

The relationship between direct care providers' physical activity behaviour and perceived physical activity needs for people with intellectual disabilities

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Abstract

Background The promotion of physical activity and the decrease of inactivity and sedentary behaviour are crucial for a healthy lifestyle and positive quality of life. People with intellectual disabilities are at increased risk of inactivity and sedentary behaviour. Therefore, it is important to increase their physical activity by implementing physical activity guidelines in their daily life. Professional direct care providers can play a decisive role in supporting people with intellectual disabilities to participate in physical activity, but the engagement of direct care providers with this role may be reflective of their own attitudes and beliefs towards physical activity. Therefore, the link between the implementation of current physical activity guidelines for people with intellectual disabilities and direct care providers' own beliefs and behaviour with regard to physical activity is investigated.

Method A total of 104 direct care providers completed self-reported questionnaires about their own physical activity behaviour (IPAQ-SF),

recommendations for people with intellectual disabilities (adaption of EMIQ-HP) and questions regarding global physical activity guidelines. They were also asked about potential barriers and facilitators for the recommendation of physical activity in open-ended questions.

Results Personal physical activity behaviour is related to the recommended physical activity for people with intellectual disabilities (moderate-to-vigorous physical activity: $r_s = 0.408$, $P = 0.005$). However, recommended physical activity behaviour for people with intellectual disabilities is significantly lower than direct care providers' own physical activity behaviour ($P < 0.001$). 47.1% of the respondents recommended people with intellectual disabilities to participate in less than the 150 min of moderate intensity physical activity per week for that is recommended in global physical activity guidelines.

Conclusion Direct care providers may hold stereotypical views and insecurities about the potential harms associated with people with intellectual disabilities participating in physical activity. Therefore, the dissemination of physical activity recommendations for people with intellectual disabilities should be a major target for health professionals, social workers and scientists to address direct care providers' concerns. Furthermore, we

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need to emphasise the benefits of regular physical activity to professional direct care providers and directly to people with intellectual disabilities.

Keywords Disability, Exercise, Guidelines, Physical activity, Sport

Introduction

There is significant evidence that regular physical activity has positive effects on the physical health of the general population, for example, the prevention of obesity, diabetes mellitus or coronary heart diseases (O'Donovan *et al.* 2010; Lee *et al.* 2012; Warburton & Bredin 2017). Furthermore, physical activity appears to prevent cognitive decline in relation to dementia and Alzheimer's disease (Reiner *et al.* 2013) and improves self-esteem, mood and well-being (Biddle *et al.* 2003; Sjögren *et al.* 2006). Finally, physical activity stimulates brain activity, making it easier to adapt to new situations (Colcombe & Kramer 2003) and leading to improvements in attention, concentration and learning skills (Tilp *et al.* 2020).

In the context of the broad benefits derived from physical activity, people with intellectual disabilities often lack opportunities to be physically active (Dairo *et al.* 2016), and thereby experience a range of health related issues such as lower life expectancy (O'Leary *et al.* 2017) and higher rates of obesity, compared with the general population (Melville *et al.* 2007). There is evidence that regular physical activity can improve the psychological well-being (St John *et al.* 2020), cognitive function (Cowley *et al.* 2010) and physical health of people with intellectual disabilities (Hassan *et al.* 2019).

According to the adapted socioecological model of Baumann *et al.* (2012), change in physical activity depends not only on individual factors but also on policy commitment and implementation. Article 30 in the UN Convention on the Rights of Persons with Disabilities prescribes the right for people with disabilities to participate in sport and leisure activities (United Nations 2006). Unfortunately, within this Convention, there are no details about the practical implementation of physical activity for people with disabilities.

Recently, people with intellectual disabilities have been included in a number of national guidelines for

physical activity, for example, in the USA (U.S. Department of Health and Human Services 2018), UK (U.K. Department of Health and Social Care 2019) and Austria (Austrian Health Promotion Fund 2020), as well as the current WHO guidelines (Bull *et al.* 2020). Basically, those guidelines state that people with intellectual disabilities should engage with the same level of physical activity as the general population. This means that adults living with or without disabilities should take part in at least 150 minutes of moderate-intensity physical activity (MPA) or 75 minutes of high-intensity physical activity (VPA) or a combination of both (MVPA) per week. Furthermore, muscle-strengthening activities involving major muscle groups should be done on 2 or more days a week. For additional health benefits, it is recommended to increase physical activity up to 300 minutes a week or more. The recommendations also state that long periods of sitting should be avoided or repeatedly interrupted by exercise (Bull *et al.* 2020).

People with intellectual disabilities face unique challenges regarding physical activity, such as need for social support, transportation to programmes, client-centred fitness programmes, financial resources and limited staffing level, which warrant specific consideration (Bartlo & Klein 2011). Thus, organisational preconditions as an environmental factor seem to be interrelated to physical activity opportunities for people with intellectual disabilities as well as personal factors (Bondar *et al.* 2019). However, according to a meta-analysis of Dairo *et al.* (2016), on average, only 9% of adults with intellectual disabilities meet global physical activity recommendations (range: 0–46%). Moreover, compared with people without intellectual disabilities, they spend more time sedentary and are less physical active (Melville *et al.* 2017; Oviedo *et al.* 2019).

A number of studies have been undertaken with parents of children with intellectual disabilities to explore their role in promoting physical activity (McGarty & Melville 2018) and the relationship between parents' own physical behaviour and that of their children with intellectual disabilities (Moore *et al.* 1991). Less well explored is the influence of professional direct care providers (Melville *et al.* 2009) who are recognised as a significant influence on people with intellectual disabilities with whom they

work (Powers *et al.* 2021). There are some studies on the support of direct care providers that focus on these workers' psychological factors, knowledge and the behaviour as this relates to physical activity (Bossink *et al.* 2019a, 2019b). However, the role of direct care providers in supporting people with intellectual disabilities to participate in the levels of physical activity recommended in national and international guidelines remains unexplored.

There appears to be very little research about the use of physical activity recommendations by direct care providers for people with intellectual disabilities. Incorporating the socioecological model (Baumann *et al.* 2012), the aim of this study is to explore the degree to which the knowledge, behaviour, personal physical activity of direct care providers of people with intellectual disabilities and their perception of barriers for promoting physical activity were congruent with current physical activity guidelines (Bull *et al.* 2020). It is hypothesised that there is a link between the physical activity behaviours of direct care providers and their recommendations about how much physical activity people with intellectual disabilities should participate in.

Methods

Sample

To assess the link between the physical activity behaviours of direct care providers and the recommended amount of physical activity for people with intellectual disabilities, direct care providers working with people with intellectual disabilities in the Austrian provinces of Styria and Lower Austria were invited to participate in an online survey. Contact people in the nine biggest organisations were asked to distribute the link in their organisation and motivate direct care providers to take part in the study. In Austria, there is a mixed economy of care for people with intellectual disabilities, incorporating day services, domiciliary services and support service at home. Direct care providers as defined in this study are social service support workers taking care of people with intellectual disabilities. Potential participants were informed about the aim of the study, what it involved, that participation was voluntary and not dependent on the level of one's own physical activity behaviour.

In total, 104 individuals from a potential sample of 134 (81.7%) completed the survey. The respondents were 82 females (78.8%), 21 males (20.2%) and one person with another gender identity (1%). The age ranged from 22 to 64 years ($M = 41.39$; $SD = 10.26$). Respondents' average working experience in this sector was 10 years, with a range from 1 to 44 years ($M = 11.64$; $SD = 9.00$). Out of the 104 direct care provider respondents, 29 were working in day services (27.88%); 27 domiciliary services (25.96%); 15 in outreach support work (14.42%); 13 in work-related trainings (12.5%); seven in school assistance (6.73%); and six in sports-related offers like Special Olympics (5.77%). The remaining six participants did not specify their working place (5.77%). No data about their respective client groups were collected.

Measures

The questionnaire contained 39 questions with regard to knowledge, behaviour, barriers, own physical activity of direct care providers and organisational preconditions (see full questionnaire in Appendix). Respondents completed an adapted version of the *Exercise in Mental Illness Questionnaire-Health Professionals' version* (EMIQ-HP), a standardised questionnaire for health professionals in the mental health sector to assess the knowledge, attitudes, beliefs and behaviours regarding physical activity and exercise (Stanton *et al.* 2014), which seems to be an appropriate instrument answering the research question. Due to the fact that the questions focus on the positive effects of physical activity and are not specifically related to the mental health sector, we adapted the EMIQ-HP for completion by direct care providers supporting people with intellectual disabilities. According to Petzold *et al.* (2020), the German version of the EMIQ-HP has been shown to have excellent psychometric properties (intra-class correlations: 0.58–1.00; Cohen's kappa: 0.35–1.00; 7-day retest reliability > 0.81). The EMIQ-HP uses different answer formats, such as Likert scales (with 1 = *excellent* to 5 = *very poor*), single-choice and multiple-choice and ranking or free text answers.

Originally, it consists of six parts – knowledge; beliefs; behaviour; barriers; exercise participation and demographics regarding physical activity. For the purpose of the current investigation, part two that

asks about beliefs was left out as well as most items in the part on barriers due to the fact that they were not relevant to the aims of the study and the target group. Instead, the following questions were added to answer the research questions. First, a question about how much physical activity time per week respondents would recommend for people with intellectual disabilities was added to allow a comparison of their own and recommended physical activity behaviour. Second, a question about knowledge of national recommendations for physical activity with a 5-point Likert scale was added. Third, an open format question about further actions needed to support people with intellectual disabilities to increase their physical activity levels was added. Fourth, the following three open-ended format questions were added about barriers and facilitators: 'What other barriers do you think could prevent you from recommending physical activity to people with intellectual disabilities?' and 'What are the facilitators that would support you to recommend physical activity to people with intellectual disabilities?' or 'What are the potential positive effects of recommending physical activity to people with intellectual disabilities?' Fifth and finally, barriers and facilitators for physical activity and exercise for people with intellectual disabilities at an organisational level were asked in two questions and added to the questionnaire. The first question was related to organisational preconditions for doing physical activity (5-point Likert scale with *excellent* to *very poor*), like supportive resources from the organisation to engage in physical activity (equipment, rooms, hours to do physical activity). A further question was related to the provision of physical activity for people with intellectual disabilities, for example, the amount of working time direct care providers use to participate in occupational physical activity with people with intellectual disabilities in their working routine.

To assess respondents' own physical activity behaviour, the short version of the validated *International Physical Activity Questionnaire* (IPAQ-SF) was used (part five exercise participation in EMIQ-HP). The IPAQ examines the physical activity behaviours over the previous 7 days (Craig *et al.* 2003). The short version consists of a set of four parts (time of moderate and intense activity, walking and sitting). The amount of weekly physical

activity is mainly reported as minutes of moderate to vigorous physical activity (MVPA).

At the end of the questionnaire, the socio-demographic data age, gender, work position and experience were collected. Respondents interested in further training was also examined with three questions taken from part six of EMIQ-HP.

Analysis

Primary analysis examining the relationship of direct care providers' own physical activity behaviour and their recommendation for people with intellectual disabilities used non-parametric tests – Mann–Whitney *U* and Wilcoxon for repeated measures as well as Spearman correlation coefficients with Holm–Boferroni correction in addition to descriptive data analysis, due to the fact that all IPAQ-variables were not normally distributed based on Shapiro–Wilk ($P > 0.05$). According to the IPAQ scoring protocol (IPAQ 2005), all activities below 10 minutes were not considered, and the maximum amount of activity was trimmed to 180 daily minutes per category.

In the secondary analysis, descriptive results were reported for potential facilitators as well as open-ended questions in relation to barriers in implementing physical activity. For the open-ended questions, answers were inductively analysed and structured through qualitative text analysis (Kuckartz 2014). In the categorisation process, two independent coders found an agreement in a consensual approach.

Piloting the questionnaire

To gain valid data and minimise the dropout rate, a pre-test was examined with nine people working with people with intellectual disabilities, whose data were not included in the final study. According to the pre-test, the final questionnaire was slightly adapted in terms of wording and structure.

Results

Descriptive data

The descriptive results regarding physical activity behaviour and recommendation are depicted in Table 1. Of the 104 respondents who fully completed

Table 1 Descriptive data of direct care providers' responses regarding qualification, recommendation and knowledge as well as own and recommended physical activity (*n* and %)

	Yes	No			
Qualification	28 (26.92%)	76 (73.08%)			
Actively recommendation	77 (74.04%)	27 (25.96%)			
	Very good	Good	Moderate	Low	Very low
Confidence to recommend	20 (19.23%)	47 (45.19%)	30 (28.85%)	6 (5.77%)	1 (0.96%)
Knowledge of guidelines	10 (9.62%)	36 (34.62%)	45 (43.27%)	13 (12.50%)	5 (4.81%)
Structural requirements	17 (16.35%)	26 (25.00%)	43 (41.35%)	15 (14.42%)	3 (2.88%)
MVPA	<150 min	150–300	>300 min		
Own PA behaviour	23 (22.12%)	32 (30.77%)	49 (47.12%)		
Recommendation of PA	49 (47.12%)	45 (43.27%)	10 (9.62%)		

min, minutes; MVPA, moderate-to-vigorous physical activity; PA, physical activity.

the questionnaire, 28 (26.9%) had a qualification or a degree in the field of sport and exercise like a coaching certificate in sports, disability sports or an academic degree in sport science or kinesiology. A total of 49 (47.1%) respondents would definitely take part in a further qualification training in the field of sport and exercise, 39 (37.5%) possible, 8 (7.7%) probably not and 7 (6.7%) definitely not.

Seventy-seven respondents (74.0%) specified that they already actively recommend physical activity for people with intellectual disabilities. Of these, 15 (20.3%) recommend daily physical activity and 55 (74.3%) several times a week. Most direct care providers recommended physical activity with low intensity (42.0%) or moderate intensity (56.5%), whereas high-intensity physical activity was recommended by only one respondent (1.4%). The three most recommended exercises were aerobic exercise like walking or cycling (84.4%), swimming (72.7%) and relaxation activities (70.1%). The most common form of recommendation method was personal discussion (93.5%) followed by referral to other programmes and professionals (44.2%).

Personal physical activity behaviour of direct care providers

The physical activity behaviour of direct care providers measured with IPAQ-SF revealed a median

of 292.5 min per week of at least moderate intensity (MVPA: $M = 441.44$; $SD = 395.01$). Based on these data, 81 of 104 respondents (77.9%) fulfilled the criteria of health-enhancing physical activity of at least 150 min per week (Bull *et al.* 2020). Forty-nine (47.1% in total) of these respondents also meet the criteria of additional health benefits with 300 min or more of activity per week. Women and men did not differ in the amount of physical activity with moderate intensity (MPA), moderate to vigorous intensity (MVPA), walking and sedentary behaviour (all $P > 0.05$). However, there is a difference in gender regarding physical activity with vigorous intensity (VPA: $U = 531.5$; $P = .035$), in which men ($M = 285.71$; $SD = 241.97$) reported more minutes per week than women ($M = 157.20$; $SD = 167.93$).

Physical activity recommendation for people with intellectual disabilities

Direct care providers were asked about how much physical activity of at least moderate intensity (MVPA) they would recommend for people with intellectual disabilities. The recommended minutes ranged from 0 to 600 min a week, with an average of 167.5 min per week ($SD = 110.87$). This is in line with the recommended 150 min found in recommendations in international guidelines; the median of 150 min is exactly the recommended value.

Table 2 Direct care providers own physical activity behaviour in minutes (*mean* and *SD*) per week (IPAQ-SF) based on their recommendation for people with intellectual disabilities

	Recommendation of PA		P-values
	Less than 150 min.	150 or more min	
VPA	150.51 (175.49)	209.91 (201.15)	0.064
MPA	154.08 (154.22)	353.45 (353.55)	0.005
MVPA	304.59 (266.37)	563.36 (449.90)	0.005
Walking	315.20 (328.90)	486.91 (367.85)	0.009
Sitting	210.61 (149.43)	265.82 (139.25)	0.064

min, minutes; MPA, moderate physical activity; MVPA, moderate-to-vigorous physical activity; PA, physical activity; VPA, vigorous physical activity. P-values corrected according to Holm–Boferroni. MPA, MVPA and walking with $P < 0.01$, no significant differences in VPA and sitting ($P > 0.05$).

No gender differences in the recommendation could be found ($U = 843$; $P > 0.05$).

To assess the characteristics of direct care providers, we divided the sample into two groups according to international physical activity guidelines (Bull *et al.* 2020): those who recommended less than 150 min per week (49 of 104; 47.1%) and those who recommended 150 min or more per week (55 of 104, 52.9%). Mann–Whitney U tests revealed that both groups differed in their own physical activity participation measured with IPAQ-SF. Minutes per week of moderate physical activity (MPA), the combination moderate-to-vigorous physical activity (MVPA) and walking were significantly higher in the group that recommended that people with intellectual disabilities participate in 150 min or more compared with those with a recommendation of less than 150 min. No significant differences were found for vigorous physical activity (VPA) and sitting behaviour (Table 2). The perceived knowledge of current physical activity guidelines on a 5-point Likert scale did not differ between the two groups ($P > 0.05$); overall, the knowledge was rated as *moderate* ($M = 2.63$; $SD = .94$).

Relation between own physical activity behaviour and recommendation

To assess the relationship between direct care providers' own physical activity behaviour and the recommendation for people with intellectual disabilities, Spearman rho correlations between self-reported physical activity and their recommendation were calculated. There are positive

correlations between all IPAQ-SF values of direct care providers and the recommendation they would make about physical activity for people with intellectual disabilities (VPA: $r_s = 0.255$, $P = 0.018$; MPA: $r_s = 0.407$, $P = 0.005$; MVPA: $r_s = 0.408$, $P = 0.005$; walking: $r_s = 0.293$, $P = 0.009$; Sitting: $r_s = 0.203$, $P = 0.039$). This means that the more physically active a direct care provider is the more time participating in physical activity is recommended for people with intellectual disabilities or vice versa. Although there are significant correlations, the own physical activity behaviour of direct care providers (MVPA: $M = 441.44$ with $SD = 395.01$) is significantly higher than those recommended for people with intellectual disabilities ($M = 167.55$; $SD = 110.87$; Wilcoxon $z = 7.025$; $P < 0.001$; $n = 104$).

Barriers and facilitators to the recommendation of physical activity

Most direct care providers assessed their own confidence to support people with intellectual disabilities in terms of physical activity on a 5-point Likert scale as *good* ($M = 2.24$; $SD = 0.87$). The organisational preconditions in the social service providers to actively engage people with intellectual disabilities for physical activity seems to be *moderate* ($M = 2.63$; $SD = 1.02$). Asked about the provision of physical activity for people with intellectual disabilities, estimated percentage of physical activity in daily work ranged from 0 to 90% with an average of 16.43% ($SD = 20.82$).

Open-ended questions regarding the needs and challenges in actively recommending physical activity for people with intellectual disabilities were asked. The question about potential barriers that prevent people from recommending physical activity to people with intellectual disabilities was answered by 63 of 104 respondents (60.58%). Most frequently (17 of 63; 26.98%) answers were related to *time restrictions or constraints* such as not having enough time because of a high workload and other obligations or a lack of staff, meaning an inadequate amount of direct care providers supporting people with intellectual disabilities. The second most mentioned factor (13; 20.63%) was perceived problems experienced by people with intellectual disabilities, such as physical impairments, illnesses or motivation. Other named barriers were structural resources (11; 17.46%), knowledge (7; 11.11%) and the fact that some direct care providers are not physically active themselves (4; 6.35%). The *time restrictions and constraints* were also predominant in the other open-ended question about needs for actively recommendation of physical activity (30.77%).

Discussion

The present study investigated the relationship between direct care providers' physical activity behaviour and perceived physical activity needs for people with intellectual disabilities. One important finding is the positive correlation between direct care providers' own physical activity behaviour and their recommendations about physical activity for people with intellectual disabilities. However, the amount and intensity of physical activity recommended for people with intellectual disabilities is significantly lower than direct care providers' own physical activity behaviours. Based on these data, one may perhaps speculate that the direct care providers' promotion of recommended physical activity to people with intellectual disabilities is dependent on whether their own physical activity reflects such guideline recommendations; knowledge of the guidelines alone, without their own physical activity engagement with them, may not be sufficient to operationalise them with the client group. However, these are informed speculations about the results and would need further investigation to definitively come to a conclusion on this subject. Another reason that might explain the

low level of promotion of physical activity in half of the respondents are potential unconscious stereotypes retained by some direct care providers about the capacity of people with intellectual disabilities regarding physical activity. Finally, time constraints and lack of staff resource are barriers for the implementation of physical activity at work.

Our results indicate that the knowledge of positive effects of physical activity and sufficient amount of physical activity for people with intellectual disabilities is an important component of direct care providers' work. Consequently, almost 75% of direct care providers in our study actively recommend physical activity for people with intellectual disabilities in their daily working routine. Even though this percentage seems quite high and the sample of direct care providers is physically active, only half of the respondents recommend 150 or more minutes of physical activity with at least moderate intensity per week for people with intellectual disabilities, as advised in the current international recommendations for all people, irrespectively of a disability (Bull *et al.* 2020). Although our data suggested a higher self-reported physical activity with high intensity for men when compared with women (Moreno-Llamas *et al.* 2022), there were no differences in terms of recommendations for people with intellectual disabilities, neither in terms of minutes, nor the intensity or frequency.

A possible reason for the low amount of recommended physical activity could be that some respondents had an unconscious bias relating to perceptions of capabilities of the client group to engage in physical activity and being risk averse in this regard (Pelleboer-Gunnink *et al.* 2021a, 2021b). This could be one explanation for insufficient physical activity behaviour among people with intellectual disabilities as described in previous findings for adults (Dairo *et al.* 2016) as well as children and adolescents (Wouters *et al.* 2019). Our present data not only indicate a low recommended amount of physical activity minutes with moderate intensity per week, but also physical activity with high intensity was hardly ever recommended despite it is clearly stated in the physical activity guidelines (150 min of moderate intensity *or* 75 min of vigorous intensity per week *or* a combination of both). Furthermore, the data from the open-ended questions regarding barriers to physical activity recommendation strengthen our

interpretation about health-related concerns, because direct care providers named impairments, illnesses or motivation as perceived barriers for people with intellectual disabilities. These findings are similar to the meta-analysis of Vancampfort *et al.* (2021), which found that age, severity of a disability and the presence of physical mobility problems are associated with decreased physical activity behaviour of people with intellectual disabilities. The presence of physical health problems seems to be an important barrier for being active in adults with intellectual disabilities. In contrast, physical activity guidelines highlight that there is no evidence of higher risk for people with intellectual disabilities taking part in physical activity behaviour compared with the general population (U.K. Department of Health and Social Care 2019).

According to Baumann *et al.* (2012), physical activity behaviour change is a process on several levels. Therefore, we asked participants about barriers on an environmental level. Respondents stated that strategies to implement physical activity programmes in care settings are missing. The main reasons are the growing tasks and demands of direct care providers (Johnson *et al.* 2021). Consequently, there is hardly any time to implement physical activity in their daily working routine. This result is in line with the findings of other studies (Etkin *et al.* 2015; Wright *et al.* 2019), stating that the perceived lack of time is one of the most common barriers regarding behaviour change especially when it comes to a desired increase in physical activity. One potential factor to overcome these constraints could be to use personalised planning and support in terms of physical activity (Robinson *et al.* 2019). Therefore, direct care providers should be supported in the planning process, for example, when to implement physical activity and which type of exercise. Furthermore, direct care providers should be guided to plan physical activity opportunities with people with intellectual disabilities in a participative process addressing the needs of people with intellectual disabilities (Mauro *et al.* 2021), especially giving them a voice to speak for their own perspective of physical activity that has to be elaborated in future studies.

Another recommendation for direct care providers is to engage external support around implementing physical activity and exercise, like coaches, trainers or physiotherapists (Cynthia *et al.* 2019). The combination of physical activity experts and direct care

providers as experts on taking care of people with intellectual disabilities seems to be a decisive model to increase physical activity and a positive health-related lifestyle (Nutsch *et al.* 2021). Furthermore, it can result in a higher awareness regarding people with disabilities in sports, which is expandable when it comes up to sports and inclusion (Kiuppis 2018). We assume that interprofessional exchange and a proper planning process regarding physical activity opportunities can solve the perceived problems with time constraints.

To summarise, this study found that both time constraints and health-related concerns can be barriers in the implementation process of physical activity, which has been reported in previous investigations (Taliaferro & Hammond 2016; Bossink *et al.* 2017). This suggests that future programmes should consider increasing the awareness of physical activity benefits for people with intellectual disabilities among social organisations and strengthening direct care providers' confidence to recommend physical activity according to current guidelines.

Consequently, training courses highlighting the positive aspects of regularly physical activity for people with intellectual disabilities should be mandatory. Direct care providers should learn how to identify the physical activity needs of people with intellectual disabilities and develop individual recommendations in line with a proper planning process on an organisational level. It seems that there is an uncertainty about how much physical activity is adequate for people with intellectual disabilities. Therefore, we need to increase awareness and train providers how to promote physical activity participation. The dissemination of currently published international guidelines (Bull *et al.* 2020) and specific national guidelines (e.g. Austrian Health Promotion Fund 2020) may contribute to a greater certainty and self-confidence to recommend a sufficient amount of physical activity, independent of the direct care providers' own physical activity level.

Limitations

Limitations of this study include the non-representative sample of direct care providers with regard to physical activity behaviour. Eighty per cent of respondents in this survey were female – this is congruent with the gender balance of workers in the

sector (Keene & Li 2005) where approximately two-thirds are female. Still, the self-assessment of physical activity revealed that the sample is highly physical active. According to their own appraisal, 77% of direct care providers fulfil international guidelines for physical activity with 150 min or more moderate intensity per week. This is higher than official numbers in the general population of Austria, which suggests only 47% meeting the criteria (Statistik Austria 2020). Therefore, our sample from social service providers may not reflect the overall population of direct care providers, and the actual percentage of people recommending a sufficient amount of physical activity according to guidelines could be even less than the 53% of our study.

A self-reported physical activity questionnaire may over-estimate or under-estimate physical activity behaviour in terms of objectivity (Lee *et al.* 2011). Nevertheless, the IPAQ is a cost-effective method to assess physical activity among several populations (Van Hees 2012). Further investigations in this area, including people with intellectual disabilities, should combine IPAQ and accelerometer or similar objective measures of physical activity to enlarge our knowledge regarding physical activity behaviour of specific groups (Sattler *et al.* 2021).

Conclusion

Based on the current findings, it will be crucial to disseminate physical activity guidelines for people with intellectual disabilities and knowledge about positive effects of physical activity, among people working in social service providers and people with intellectual disabilities themselves. It will be important to prepare physical activity guidelines and recommendations for the target group, for example, with the use of pictograms and easy-to-read language. Besides the importance of mentioning specific target groups, the directly inclusion of people with intellectual disabilities in the dissemination process is missing so far. This will increase the number of physically active people with intellectual disabilities resulting in positive physical, psychosocial and cognitive impacts.

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Conflict of interest

No conflicts of interest have been declared.

Ethics approval

Ethical approval was confirmed by the University of Graz (reference number: 39/80/63 ex 2019/20).

Data availability statement

Data and materials associated with the current study are available from the corresponding author on reasonable request.

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Supporting Information

Additional Supporting Information may be found online in the supporting information tab for this article.

Data S1. Supporting Information