



Article

Inclusive opportunities to participate in tennis from the perspectives of people with and without intellectual or physical disability

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Abstract: Participation in sport and exercise as leisure activities is a human right for everyone. As in many other sports, opportunities to participate in tennis for people with disabilities are often exclusively for specific target groups, such as wheelchair tennis or comparable opportunities for people with intellectual disabilities. Moreover, people with disabilities are rarely asked about their own perspectives on (inclusive) sport events. Therefore, 21 recreational tennis players with disability (12 Special Olympics and nine wheelchair tennis players) and 21 without disability, as well as 14 trainers and other representatives were surveyed before and after several integrative and inclusive competition events using a sports-related version of the index for inclusion. Players with and without disability did not differ in their perception of inclusive opportunities in tennis. Although both tennis players with and without disability appear to be content with the situation regarding inclusive tennis opportunities, accessibility seems to be a major issue. The results indicate that there is a need for further awareness-raising through different tennis opportunities.

Keywords: inclusion; Index for Inclusion; mixed-ability; Paralympics; physical activity; Special Olympics; sports; Unified; wheelchair tennis

Introduction

There are manifold positive effects of regular participation in sport and exercise on all aspects of health, including physical (Warburton & Bredin, 2017) and psychosocial well-being (Andersen et al., 2019; Wankel & Berger, 1990). This is irrespective of gender, age, nationality and applies for all people, including people with disabilities (Martin Ginis et al., 2021). Nevertheless, people with disabilities are typically less physically active and show more sedentary behaviour compared to people without disabilities (Oviedo et al., 2019; Rimmer & Marques, 2012). However, participation in sport and physical activity is a basic human right and is anchored in various political documents and recommendations. To date, there have been specific recommendations for physical activity and participation in sport for people with disabilities. In relation to concrete recommendations, the World Health Organization (WHO) recently renewed its physical activity guidelines and included people with disabilities with basically the same recommendations - 150 minutes of moderate intensity and two times muscle strengthening activities per week - as for people without disabilities (Bull et al., 2020). Another official document at a sociopolitical level is the Convention on the Rights of Persons with Disabilities (UN-CRPD; United Nations, 2006). In Article 30, the right of people with disabilities to participate in exercise and sport as leisure activities is clearly stipulated. While political and binding documents as well as

recommendations do exist, opportunities for the target groups are often limited, especially in terms of choice of options.

There are different approaches to the categorization of sport and physical activity opportunities for people with disabilities, e. g., the spectrum model of inclusion (Stevenson, 2009). Based on this model, offers can be divided into separate, parallel, disability sport, open (inclusive) and modified activities (Black & Williamson, 2016). Separate opportunities are aimed at a specific type of disability, and usually take place separately from other events, such as the situation of the Paralympics taking place after the Olympic Games. Parallel opportunities are competitions for people with and without disabilities taking place at the same time and location, but participants perform in their specific classes. Taking the example from before, this would mean the Paralympics and Olympic Games taking place at the same time and location, as has been discussed in the media and through representatives for the last few years (Walker, 2019). The other three activities are related to more inclusive approaches. Disability sport refers to people without disabilities being integrated into sports for people with disabilities. Open activities are those in which everyone can play together with minimal or no adaptations and finally, modified activities, where adaptations are made to ensure that participants with and without disabilities perform together, either on the same team and/or against each other. Common examples are mixed-ability events (Corazza & Dyer, 2017) or Unified sports (Kreinbacher-Bekerle et al., 2024). These adaptations enable typically separate offers like Paralympics or Special Olympics to create inclusive events.

Inclusive sport opportunities have the potential to increase the participation of people with disabilities in sport as a leisure activity (Doll-Tepper, 2012). Irrespective of the type of sport events for people with disabilities, the potential in terms of social inclusion has been highlighted in many studies (Asunta et al., 2022), but has also been the subject of controversy lately (Giese et al., 2022). To create inclusive opportunities could be a benefit and would have advantages at an individual level as well as in terms of social inclusion (Greve et al., 2021). Social inclusion refers to the interaction between interpersonal relationships and community participation (Simplican et al., 2015), both aspects to which participation in sport can highly contribute. However, the perspectives of people with disabilities about participation in inclusive events, e.g., in the preparation and implementation of a tournament, have not been addressed thoroughly. Especially under the circumstances that the expectations of people with disabilities can be different from those of organisers (Jobst & Kreinbacher-Bekerle, 2025) and the integration of different perspectives remains unclear as well as potentially challenging (Orr et al., 2021). So far, mainly coaches of people with different disabilities have been asked about barriers and facilitators (Sakalidis et al., 2023), the view of athletes especially with intellectual disabilities, has rarely been investigated (Hansen et al., 2023). A helpful working tool in this context could be the sports-related version of the Index for Inclusion (Booth & Ainscow, 2011), which is a practical instrument to evaluate inclusion in sport clubs and allows to bundle the perspectives of players, coaches, and representatives (National Paralympic Committee Germany, 2014).

In the sport of tennis, there are mainly separate opportunities for specific target groups, such as wheelchair tennis or comparable opportunities for people with intellectual disabilities, deafness, or blindness. Wheelchair tennis has a long tradition (Fuller, 2019), with supporting benefits to the psychological well-being of the participants (Greenwood et al., 1990). Wheelchair tennis follows the same tennis rules, with the only difference being that the ball can bounce twice (International Tennis Federation, 2023a). Sport for people with intellectual disabilities is mainly part of the Special Olympics movement (Burns, 2018) and differs from traditional sports culture, e.g., focussing more on socially inclusive aspects of sport (McConkey, 2016). Data for tennis players with intellectual disabilities in the context

of Special Olympics are rare and so far, only relate to coaches (Orbán-Sebestyén et al., 2023). Tennis in the Special Olympics was first divided into specific levels for people with intellectual disabilities, but recently uses a specific rating format as well, which is called the International Tennis Number (ITN) (Special Olympics, 2023). Since 2020, there have been attempts by the International Tennis Federation to transfer the ITN to the World Tennis Number (WTN) (International Tennis Federation, 2023b). In this rating format, everyone has a rating from 1 to 40, based on their experience, whereas, in the ITN which has been adopted in Austria as an example country, the rating is from 1 to 10, and has been used since 2009 (Austrian Tennis Federation, 2023). The principles and procedures are similar for both systems as they are dynamic and change immediately after each competitive match, depending on the result and considering the ranking of the opponent. One big advantage of this or similar rating systems — e.g., the “handicap” in golf — is that everybody with comparable ratings can compete with or against each other. These rating systems are per se highly inclusive, e.g., everyone can play together or against each other, irrespective of age, gender, origin of birth, or potential disability.

Against this backdrop, the aim of this study was to focus on the perspectives of tennis players with and without disability before and after integrative (parallel) and inclusive (open-modified) tennis events, according to the ITN scoring system. As a proxy case study in a specific region of Austria, this should give some insight into increasing inclusive tennis opportunities for people with and without disabilities from different perspectives.

Materials and Methods

Procedure

From 2020 to 2022, four integrative and three inclusive tennis events ($N = 7$) were organized based on the ITN scoring format in the region of Styria (federal state of Austria). The four integrative events were imbedded in regional tournaments which offered classes for men, women, and seniors as well as for Special Olympics and wheelchair tennis. According to the spectrum model of inclusion (Black & Williamson, 2016), the integrative events were classified as parallel events. The three inclusive events were tournaments in which people, irrespective of their age, gender, or disability, played with or against each other. Thus, people without disabilities, Special Olympics players, and wheelchair tennis players competed against each other according to their ITN rating. These events would be classified according to the spectrum model of inclusion (Black & Williamson, 2016) as open-modified activities. The number of players per tournament and type are depicted in Table 1.

Table 1. Number of players with and without disabilities in integrative and inclusive tournaments.

Event year	Type	Special Olympics	Wheelchair	Other players
2020	Integrative	11	4	220
	Inclusive	6	3	4
	Integrative	9	8	53
2021	Integrative	10	7	108
	Inclusive	5	7	3/206a
2022	Inclusive	0	11	11
	Integrative	5	7	116
Total	7 events	46	47	515/718

Note: n = Number of players. ^a The inclusive tournament in 2021 was integrated in another tournament. In the inclusive part of the tournament, three players without disabilities took part. In the whole tournament, 206 players without disabilities played in different age- and gender-related classes.

An initial examination was conducted around the first event at the beginning of 2020, and a follow-up was conducted after the completion of the events in 2022. Players with

intellectual and physical disability were included, as well as their trainers and representatives as a reference group.

The implementation of the study was based on the declaration of Helsinki and approved by the ethics committee of the University of Graz (39/16/63 ex 2023/24) as well as the regional tennis federation. Participants or their legal representatives were given informed consent and had the chance to withdraw at any time without giving a reason.

Participants

In the initial examination, 56 people (22% female out of 50; six without gender details) with an age from 17 to 66 years ($M = 39.9$, $SD = 11.9$) and tennis-related experience from 1 to 43 years ($M = 17.2$, $SD = 10.9$) participated. Therefore, these people can be considered highly experienced in tennis. Of the 56 people, there were 42 tennis players and 14 staff members. Twelve players were from Special Olympics (people with intellectual disability), nine wheelchair tennis players with a physical disability, and 21 players without disability. The general aim of including players without disability in the initial examination was to have a comparable sample and a reference group. To draw a holistic picture of the current situation, 14 additional people involved people and were asked to complete the questionnaire, six of whom were trainers for Special Olympics or wheelchair tennis players, three were other trainers, and five were board members of the regional tennis federation, so called staff members (see Table 2 for characteristics). Although the groups did not differ in gender and age, tennis experience differed slightly. Post-hoc tests revealed that the players without disabilities had significantly more tennis experience than the Special Olympics players ($U = 39.50$, $p = .007$), wheelchair players ($U = 31.50$, $p = .045$), and staff members ($U = 22.00$, $p < .001$).

Table 2. Participant characteristics of tennis players and additional people.

Category	Special Olympics	Wheelchair	Other players	Staff members	Test statistic
Gender (n)					$\chi^2 = 1.77$, $df = 3$, $p = .622$
Female	3	3	3	2	
Male	9	5	13	12	
No details	0	1	5	0	
Age					$H = 6.08$, $df = 3$, $p = .108$
range (y)	17–66	28–55	19–63	22–60	
M_{age} (SD)	37.92 (13.28)	45.25 (9.82)	36.13 (12.10)	42.93 (10.89)	
Tennis experience					$H = 16.66$, $df = 3$, $p = .001$
range (y)	4–40	2–33	11–43	1–33	
M_{exp} (SD)	15.58 (10.87)	16.50 (10.62)	25.00 (8.47)	10.07 (8.55)	

In the follow-up examination after the completion of the events, 18 people took part (29% female; age: $M = 44.3$, $SD = 11.5$ years; tennis experience: $M = 17.1$, $SD = 10.4$ years). Of these, seven were Special Olympics players and five were wheelchair tennis players. No players without disabilities were included in the follow-up because the perspective of tennis players with disabilities was the focus of this study, and the others only served as a comparison at the beginning. Six staff members, including three trainers of players with disabilities and three board members also took part.

Instruments

A sports-related questionnaire based on the Index for Inclusion (Booth & Ainscow, 2011) was used in the initial and the follow-up examination. The Index for Inclusion is originally a working tool to enhance inclusion in the school context, with the aim of obtaining an overview of all people involved. In German-speaking countries, the Index for Inclusion has been implemented in the sports domain with a questionnaire specially designed for use

in sport clubs and federations (National Paralympic Committee Germany, 2014). The questionnaire consisted of four versions, one for players in general, one easy-to-read version, one for trainers, and one for board members, with specific similarities in the questions. Besides sociodemographic data (three items), the survey for players consisted of 22 items based on a 4-point Likert scale measuring agreement (except open-ended questions) in four parts (see example questions for each part): (A) welcome culture (seven items): ‘I feel respected and appreciated.’ (B) accessibility (four items): ‘The access to the tennis facilities is easily possible.’ (C) tennis-specific opportunities (seven items): ‘The rules and principles in our group/club are fair.’ (D) open-ended questions (four items): ‘What do I like?’, ‘What is important to me?’, ‘What do I want to change?’, and ‘Is there anything else you want to tell us?’. The questions for the Special Olympics players were given in an easy-to-read language format. The questions for staff members included five additional general questions. The version for trainers thus had 29 items (part A: 7, B: 6, and C: 7) and the version for representatives of the federation had 30 items (A: 8, B: 5, and C: 8).

Data Analysis

In addition to the presentation of descriptive data, an analysis was conducted between players with and without disability, as well as between the initial and follow-up examinations. In the sports-related version of the Index for Inclusion, the mean value for each of the three domains was used as a dependent variable. Due to the small sample size and the fact that the data were not normally distributed, Kruskal-Wallis (for differences between players) and Mann-Whitney U-tests (for differences between examinations), as non-parametric tests, were conducted. All analyses were performed in SPSS version 27.

Results

Comparison based on the Index for Inclusion

The Special Olympics and the wheelchair tennis players were compared with players without disabilities in the three categories of the Index for Inclusion in the initial examination (see Table 3). There was a statistically significant difference in the category of welcome culture. Post-hoc tests revealed that there was no difference between Special Olympics and wheelchair players ($U = 47.00$, $p = .651$), but both Special Olympic players ($U = 47.00$, $p = .002$) and wheelchair players ($U = 35.50$, $p = .006$) scored higher values than players without disabilities. No differences were found in the other two categories: accessibility and tennis-specific opportunities.

Table 3. Comparison of the tennis players in the initial examination.

Category	Special Olympics ($n = 12$)	Wheelchair ($n = 9$)	Other players ($n = 21$)	Test statistic
Welcome culture	1.17 (0.21)	1.19 (0.36)	1.62 (0.40)	$H = 12.67$, $df = 2$, $p = .002$
Accessibility	1.46 (0.45)	1.47 (0.38)	1.87 (0.55)	$H = 4.13$, $df = 2$, $p = .127$
Tennis-specific opportunities	1.91 (0.14)	2.09 (0.37)	2.20 (0.26)	$H = 5.09$, $df = 2$, $p = .078$

Furthermore, a comparison between the initial ($n = 21$) and follow-up examination ($n = 12$) for tennis players was conducted. Whereas there appears to be no difference in the category of welcome culture ($U = 100.50$, $p = .345$), the categories of accessibility ($U = 70.99$, $p = .036$), and tennis-specific opportunities ($U = 24.00$, $p < .001$) showed significant differences. After the completion of inclusive and integrative events, tennis players with disabilities rated the categories accessibility ($M = 1.15$, $SD = 0.23$) and tennis-specific opportunities ($M = 1.41$, $SD = 0.20$) higher than before these events (accessibility: $M = 1.46$, $SD = 0.41$; tennis-specific opportunities: $M = 1.98$, $SD = 0.40$).

The analysis for staff members and trainers was conducted separately because their questionnaire differed from that used for tennis players. In contrast to the players, the staff members and trainers' answers did not differ between the initial and follow-up examinations (see Table 4).

Table 4. Comparison of staff members and trainers between the initial and follow-up examinations.

Category	Initial examination (n = 14)	Follow-up examination (n = 6)	Test statistic
Welcome culture	1.20 (0.24)	1.12 (0.23)	$U = 29.50, p = .312$
Accessibility	1.89 (0.51)	1.80 (0.45)	$U = 37.50, p = .718$
Tennis-specific opportunities	2.00 (0.77)	1.69 (0.75)	$U = 30.50, p = .353$

Open-ended questions

In general, there was a lot of positive feedback on the operation of the inclusive and integrative events in the open-ended questions. The main critical points were mentioned according to accessibility. Players with a physical disability, in particular, recalled problems with stairs, other obstacles, locker rooms, parking, and access to tennis courts. This was also reflected in the statement of a wheelchair tennis player: ‘We absolutely need more wheelchair-accessible sport facilities and unrestricted accessibility to locker rooms, toilets, and restaurants.’ In this context, it was mentioned that players with wheelchairs were sometimes not permitted to play on clay courts, due to the possibility of damaging the court with their wheelchair. Other points mentioned by players with disabilities were more common and joint events for people with and without disabilities, being included in the regular club events, and including the topics of disability and inclusion in the general educational training of coaches and trainers.

From the perspective of the representatives, accessibility was also a critical point, but it was added that ‘the conditions and environment for wheelchair tennis are constantly improving’. They also highly valued ‘the fact that inclusion has become a topic at all in the last few years and now is permanently anchored’. The representatives also demanded that ‘the fear of contact with people with disabilities may continue to decrease’, and similar to the players’ opinion, inclusion should be a topic for coaches in their educational training.

Discussion

To the best of the author’s knowledge, this is the first empirical investigation to have implemented the perspectives of different tennis players and representatives on inclusive and integrative tennis events with the help of a sports-related version of the Index for Inclusion (Booth & Ainscow, 2011; National Paralympic Committee Germany, 2014). The strength of the Index for Inclusion is that it covers a whole and holistic approach to get the views of all people involved in sports activities. Comparable investigations in other sports used similar approaches (Haynes et al., 2024). The data in the current study suggest that, in general, people with and without disabilities were very content with the opportunities available to them and only mentioned minor critical points. Furthermore, people with disabilities seemed very welcomed within those opportunities according to their self-reporting. In the other domains of accessibility and tennis-specific opportunities, there were no differences in the initial examination, and there were also no differences between Special Olympics and wheelchair tennis players. In the initial examination, welcome culture was rated very good, accessibility varied, depending on who was asked, and the tennis-specific opportunities were rated good. Surprisingly, accessibility was rated very positively in the predetermined quantitative questions. However, players with physical disabilities mentioned the lack of accessibility in the open-ended questions about their needs. A possible explanation could be that the format of these questions was not appropriate, or people with

disabilities are already used to coping with challenges in terms of accessibility and therefore perceive them differently.

The topic of accessibility is an important step to ensure that people with disabilities can take part in sport and physical activity opportunities, which is one of the five domains based on a human rights perspective of sport participation (Aichele, 2012). The current results are comparable to empirical findings from Germany (Bükers & Wibowo, 2020), which highlight that the situation could be improved. Accessible sports facilities are associated with increased physical activity (Lee et al., 2016), can motivate players to practice, and ensure social interactions within sport and physical activity opportunities (Sá et al., 2012). In addition to the physical barriers mentioned by the tennis players in the current survey, such as access to and from the tennis courts, the use of facilities, communication was also an issue, especially for players with intellectual disabilities. Besides accessibility, there might be some other challenges and opportunities for inclusive sport events, such as the attitudes of people without disabilities to the participation of players with disabilities, available resources, and needs (Becker & Anneken, 2013). Additional information from the current investigation suggests that through bidirectional exchanges during integrative and inclusive tournaments, the attitude of players without disabilities might shift to a productive view of players with disabilities.

The results of the sports-related version of the Index for Inclusion showed differences between the initial and follow-up examinations in players with disabilities but not in trainers and representatives of the tennis federation. In players with disabilities, accessibility and the assessment of tennis-specific opportunities improved through integrative and inclusive tennis events. Thus, inclusive and integrative events can contribute to the inclusion of tennis players with disabilities, leading to higher values in their self-perception (Mihajlovic, 2023). Only in the domain of welcome culture, no differences were found. Tennis players with and without disabilities were very content at the beginning. Therefore, a potential ceiling effect might have interfered with the results. Studies of other sports in which inclusive or mixed opportunities were examined also highlighted the contentment, e.g., with the social impact in mixed-ability rugby (Corazza & Dyer, 2017). Following participatory approaches, it can only be a first step that the voices of players with disabilities have been heard. As a further step, it would be important to work with reflective methods, especially with players with intellectual disabilities. Therefore, the needs of people with (intellectual) disabilities in terms of communication and accessible question formats should also be considered (Hollomotz, 2018).

Based on a human rights perspective and to further enhance the positive effects of social inclusion as well as to give athletes with and without disabilities options, it will be relevant to establish inclusive and mixed-ability opportunities for playing tennis or other sports (Misener, 2018). Apart from indications from Special Olympics Unified (Mihajlovic, 2023) and mixed-ability rugby (Corazza & Dyer, 2017), investigation into how participants perceive these mixed events are very rare and have to be deepened in further studies. As a result of the current investigation and with the help of the ITN classification, it is concluded that people with disabilities are welcome to play in regional tennis competitions, according to their playing ability. Involvement in regional sport clubs was also mentioned in the open-ended questions about the needs of players with disabilities, and has been stated in similar investigations (Pochstein et al., 2023). In this vein, it will also be central to establish contact points in different tennis-specific settings. Therefore, inclusive opportunities are needed at an early age in leisure (Züll et al., 2019), as well as in physical education (Lieberman & Houston-Wilson, 2009) and other physical activity-related opportunities in schools, e.g., school sports trips (Kreinbacher-Bekerle & Mikosch, 2023). In particular, inclusive, Unified, or mixed-ability opportunities have great potential if they are already implemented in youth

and adolescence (Hassan et al., 2012). Therefore, the education of trainers and representatives is mandatory (Hölter, 2013). Furthermore, it is also relevant that inclusive opportunities and the needs of tennis players with disabilities are a compulsory part of the education process, according to the players' perspectives and the representatives of the federation in the current investigation.

Limitations

A limitation of the current investigation is the small sample size and dropouts during the research process. Although the numbers of participants might have been low, almost all tennis players with intellectual and physical disability in this specific region took part. Still, related to these numbers, the comparison between the initial and follow-up examination was not representative. Moreover, the Index for Inclusion (Booth & Ainscow, 2011) is a scaling tool for rough classification at the association level rather than a standardized questionnaire and is not yet validated for the different target groups used in this study. In this sense, it would be recommended to conduct a larger survey or interview study to further examine the needs of (tennis) players with disabilities. However, this preliminary proxy case study allows a first insight and the sports-related version of the Index for Inclusion (National Paralympic Committee Germany, 2014) could be a promising tool for practical implementation in the field of sports.

According to the inclusion of people without disabilities, the current investigation only reflects the status quo before the events and was not able to provide an insight into their perspective after the completion of the events. However, as a consequence of the events and results, people with disability were permitted to take part in regional tournaments and there was an exchange between players with and without disabilities, leading to arrangements for mixed-ability training sessions. Thus, it can be concluded that both integrative and inclusive events have the potential to bring people together and let us reflect on the core values of the sport itself such as equality, fairness, inclusion, and respect (UNESCO, 2021).

Conclusions

As in many other sports, tennis has the potential to create inclusive opportunities, which are appreciated by players with and without disabilities. However, it will be important to encourage not only tennis clubs and federations to establish inclusive opportunities, but also for other sports to find creative ways for how people with different backgrounds can compete together and/or against each other, which is a core component of all sports. The current investigation highlights that these processes can and should be accompanied by research activities. In summary, the use of the sports-related version of the Index for Inclusion is an appropriate tool to assess the views of all people involved in a sport, not only players with and without disabilities, but also coaches and representatives of federations. Further examinations and studies using this or similar tools are highly recommended.

Perspectives

This article provides some first insight into increasing inclusive tennis opportunities for people with disabilities from different perspectives. Current ranking systems in tennis, such as ITN or WTN, can serve as a basis for inclusive opportunities with the advantage that no specific adaptations to the format are needed and players with a similar ranking can compete with or against others. However, access to the tennis courts and facilities is a core requirement that such events can take place at all. Thus, adaptations at a structural level will be mandatory for tennis and several other sports. Further investigations including the perspectives of all involved people in different sports would shed some more light on research and practice about inclusive sport opportunities. The sports-related version of the Index for Inclusion can be an appropriate tool for this specific purpose. It allows a status-

quo on the contentment as well as potential barriers and can foster dialogue between persons involved in a sport discipline. Empirical research should guide this process to ensure meaningful physical activity opportunities for everyone.

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