support to the ability for teams and coaches to identify and establish effective line-ups that collectively work together to achieve success.

Table 32.2. Summary of top three teams and competition location for the men's International Wheelchair Basketball Federation's World Wheelchair Basketball Championship (WC) and the International Paralympic Committee's Paralympic Games (PG) from 1960 to 2018.

Year	Host Country	Gold	Silver	Bronze
1960	Italy (PG)	USA	Great Britain	Israel
1964	Japan (PG)	USA	Great Britain	Israel
1968	Israel (PG)	Israel*	USA	Great Britain
1972	Germany (PG)	USA	Israel	Argentina
1972	Belgium (WC)	Great Britain	France	The Netherlands
1975	Belgium (WC)	Israel	USA	Great Britain
1976	Canada (PG)	USA	Israel	France
1979	USA (WC)	USA*	The Netherlands	France
1980	The Netherlands (PG)	Israel	The Netherlands*	USA
1983	Canada (WC)	USA	France	Sweden
1984	Great Britain (PG)	France	The Netherlands	Sweden
1986	Australia (WC)	USA	Canada	The Netherlands
1988	South Korea (PG)	USA	The Netherlands	France
1990	Belgium (WC)	France	USA	Canada
1992	Spain (PG)	The Netherlands	Germany	France
1994	Canada (WC)	USA	Great Britain	Canada*
1996	USA (PG)	Australia	Great Britain	USA*
1998	Australia (WC)	USA	The Netherlands	Canada

2000	Australia (PG)	Canada	The Netherlands	USA
2002	Japan (WC)	USA	Great Britain	Canada
2004	Greece (PG)	Canada	Australia	Great Britain
2006	The Netherlands (WC)	Canada	USA	Australia
2008	China (PG)	Australia	Canada	Great Britain
2010	Great Britain (WC)	Australia	France	USA
2012	Great Britain (PG)	Canada	Australia	USA
2014	South Korea (WC)	Australia	USA	Turkey
2016	Brazil (PG)	USA	Spain	Great Britain
2018	Germany (WC)	Great Britain	USA	Australia

Note: *Medal won by the host nation.

Furthermore, on several occasions, those nations who are not necessarily the host nation but either occupy neighbouring international borders, fall into the same geographical zone or are in the same time zone, achieve medal success. Athletes with lower limb deficiencies have been found to take longer to recover from jet lag and adjust to new time zones, subsequently becoming more susceptible to pressure sores and/or risk skin (Thornton et al., 2018). Therefore, for athletes travelling shorter distances to compete, the risk of these injuries are reduced as they can adapt their bodies in a shorter time and are used to similar environmental conditions. This finding supports the observable trend in Table 2 whereby those nations or teams who are geographically close to the host may have some form of HA effect.

Spectators from neighbouring countries or similar geographical zones do not have to face the same logistical challenges when attempting to travel to support a team. Goumas (2013) highlighted that it is not just crowd size, density, or proximity, but the intensity of crowd support appears to be the strongest predictor. For example, at the 2018 World Wheelchair Basketball Championships final between the USA and Great Britain over 1,500 spectators filled the 2,800-capacity stadium. It was also noted that approximately 70% of spectators in attendance were from Great Britain, who won the competition (International Wheelchair Basketball Federation, 2018). Whilst providing supporting evidence towards having an advantage through crowd intensity and proximity of travel for players and supporters, Great Britain utilised a line-up that Francis et al. (2019) highlighted increased the odds of game outcome (FIBA LiveStats, 2018).

In a similar competition structure to blind football, international wheelchair basketball games are played for several days followed by a rest day before competing again. Class 1.0 players, in particular, have been shown to take longer to recover from continuous bouts of high-intensity exercise (Yanci et al., 2015). Furthermore, these players would also take longer to recover from the effects of travelling over long distances and multiple time zones (Janse Van Rensburg et al., 2020). Therefore, if teams comprise of a greater number of lower point players, and recovery time has not been considered, the potential HA effect that may exist from hosting or being a neighbouring country may be compromised. Additionally, studies have also found that the quality and type of playing surface affects several physiological and biomechanical aspects of propulsion, in particular in lower-classed players (Crespo-Ruiz et al., 2011). Temporary wooden basketball courts have been found to result in the requirement of higher peak forces to generate movement (Kong et al., 2018). Therefore, dependent on the cushioning and the resistance of the court, players would be required to expend more energy to propel the wheelchair. A number of these international competitions are hosted on temporary courts that have been designed for the running version and not for movements in a wheelchair.

Therefore, any HA due to familiarisation of playing venue and experience of the court, previously identified as an important factor in able-bodied sport, will be diminished in Para-sport due to these temporary surfaces.

Further to this, through examining field-goal shooting at the 2016 Paralympic Games, Francis et al. (2021) identified no evidence to separate the top four ranked team's shooting success at the competition in comparison to the other eight participating teams. Despite finishing fifth, the hosts, Brazil, had significantly lower odds of converting field-goal attempts into successful shot attempts. The results also reinforce the notion of mid-point and high-point players having higher odds of shooting success than low-point players. These findings further support the notion that within wheelchair basketball, aspects and factors associated with player classification and line-up composition have a greater effect on the outcome of a game than the phenomena of HA.

Conclusions

It is clear from the analysis presented in this chapter that the phenomena of HA in Para-sport has a relatively short and unexplored history, remaining particularly fragmented, complex and confusing. Through drawing on examples from blind football and wheelchair basketball, factors previously identified within able-bodied sport regarding HA as well as classification and the intricacies of Para-sport were critically examined. In both sporting examples, evidence towards the phenomena at both a national and international level is inconclusive. Classification and the players highly individualised and complex characteristics have a profound effect on a team's performance and therefore the existence of HA. The quality of the team and the ability of these players to work collectively as a unit appears to have a greater impact on performance. Whilst not discussed in detail, environmental (accessibility and experienced staff) and economical (funding resources) factors are also of significant importance to consider when exploring the phenomena to understand the training environment that helps prepare these athletes to perform (Kean et al., 2017). As such, in the interest of strengthening the wider knowledge and understanding of Para-sport performance, further research into the phenomena as well as overall aspects of performance are needed.

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