CHAPTER 12.3. HOME ADVANTAGE IN CRICKET

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Summary
The advantage of playing cricket matches in home conditions is a phenomenon routinely observed by coaches, players and commentators across various match formats. Interestingly though, the 'home advantage' phenomenon in cricket has received only marginal attention in the literature, despite being a sport played internationally. The exact mechanisms explaining why a 'home advantage' occurs in cricket is currently unclear with the current chapter focusing on four possible contributors including home crowd, travel, rule effects, and environment familiarity. Further work is encouraged to elucidate the mechanisms of a 'home advantage' effect in the unique sport of cricket.

Overview of cricket

Cricket is a globally recognized sport, played both internationally and domestically across numerous countries. Cricket is a striking sport, involving a bat and ball, and played on a 22-yard pitch between two teams, each with eleven players. Similar to other striking sports like baseball, teams alternate innings (order based on the winning of a coin-toss) where one team "bats", attempting to score as many "runs" as possible, while the other team "bowls and fields"; tasked with restricting the amount of runs scored by the batting team. Batters can score runs by striking the ball between fielders and simultaneously running to the other end of the pitch, or striking the ball towards the boundary on the ground (4 runs) or in the air (6 runs). Bowlers can bowl (straight arm) 6 consecutive deliveries (termed an "over"), before having to rotate with another bowler who bowls from the opposite end of the pitch. The role of a bowler is to deliver the ball and try to dismiss the batter via obvious means (e.g., ball hits stumps) or umpire's decision (e.g., ball prevented from hitting stumps by batter's legs) and limit the number of runs scored by the batter. Unlike most other sports, a cricket match can be played across three (3) different formats. Test-match cricket played internationally (also referred to as First-Class when played at the domestic level) is the traditional format, having first been played in the late 1800's, and spans multiple days (5 days international level; 4 days domestic level) with each team provided two (2) opportunities to bat and bowl (i.e. innings). The winning team is the one which scores more runs than the opposition and dismisses all of the opposition's batters in both innings. The two other formats are categorized as limited-over cricket and played on a single day; One-day international (ODI) cricket matches (domestic matches are referred to as List-A) comprise of 50 overs per team (i.e. one innings per team only) while T20 cricket consists of twenty overs per team. Unlike Test-match cricket, teams do not need to dismiss the entire opposition to win, but rather just need to score more runs than their opposition in the allotted overs or before all 10 batters are dismissed.

Despite the range of cricket formats and worldwide popularity of the sport, there have been limited studies examining factors that predict or influence the outcome of a cricket match. For example, Allsopp & Clarke (2004) reported that in test cricket, a team's first-innings batting and bowling strength, first-innings lead, batting order and presence of a 'home advantage' were strong predictors of a winning match outcome. In contrast, other factors may be more important for the ODI and T20 formats as multiple innings to bat and bowl were not present. For example, winning the toss and batting first during day-night ODIs increased the probability of winning compared to choosing to bowl first (Dawson, Morley, Paton, & Thomas, 2009). Further, De

Silva and Swartz (1998) reported that playing at home with familiar conditions increased the probability of winning for the home team. Interestingly, this 'home advantage' was reported to be a consistent factor influencing the outcome of cricket matches, and across all formats (Allsopp & Clarke, 2004; Petersen, Pyne, Portus, & Dawson, 2008) and highlights the sport of cricket as a unique opportunity to examine the 'home advantage'.

Home Advantage in cricket

While a 'home advantage' effect has been a consistent finding in cricket performance research (Allsopp & Clarke, 2004; Dawson et al., 2009; Morley & Thomas, 2005), the underlying factors for this advantage are yet to be fully understood. Importantly, the 'home advantage' is unlikely to be a resultant of any one single factor (Morley & Thomas, 2005). Rather, a number of explanatory factors can have an effect on coaches, competitors and umpires, which can induce a 'home advantage' downstream, as well as influence the magnitude of its effect during any given match or competition (Carron, Loughhead, & Bray, 2005). There has been limited empirical investigation of these factors with four major factors proposed: 1) the influence of the home crowd on player performance and umpire bias; 2) travel and its physiological effects on opposition players; 3) rules such as privileges favoring the home team; and 4) familiarity and adaptability to the physical environment.

Home crowd effects

A substantial amount of empirical work has explored whether home crowds at least partially explain the existence of a 'home advantage' (Ponzo & Scoppa, 2018). A supportive home crowd is thought to affect match-related performance factors and match outcome by influencing the mental state of players on the field (Legaz-Arrese, Moliner-Urdiales, & Munguía-Izquierdo, 2013). For example, Carré, Muir, Belanger, and Putnam (2006) reported that ice hockey players were more self-confident when preparing to play in home conditions, while they displayed greater somatic and cognitive anxiety prior to performance away. Albeit, altered psychological states due to play in home or away conditions has not been consistently reported, and may be moderated by external influences such as match importance or crowd size (Bray, Jones, & Owen, 2002). Morley and Thomas (2005) investigated 'home advantage' during domestic one-day cricket matches in England, finding no support for a crowd effect on match outcome. These authors acknowledged that this lacking in domestic matches may be due to subdued supporters and smaller competition grounds. In comparison, international matches are played in vast stadiums with greater spectator numbers and vocal enthusiasm from crowds that may support a subsequent 'home advantage'. Further investigations are needed to elucidate the effect of crowd size/patronage on 'home advantage' in cricket.

Another potential factor contributing to home crowd effects on match outcome is the impact of unconscious referee/umpire bias (Sacheti, Gregory-Smith, & Paton, 2015). Prior laboratory studies have indicated that crowd noise was associated with increased anxiety and mental effort in referees who may attempt to cope by making more favorable decisions for the home team (Balmer, Nevill, Lane, & Ward, 2007). However, direct evidence of this bias during actual matches has been lacking. Jones, Bray, and Bolton (2001) assessed potential cricket umpire bias by examining decision-making at the sub-elite level with low spectator numbers. Their findings indicated that although a 'home advantage' was observed, there was no statistical difference observed for the number of dismissals decided by the umpire relative to the total number of dismissals. These authors concluded that teams may win more often at home for reasons other than biased umpiring decisions. With the existence of cricket umpires' bias being limited at the sub-elite level, Sacheti et al. (2015) suggested that potential umpire bias within elite level cricket may also be minimized due to the introduction of neutral umpires in the early

1990's. Adie and colleagues (2020) recently reported that the accuracy of cricket umpires with correct umpiring decision ranged between 86% and 98% dependent on match format, over a 7-year period. Despite the potential for umpiring bias to exist and contribute to 'home advantage' in cricket, the evidence for this argument to date has been relatively weak. Increased utilization of technology and 'review' of umpiring decisions has likely minimized any potential umpiring bias at the current time. Subsequently, other factors may provide a greater contribution to a potential 'home advantage' in cricket.

Travel effects

The effects of travel (e.g., distance and time, changes in time zones, etc.) have also been proposed to contribute somewhat to a 'home advantage'. Travelling has been suggested to induce fatigue, disrupt preparations and adversely affect match performance in athletes (Smith, Ciacciarelli, Serzan, & Lambert, 2000). In particular, travel direction (i.e. east to west travel) and starting country have been suggested to potentially moderate the severity of travel attenuating performance, and further supporting the opposition team's home advantage (Fowler et al., 2017; Goumas, 2014). Interestingly, there has been equivocal evidence for the overall impact of travel on sporting performances (Goumas, 2014; Smith et al., 2000) with very few studies explicitly exploring these effects in cricket.

One well known effect of long distance travel is the disruption of circadian rhythm and sleep patterns (Leatherwood & Dragoo, 2013). McEwan, Davy, and Christie (2020) recently examined sleep behaviour and efficiency in elite level cricketers during competitions played at home and away. The authors reported that sleep onset latency was longer, and sleep efficiency was lower, during the away games compared to the home games. Importantly, poorer sleep time, sleep efficiency and subjective sleep quality were also correlated with poorer batting averages. It was hypothesized by the authors that the combination of trans-meridian and short-haul air travel had a greater adverse effect on post-travel sleep efficiency and quality that impacted upon cricket performance when playing away (McEwan et al., 2020). Further studies are needed to expand our understanding of travel and its contribution to a potential 'home advantage' in cricket. Currently, teams travel to opposition countries early, with an adjustment period incorporated, to combat any potential negative effects of long-distance air travel (Van Rensburg et al., 2020). However, the optimal time period to travel to another country prior to competition remains to be determined.

Rule effects

Certain sports also grant unique privileges to either the home or away team, which may or may contribute to the home advantage effect (Bray, Obara, & Kwan, 2005; Carron et al., 2005). For example, in baseball and softball, the home team is always granted the opportunity to bat last, and therefore know how many runs are needed to win. However, there is little evidence that these unique rules are beneficial or aid in a 'home advantage' (Bray et al., 2005; Courneya & Carron, 1990). Cricket is a sport which offers the away team captain with an opportunity to call the coin toss, with the winner deciding which team bats or bowls in the first innings. Interestingly, Dawson et al. (2009) examined whether the coin toss and choosing to bat or bowl first influenced performance outcomes in elite cricket day/night matches. Their analysis of over 600 matches indicated that winning the toss and batting first increased the probability of winning the match. However, it is important to note that others have reported winning the toss alone is not associated with winning matches (Akhtar & Scarf, 2012; De Silva & Swartz, 1998; Petersen et al., 2008), and are equivocal on whether batting first or second is more advantageous. To our knowledge, no other studies have examined the contribution of rules to

a ‘home advantage’ within cricket. Therefore, this factor is likely to have a marginal influence on ‘home advantage’ in cricket.

Familiarity with Playing Conditions

Finally, familiarity with the environment has often been put forward as a key factor for a ‘home advantage’ with two primary mechanisms purported. Firstly, environment familiarity may indirectly influence a player’s psychological preparedness and emotional state. Bray et al. (2002) highlighted that athlete’s perceptions of their cognitive and somatic anxiety, self-confidence and self-efficacy were more negatively impacted by matches played away. This less-than-ideal psychological state experienced during away matches may negatively impact motor skill performance, decision-making, and overall match outcome. Secondly, familiarity with the physical environment, and in particular the knowledge of how environmental constraints shape performance behavior, may impact directly upon a player’s decision-making and technical execution (Connor, Renshaw, & Farrow, 2020; Morley & Thomas, 2005).

Cricket, unlike most sports, is played on a constantly changing physical surface (i.e., pitch); so much so that deteriorating pitch conditions are considered a core component of the game. Further, different pitches can exhibit differing properties that influence ball characteristics (Carré, Baker, Newell, & Haake, 1999), such as ball bounce and speed, and subsequently influence performance-related factors such as batting and bowling (Akhtar & Scarf, 2012; James, Carré, & Haake, 2004). Therefore, personal knowledge of the playing surface characteristics may provide a unique performance advantage to the home team. Specifically, the home team may have a greater knowledge of how the playing surface and ball will react to benefit batsmen or bowlers, greater knowledge of weather conditions and their impact on the playing surface, and increased practice opportunities on the home pitch during a range of weather conditions. For example, Crowther, Gorman, Spratford, Sayers, and Kountouris (2018) reported that pitch conditions in different countries, and of varying soil types, influenced both a bowler’s spin characteristics and their bowling speed. Spin bowlers under Australian conditions were reported to bowl faster and induce more straight-bat shots from batters, compared with spin bowlers under Indian conditions who bowled slower and induced wider-shots from batters (Crowther et al., 2018). This intimate knowledge of the playing surface may subsequently aid team performance through team preparation, player selection, and/or choice to bat or bowl first.

Familiarity with playing conditions not only includes the pitch but may also include the equipment used during the match. For example, the type of cricket ball used differs based on the location of the match, and has been shown to influence performance-related factors during a match (Connor, Sinclair, Leicht, & Doma, 2019). In Australia, the cricket ball used is developed by Kookaburra (Kookaburra Sport Pty Ltd, Moorabbin, Australia), while India uses a SG ball (Sanspareils Greenlands Pvt Ltd, Meerut, India), and England and West Indies use a Duke ball (British Cricket Balls Ltd, London, United Kingdom). All of these balls are manufactured differently and thus, can exhibit different properties (Scobie, Shelley, Jackson, Hughes, & Lock, 2020) including bounce and lateral deviation through the air and off the pitch. Connor et al. (2019) reported that the type of ball significantly influenced the proportion of dismissals taken by pace (greater with the Duke ball) and spin (greater with the Kookaburra ball) bowlers in Australia. Consequently, familiarity with the specific cricket ball to be used during competition may produce a ‘home advantage’. Further, the combination of playing surfaces and equipment may be contributory factors to the existence of a ‘home advantage’ in cricket, and worthy of further investigation. A clear question for coaches and administrators

moving forward is how to best prepare away teams to adapt to these unfamiliar conditions, and the optimal duration for skill acquisition to occur.

Challenges of analysing home advantage in cricket

As we have described above, there have been very few studies to date that have examined the existence of, and contributing factors for, a 'home advantage' in cricket. Possibly, a number of significant methodological challenges exist when examining the 'home advantage' in cricket. Unlike most sports, cricket is played across multiple different match formats (e.g. multi-day test, ODI and T20) with each format having its own set of rules and factors that may influence how influential a 'home advantage' effect is on match outcome. Further, elite international matches are played following an imbalanced schedule, and in most cases, teams do not play their opponent in the contrary playing condition until much later (e.g., following years). This delay in competing against the opposition can result in significant changes in team members, further adding to the complexity of examining 'home advantage' in cricket. Finally, 'home advantage' involves exploring the magnitude of a win, typically calculated based on the difference in scores between teams (i.e. one outcome metric). However, in cricket, there are multiple metrics available (e.g. runs scored, number of dismissals remaining, the number of balls remaining) that are dependent upon which team batted first and won, and the match format. Collectively, these methodological challenges have hindered our understanding of 'home advantage' in cricket with further studies encouraged to address these aspects and our understanding.

Conclusion

In cricket, there is some evidence of a 'home advantage' effect that influences match outcome. However, the various mechanisms underpinning this advantage, and the magnitude of their influence, remains to be clarified. There is equivocal evidence regarding the influence of rule constraints or umpire bias for the 'home advantage' in cricket matches. Travel factors, and vocal home crowd support have not been investigated sufficiently to draw clear conclusions. However, given the weight of evidence from other sports, future studies are encouraged to consider these factors. Finally, player/team familiarity with the environmental constraints may be crucial to exhibit the 'home advantage' effect in cricket. The international sport of cricket may provide an important research setting for future work examining the mechanisms of a 'home advantage' effect.

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