

# Chapter 7: Visually Impaired Sport

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### Author Biography

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### Abstract

The organisation and development of visually impaired (VI) sport across the globe is complex. The Paralympic Games feature only a select number of sporting events for visually impaired athletes (VIAs) and is just one event in a relatively invisible VI sport calendar of regional and international championships across a range of sports. VI sport also assumes a relatively marginal status within the academic fields of sport, disability studies and vision science. Visually impaired people are amongst the most inactive of minority groups and access to sporting opportunities can be problematic, denying a range of health, social and psychological benefits. As will be shown in this chapter, sport can have an important empowering role to play, but VI sport is also laced with challenges which can threaten the value of inclusion. This chapter provides brief context to VI sport, before summarising pockets of multidisciplinary research around several prominent themes: socialization experiences; barriers, facilitators and equity issues; meaning and identity; sensory experiences and; classification. What emerges from the research is a diverse range of practical implications and considerable scope for further research which could have an important role in developing accessible, inclusive and equitable sporting opportunities for people with visual impairment.

## Introduction

It is well-known that the roots of the showcase sporting event for disabled people, the Paralympic Games, began with the Stoke Mandeville Games in 1948. At this time competitive opportunities were reserved for those with spinal cord injury, reflecting the rehabilitation of war veterans at Stoke Mandeville Hospital (Brittain & Green, 2012). It would take until the 1970s before visually impaired athletes (VIAs), as a distinct impairment group, would be featured in the Paralympic Games. At the last Winter Paralympics in Pyeongchang 2018, there were medal events for VIAs in half of the six sports (alpine skiing, biathlon, cross-country skiing) (International Paralympic Committee [IPC], 2018). Out of the 22 Paralympic sports to be included in Tokyo, three sports are exclusively for VIAs (Goalball, Judo and 5-a-side football) and six other sports include VI classes (athletics, cycling, equestrian, rowing, swimming, triathlon) (Tokyo 2020, n.d.).

Whilst the Paralympic Games might offer the most high-profile stage and most of the worlds' only exposure to VI sport (or disability sport more generally), it provides just a narrow glimpse into a much more established, but relatively hidden, world operating beyond these elite and selective events. The marginalised position of VI sport more broadly has rendered it a largely neglected area in academic research on sport. In addition, sport has received relatively limited academic attention within the fields of disability studies and vision science due to an understandable prioritization of social justice, quality of life and prevention, diagnosis and treatment of sight loss and eye conditions (Rowe et al, 2014). The next section of this chapter offers an overview of the context of VI sport. It then turns to a review of the multi-disciplinary academic research in the area, proposes potential areas for future research then, finally, provides a short discussion of the practical implications of existing empirical research.

## Context Overview

It has been recognised by Thomas and Guett (2014, p.404) that “the organization and structure of disability sport ... is most adequately conceptualized as fragmented, complex and cumbersome” and a similar assertion can be made about VI sport. Providing a comprehensive contextual overview is therefore a considerable challenge and one not yet risen to by any academic researcher. There is very little by way of detailed histories of VI sport(s). Instead we currently have a relatively fragmented picture provided in brief historical accounts of various national and international Disability Sports Organisations (DSOs) and National Governing Bodies (NGBs), alongside references to blind veterans in research on the use of sport and physical activity in the rehabilitation of disabled veterans of the First and Second World Wars (Anderson, 2001, 2011) and fleeting references to sport and physical activity in more general memoirs of blind veterans (Doria, 2018). For the purposes of this chapter, this section aims to draw on these sources to offer at least some brief historical and contemporary context to VI sport but will be unable to do justice to its complexity across the globe. Accordingly, historical developments and explorations of national and international organisation and structure of VI sport(s) is highlighted as a theme for future research later in the chapter. At this point it is useful to clarify that the term ‘VI sport’ is used in this chapter to refer to sport which is organised specifically for visually impaired people. It is acknowledged that some visually impaired people participate in ‘mainstream’ sport alongside people without visual impairment, and others participate in ‘pan-disability’ sport alongside people with other physical, sensory or intellectual impairments.

Attention to the experiences of visually impaired people in these two contexts is, as highlighted later in this chapter, an important area of research, but the central focus here is on sport organised primarily for visually impaired people<sup>1</sup>.

Some of the earliest references to the organisation of VI sport emerge within the context of the rehabilitation of blind veterans during and after the First World War. There are records of tandem cycling, running and tug-of-war, amongst other activities, following the formation of the Blinded Soldiers' and Sailors' Care Committee<sup>2</sup> in 1915 (Blind Veterans UK, 2017), laying the foundations for the first of an annual sports day organised by the committee in 1917. Anderson's (2001, 2011) research reveals that during the 1920s blind people in the UK could access a growing number of opportunities for sport and physical activity, particularly at institutions such as St Dunstan's home for blind ex-servicemen. In the UK sporting opportunities also began to emerge for children at schools such as Worcester College public school for blind boys and Chorleywood College for blind girls (Anderson, 2001). Elsewhere, it has been asserted that the 1920s saw developments in other sports, such as blind golf in the USA (England and Wales Blind Golf, n.d.), blind football in Spain (IPC, 2016) and blind cricket in Australia (Blind Cricket Australia, n.d.).

Following these early developments in VI sport, and at a time when sports were being adapted to help rehabilitate those with spinal cord injuries following the Second World War, a bespoke sport for people with VI was being developed. Goalball was designed in 1946 to rehabilitate and keep the visually impaired veterans of World War II active. Hanz Lorenzen from Austria and Sepp Reindl from West Germany are credited as inventors of the sport, which developed competitively throughout the 1950s and 1960s. The 1960s saw international competition in VI sport become more established. For example, the first international sports competition for the blind members of St Dunstan's took place in 1968 against competitors from Austria, France, West Germany and Poland in a range of events including running and rifle shooting (Anderson, 2001). Four years later, Goalball appeared as an exhibition event, alongside the 100m sprint for VIAs, at the Heidelberg Paralympics (National Paralympic Heritage Trust, n.d.). Following their participation in the first multi-disability skiing world championships in 1974, VIAs and amputees were formally included as competitors at the inaugural 1976 Ornskoldsvik Winter Paralympics. In fact, at this first ever Winter Paralympics, competitive events were reserved for just amputees and VIAs competing in alpine and cross-country skiing, with ice sledge racing featured as a demonstration sport (IPC, n.d. a). 1976 Toronto was the first Summer Paralympics that included VIAs in medal events, with 187 competing at the games (IPCb, n.d. b).

Outside of the Paralympic context, the 1970s and 1980s witnessed developments in a number of sports, for example blind archery (Archery Australia, n.d.), beep baseball (National Beep Baseball Association, n.d.) and blind tennis (International Blind Tennis Association, n.d.). International competitions gathered pace in various VI sports from this point, with most international federations providing records of the first official international championships under their governance. However,

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<sup>1</sup> It is also acknowledged that, at a recreational level, some VI sports such as Goalball, are inclusive of people without visual impairment. But the focus in this chapter prioritises VI sport and the VIAs who participate within them.

<sup>2</sup> The Blinded Soldiers' and Sailors' Care Committee was founded by Sir Arthur Pearson in 1915, based in London, UK. In 1923 until 2012 it was known as St Dunstan's and renamed Blind Veterans UK in 2012 "to help more people understand who we are and what we do" (Blind Veterans UK, n.d.).

without detailed histories, we know little about the way these sports developed within and across different nations to necessitate these inaugural competitions. By 1981, there had been sufficient developments in VI sport across the globe, to warrant the formation of the International Blind Sports Federation (IBSA), the result of a meeting of 30 national federations at the UNESCO Headquarters in Paris (IBSA, n.d. a). Some of the early members of IBSA include NDSOs such as the Spanish Sports Federation for the Physically Disabled (1968), British Blind Sport (1975), United States Association of Blind Athletes (1976), and Blind Sports Australia (1980). IBSA currently boasts a membership of around 110 countries with VIAs from different nations represented by either VI-specific NDSOs, pan-disability NDSOs, or Paralympic Committees (IBSA, n.d. b).

Whilst IBSA governs international competition and classification for “a wide range of sports for athletes who are blind or partially sighted” (IBSA, n.d. c), there are some sports governed by other sport-specific and impairment-specific international federations. IBSA works to support and advise these international federations, including the World Blind Cricket Council (established in 1996) and the International Blind Golf Association (formed in 1998). In addition, IBSA works closely with the IPC who act as the international federation for several Paralympic sports in which VIAs compete, including swimming, alpine skiing, and Nordic skiing. Whereas some mainstream sport-specific international federations, such as the Union Cycliste Internationale (UCI), the Fédération Équestre Internationale (FEI) and World Rowing (FISA), govern competition for VIAs within their sport. In their research, Thomas and Guett (2014, p.404) recognise the policy of mainstreaming, across Europe in particular, as a “dominant objective that underpinned the varied pattern of sports provision for people with disabilities”. As these examples illustrate, this is reflected in the fragmented landscape of VI sport, with different types of international federations (impairment-specific and multi-sport, multi-impairment and multi-sport, impairment-specific and sport-specific, mainstream and sport-specific) responsible for governing the participation of VIAs in different sports.

The organisation of VI sport may be complex, but the range of stakeholders involved across the globe demonstrates the importance placed on providing sporting opportunities for this specific impairment group. These stakeholders have an important role to play in relation to the United Nations *Convention on the Rights of Persons with Disabilities* (UNCRPD), passed in 2006, which stresses the rights of disabled people “to participate on an equal basis with others in recreational, leisure and sporting activities” (United Nations General Assembly, 2007, p.18). More recently, the Sustainable Development Goals highlight the potential role that sport can play in tackling social isolation and “creating awareness about social inclusion for persons with disabilities” (Sustainable Development Goals Fund, 2018, p.16). These developments are all the more pertinent given that both visually impaired children (Haegele & Porretta, 2015) and adults engage in significantly less physical activity than their sighted peers (Holbrook et al, 2009; Inoue et al, 2018; Starkoff et al, 2017) and that the combination of a growing and ageing global population threaten a substantial and accelerating increase in the number of visually impaired people who are blind and visually impaired (Bourne et al, 2017). The following section summarises the academic research on VI sport which reveals the positive and empowering role that sport can play in the lives of visually impaired people, juxtaposed with a range of challenges for VI sport from recreational to elite levels.

## Research Overview

Apart from a handful of studies, the majority of academic research on VI sport has emerged within the last decade. This emerging body of research is multi-disciplinary and can be organised around several key themes, each of which will receive attention in this section: socialization experiences; meaning and identity; barriers, facilitators and equity issues; media representations and spectator experiences; auditory experiences of sport and; classification. A number of the studies focus on several of these overlapping themes and therefore feature multiple times in this section. One paper that does not feature below is Gamonales et al's (2018) descriptive literature review of 5-a-side football. This is a useful point of access to the multi-disciplinary research on this specific sport but their review included any type of document and a number of papers only available in Spanish and Portuguese.

### Socialization Experiences

A pioneering study by Sherrill et al (1986) explored the socialization of elite US blind athletes and revealed some of the first insights in this area, building on similar research on other groups of disabled athletes. Many of the key findings from this study were subsequently supported in research by Scott (1995) and Tepfer (2004) and include: the importance of other blind athletes, organisations for the blind and PE teachers as important socializing agents, more so than parents and family; the various socialization experiences VIAs have depending on whether they were educated in mainstream settings or in schools specifically for visually impaired children; and that VIAs tend to be introduced to their main sport at a later age than sighted athletes.

Similarly, Ponchilla et al (2002) set out to explore some of the unanswered questions from Sherrill et al's (1986) study using a 54-item questionnaire telephone interviews with 159 athlete members of the USABA. Influenced by broader mainstreaming processes since Sherrill et al's (1986) research, Ponchilla et al (2002) revealed a lower proportion of VIAs having attended schools specifically for visually impaired children and a higher proportion of VIAs in mainstream settings. The most significant finding of their study is recognised as the "strong evidence of the value of inclusion in physical education classes and the benefits of participating in school sport" (Ponchilla et al, 2002, p.271). Tepfer (2004) claimed to embark on a more in-depth understanding of socialization, but the data from 'interviews' with 32 US and Canadian VIAs is largely reduced to descriptive statistics with limited qualitative data presented. So, whilst this cluster of studies provides some insight into the socialization of VIAs into sport, there is a bias toward quantitative approaches (largely reflective of socialization research during the 1980s and 1990s) and a resulting lack of rich, qualitative data of VIAs experiences of becoming and being involved in sport.

One of the few qualitative studies to explore the socialization experiences of VIAs is Macbeth and Magee's (2006) study of the career paths of a small group of elite partially sighted footballers in England. Drawing on Stevenson's (1999 and 2002) work on athletic careers, they took an interactionist approach to the socialization process to reveal three varied pathways from first becoming involved in football to representing their nation at elite level. Again, educational experiences of VIAs was revealed as an important factor in shaping career paths. Players introduced to partially sighted football at either a school or college specifically for visually impaired students experienced the most logical pathway from grassroots to elite level. Players who attended

mainstream education became introduced to partially sighted football either through relatively new 'pan-disability' or VI-specific provision offered by professional football clubs. All but one of these players experienced a 'participation gap' after being socialized out of sighted football due to the onset or degeneration of visual impairment and before becoming aware of opportunities to play partially sighted football.

Whilst exploring the meanings that elite VIAs ascribe to their school-based experiences of physical education and sport (a topic covered exclusively in Chapter 4), Haegele et al's (2017) phenomenological study also provides some insight into the socialization experiences and athletic identity of a small sample of elite male Goalball players from the US. The VIAs interviewed generally had quite positive experiences with PE teachers but experienced some degree of exclusion in the PE context and this tended to be internalized by participants who "ascribed it to either personal characteristics (blindness) or personal choice" (Haegele et al, 2017, p.383). In fact, the VIAs in this study stressed that physical activity and sporting initiatives for visually impaired children outside of the school-based PE context were particularly important in terms of their development into elite athletes. Firstly, they developed confidence and knowledge to enable participants to "advocate for themselves in PE classes" and, secondly, these activities "also promoted a sense of connectedness with others with visual impairments" (Haegele et al, 2017, p.387).

### Meaning and Identity

The potential of VI sport to promote a collective identity amongst visually impaired people, highlighted by Haegele et al (2017), is consistent with Powis' (2018a) research with VI cricketers. In exploring the empowering potential of VI cricket, the study highlights that it provides a positive opportunity for players to socialize with other visually impaired people, discuss their experiences openly and seek advice and guidance. For players who had not attended specialist schools or colleges, cricket became their first experience of such interaction and endowed them with a newly shared identity. Powis' (2018a) ethnography also reveals how players develop a stronger sense of self-belief in their embodied abilities. Through cricket, those with congenital and acquired conditions were able to experience an embodied 'reconceptualization of self' and resist dominant, negative conceptions of disability through corporeal mastery and physical success. Haegele et al (2017, p.385) similarly found that, for some VIAs, their athletic capabilities and successes "helped change peers' perceptions of them from being a person with a disability to being an athlete".

In her ethnographic study of a tandem mountain biking groups involving sighted and visually impaired cyclists in Israel, Hammer (2015) reveals how a form of 'togetherness' is initiated by the group. As members of a shared community, cyclists can recognise and learn from their differences, foster "communal relations of intimacy and trust" and initiate "an awareness of a spectrum of bodily experiences and social identities" (Hammer, 2015, p.517). In relation to connectedness between VIAs and spectators, De Haan et al's (2014) case study of the 2010 IBSA World Blind Football Championships (WBFC) reveals the potential for such events to enable previously socially distant groups (only 5% of their sample of spectators were visually impaired) to acquire bridging social capital through participating and spectating at the event, respectively. Koolae's (2017) research warrants brief attention here since it reveals the empowering potential of sport and is one of the first studies to focus exclusively on the role of sport in the lives of VI women. In her comparison of self-concept and hope in athletes and non-athletes, statistical analysis of data generated from 120

women in Tehran, Iran revealed that female VIAs had better self-concept and higher hope in comparison to VI women who did not participate in sport.

Despite the empowering potential of VI sport, Powis' (2018a) research alerts us to the disempowering consequences of crickets' relationship with mainstream sport and stresses that the more VI cricket "persists with the quest to emulate mainstream sport, the more disempowering it becomes" (Powis, 2018a, p.203). This is of particular concern for players with more severe visual impairment, a finding consistent with Macbeth's (2009) research on the experiences of grassroots partially sighted footballers. Haegele et al (2017) also found that developing an athletic identity was more of a challenge for some VIAs due to restrictions on opportunities to engage in sporting activities and a struggle for athletic identity confirmation by (sighted) peers. Similarly, in their study comparing the athletic identity of blind tandem cyclists with their sighted counterparts, Tasiemski et al (2012) revealed that whilst there were no significant differences in the athletic identity of VI cyclists with differing levels of sight, there were significant differences between the athletic identity of VI cyclists in relation to their sighted 'captain' and in relation to the athletic identity of disabled athletes in other research. Several explanations for this are offered by Tasiemski et al (2012, p.182), but the most convincing is that, in such a partnership, sighted captains assume greater responsibility for decision-making, assessment of situations, tactics and ultimately, the sporting outcome. These findings do not entirely align with the 'togetherness' experienced in Hammer's (2015) ethnographic research on tandem cycling, although she did recognise the existence of social dependency and asymmetry. Jenks and Jenks (2015) reveal the identity work of Goalball athletes to differentiate themselves from other athletes. A number of athletes in their study regarded themselves as more similar to Olympians than Special Olympians, but different from Olympians due to the dissimilar lived experiences they face because they are blind. There is certainly scope for more research investigating the fluidity of identities assumed by VIAs in different sporting and non-sporting contexts.

### Barriers, facilitators and equity issues

There is a growing body of research on the barriers and facilitators to physical activity experienced by visually impaired people, but less that considers organised sport specifically. Whilst there are generic barriers and facilitators across these spheres, it is important to appreciate that there may be nuances across different sports, in different cultural contexts and for people with different experiences of visual impairment. There are several studies in this area that warrant attention. Jaarsma et al's (2014) quantitative survey of visually impaired people in the Netherlands highlighted some common barriers and facilitators to sport experienced by both active and inactive visually impaired people. Key 'personal' barriers included: experiences of visual impairment and dependency on others; and the main 'environmental' barriers included: transport, costs of participating, lack of peers or buddies; and limited local opportunities. Key facilitators included: acquiring social contacts, health and fun, and support from family. There were also some differences identified depending on whether respondents were active or inactive. Whilst Jaarsma et al (2014) revealed that just over one quarter of active respondents declared to have experienced no barriers to participation in sport, the majority who are involved continue to experience persistent barriers, particularly relating to dependency on others and transport.

A body of qualitative research work by Macbeth and Magee (2006) and Macbeth (2008, 2009) with grassroots and elite partially sighted footballers in England has recognised awareness of opportunities and travel and transport as barriers consistent with those more recently revealed by Jaarsma et al (2014). More specifically, limited local opportunities (a barrier also recognised by active respondents in Jaarsma et al's study) resulted in VI sport often being organised over larger geographical areas to ensure sufficient numbers for viable competition (Macbeth, 2009). This compounds the existing travel and transport challenges by demanding longer, more complex and more expensive journeys of VIAs (and the people they may depend on) if travel support is not provided by their sports teams / clubs. This research on partially sighted football and Powis' (2018a) on VI cricket also reveal problems associated with developments in the organization of these sports, particularly as a result of the increasing involvement of mainstream NGBs at the elite level. As discussed above, the empowering potential of these sports is not experienced uniformly by all VIAs as stakeholders' ambitions for elite success can threaten the value of inclusion.

### Media representations and spectator experiences

In the last decade there has been a growth in academic research concerning media representations of disability sport, particularly the Paralympics as the event which receives the most coverage (for example see Jackson et al, 2015 and Rees et al, 2019). Research specifically on media coverage of VI sport is limited and arguably reflective of the limited media coverage granted to it. There are a handful of studies, however, that have focused on media representation (Jenks & Jenks, 2015), public relations (De Haan et al, 2015) and spectator experiences (De Haan et al, 2014) in VI sport. In their autoethnographic enquiry of Goalball athletes' lived experiences, Jenks and Jenks (2015, p.223) regard the US media as "one of the most formidable social structures that excludes blind athletes". Athlete testimonies report that Paralympic sport is relatively neglected by major US broadcasters but, by comparison, Goalball is rendered invisible. A lack of a mainstream equivalent and resulting ignorance of the sport are highlighted as factors influencing the sports' neglect in the media. Athletes also perceive the media to consider them not disabled enough for others to appreciate the difficulty of their sport and when coverage is afforded to the athletes, they accuse the media of perpetuating pity stereotypes.

Two case studies of the 2010 WBFC are presented by De Haan et al (2014) and De Haan et al (2015). In the first, De Haan et al (2014) stressed the commercial significance of sport spectatorship to disability sport and explored the experiences of spectators at this particular event. The research found that the popularity of the championships and positive experiences of spectators drew renewed attention to, amongst other things, "the legitimacy of disability sports in seeking more prominent media coverage" (De Haan et al, 2014, p.590). In contrast, the second case study by De Haan et al's (2015) analyses public relations following a television advertisement for gambling firm Paddy Power featuring the England Blind Football Team in the lead up to the 2010 WBFC. The advertisement caused considerable controversy in the United Kingdom and De Haan et al (2015) argued that the sport of blind football was misrepresented. The article explores the relations between Paddy Power, players and staff of the England team and the Football Association (FA) and reveals that whilst participation in the advertisement offered a valuable opportunity to raise the profile of the nascent sport, the "creative approach taken in the advert led to an outcome that failed to realise the goal of building brand awareness" (De Haan et al, 2015, p.425). What their case study also reveals was an arm's length approach by the FA, resulting in a lack of proactive PR management

and a missed “PR opportunity to showcase both the sport and the individual athletes” in a more favourable light (De Haan et al 2015, p.428).

### Sensory experiences of sport

The sensory experiences of VIAs have been explored in the ethnographic studies of Hammer (2015) and Powis (2018b). The intersensory aspects of tandem mountain biking are explored by Hammer (2015, p.504) through a year-long ethnographic study which emphasizes a “*social dialogue* among people with varied visual skills and bodily functionalities”. Her research exposes a mutual physical experience where the boundaries between ability/disability affiliations and categories are less distinct. In an activity which involves the coexistence of blindness, sight and visual impairment, Hammer (2015, p.517) revealed that participants’ perspectives on disability and the blind other are challenged and blindness is addressed as a “legitimate bodily performance”.

Whilst aspects of the participants’ experience in Hammer’s (2015) and Powis’ (2018b) studies are similar, Powis (2018b) points out that, for the cricketers in his research, there is no interdependency with a sighted partner, and they are competing at an elite level where the role of auditory perception is centralized. He examines the complex auditory structure of VI cricket by revealing how players engage with both linguistic and non-linguistic stimuli on the field and develop auditory knowledge to make sense of the game. Like Hammer’s (2015) study, Powis (2018b, p.160) revealed that cricket provides a platform to demonstrate how blindness is an alternative way of being in the world and “an alternative way of *being* in sport that subverts the dominant ocularcentric conception of the sporting body”. Powis’ (2018b) paper is followed with an accompanying methodological piece (2019) on his innovative use of soundscape elicitation in research with VI cricketers. To counter the dominance of ocularcentric methods, Powis examined how his use of audio recordings of the players’ participation in the sport, replayed during interviews, prompts sensorial discussions about their experiences. The paper highlighted some practicalities, innovations, successes and limitations of his approach in an area which lacks methodological precedent.

### Classification

Classification is arguably the most contentious issue within disability sport. With systems and processes under constant review and scrutiny amid controversies at recent Paralympic Games, the role of research has become particularly important. The *IPC Classification Code*, published in 2007, followed by the *IPC Position Stand* in 2011 (Tweedy & Vanlandewijck, 2011), triggered a review of classification systems. However, as Ravensbergen et al (2016) stress, the Position Stand did not wholly address VI sport and the unique demands of classifying these events. The IPC and IBSA have recently funded research projects seeking to develop evidence-based sport-specific classification across a range of VI sports and the fruits of some of this research have been published in recent years. Whilst not all VI sports are governed by the IPC or IBSA (see Context Overview), the need to develop classification systems which ensure as level a playing field as possible is fundamental to the legitimacy of VI sport. There has also been growing interest in research on classification in sports which are not part of the Paralympic programme. This section summarises this emergent body of research which focuses on measuring the effect of vision on performance, exploring stakeholder opinions and experiences of classification, or a combination of these areas.

A useful starting point is Ravensbergen et al's (2016) Delphi study analysis of experts involved in the classification process (including coaches, athletes, classifiers and administrators in Paralympic sport) across several VI sports. They revealed overwhelming agreement that "the current VI classification system does not fulfil the IPC's aim to minimise the impact of the impairment on the outcome of competition" (Ravensbergen et al, 2016, p.390). The authors raised a number of other key issues including: the need for sport-specificity to account for the unique visual demands of different sports, a call for further tests of visual function (beyond the sole reliance on visual acuity and visual field tests) to determine an athlete's class, whether the age at which an impairment was acquired should be included in classification and whether an impairment must be permanent to make an athlete eligible for competition. Intentional misrepresentation is identified as a growing issue and one which is a direct consequence of problems in the current system. These issues highlight aspects of diversity across VI athletes that had been not captured in previous literature on classification and formed the basis of the subsequent joint IPC/IBSA Position Stand (Mann & Ravensbergen, 2018).

In an attempt to address some of the issues raised in Ravensbergen et al (2016), sport-specific research has explored the impact of vision on sport performance in rifle shooting, judo and swimming. A collection of studies by Myint et al (2016), Allen et al (2016), Allen et al (2018) and Allen et al (2019) aim to provide sufficient evidence for the inclusion of VI rifle shooting in the Paralympic Games. Through correlation of the performance scores for elite VI shooters with measures of visual function deemed important for shooting (visual acuity [VA], contrast sensitivity [CS] and visual field [VF]), Myint et al (2016) found that VIAs with poorer sight were able to rely on the auditory guidance for targeting in order to compete equitably with better sighted VIAs. It was therefore deemed that only one class for all VIAs is required, but their study did not determine what the minimum level of impairment should be to be eligible for competition. This was explored by Allen et al (2016) using sim-specs to simultaneously decrease both VA and CS to simulate six different levels of VI for international athletes without VI. Although the study was able to determine the minimum level of impairment required for competitive performance in rifle shooting, the authors recognised the need for further research "to determine the impact on shooting performance of independent reductions in VA and CS" (Allen et al, 2016, p.4).

Subsequently Allen et al (2018) sought to determine the impact of CS on shooting performance and revealed that, despite rifle shooting classification not currently testing for it, CS is a better predictor of shooting performance than VA in the unadapted version of the sport (in the absence of auditory guidance) and should, therefore, be tested during classification. Finally, Allen et al (2019) replicated Myint et al's (2016) study with a larger sample size and including VIAs who would be eligible with the more inclusive cut-off point proposed in Allen et al (2016 and 2018). Responding to the recognition by Ravensbergen et al (2016) and Mann and Ravensbergen (2018) that the age at which it is acquired, can result in an advantage in some sports, Allen et al (2019) also examined the impact of this. The study revealed that these recent modifications "including the use of auditory tones to guide the gun barrel, appear to have successfully rendered the sport equitable for all eligible athletes" (Allen et al, 2019, p.1). This sequence of studies on rifle shooting has led to progress in modifications in classification, but it has also unearthed some continuing challenges around the measures used for CS, reliance on subjective responses of participants and the resulting risk of intentional misrepresentation (IM), concerns that are voiced in other research reviewed in this section.

Similar research has been developed on judo with a particular emphasis on reviewing whether the combination of partially sighted and blind athletes within the sport is fair, providing judokas begin the match with their grip in place (Krabben et al, 2018). In contrast to the findings in the studies on rifle shooting, Krabben et al (2018) revealed that in the current classification system blind judokas are disadvantaged. Through an analysis of 340 judo matches at the London 2012 and Rio 2016 Paralympics, Kons et al (2019) add further support to Krabben et al's (2018) research by concluding that, in comparison to athletes with some residual visual function, blind athletes exhibit lower competitive and technical-tactical performance. Two tentative solutions to this apparent inequity in judo are proposed by Krabben et al (2018). First, that all fighters wear blindfolds for competition and, second, that the competition class be separated into two or more classes based on the degree of VI. However, the authors stress that these potential solutions are not entirely desirable nor feasible. Discussed in more detail in Mann and Ravensbergen (2018), the use of blindfolds is not a popular proposition amongst those involved in all VI sports and separating the competition class would require further research, raises practical challenges for competition organisers and threatens viable competition in terms of competitor numbers. The Delphi study by Krabben et al (2019) presents expert opinions on, and a general agreement with, the issues raised in Krabben et al (2018) and Kons et al (2019). In particular, experts advocated a re-evaluation of the minimum level of VI required to be eligible for competition and confirmed the issues with currently having only one competition class for both blind and partially sighted judokas. The Delphi study enabled the identification of the aspects of VI experts considered to have the most impact on judo performance and the aspects of judo performance most likely to be impacted by VI. This and the studies by Krabben et al (2018) and Kons et al (2019) will guide future research aiming to shape evidence-based classification in judo.

Finally, classification in swimming has also been the focus in Souto et al's (2017) analysis of performance data of national and international VI swimmers. Their study determined that there is a significant influence of VI on performance in freestyle events, especially for international swimmers. They also raise many issues reported in Ravensbergen et al's (2016) Delphi study, with the addition of sport-specific issues for swimming, such as the impact of water interference on underwater vision. Souto et al's (2017) study provides an important starting point but, as the authors assert, there is need for more detailed scientific research which considers additional aspects of VI and uses test procedures that replicate what Mann and Ravensbergen (2018) describe as the "habitual viewing situation" experienced in the sport.

In the midst of the publication of these sport-specific studies, Mann and Ravensbergen (2018) position stand reiterates many of the issues highlighted in Ravensbergen et al (2016) and proposes three conceptual research models (correlation model, simulation model and component-analysis model) that could be used in combination to "establish the relationship between impairment and performance during VI classification research" (Mann & Ravensbergen, 2018, p.2018). There is some consistency in the approach to the research projects summarised above, with analyses of performance data and technical explorations of impairment-performance relationships fundamental to developing evidence-based classification. The expert opinions canvassed using Delphi methods have highlighted important areas for investigation and challenges that remain. There is limited research exploring, in a more qualitative fashion, athlete experiences and perspectives of classification. The extent to which the classification system and organisation of competition classes is equitable in partially sighted football emerged as a concern of players in Macbeth's (2009) study

and this was duly followed up in Powis and Macbeth's (2019) recent investigation of classification in VI cricket and partially sighted football. Their sociological study, underpinned by an embodied approach to disability sport and drawing on ethnographic and interview data, provides rich insight into the extent to which the classification issues reported by Ravensbergen et al (2016) and Mann and Ravensbergen (2018) are experienced by VIAs outside of the Paralympic context. Powis and Macbeth (2019, p.13) provide evidence that "the diversity of visual impairment, the complexity of classification and the confusion experienced by many players has created an endemic culture of rumour and gossip". In addition, the adoption of VI classes (B1, B2 and B3) as social identifiers can lead to pervasive and detrimental embodied expectations of players. In team sports in particular, classification can result in social hierarchies within these sporting spaces and lead to divisive and marginalising experiences. What is clear in this collection of studies on classification is an overwhelming consensus that classification in VI sport is complex, sport-specificity is required and there is likely to always be a risk of intentional misrepresentation.

## Future research

Despite VI sport gaining more interest in recent years, especially around classification, there remains considerable scope for further research in the area. This section focuses on issues that could be regarded as most pressing in terms of being highlighted in existing research or representing a significant area of neglect in research so far.

In relation to VI classification research, comparative studies to those conducted on rifle shooting, judo, swimming and currently in progress in 5-a-side football, are required across all VI sport. The recent combination of competition classes in women's football requires detailed investigation. Whilst scientific research which enables IBSA to comply with the IPC Classification Code is crucial, it is important to also gain a qualitative understanding of the players' perspectives and experiences during this developmental phase in the game. The combination of both types of research will provide a broader evidence base for classification in which the athlete voice is valued. In terms of research on the technical aspects of classification, the research models proposed by Mann & Ravensbergen's (2018) need to be employed and critiqued and this is certainly in progress with current projects.

Studies that have focused on barriers and facilitators / enablers to VI sport have tended to generate rich qualitative data from a specific, small sample of VIAs within a particular sport (Macbeth & Magee, 2006, Macbeth 2008, 2009, Powis, 2018a), or broader but less in-depth data from both active and inactive visually impaired people (Jaarsma et al, 2014). What is lacking is in-depth qualitative research on the lived experiences of VIAs becoming and being engaged in a range of sports. Whilst current participants are likely to have overcome barriers that may prevent some inactive visually impaired people from getting involved, an understanding of the enablers experienced by VIAs currently participating could better inform providers on how to reach and attract more visually impaired people to sport.

Whilst some of the research presented in this chapter has attempted to take the diversity of VI (e.g. congenital versus acquired, age of onset, family history, conditions, level of VI) into account, we are yet to have a detailed understanding of the impact of such diversity on performance in and

experiences of sport. There is also scope to develop research which examines the intersection of VI with other factors (e.g. gender / social class etc) in sport to begin to account for the heterogeneity of experience. For example, apart from Koolae (2017) and BBS and Women in Sport (2016), there is extremely limited attention to gender in existing research on VI sport. The research in this chapter also tends to focus on the experiences of VIAs in developed nations. The emergence of sports development projects for visually impaired people in developing nations (e.g. Blind football projects of the BINA Foundation in Nigeria) also warrant attention and evaluation.

The research in this chapter represents VI sport both inside and outside of the Paralympic context. As the Paralympic Games continues to reach new heights in terms of profile and media coverage it is likely to attract increasing attention from academic researchers. Research which centralises VIAs within the Paralympic context will be of considerable value as this showcase event evolves. But, considering the scale of VI sport outside of the Paralympic context, we also need to ensure that future research “recognizes the richness of visually impaired sporting experience” (Powis, 2018a, p.204). In relation to this, the parameters of this chapter outlined in the introduction were to focus specifically on VI sport, but there is value in research which explores the experiences of visually impaired people who participate in ‘mainstream’, pan-disability or sporting opportunities regarded as 'inclusive' to all. Their experiences of sport outside of the VI sport context would provide insights, as Hammer’s (2015) work on tandem cycling has done, about the relationships, interdependencies and identities that emerge within these contexts.

This chapter has made one of the first attempts to provide an overview of the complex world of VI sport. What is clear is that there is a distinct lack of historical research on the evolution of VI sport(s) which captures the way in which broader societal developments, conceptualisations of disability / disability rights movement have impacted on developments. There is considerable scope for documentary and life history research which unearths these developments before they are lost. Whilst this is not an exhaustive list of potential areas for future research, this section has highlighted just some of the areas that emerge as particularly relevant considering the research that currently exists.

## Practical implications

There are some clear practical implications of the research summarised in this chapter and this section will outline some of the most prominent. There is evidence to suggest that sport has the potential to provide empowering experiences for visually impaired people. However, for more people from this relatively inactive group to experience the benefits of sports participation, there remain some persistent barriers. More work clearly needs to be done in terms of addressing the lack of local opportunities, limited awareness of provision and travel / transport barriers faced by visually impaired people. The potentially disempowering experiences of VIAs identified by Macbeth (2009) and Powis (2018a) draw attention to the need for key stakeholders to carefully negotiate the way that VI sport is structured from grassroots to elite levels and the impact of ‘mainstreaming’ on participants. Involving VIAs in discussions and decision-making about the future of their sports is of paramount importance to ensure equitable developments for VIAs in all competition classes.

The classification research reviewed here has considerable practical implications and influences the IPC and IBSA in their decisions regarding eligibility criteria and the organisation of competition classes within VI sports. In competitive sport, there is clearly a tension between using combined classes to ensure sufficient numbers for viable competition and providing equitable opportunities. But until more visually impaired people are involved in sport, combined classes may be the only practical option. This has been exemplified with IBSA's recent (January 2020) announcement that B1, B2 and B3 classes are to compete together in women's football in an attempt to attract more female players to the sport in the lead up to the inaugural IBSA Blind Football Women's World Championship scheduled for 2021 (IBSA, 2020). The sport will be organised in this way until recommendations have been received from the IBSA Blind Football classification research project. The impact of these developments on the experiences of female players remains to be seen, but it is an area that warrants detailed research in the future.

## Conclusion

This chapter has revealed that the world of VI sport is a complex one which attracts research from a range of disciplines. As a broad research area, it has been largely neglected but there is a growing interest, especially in the important area of classification research. What becomes clear in this chapter is that there remain significant gaps in our knowledge about VI sport and there is considerable scope for empirical research in a range of areas. If sport is to have an empowering role within the lives of visually impaired people, research on the technical aspects of sports and the experiences of VIAs is of paramount importance. Providing robust evidence in these areas is fundamental to ensuring that VI sport develops as equitably as possible. It is hoped that this chapter can inspire future researchers to immerse themselves in this fascinating world and undertake research which can have a meaningful impact in the lives of visually impaired people.

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