GOLF FOR THE DISABLED (G4D)

INCLUSION, CLASSIFICATION, CARE, AND PERFORMANCE

– Written by Roger Hawkes, the Netherlands and Tony Bennett, Switzerland

GOLF FOR THE DISABLED (G4D): INCLUSION, CLASSIFICATION, CARE, AND PERFORMANCE

In 2016, Martin-Ginis and colleagues highlighted the critical importance of sport for people with disability to help improve health outcomes[1], while others outline that sport can challenge negative stereotypes about disability[2] and provide opportunities for full participation in social life[3]. The current paper on golf for the disabled (G4D) highlights why golf can be considered an inclusive sport, how the game is ensuring that the mainstream sport is accessible for players with a wide range of impairments, and describes key considerations for classification, clinical care and to support maximum performance in these players.

General agreement across the disability landscape suggests that, to an extent, the individual's level of participation in society is a result of the "level of physical, mental, or emotional functioning ... associated with the nature of the interaction a person has with all aspects of his or her environment"[4]. Sport in general, and golf specifically, has the potential to increase physical activity for people with a disability, while also providing social and economic benefits.

The nature of the sport of golf, a game which has a stationary ball and can be played sitting as well as standing, is ideal for participants with a wide range of disabilities not always catered for in other sports. Golf can be played alone or with others. The World Handicap System ensures meaningful competition between men and women, professional and amateurs, persons without and individuals with disability, all playing together. Golf can be played at a driving range or on a golf course and the thrill of hitting the ball can be experienced at a more entry level, for example with large plastic clubs aimed at targets, in schools and rehabilitation facilities.

Misener and Darcy (2014)[5] outlined that people with disabilities must have the opportunity to choose their preferred method of participation. Many sports have parallel, adapted or even separate versions of their sport for individuals with disability. Golf has not needed to create a parallel version of itself. Some modifications to the rules are required and up until the 1st January 2023 these were set out in a separate document to the rules of golf. Now these modifications are fully incorporated into the rules of golf. Players eligible to use the modifications can do so without having to request their use or provide further evidence to the organiser.

Golf has been criticised for its lack of inclusivity based on gender, race and disability; golfers with disability are underrepresented in golf clubs. Indeed, of the 151 National Golf Federations, less than a handful have any meaningful data on the numbers of registered players that self-identify as being disabled. However, the federations are increasingly willing to ask such questions of their member clubs, and many are getting engaged in the development of golf for players with disability.

Golf is played by 66.6 million registered players world-wide and because of the existing infrastructure has potential for growth to accommodate individuals with disability and even to impact public health targets aimed at reducing inactivity[6]. Golf has been shown to be a health enhancing





physical activity, has relatively low injury rates and evidence of associated longevity in those that play it regularly[7]. It is also known that people with disability have fewer opportunities to be active than those without disability and so there may be even more benefits from their participation[8].

CREATING AN INTERNATIONAL AGENCY FOR DISABILITY GOLF

EDGA, formerly the European Disabled Golf Association, was formed as an international agency to provide disability golf expertise, training and knowledge to the national golf federations and to the various international governing agencies of golf. EDGA's aim is to see an increase of 500 000 players with disability over the next 25 years. It is doing this by providing or facilitating the following objectives:

1. Raise awareness of golf as a viable sporting option for individuals with disabilities.
2. Establish and maintain a meaningful and robust eligibility standard for the 10 eligible impairments defined by the International Paralympic Committee and other governmentally recognised impairments.
3. Create, publish and maintain the rules and regulations of the eligibility standard and classification.
4. Develop a relevant programme to train eligibility assessors.
5. Establish a meaningful player pathway, from sampler starter sessions to participant engagement programmes, and finally to competitive opportunities at the national and international level.
6. Train coaches to introduce individuals with disability to the game and coach golfers with disability to develop new skills.
7. Approve, deliver and assist organisers to run golf for the disabled tournaments.
8. Expand opportunities for the career progression of golfers with disability to have legitimate and full participation in all golfing institutions, as players, and in decision making roles. Use a proven 8 stage pathway to build industry capacity to serve individuals with disabilities at every level of the sport.
9. Protect and enhance the health of golfers with disabilities.

EDGA now consults with more than 45 national federations on tournament, development or training/education initiatives.

Ultimately EDGA intends to shrink into the background as the logical development would be for each National Federations to have their own in-house expertise, run tournaments, train its coaches and perform eligibility assessments. The International Golf Federation (IGF) will be responsible for eligibility standard setting and defining the minimum level of impairment for the 10 IPC impairment categories and will develop and maintain the rules and governance standards.

ELIGIBILITY STANDARD FOR GOLFERS WITH DISABILITIES

A short to medium term aim is to further finesse the *minimum level of impairment* for each of the 10 eligible impairments and for there to be equity between the standard for each eligible impairment to facilitate meaningful competition. Players should be rewarded for their ambition, training and skill level reached. It is vital that winners are not those players with the least impairment or that a single impairment category provides a clear advantage compared to other categories.

To date, the World Rankings have not been dominated by any impairment category. In Figure 1, each of the colours represents a different impairment category.

The majority of competitions use the golf World Handicap System (a golf handicap is a numerical measure of a golfer's typical performance that is used to enable players of varying abilities to compete against one another), but for elite events players compete without modifications to their score based on predicted ability using the eligibility standard. It is based on the IPC eligible impairments, shown in Table 1.

The eligibility standard has evolved over 23 years, is constantly updated and was last reviewed at the London International Conference, organised by the International Golf Federation in 2020. The review involved the EDGA Central Eligibility Team, eligibility assessors and representatives from the member National Federations. The aim was to review and agree on a *minimum level of impairment* for each of the ten eligible categories and to decide how the standards could be "proven" or "enhanced" over time. Most importantly it also considered how the standard could be assessed consistently across the world especially in view of the enormous growth in recent years. Almost 80% of EDGA's competitive pass holders registered in the years 2019-2022, in part due to a four-fold growth in federation membership since 2014 to 39.

1	*Neurological*	*hypertonia/weakness*
2	*Musculoskeletal*	*range of movement/weakness*
3	*Limb Length*	
4	*Short Stature*	
5	*Limb Length*	
6	*Musculoskeletal*	*range of movement/weakness*
7	*Amputation*	*above knee*
8	*Amputation*	*above knee*
9	*Neurological*	*hypertonia/weakness*
10	*Amputation*	*above knee*
11	*Musculoskeletal*	*range of movement/weakness*
12	*Musculoskeletal*	*range of movement/weakness*
13	*Amputation*	*below knee*
14	*Amputation*	*above knee*
15	*Neurological*	*hypertonia/weakness*
16	*Amputation*	*below knee*
17	*Amputation*	*above knee*
18	*Amputation*	*above knee*
19	*Neurological*	*ataxia*
20	*Amputation*	*bilateral below knee*
21	*Intellectual impairment*	*ii1*
22	*Spinal cord*	
23	*Amputation*	*above knee*
24	*Amputation*	*below knee*
25	*Intellectual impairment*	*ii3*
26	*Neurological*	*hypertonia/weakness*
27	*Musculoskeletal*	*range of movement/weakness*
28	*Intellectual impairment*	*ii1*
29	*Amputation*	*below knee*
30	*Amputation*	*above knee*

Figure 1: Impairment category for the 30 top golfers with disability in the World Rankings for Golfers with Disabilities, March 2021.

Eligibility for individuals is determined by expert assessors. Eligibility Assessors (EAs) are either physiotherapists or doctors with experience of disability and an interest in golf. Each National Federation is asked to appoint a National Eligibility Assessor (NEA) to manage assessors in that country, to decide the number of eligibility assessors required and to recruit more if there is any shortfall. The NEAs are the conduit by which information is shared between EDGA, the IGF and the National Federations. They also assess players with impairments outside of the 10 IPC eligible impairments but which, in that country, may be considered a disability. That way a wider group of players with disability are encouraged to play golf. In such a case, a player will be awarded an Access Conditional Pass, which will allow them to enter relevant events in that country, but not accumulate world ranking points.

EDGA is also responsible for training eligibility assessors, and have recently, in collaboration with the Shirley Ryan Ability Lab, a leading disability Hospital in the United States, have produced an online training system which provides the theoretical knowledge required to satisfactorily assess players and to use the online assessment system. This training can be accessed free of charge after contacting your National Eligibility Assessor or registering at eligibility assessor applications.

THE PLAYER PATHWAY

Currently an interested player can apply for an assessment by registering at the EDGA website. They must provide medical information and relevant photographic evidence. An Eligibility Assessor is available at most EDGA organised tournaments and players are assessed on one of the practice days. If the player is shown to be eligible, they will be given a World Ranking pass (Wr4GD Pass) and they will be able to earn World Ranking Points based on their performance against the course.

If a player does not meet the minimum level of impairment, they are provided with an Access Pass which will allow them to

Table 1

	Impairment	Explanation
A	IMPAIRED MUSCLE POWER	Reduced force generated by muscle or muscle groups, may occur in one limb or the lower half of the body, as caused by example, by spinal cord injuries, Spina Bifida or Poliomyelitis.
B	IMPAIRED PASSIVE RANGE OF MOVEMENT	Range of movement in one or more joints is reduced permanently. Joints that can move beyond the average range of motion, joint instability and acute conditions such as arthritis are not considered eligible impairments.
C	LIMB DEFICIENCY	Total or partial absence of bones or joints, from birth or as a consequence of trauma (e.g. car accident or amputation, illness (e.g. bone cancer).
D	LEG/ARM LENGTH DIFFERENCE	Bone shortening in one leg/arm from birth or trauma etc.
E	SHORT STATURE	Reduced standing height due to abnormal dimensions of bones of upper and lower limbs or trunk.
F	HYPERTONIA	Abnormal increase in muscle tension – reduced ability of a muscle to stretch, which can result in injury, illness or a health condition such as cerebral palsy.
G	ATAXIA	Lack of co-ordination of muscle movements due to a neurological condition such as cerebral palsy, brain injury or multiple sclerosis.
H	ATHETOSIS	Generally characterized by unbalanced, uncontrolled, movements and a difficulty in maintaining a symmetrical posture – due to cerebral palsy, multiple sclerosis or other conditions.
I	VISUAL IMPAIRMENT	Vision is impacted by either an impairment of the eye structure, optical nerve/pathways or part of the brain controlling vision (visual cortex).
J	INTELLECTUAL IMPAIRMENT Additional impairment: NEURODEVELOPMENTAL DISORDERS	Limitation in intellectual functioning and adaptive behavior as expressed in conceptual, social, and practical adaptive skills, which originates before the age of 22.

Table 1: The 10 International Paralympic Committee Eligible Impairments (modified by EDGA).

play in G4D tournaments, but they will not be able to accumulate world ranking points. That way inclusion and competitive fairness are both prioritised and players are not discouraged from playing. EDGA and the golfing world are not seen to be deciding on who is and who is not "disabled", but competitive fairness is retained.

All the physical assessments are completed by the Eligibility Assessors, but specialist teams are involved in the assessment of players with visual disability, intellectual impairment and neuro developmental disorders.

THE TOURNAMENT SYSTEM

The aim of the tournament system is to provide playing opportunities for elite players and to publicise these events to encourage other individuals with disability to try out golf. Tournaments promoted by EDGA will continue to showcase how players with disability can adapt to playing golf. Most events are in the open format, with players from all 10 eligible impairments playing together. A fundamental value of the game is that "Golf Plays Together".

Golf requires a variety of skills to perform well. For example, players will need power generation, fine motor control, cognitive analysis, attention focus control, and emotional resilience. Over the last two years, EDGA has been looking at ways of showing how players in all eligible impairment categories *adapt to play the game* at the highest level. They have now introduced a number of *sport classes*, largely determined by the way that the player plays the sport, e.g. in a sitting position or in a standing position, and there is a further subdivision, determined by the extent of the impairment. Prizes can then be awarded and skill levels can be appreciated in each of the 9 different sport classes highlighted in Table 2a, and Table 2b.

In team events it is likely that these categories will be further sub categorised into a smaller number of *bands* which are determined by performance measures. A team would have a player in each of the four bands and each would contribute to a team score. This concept is presently under development and further work will be needed to create a robust and fair system.

Lessons from the Paralympics and other disability sport include a clear requirement for those looking after the athletes (including for example physiotherapists, doctors, strength and conditioning coaches, psychologists, and sports scientists) at their training environment/home country to provide the same essentials as they would to any athlete. This includes appropriate advice regarding injury prevention, illness prevention, warm up, physical preparation, sleep, nutrition, and the prompt assessment of any illness or any injury when it does occur. Some specific considerations relate to impairment categories, and having access to relevant prosthetic experts, optometrists or whichever health professionals are most relevant to the player.

The golf and health facilities at a tournament for G4D golfers are set up to ensure that golfers can access all relevant facilities, and that illness and injury can be

Table 2a

Sport Class		
Sitting	*1*	*Si1*
Sitting	*2*	*Si2*
Standing	*1*	*St1*
Standing	*2*	*St2*
Standing	*3*	*St3*
Visual	*1*	*Vi1*
Visual	*2*	*Vi2*
Intelectual	*1*	*In1*
Intelectual	*2*	*In2*

Table 2b

Sport Class	Class Code	Allocation criterion	Examples	Comment
Sitting 1	*Si1*	*Players with impaired trunk control, poor sitting balance and no independent standing balance.*	*High SCL (T12 and above), complete paralysis (e.g. MS/stroke).*	*All seated players remain seated for the entire round. Likely stabilise with one hand and play with the other.*
Sitting 2	*Si2*	*Players with active trunk control, sitting balance, minimal unsupported standing balance and unable to play standing without support.*	*Low SCL (L1 and below), ataxia involving more than one limb, bilateral lower limb amputees (e.g. Aak), moderate paralysis (e.g. MS/stroke).*	*All seated players remain seated for the entire round.* *Likely play with two hands.*
Standing 1	*St1*	*Players with impaired static standing balance and multiple limb impairments such as amputations, MSK weakness, hypertonicity and ataxia.*	*Incomplete High SCL, bilateral lower limb and/ or multiple limb amputations (e.g. arm and leg or three limb), hemiplegia or bilateral phocomelia.*	*Buggy allocation.*
Standing 2	*St2*	*Players with impaired dynamic standing balance. Players with unilateral upper limb impairments such as amputation/ altered limb length/ altered muscle tone. Extensive spinal stiffness.*	*Incomplete Low SCL, Aak, Aae, Abe, bilateral lower limb spasticity, or ataxia, spinal reduced ROM neck AND back rotation.*	*Probable buggy allocation if lower limb implications over three rounds.*
Standing 3	*St3*	*Players with good dynamic standing*	*Abk, Short stature, mild*	*Possible buggy allocation*

Table 2: a) Golf Sport Classes. b) Further definition of each Golf Sport Class. SCL=spinal cord lesion. Aak=above knee amputation. Aae=above elbow amputation Abe=below elbow amputation. MS=multiple sclerosis. ROM=range of movement.

promptly attended to. The G4D competitors receive support from physiotherapists, sports medicine, strength and conditioning and nutrition professionals at events, in the same way DP World Tour players would at DP World Tour events. About 80% of the illnesses (for example hay fever, viral illness, depression, asthma) and injuries (back, neck, and wrist) are very similar to the non-disabled player, while having additional knowledge of specific illnesses and injuries (blisters from prothesis, increased forces through some joints due to restriction or absence of others) that can occur is important.

For spectators and television viewers, it is important that what they are watching is understandable, and how categories create a framework for competition and ultimately how winners are determined. The LEXI system of symbols illustrates each *sport class* in less than 10 seconds so that the player and the spectator alike can get on and concentrate on the sporting spectacle rather than being distracted by how and why categories are put together.

WHAT NEXT for G4D?

The UN Convention for Disability defines persons with disabilities as those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others. This is an important lever for change and government development funding may become more dependent on how a sport manages inclusion and diversity and will be important for the continued development of golf in many countries.

Until now the Eligibility Standard has been determined by consensus. It is important that studies should be undertaken to verify this. For this reason, EDGA has appointed a Chief Medical and Scientific Officer whose remit will include overseeing a research programme. For example, a published survey has shown the need for a "golf specific" visual impairment standard[9].

Finally, any new development in sport needs to recognise a duty of care for the players who have modified their lives to become involved in the increasing tournament opportunities now available. A risk analysis may suggest players with disability are more vulnerable to the physical demands of travel and multi-day tournament play. For example, it is not known how players with amputations or players with autistic spectrum disorder





(ASD)will react to their additional stress of travel and multiday tournaments. There is a duty of care for those involved to continually assess these risks. The newly appointed Chief Medical Officer will need to identify risk factors for physical and mental health issues.

CONCLUSION

Golf, for players with disability, has grown significantly over the last decade. The distributed leadership structure within golf is very supportive of the development. The international federation, the IGF, has supported the sport in the development of the eligibility standard, and the R&A and USGA (the International Rules Organisations) have incorporated the modification of the rules of golf to allow seamless involvement of player with disability and is providing playing opportunities at all levels. The DP World Tour and the R&A (in their Tournament organising role) have provided playing opportunities at the top-level and alongside elite non-disabled players at European Tour Events.

It is important that the whole golf industry, eliminates any unintended discrimination and works towards increased participation for players with disability. As the number of players builds it will become easier to convince the world outside of golf that the game is a fun and realistic option for players with disability and that schools and rehabilitation units can promote golf alongside traditional activities.

There are considerable opportunities for health professionals to provide care to golfers with disability, where they train, and where they compete. There is also a clear need to globally grow the number of physiotherapy, medical and allied colleagues who can accurately classify individuals to support fairness and inclusion.

References

1. *Martin-Ginis, K.A., Ma, J.K., Latimer-Cheung, A.E. and Rimmer, J.H. (2016). 'A systematic review of review articles addressing factors related to physical activity participation among children and adults with physical disabilities', Health Psychology Review, 10(4), pp. 478-94.*
2. *Hardin, M. and Hardin, B. (2004) 'The "supercrip" in sport media: wheelchair athletes discuss hegemony's disabled hero, Sociology of Sport Online, 7(1)*
3. *Carroll, P., Witten, K., Calder-Dawe, O., Smith, M., Kearns, R., Asiasiga, L., Lin, J., Kayes, N. and Mavoa, S. (2018). 'Enabling participation for disabled young people: study protocol', BMC Public Health. 18(712), pp. 1-11.*
4. *Altman, B.M. (2014) 'Definitions, concepts, and measures of disability', Annals of Epidemiology, 24(1), pp.2-7.*
5. *Misener, L. and Darcy, S. (2014) 'Managing disability sport: from athletes with disabilities to inclusive organisational perspectives', Sport Management Review, 17(1), pp. 1-7.*
6. *World Health Organization. Global action plan on physical activity 2018-2030: more active people for a healthier world. World Health Organization; 2019 Jan 21*
7. *Murray AD, Daines L, Archibald D, Hawkes RA, Schiphorst C, Kelly P, Grant L, Mutrie N. The relationships between golf and health: a scoping review. British journal of sports medicine. 2017 Jan 1;51(1):12-9.*
8. *Carroll, Dianna D et al. "Vital Signs: Disability and Physical Activity — United States, 2009–2012." MMWR. Morbidity and mortality weekly report 63.18 (2014): 407–413. Print.*
9. *Hynes NJ, Beukes EW, Hawkes R, Bennett HA, Hamilton C, Jayabalan P, Allen PM. Evidence-based classification in golf for athletes with a vision impairment: A Delphi study. Ophthalmic and Physiological Optics. 2022 Nov;42(6):1193-203.*

Roger Hawkes M.D.

Director of Eligibility

Medical and Scientific Department, EDGA (formerly European Disabled Golf Association)

Wassenaar, the Netherlands

Tony Bennett Ph.D.

Disability and Inclusion

International Golf Federation

Lausanne, Switzerland

Contact: roger@hawkes.co