



Article

The Invictus Games Categorisation System: A framework for adapted sports

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Abstract: Categorisation (also called classification) systems are a fundamental part of adapted sports. While current systems seek to promote fair participation, they may also conversely prevent individuals experiencing diverse and complex physical and psychological illnesses and injuries from engaging in adapted sports. Drawing on the experiences and perspectives of stakeholders working with the Invictus Games Foundation, this paper describes the Invictus Games categorisation system, an innovative framework for non-elite adapted sport competition that seeks to integrate individuals experiencing these diverse conditions. We review (a) the development of the categorisation system; (b) the categorisation process; and (c) the training of categorisers. The paper further highlights how these developments were influenced by recent advances in our understanding of the impact of pain-based impairments as well as psychological illnesses and injuries. Additionally, we present critical implications for organisations seeking to develop or refine categorisation systems to expand access to non-elite adapted sport competition. Our aim is for this paper to serve as a practical guide for stakeholders, researchers and practitioners.

Keywords: adaptive sport; competition; military personnel; rehabilitation; veteran; physical; sensory; psychological illnesses; injuries

Introduction

Increasing recognition has been given to the physical and psychosocial benefits of sport participation for persons experiencing disabilities (e.g., Martin Ginis et al., 2016). Countless formal and informal sport initiatives have developed to serve a variety of groups experiencing disabilities. For example, Special Olympics International aims to provide year-round sports training and athletic competition for children and adults experiencing intellectual disabilities (Special Olympics, 2022). Meanwhile, the International Paralympic Committee (IPC), either directly or indirectly through member federations, governs 28 summer and winter sports for individuals experiencing physical, visual, and intellectual impairments and hosts the Paralympic Games on a quadrennial basis (Legg & Steadward, 2011).

Sports for persons experiencing disabilities (hereto forth referred to as adapted sports) aim to provide equitable sporting opportunities to individuals with various disability types. This is achieved through the implementation of organizational systems, also termed classification or categorisation systems. Categorisation groups athletes, such that individuals with a range of underlying health conditions, can compete with and against one another, provided they have relatively similar levels of functional ability. Within the context of IPC adapted sport, classification is carried out by a panel of qualified practitioners (primarily physicians and physical therapists) who assess athletes' functional abilities and

observe them in competition before assigning a “sport class” representative of their function (IPC, 2015). In the sport of Athletics, for instance, athletes experiencing varying degrees of visual impairment may be assigned one of three classes from 11-13 while athletes experiencing co-ordination impairments are represented by the numbers 35-38. Classification in this context seeks to ensure that no one person is overtly advantaged or disadvantaged by their impairment (Tweedy & Vanlandewijck, 2011). Rather, the victor of sporting competitions is determined by competitors’ training, skill, and performance. Stringent evaluation criteria are used to ensure the validity of classification, and therefore protect the adapted sport movement and standard of elite-level competition (Tweedy et al., 2014).

However, recent literature highlights that adapted sport classification systems can sometimes be perceived not as a gateway to participation, but as a barrier (Howe, 2011; Peers, 2009; Purdue & Howe, 2013; Schantz & Gilbert, 2012). For example, Howe (2008) and Peers (2009) reported their experiences undergoing classification as negatively foregrounding their disability over their ability or athleticism. Peers (2009) additionally detailed how ableist standards of how bodies should look, move, and be presented were embedded within the classification process, leaving the author feeling that their disability status was being called into question as a result of the classification. Relatedly, Lawson et al. (2022) examined athletes’ experiences with classification across adapted sports and found the stress of repeated classifications and the requirement to compile medical documentation of one’s impairment (an often-lengthy process) was off-putting and contributed to some athletes’ desire to leave their sport.

Beyond this, many athletes do not meet the eligibility criteria set out by the IPC (IPC, 2015) and are therefore ineligible to compete in sports governed by the IPC. The IPC’s current classification code allows individuals experiencing underlying health conditions to compete only if the health condition leads to permanently impaired muscle power or passive range of movement; limb deficiency; leg length difference; short stature; hypertonia; ataxia; athetosis; vision impairment; or intellectual impairment (IPC, 2015). These IPC criteria have become a standard for adapted sport. Thus, even if not competing at an elite level, individuals participating in adapted sport can be limited by whether the condition they experience corresponds to the classification system. Accordingly, individuals that fall outside of these criteria— such as those seeking adapted sport as a means of rehabilitation or recovery from illness or injury, those that are impaired by psychological illnesses and injuries, individuals with complex conditions, or whose impairment may change over time— may have difficulties finding opportunities for adapted sport competition or may be forced to leave sport as a result of classification (Bundon et al., 2018; Lawson et al., 2022). These difficulties became pronounced as military personnel returned from conflict in Afghanistan and Iraq. These conflicts were significant due to higher incidence of blast injuries, and a greater understanding of the pain-based, psychological, and functional impairments and injuries that may be linked to these injuries and the resulting impairments (Afari et al., 2009; Clifford et al., 2014; Fear et al., 2010; Fitzgerald, 2018; Higgins et al., 2014; Horowitz, 2013; Jaarsma et al., 2014; Schneiderman et al., 2008). While military personnel sought to engage in adapted sport, many found that their physical and psychological illnesses and injuries were not accommodated within existing classification systems.

In 2014, the international Invictus Games were developed to support the rehabilitation of service members and Veterans through adapted sport. The Invictus Games differ substantially from other international sporting competitions based on its unique aims, terminology, population, and categorisation system. Notably, the focus is non-elite parasport participation. While some may approach the Games from a high-performance mindset or with a focus on winning medals, this approach is not encouraged by the Invictus

Games Foundation (IGF). The IGF encourage nations and competitors to focus on how participation will contribute to the personal journey of recovery and rehabilitation for both the individual, as well as their family and friends. No medal tables are kept during the Games and all competitors receive participation medals in recognition of what they have achieved for their recovery through training for the Games. Due to this non-elite focus, participants are called “competitors”, which is meant to distinguish them from high performance “athletes” who focus on winning and train for years with the hope of a medal. Another difference in terminology between the Invictus Games and other adapted sport is the use of the term “categorisation” compared to “classification”; the latter term being used in existing adapted sport frameworks. This is to delineate the differences in the structures, but also to emphasize that although a competitor has an IGF categorisation, they may not be eligible for an IPC classification.

A further unique aspect of the Games is the population. Eligibility is restricted to active service members or Veterans from one of the now 23 participating nations who have been seriously wounded, injured, or have experienced life-changing illness during, or as a direct result of service (IGF, 2018). As such, unique terminology is used. For example, the terms “illnesses” or “injuries” tend to be used as opposed to “impairments” or “disabilities.” This terminology reflects the military nomenclature given to the wounded, injured, and sick personnel whose conditions may or may not be permanent and who are eligible to compete in the Invictus Games. In addition, this distinction also reflects that it is an often-different population to athletes experiencing permanent impairments, or disabilities, eligible to compete within the IPC classification system. Thus, the terminology allows for the expansion of traditional understandings of adapted sport participants. To accommodate the wide range of illnesses and injuries experienced by military personnel (e.g., spinal cord injury, amputation, cancer, traumatic brain injury, depression, post-traumatic stress, functional neurological impairments, complex regional pain syndrome), and the difficulties many service members and veterans were experiencing with other adapted sport classification systems, the IGF emphasized the need to expand understandings of illness and injury and develop a non-elite adapted sport categorisation (IGF, 2018) system that creates opportunities for people with diverse physical, sensory, and psychological illnesses and injuries to compete fairly with each other. The inclusion of competitors with a wide range of illnesses and injuries is important, as the 2023 meta-analysis by Isidoro-Cabañas et al. (2023) shows the practice of adaptive sport to beneficially influence physical and mental quality of life, as well as reduce stress and anxiety levels, promote social and family relationships, and improve social competence. Importantly for this population, the practice of adaptive sports may favor the (re)creation of athletic identity, dissociate the illness or injury from a pathological view and cultivate a positive post-injury identity (Gutiérrez-Sanmartín et al., 2006; Hendrick et al., 2024). For members of the armed forces, the community and camaraderie once found in the military can be rekindled on the sports field. The resulting Invictus Games categorisation system is unique as it allows for athletes experiencing diverse injuries and illnesses to compete on the same field of play compared to other adapted sport categorisation systems where eligibility is defined by impairment type and disability permanence. Estimates from the Invictus Games Sydney 2018 suggest that just over 20% of Invictus Games competitors with physical impairments competing in physical injury sport categories at the Invictus Games would not be eligible for IPC classification, with that number continuing to grow as the participant pool evolves from competitors experiencing predominantly physical injury to competitors experiencing physical illness or psychological illness and injury (see Figures 1 and 2; Blamey, 2019).

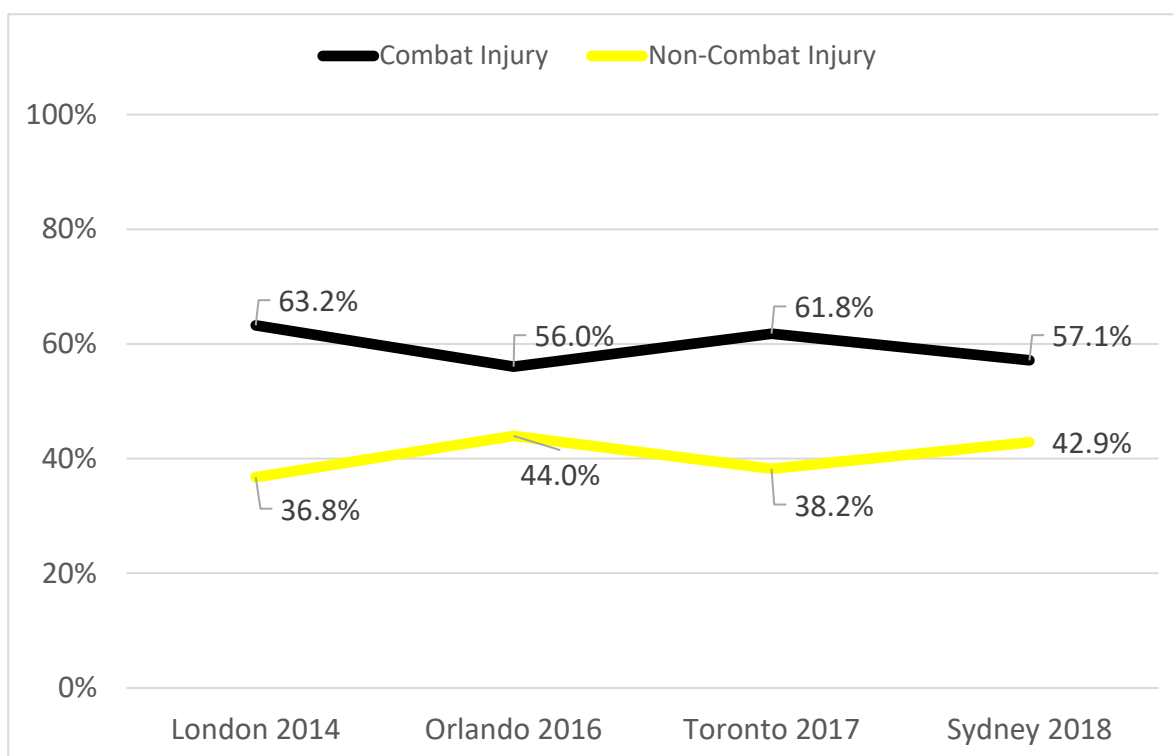


Figure 1. Presence of combat and non-combat injuries and illnesses across Invictus Games. Note: Data from two nations are missing for Sydney 2018. Adapted from Blamey (2019).

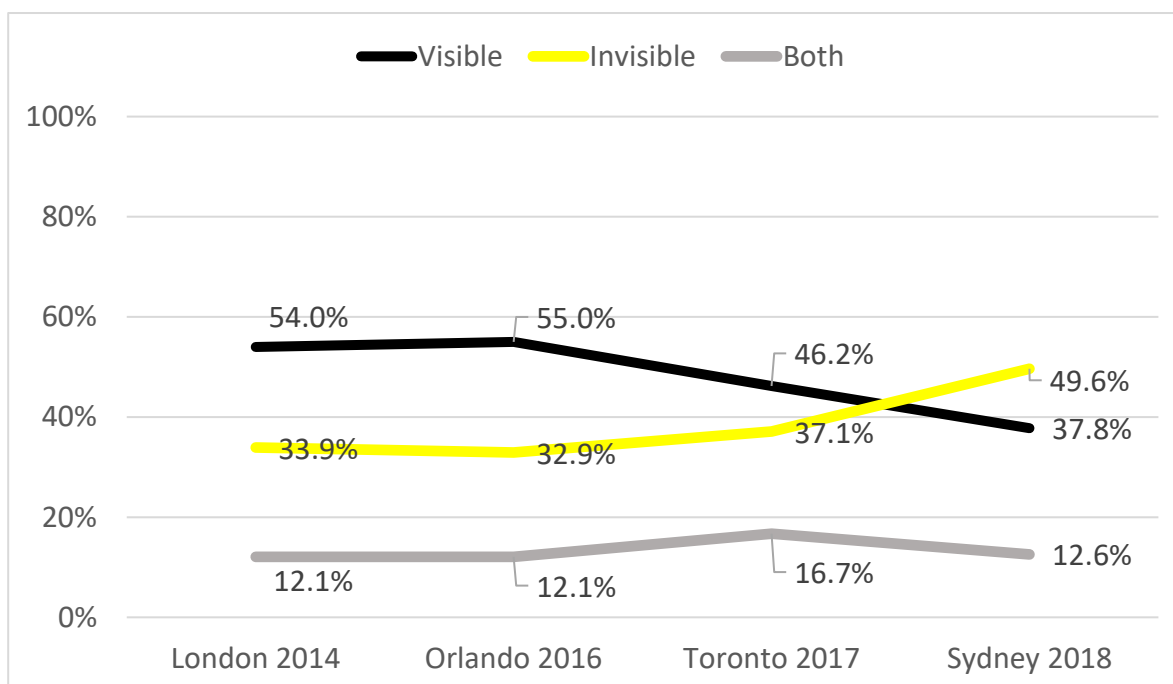


Figure 2. Presence of visible and invisible illnesses and injuries across Invictus Games. Adapted from Blamey (2019).

The aim of this paper is to review the categorization system, its development and application in adapted sports, as well as training approaches. We also seek to critically discuss learnings, challenges, and experiences for the development and implementation of this innovative system. By presenting this inclusive system, we seek to highlight how this framework can be used in non-elite environments and inform the promotion of greater adapted sport participation among a more diverse population of individuals experiencing illnesses and injuries.

Materials and Methods

Design and Context

This paper, developed in partnership with the IGF, presents a qualitative review of the Invictus Games classification system. Through a focus on the conceptualization and development of the classification system, the manuscript covers the period of 2014 through 2022, encompassing the first four Invictus Games (London 2014, Toronto 2017, Sydney 2018, and The Hague 2020 which took place in 2022 due to COVID-19).

Positionality

The authors have extensive research and practical experience on the topic of adapted sport, disability, and classification. The first author is a medical Doctor trained in the UK, with a sport background in coaching para-rowing. This author is an international classifier for four IPC sports, as well as the Lead Categoriser for the Invictus Games Foundation. The second author is an assistant professor whose research explores the influence of the IPC's classification system on sport participation among persons with disabilities. Finally, the third author is an assistant professor in the field of adapted sports for individuals experiencing physical and psychological illnesses and injuries, as well as a research partner of the Invictus Games Foundation.

Methods

In seeking to conduct this qualitative review, the authors first met with IGF to discuss the planned manuscript and request documentation relating to the categorisation system. During this process of document collection, HB also collated their classification materials as part of the team that developed the categorisation system. In addition, CHS reviewed qualitative observations of Invictus Games and Invictus Games training camps, as well as interviews with IGF nations and competitors from previous research (Shirazipour et al., 2017; Shirazipour et al., 2024) and identified meaningful segments of data relating to the classification system.

The authors then conducted a thematic synthesis of the data led by CHS, with a focus on deductive coding based on three categories considered pertinent for understanding the categorisation system, as well as meaningful contributions to existing literature (Lawson & Latimer-Cheung, 2024): (a) a description of the categorisation system and its development; (b) training of categorisers; and (c) challenges and lessons learned. During this process, HB sketched a timeline of activities integral to the development of the IGF categorisation system. HB and CHS then supplemented this timeline and coding analysis with literature pertaining to the IPC's classification system to highlight differences in the aims and applications of each system. Finally, all authors, as well as executive members of the IGF, reviewed the results for accuracy and engaged in further critical and reflexive discussion on challenges experienced and lessons learned.

Throughout this process, the authors met to discuss the data, and their Invictus Games experiences as they related to the categorisation system. This discussion also included consideration about how the data and the categorisation system described therein compared to their own experiences or existing literature on IPC classification. The researchers understood that their in-depth experiences with the categorisation system and the Games meant that there had to be an important focus on rigor during the analysis process. To meet this requirement, the research team continually critically questioned how their backgrounds and experiences may be influencing their analysis and perceptions of the categorisation system. Due to HB and CHS's roles with the IGF they sought to specifically question their positionality and potential biases, which served to enhance their reflexivity and critical eye during the coding and timeline development process, as well as lead to refinements in language for the current paper. As part of this process, JAL, who had no previous experience

with the IGF held the important role of critical friend, prompting further questioning and reflection that sought to maintain the research team’s openness to diverse perspectives and interpretations of the categorisation system.

Results

This results section is divided according to these three categories. First, we describe the Invictus Games categorisation system itself and its evolution. This provides valuable information to individuals that may wish understanding of how the system can be applied in other settings. The second section focuses on the training of categorisers and adds to the growing body of exploring classifiers’ experiences and learning processes (Lawson et al., 2022). The final section presents challenges and lessons learned for the development and implementation of this innovative system.

The Categorisation System

In this section, we present an overview of the categorisation system and how it has developed in response to the evolution of the Invictus Games and the prevalence of diverse types of illnesses and injuries. The categorisation system was first developed for the inaugural London 2014 Invictus Games and has evolved over time (Table 1). This evolution has occurred in response to identified gaps or challenges in a previous year’s categorisation process, changes in competitors’ illnesses and injuries, or sports offered by the host nations (see Appendix A).

Table 1. Development of the categorisation system

Invictus Games	Categorisation Development
London 2014	London, UK was the inaugural event. Individual sport National Governing Bodies (NGBs) within the UK were approached by the Games Organising Committee (OC) to develop sport specific categorisations for each individual sport. These systems were not linked across sports and were developed to best suit the Wounded Injured and Sick (WIS) military (serving and veteran) population with combat related injuries.
Orlando 2016	Existing system used with no changes to 2016 competition.
Toronto 2017	Existing system used with no changes to 2017 competition.
Sydney 2018	Co-ordinated centrally by the IGF Categorisation Lead and IGF Operations Manager. Formal categorisation system developed with Categorisation Handbook containing categorisation guideline/rules for pre-competition and competition period. Pool of five IGF categorisers identified through process of application, with sport specific expertise across six of the nine core IG sports
The Hague 2020 which took place in 2022	<i>(In addition to changes from Sydney 2018)</i> Additional classes added to sport categories with the widest performance spread. Competitors must be seen and assessed by an IGF categoriser during the verification visit or must present for verification during Games time. Addition of ‘Documentation Tool for Categorisation Assessment’ to improve accuracy of categorisation and reduce variability between IGF categorisers. Increased education of IGF categorisers. IGF categorisers have increased classification experience across sports and greater gender and cultural diversity. Panels of two categorisers attend in-country verification visits to increase validity of assessments.

Eligibility to compete in the Games is defined pre-categorisation. Eligibility is restricted to active and veteran service personnel from all branches of the regular or reserve Armed Forces of the participating nations who have become wounded, injured, or sick during or as a direct consequence of their service. Wounds, injury, and sickness must affect service personnel in a manner which significantly changes their lives to be eligible to compete in the Games. Contrary to many other adapted sport competitions, *all* impairment types are

eligible to participate, including impairments without identifiable organic causes, and pain-based impairments. The sport classes are split into two categories; ‘Open’ and ‘Permanent Physical Impairment (PI)’ classes, both of which control for the impact of the illnesses or injuries included within them on sport performance.

The ‘Open’ Class: A unique category in Invictus Games Categorisation

The ‘Open’ category exists for athletes with psychological impairments (e.g., PTSD, anxiety, affective disorders, personality disorders, adjustment disorders), those experiencing non-permanent physical impairments (e.g., acute injuries), hearing impairments, minor physical impairments (i.e., those which do not meet the criteria for entry to a PI category), and health conditions presenting without accompanying physical impairments (e.g., asthma). There have been times when the ‘open’ category has caused concern among competitors experiencing physical impairments that do not meet the criteria for an adapted sport class, or who feel the sport category should be solely for those with psychological conditions. As the Games have progressed and competitors are presenting in greater numbers as experiencing non-physical impairments, the size of the open category has grown. It is by far the greatest populated sports category, increasing the standard of competition significantly.

The ‘PI’ Class: Expanding understandings of physical impairment

The PI classes are sport specific and differ in qualifying criteria between each of the sports. Classes and their criteria are based on the impact the competitors’ impairment has on their performance of sport specific movements. Eligibility to compete in a PI category requires competitors have an impairment eligible for IPC classification, for example, impaired range of movement, impaired muscle strength; however, as all competitors needed to have passed military medical standards prior to their service, no intellectual impairments, short stature, leg length differences or any congenital impairments exist within this cohort.

Furthermore, in contrast to IPC classification, the mechanism of impairment in the PI Class is not regulated. For example, impaired range of motion could be due to pain as a result of complex regional pain syndrome, and impaired muscle strength could be due to a functional neurological impairment. This is the unique feature of the Games as all adapted sport events governed by IPC rules exclude individuals who experience (a) symptoms without medical diagnoses, (b) pain-based impairments, (c) functional impairments, or (d) impairments that don’t fit IPC eligibility criteria. Within the context of rehabilitation or non-elite adapted sport participation, many individuals experiencing non-organic physical impairments who could benefit physically, psychologically, and socially are excluded from adapted sport participation. For example, in England, 12% of the population (around 5.5 million individuals) have high-impact chronic pain that influences activities of daily living (Ellis et al., 2021). This large percentage of the population experiencing non-organic physical impairments is likely replicated across many of the 23 Invictus Games nations. These individuals should have access to sport-based rehabilitation or competition.

Determining competitor class

The Invictus Games’ approach – consistent with the focus on a personal recovery journey as opposed to winning – relies on competitor and team staff honesty and integrity. Category decisions rely solely on the clinical assessment (manual muscle testing, goniometric range of motion testing, limb length measurements, balance and coordination testing, cognitive command assessment and spasticity grading) and professional judgement of trained IGF categorisers (all medical professionals), who perform both the bench assessment and sports observation of all competitors, during training and competition. In contrast with many other adapted sport systems which require a completed medical

diagnostics form, and medical documentation signed by a healthcare professional confirming the diagnosis, IGF asks for no evidence of impairment in the form of imaging, medical reports, or otherwise. This is a key differentiation between the Invictus Games categorization system, and other disability sport classification structures. Rather IGF assumes a medical discharge or physical presentation qualifies the competitor's condition. This IGF model accepts the increase in subjectivity of the IGF categorisation system as a means to increasing inclusivity.

Furthermore, the IGF model aims to reduce or, ideally, eliminate any stress or anxiety for the competitor and their families. Undergoing medical exams and seeking medical documentation is costly in some nations and can also be a great source of stress for those still struggling to gain recognition of their condition, or its severity, from the military or medical professionals. Accessing this documentation may be difficult for competitors from some nations, particularly those in active conflict. Finally, due to the complex nature of the illnesses and injuries experienced, diagnoses may evolve over time and the severity of the presentation of the impairment vary as well. Due to this potential for change in functional status of competitors, the competitor categorisation system runs anew each Games cycle, with each competitor needing full assessment ahead of every Games.

The Evolution of the Categorisation Process

For the first two Invictus Games (London 2014 and Orlando 2016), competitors self-categorised in each sport with guidance from their national team staff. No process existed to challenge or confirm categorisations, and the accuracy varied depending on the experience of competitors and team staff. As the Games grew, modifications were made for Toronto 2017 to reflect the increased number of competitors and participating nations. Documents were developed by the Local Organising Committee Categorisation Manager to assist with pre-Games assessment. These documents consisted of sport specific categorisation forms detailing each category with examples of eligible impairments per category. Competitors were assessed in the pre-competition period by a team of local categorisers in line with this paperwork, but there was no sports observation or opportunity for re-assessment throughout the Games.

After 2017, there was a shift in the structure of categorisation to improve validity, transparency, and consistency of the categorisation process. Categorisation is now coordinated centrally through IGF by an IGF Categorisation Lead (HB) and the IGF Operations Manager. A formal categorisation system was developed with a handbook containing guidelines for pre-Games and the Games themselves. Following an open process of applications, five categorisers were identified in 2017/8 to form an initial pool of IGF-specific categorisers. These individuals are all trained healthcare professionals (doctors, physiotherapists, or occupational therapists) with sport specific expertise across Invictus Games sports, as well as knowledge and experience with IPC classification.

The new process (Figure 3) was first implemented for Sydney 2018. The IGF categoriser pool was then expanded for The Hague 2020 to include 12 categorisers. This increase occurred with the aim of improving diversity in gender, geographic location, languages, and categorisation experience. Gender was a particularly important change as feedback from categorisers was that male competitors from traditionally Muslim nations were uncomfortable being assessed by female categorisers due to religious laws. Additionally, for the 2020 cycle, further documentation was developed to improve accuracy of assessments.

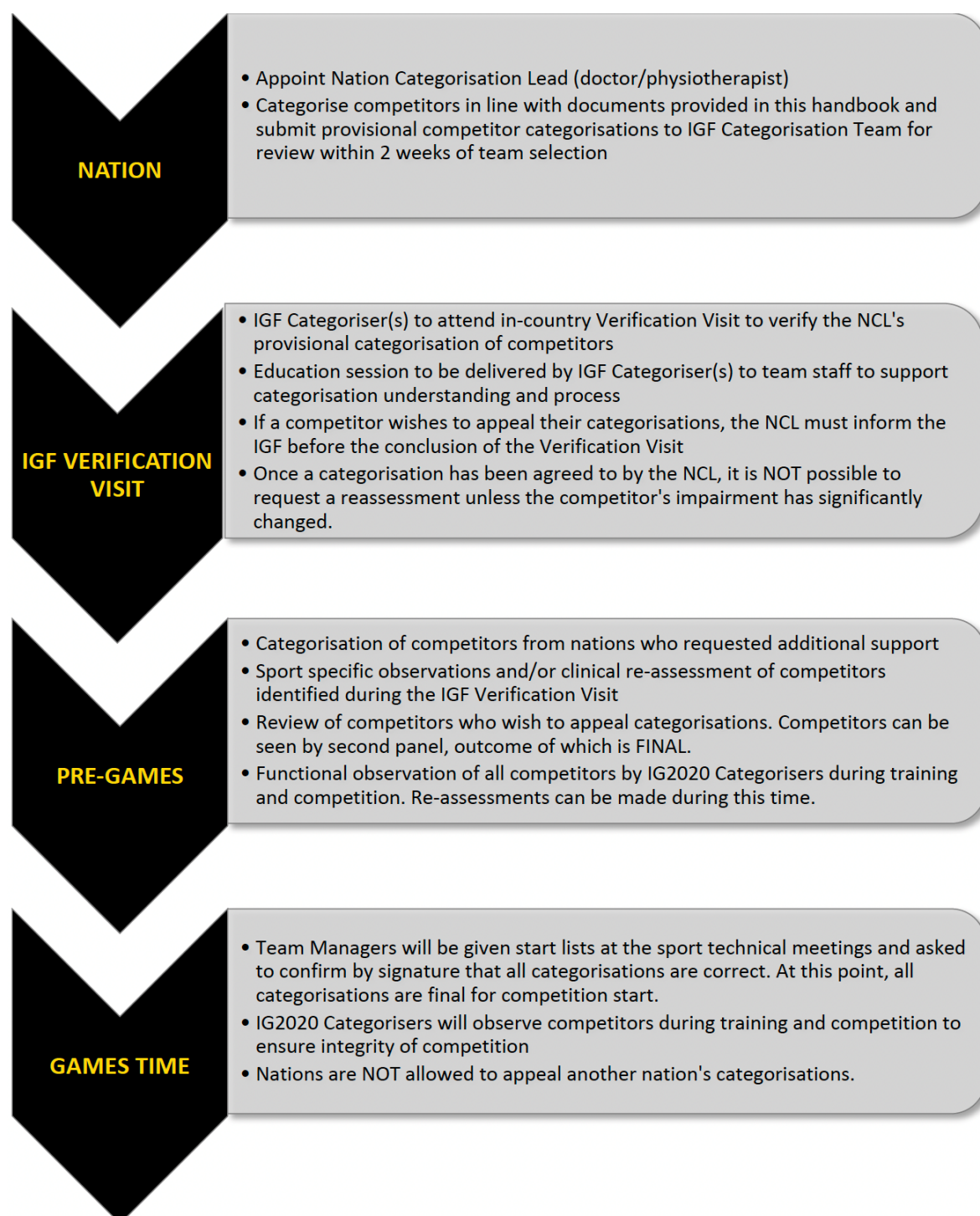


Figure 3. Most recent iteration of categorisation process

Current categorisation procedure

As the categorisation process currently stands, competitors are first assessed in their home nation by a Nation Categorisation Lead. The National Categorisation Lead must be a trained healthcare professional (a doctor or physiotherapist) with experience examining and assessing individuals for the purpose of sports competitions. This paperwork will be submitted to the IGF for review by the Lead Categoriser, who may ask for additional information if required (e.g., for competitors with neurological impairments to complete balance testing). Following this, IGF categorisers visit nations, often during a training camp to enable sports observation alongside clinical assessments, to verify each competitor's

categorisation. As seen in many parasport systems, competitors and team staff can disagree with the process or the outcome of categorisation. Therefore, to increase validity, categorisers perform assessments in panels of two, and first aim to engage in discussion with the competitor and their support team (e.g., coach, team manager, translator, or caregiver) – often the conflict is the result of misunderstanding, and careful explanation and illustration is all that is required to settle the dispute. At this stage, if it is possible, the categorisers offer to perform the sports observation immediately, which can provide further information to help resolve potential disputes. If competitors and their support team are unsatisfied, the National Categorisation Lead can request a second panel assessment, which is performed by two new categorisers who assess the competitor for the first time during the Games in the pre-competition period.

During the Games, a small number of competitors (e.g., those experiencing neurological conditions that have variable presentation or competitors that are close to the boundary of two categories) who have been flagged for re-assessment or sport specific observation are observed. Competitors can also request re-assessment at the Games if they feel their condition has significantly changed since the verification visit. These requests are considered on a case-by-case basis. Re-assessment requests require re-assessment and re-completion of documentation by the National Categorisation Lead for the request to be considered. During the Games, the days prior to competition are used for these re-assessments and observations, with assessments finishing prior to the Opening Ceremony.

Recognising the potential for misrepresentation and differences between bench assessment and functional performance for each sport, and the subjectivity of the system, the categorisation system includes a full-time observation schedule throughout the Games. Competitors can be re-assessed at the discretion of the Categorisation team if any discrepancies in presentation are identified. Data from Sydney 2018 indicates that out of 523 competitors categorized in advance of the Games, 59 competitors had their categorisation changed during verification visits by the IGF categorisers with 60 competitors flagged for further review and observation at the Games. During Games times, 119 competitors were categorized in the days prior to competition and an additional 37 competitors underwent categorisation review following request. Of these Games time categorisations, 43 competitors had their categories changed. Finally, one competitor was re-categorised after being observed in competition following identification of an error in data transcription from a verification visit. A similar number of Games time categorisations and category changes were reported across most recent Games. The demand for Games time categorisations may be due to nations with a high number of competitors choosing or being unable to perform in-person categorisation. Regardless of the reason, the value of the in-person assessments for the well-being and understanding of competitors and team staff is clear.

Training of Categorisers

The categorisation workforce has evolved in response to the needs of the Games, the nations, and the categorisation system. As the system has become more formalized, the education required for categorisers has also become more structured. Hand-selecting categorisers and formal training are essential for promoting equity and fairness in assigned categories across nations and illnesses and injuries. Prior to the development of the categorisation process and categoriser training, some competitors and nation staff would highlight inconsistent categorisation as a limitation of the Games, and negative emotional responses to categorisation influenced the quality participation experiences. The implementation of centralised categorisers and formalised education has sought to address these concerns.

IGF categorisers undergo extensive in-person training. Training starts with a focus on education: reviewing the purpose of the Invictus Games, the sports included in the upcoming Games, and the number of nations that will be competing. A sample timetable for the Games is provided to give categorisers who have not attended previous Games an understanding of the Games experience. The session leader then highlights what makes the Games unique compared to the categorisers' previous parasport experiences, as well as an overview comparison of the categorisation compared to IPC classification. Categorisers are then trained on the three core principles of the Invictus Games categorisation:

1. Is it fair?
2. Is this competitor disadvantaging other competitors by being in this category, or being disadvantaged by other competitors in this category?
3. In your professional opinion, is the competitor's impairment causing a comparable activity limitation to listed impairments in this category?

After a break, the training then focuses on the structure of the categorisation team (Foundation- and nation-level personnel) and the schedule and procedures for nation verification visits. Finally, there is in-depth training across each sport for the categorisation structure and forms, and processes for categorisation assessment. In addition to categorisation for each sport, categorisers also receive training on the most prevalent illnesses and injuries that may be present across diverse categories. The initial education component of training ends by highlighting guiding principles for categorisers to look after their own mental health during the categorisation process.

Once the formal educational component is completed, training transitions to the second component: hands-on exposure to competitors and practicing categorisation. This training phase starts with a guest presentation from a former competitor about their military background, illness/injury, and their Invictus Games experience. Categorisers are then paired up for mock categorisations. The pairs are created such that someone with previous Invictus Games categorisation experience is matched with a new categoriser. These pairs then conduct five mock categorisations meant to mimic categorisation visits with competitors at nation training camps. The mock categorisations are conducted on former UK Invictus Games competitors as training is conducted in London, UK. Ultimately, categorisers leave with knowledge and confidence to promote fair categorisation practices.

Challenges

As indicated above, the Invictus Games categorisation system has evolved to meet the changing needs of the Games. Throughout this evolution, various challenges have been emerged. Specifically, challenges related to the population being categorised, changing demographics of illness and injuries, and the rapid progression of the Games.

Population

When compared to IPC teams, the relative inexperience of both competitors and team staff working with the categorisation system has posed challenges for its development and the assignment of categorisations. Working with a military population approaching sport as rehabilitation, compared to high-performance athletes, requires a large community education effort regarding expectations of the system, as well as the engagement of stakeholders to ensure the system reflects the needs and experiences of the community. For example, one of the authors had the opportunity to attend competitors' categorisation during a nation's training camp and was struck by two diverse responses to categorisation. One competitor had a visible limb injury that was assigned a PI class categorisation. However, the competitor did not want the assigned categorisation and requested to be placed in the Open category. The competitor left the room, and another competitor entered.

This second competitor did not meet the minimal functional impairment criteria for their sport and were assigned to the Open category. This Open categorisation greatly distressed the competitor who felt as if they were being told their illness or injury did not exist. After discussion with the categorisers and reviewing the sport categorisation criteria, the competitor agreed to the Open category with the caveat that they be reviewed for potential re-categorisation by a second categorisation panel at the upcoming Games due to ongoing fluctuations in the severity of their impairment. This example of two different competitor reactions to their categorisation highlights the stress and anxiety that may be involved in categorisation based on how the individual perceives their illness and injury, how they think their military community perceives adapted sport and disability, and the impact of previous medical experiences on their trust in and perceptions of medical systems.

The authors recognize that many competitors in the Invictus Games experience stress and anxiety as a result of medical trauma and disability perceptions, and that this may be exacerbated by clinical assessments. While it is not possible to eliminate all competitor anxiety, as a fair and robust sport categorization system requires competitors with physical impairments be clinically assessed, key considerations have been made when amending the categorisation process to try and reduce competitors' stress and anxiety. Measures taken to reduce anxiety around the categorisation process include:

- Eligibility is determined pre-Games, so no one will attend categorisation and be told they cannot compete or participate in the Games.
- The model of completing assessments outside the Games during a verification visit seeks to ensure team staff and competitors do not have any increased anxiety around competition windows.
- Verification visits are conducted in the competitor's home nation, at their training camp and in their venues, ensuring familiarity with their environment as a factor to reduce stress.
- Coaches, friends, or family members are allowed and encouraged to attend categorisation assessments to ensure that competitors feel appropriately supported.
- If a competitor is being seen during the pre-Games assessment period on-site at the Invictus Games, mental health support around categorisation, in the form of psychological first aiders who can support competitors as required, is provided.
- Competitors have the option of a second panel assessment in the cases of a disputed categorisation.

Due to the potential inexperience of the competitors participating in the Invictus Games and the flexibility to adapt the system to best meet the needs of this group, there are some unique features to the categorisation system. Competitors can 'compete up' into a category which has competitors with fewer functional limitations. This option may be taken if, for example, a competitor is experienced in a sport and faces a field of novice recreational competitors. This option would allow them to challenge themselves to a greater degree, creates a more even playing field for the novice competitors, and respects the ethos of the games to focus on personal development and recovery rather than winning. Additionally, the Games enable competitors to use adapted equipment to enable participation. Using further adapted equipment in their assigned categories enables competitors to participate where they would otherwise be unable to without the equipment modification, but not disadvantage the competitors who use the same equipment in a category with individuals with more functional limitations. For example, in rowing, using an upright seat in the IR4 category (competitors with trunk function) enables competitors with low back pain to participate using adapted equipment, but does not disadvantage the competitors who need an upright seat due to a lack of trunk function (IR2 category). For competitors who present

with pain, or non-organic motor impairments, equipment is used to negate any residual function. For example, if a competitor presents with a pain disorder affecting their right arm, they would be expected to compete in the corresponding category of individuals who may have a single arm amputation, but with the arm strapped to their body.

Inequitable Resources

Beyond the level of experience of the competitors and nation staff, the equity of access to resources and categorisation workforce differs widely between participating nations. For example, training facilities are vastly different based on size of the military, national military budgets, or stigma or support for military personnel with illnesses and injuries. Differences that will only continue to increase as more nations from across the globe continue to join the Invictus Games. These factors influence competitors' categorisation experiences. For many participating nations, IGF trained categorisers (in addition to the Nation Categorisation Lead for each country) attend training camps or specifically hosted events (known as 'categorisation verification visits') for early categorisation confirmation. This early visit allows competitors sufficient time to prepare for their category, as well as reduces stress at the Games, providing opportunities for competitors to focus on their Games time experience (e.g., training, performance, socialization) during competition as opposed to categorisation processes. From an administrative standpoint, it also allows the organizing committee to have advance knowledge of participation rates for each sport category. However, these early visits are not the case for all countries (e.g., Iraq). Competitors from some countries are only classified on-site before the Games due to travel restrictions to these countries and the lack of trained team staff to perform in-country categorisation. This Games-time classification results in competitors experiencing a rushed introduction to the categorisation system, last minute changes to expected categorisation, sometimes needing to borrow required equipment from other teams that they have not tested prior to competition, and less opportunity to train on-site pre-competition.

Changing Demographics

While the categorisation system allows for continued integration of individuals with combat injuries, such as those experiencing injuries from the War in the Ukraine, it has also needed to respond to changes in demographics in other participating nations (see Figures 1 and 2). As other nations have moved further away from the conflicts in Iraq and Afghanistan, the number of competitors seeking rehabilitation from combat injuries has decreased. This shift was reinforced by the introduction of the 'two Games rule' after 2018, which dictates that competitors can participate in a maximum of two Invictus Games each. The goal of this rule is to reach new individuals who may be lacking access to rehabilitation opportunities. The rule resulted in a change in competitor demographics from individuals participating in or directly out of physical rehabilitation to individuals experiencing other diverse illnesses and injuries. This change challenges adapted sport systems designed with a focus on physical impairment, as well as the previously developed Invictus Games system which was designed to enable participation of competitors with common physical combat injuries. The challenge has been particularly evident in team sports wherein participation rules have been revised to allow greater inclusion of those with psychological injuries and illnesses.

A change in the demographics of Invictus Games competitors has also been evidenced by the need to revise a system based on traumatic injuries (e.g., mostly amputations) to reflect more functional impairments (e.g., functional neurological disorders) and neurological impairments (e.g., multiple sclerosis or stroke). To respond to these needs, both the system (categories) and the process of categorisation have evolved. An open seated category has been added to several sports for competitors with pain-based. Furthermore, the

boundaries between categories have been shifted to enable fairer competition. Visually impaired competitors can compete with or without a guide, as some nations do not have the staff/competitors to provide a guide. In terms of the categorisation process, a documentation tool has been developed to increase accuracy of assessment of competitors with neurological impairments. This tool requires assessments of sitting, standing, or dynamic balance, alongside coordination testing and the usual muscle power or range of motion assessments. This has enabled more accurate and increased validity of assessments and the ability to better match impairment groups in a sport category.

Speed of Progression

At time of writing, there have been five Invictus Games over seven years, four of the five occurred annually or bi-annually in that period. The largest gap in competition was due to the COVID-19 pandemic which resulted in four years between Sydney 2018 and The Hague (originally planned for 2020 before being postponed to 2021 and then to 2022). In comparison, Paralympic cycles run over four years. The Invictus Games schedule challenges the categorisation system to reflect and instigate effective changes quickly for the next competition cycle. Gathering competitor and team staff feedback on categorisation, as the system develops, is essential to ensure competitors and team staff feel engaged in the categorisation system, and not passive recipients of it. Feedback from participants is particularly important as the categorisation system continues to evolve. As a result of the frequent changes made to the system, competitor categorisations cannot stand year-on-year, and each competitor must be reassessed for each Games. This increases workload for the categorisation team and requires frequent re-assessments for competitors who compete in two consecutive Games. It is, however, also an important feature to ensure the integrity of assessment and decision making in the absence of medical documentation verifying a competitor's illness or injury. Furthermore, education of nation staff must occur each year to reflect changes in team staff and changes in the categorisation system.

Discussion

This paper sought to describe an innovative system for non-elite adapted sport categorisation that can support wider access to adapted sport participation. In addition to presenting the Invictus Games categorisation system, we shed light on challenges associated with developing a fair categorisation system for a rapidly changing demographic, and one that services competitors with varying knowledge and access to resources. Although some of the challenges explored here (e.g., the speed of progression) may be unique to the Invictus Games, others may have important implication for non-Invictus Games and indeed non-military sports, competitions, and programming. As such, we highlight three key learnings for the broader parasport community.

Lesson 1: The need for a flexible categorisation system

The impact and value of the welcoming, non-elite categorisation system described in this paper is being felt beyond the Invictus Games. It has also been implemented by other organisations. For example, British Rowing worked with IGF to incorporate IGF categorisations for rowing into the British Rowing Indoor Championships. Similarly, the Canadian and Australian national indoor rowing championships have used the IGF rowing categorisation system to promote competitive categories more inclusive of diverse illnesses and injuries. The system has also been implemented in IGF active esports, promoting adapted sport participation during the pandemic. This virtual approach allowed individuals who may normally not have had opportunity for competition during this time to participate in virtual sports with their community. Thus, through collaboration and partnership, the

Invictus Games categorisation system may provide beneficial guidance to other sport organizations as they seek to further develop the inclusivity of their parasport programming.

Indeed, as the prevalence of acquired or intermittent chronic and neurological conditions increases and the world develops a growing understanding of and reduced stigma towards mental illnesses and injuries (Statistics Canada 2023), there is a need to develop a system that is welcoming, compassionate, and equitable for the diverse individuals who can benefit physically, psychologically, and socially from adapted sport. Many of these individuals may wish to compete but may feel their condition limits equitable participation in non-adapted sport programs. However, such individuals may also be excluded from adapted sport programs as a result of their impairment not fitting within existing classification or categorisation systems. The inclusivity of adapted sport must also be considered in relation to the importance of non-elite competitions like the Invictus Games. Opening categorisation systems for non-elite participants is essential to introducing individuals experiencing diverse disabilities to adapted sport. Individuals experiencing disabilities already face substantial barriers to adapted sport participation (Fitzgerald, 2018; Jaarsma et al., 2014; Martin, 2013); limitations within the categorisation system should not be one of them.

Lesson 2: Changing perspectives on the medicalisation of classification

The process of assessing a competitor's impairments for the Invictus Games is not reliant on medical documentation. The requirement for medical documentation, which is often important for other categorisation systems, can be a deterrent to adapted sport participation (Lawson, 2022). Therefore, while stringent medical documentation may be necessary for classification within the high-performance context, the example illustrated within the Invictus Games system may be a more viable option for non-elite programs seeking to develop a broadly inclusive and barrier free categorisation system. Similarly, offering competitors additional supports throughout the categorisation process (e.g., access to mental health supports, a second panel assessment) may reduce stress and anxiety related to classification. Previous studies have called for increased educational resources for athletes and coaches to support their understanding of classification and, in turn, reduce anxiety (Lawson, 2024).

Lesson 3: A model for categorisation staff training

A final implication is the continuous evolution of categorisation staff and training processes. For early iterations of the Invictus Games, a lack of standardised training and formal categorisation processes had an important impact on competitors' Games performance and experience quality. Important changes were made to improve processes including hiring clinical professional, developing standardized testing, and providing substantial training. As the lack of formal training opportunities for classifiers outside of IPC-mandated training programs has been highlighted in existing literature (Lawson et al., 2022), learning from the formal training structure integrated into the Invictus Games system may be valuable for other adapted sport programs at all levels of competition.

Conclusions

In this review of the Invictus Games categorization system, we sought to present this innovative system, approaches for its implementation, training of categorisers, and lessons learned. The system seeks to increase access to adapted competitive sports for a wider range of illnesses, injuries, and impairments, in a unique population group, whilst still providing a fundamental framework for fair sport which minimizes the impact of impairment on the outcome of competition. There is no doubt that the Invictus Games categorisation system will continue to evolve based on the needs of the Games, the nations, and the competitors,

as well as respond to the natural developments and progressions of each sport in the broader parasport community. Highlighting this system, methods for application, and lessons learned is important for supporting other adapted sport organisations as they develop or modify their own systems. As well, opening discussions on the importance of welcoming and flexible categorization processes for non-elite competitors engaged in adapted sport may promote recovery, rehabilitation, and the full and effective participation of people experience diverse disabilities in society.

Perspectives

By presenting the Invictus Games categorisation system, this manuscript offers unique insight into how classification systems for athletes experiencing disabilities may be developed and implemented. This is an important contribution to the literature as there is limited research to date which has explored how classification systems come into being or influence participants' experience in sport (Lawson et al., 2021). Moreover, this manuscript may prompt further academic discussion pertaining to the inclusion of athletes traditionally deemed to be 'not eligible' for adaptive sport (i.e., those experiencing pain-based impairments and psychological illnesses and injuries). As classification is a factor unique to sport for persons with disabilities that can influence an individual's progression in sport or lead to their involuntary retirement (Bundon et al., 2018; Patatas et al., 2019), it is worth examining how the 'open' categorisation used within the Invictus Games system may be replicated in order to further promote participation in sport by persons with varying disabilities. In turn, the substantial benefits associated with participation in social activities such as sport may be experienced by a wider group of persons with disabilities (Law, 2002; Lavasseur et al., 2009).

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Appendix A – Sports included in the Invictus Games

Games	Sports
London 2014	Athletics (track and field), Cycling, Indoor Rowing, Sitting Volleyball, Swimming, Wheelchair Basketball, Wheelchair Rugby, Archery, Powerlifting
Orlando 2016	Athletics (track and field), Cycling, Indoor Rowing, Sitting Volleyball, Swimming, Wheelchair Basketball, Wheelchair Rugby, Wheelchair Tennis, Archery, Powerlifting, Driving challenge
Toronto 2017	Athletics (track and field), Cycling, Indoor Rowing, Sitting Volleyball, Swimming, Wheelchair Basketball, Wheelchair Rugby, Wheelchair Tennis, Driving Challenge, Golf
Sydney 2018	Non-medal sport: Para-ice hockey Athletics (track, field, horizontal jump), Cycling, Indoor Rowing, Sitting Volleyball, Sailing, Swimming, Wheelchair Basketball, Wheelchair Rugby, Driving Challenge
The Hague 2020 which took place in 2022	Non-medal sport: Golf, Wheelchair Tennis Athletics (track, field, horizontal jump), Cycling, Indoor Rowing, Sitting Volleyball, Swimming, Wheelchair Basketball, Wheelchair Rugby, Driving Challenge (not categorised).

Note. A few sports were not categorized, including Golf and Para-ice hockey. Archery and Powerlifting categorisations were not based on illness/injury but gender, as well as sport-specific features (bow type and novice status for archery, weight for powerlifting). The Driving Challenge, a skill and precision-based event during which teams must navigate obstacles in a prescribed order using Land Rover vehicles, is also not categorized.



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