

The role of motivation in shaping social inclusion of people with intellectual disabilities in physical-sports activity contexts

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Abstract

The present study aims to test a model in which basic psychological needs (BPN) satisfaction in physical-sport activity contexts is associated with self-determined motivation, which, in turn, would predict the social inclusion of people with intellectual disabilities. A total of 286 people with intellectual disabilities (53.5% men) who reported engaging in physical-sport activities responded to a validated questionnaire about the satisfaction of their BPN, motivation (using the Self-determination index [SDI]), and social inclusion. A Pearson's bivariate correlation and structural equation modeling were conducted. The resulting model was reanalyzed in a multigroup analysis to test its invariance across self and proxy reports. Positive associations were found between the satisfaction of the BPN and the SDI. However, the SDI and social inclusion were positively associated only in proxy reports ($\beta_{\text{self}} = 0.07$ vs. $\beta_{\text{proxy}} = 0.30$). The tested model established positive relationships between the BPN and SDI in autonomy ($\beta_{\text{self}} = 0.21$ vs. $\beta_{\text{proxy}} = 0.18$), competence ($\beta_{\text{self}} = 0.47$ vs. $\beta_{\text{proxy}} = 0.53$), and relatedness ($\beta_{\text{self}} = 0.21$ vs. $\beta_{\text{proxy}} = 0.23$). Further research is needed to understand the factors leading to discrepancies between participants and proxies when relating the SDI to social inclusion in the context of physical-sport activity. However, the results obtained suggest that it would be optimal to develop contexts of practice for people with intellectual disabilities in which the satisfaction of their BPN is favored and that this has a positive impact on their motivation and social inclusion.

KEYWORDS

basic psychological needs, intellectual disabilities, physical activity, self-determination theory, social inclusion

Highlights

- In the context of physical-sport activity practice, the satisfaction of basic psychological needs in people with intellectual disabilities seems to be associated with developing more

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self-determined motivation, with a strong association found between competence satisfaction and self-determined motivation.

- Self-determination index appears to have a positive relationship with the social inclusion of people with intellectual disabilities in physical-sport activity contexts.
- Discrepancies have been found between the perceptions of people with intellectual disabilities and proxies regarding the terms of this relationship, necessitating research to understand better the factors that may be generating such discrepancies.

1 | INTRODUCTION

Social inclusion is a relevant indicator of quality of life, and it is recognized as a dimension involving the performance of community roles, participation in community activities, or the development of volunteering and social support (Schalock & Verdugo, 2007). Fostering social inclusion promotes health and well-being (World Health Organization, WHO, 2012) and counteracts “social exclusion, economic poverty and lower education achievements of poorer health outcomes” (Hästbacka et al., 2016, p. 2). Therefore, social inclusion should be a right for all people.

While relevant for everyone, the importance of people with intellectual disabilities' (PWIDs) participation in cultural and social activities is particularly important, given the barriers that this population usually finds to create meaningful connections with society. PWIDs often do not have proper access to essential public services and daily activities that promote their inclusion in society (Louv et al., 2020). Interestingly, the United Nations Convention on the Rights of People with Disabilities (CRPD) emphasized the importance of participation in cultural activities, recreation, and sports (CRPD, 2006). The reason behind the recommendation of engaging in sports is linked with the numerous benefits of regular physical-sport activity for physical and mental health (WHO, 2018) and can be translated into an increase in quality of life. Specifically, there is scientific evidence placing physical-sports activity as a catalyst for general health and social inclusion in particular in PWIDs. In this vein, different studies have found that when PWIDs participate in sports programs or other physical activities, such as dancing or activities in the community environment, they are more likely to develop social interactions and social inclusion (Aujla & Needham-Beck, 2020; Bota et al., 2014).

Social inclusion in physical activity contexts has been suggested to be influenced by motivational patterns (Cecchini et al., 2013). The role of motivation in the explanation of social and behavioral patterns in physical activity-related contexts has been frequently addressed from the perspective of Self-determination theory (SDT), which is a dynamic macro-theory that examines the extent to which human behavior is driven by self-motivation and self-determination (Deci & Ryan, 1985). This theory states that the type of motivation a person exhibits will be determined by the degree of self-determination the person has. In order to obtain a single comprehensive indicator of the self-determined motivation of a person, the SDI (or Relatively Autonomous Index) has been used (Grolnick & Ryan, 1989; Standage

et al., 2006; Vallerand & Losier, 1999). This index reflects the degree to which a person is more or less self-determined in the achievement domain (Connell & Ryan, 1984). In this way, SDI varies as a function of three different types of motivation: autonomous, controlled, or lack of motivation (amotivation). Depending on the self-determination level of behaviors, autonomous motivation is composed by intrinsic motivation (higher self-determination), related to the inherent pleasure of doing something or identified regulation, associated with the alignment of personal values. Likewise, controlled or extrinsic motivation refers to a commitment to an activity to achieve something, but not as an end in itself. It can be divided into introjected regulation, related to internal pressures to avoid feeling guilty, or external regulation, given by an external demand imposed by the social context or to avoid punishment. Finally, amotivation is characterized by a complete absence of motivation, where individuals have no intention of acting and often experience frustration. According to the SDT, intrinsic motivation is the most desirable and long-lasting form of motivation.

This theory also postulates three basic psychological needs (BPN), autonomy, competence and relatedness, whose satisfaction is essential to promote self-determined motivation and other adaptive outcomes such as life satisfaction or engagement. According to the principles of SDT, contextualized in contexts of physical activity and sports, the satisfaction of autonomy is associated with the feeling of freedom to decide, for example, in the athlete's decision-making during the training process or the freedom to express feelings and opinions (Ryan, 1995). In this sense, coaches can support autonomy by showing interest in athletes' preferences, offering them a relevant space for decision-making or fostering a climate in which athletes can freely express their feelings. As for competence, it refers to the perception of feeling capable of tackling the exercises proposed by the coach, therefore generating a feeling of achievement (Ryan & Deci, 2002). In this case, coaches can support their athletes' competence by providing structure, setting clear expectations, or adapting tasks to the athletes' skills. Lastly, relatedness is defined as the degree to which individuals experience a secure sense of belonging and connection with others in their social environment (Baumeister & Leary, 1995). In this case, the coach can show support for the relationship through creating a climate where coaches are empathetic and understanding with their athletes. Most of the related research has been developed among people without intellectual disabilities (Alvarez et al., 2021; Leo et al., 2022; Standage & Ryan, 2020; Vansteenkiste et al., 2023). However, evidence

highlights the relevance of meeting BPN among PWIDs (Frielink et al., 2018) as this has been associated with an increase in psychological and physical well-being in various life domains (Bartholomew et al., 2011; Ryan et al., 2008) and influencing the exercise adherence for individuals (Kang et al., 2019).

Even though motivational processes are widely accepted to be closely related to social experiences, the literature is scarce in addressing these hypothesized relationships among PWIDs. Moreover, while social inclusion seems to be a crucial dimension for the well-being of PWIDs (Verdugo et al., 2012), to the best of our knowledge, the influence that motivational patterns in this population might have on their social inclusion has not been explored yet. The aim of the present study is thus to test a model in which BPN satisfaction in physical-sport activity contexts is associated with SDI, which, in turn, would predict the social inclusion of PWIDs.

On one hand, it is expected that satisfying BPN in PWIDs in physical-sports activity contexts will have a positive impact on the SDI, as has already been studied in individuals without intellectual disabilities. On the other hand, this positive influence on the SDI is expected to lead to more self-determined motivating behaviors in PWIDs, resulting in positive effects on their social inclusion in sports contexts.

2 | MATERIAL AND METHODS

A cross-sectional study design was conducted in order to test a model in which BPN satisfaction in physical-sport activity contexts is associated with SDI, which, in turn, would predict the social inclusion of PWIDs.

2.1 | Participants and procedure

A convenience sampling method was used to recruit the sample (Dorofeev & Grant, 2006). Sample size was determined following recommendations by Schreiber et al. (2006) who suggested that the ratio should be 10 observations to one parameter. Since 21 parameters were estimated in the model, a minimum sample of 210 was required. Considering Wolf et al. (2013) comments on the need and aiming to account for potential and expected dropout, the sample size was inflated by 80% to 378. Out of the 378 collected questionnaires, a total of 68 were discarded as incomplete, and other 19 were dropped due to inconsistencies in the responses.

The final sample consisted of 291 PWIDs, 53.61% ($n = 156$) men, 45.02% ($n = 131$) women, and 1.37% ($n = 4$) who preferred not to state their gender, aged between 6 and 65 years ($M = 28.59$; $SD = 11.70$). All the participants declared that they practiced some kind of physical-sport activity, 69.75% ($n = 203$) were engaged in sports, while 50% practiced non-regulated physical activity. Of the 291 people who participated in the study, 161 answered the questionnaire self-reported, while 130 answers were filled in by the proxies of PWIDs.

All the participants had intellectual disabilities. The 85.3% reported secondary diagnoses associated with their intellectual disability, being the most frequent Down's syndrome ($n = 98$; 33.68%) and borderline intelligence ($n = 38$; 13.06%). In terms of the percentage of disability issued by the Spanish public administration, 60 participants (20.62%) were given a disability degree between 33% and 64% (mild), 134 participants (46.05%) presented a disability degree between 65% and 74% (moderate), and 45 participants (15.46%) were issued a disability degree greater than 75% (severe). A total of 47 participants (16.4%) reported not knowing their disability degree.

The sample was contacted through institutions in the field where the participants were users. The questionnaires were administered online and in person between November 2022 and April 2023. Before completing the questionnaire, all participants were informed about the project and their rights as participants in the study (particularly the right to review material and withdraw from the process). The work followed the guidelines of the ethical principles of the Declaration of Helsinki and all the participants signed an informed consent form. The present study was approved by the Ethics Committee of a Spanish University (ID 2022/46).

2.2 | Instruments

Two versions of the administered questionnaire were designed: self-reported and reported by proxy. The self-reported version was made in an easy-to-read format. Both versions included the following information:

Sociodemographic variables. Participants were asked about their age, gender, diagnoses associated with their disability, percentage of disability, and characteristics of the physical-sports activity practiced.

BPN Satisfaction and Frustration. A Spanish-translated version of the BPN-SFS-ID instrument (Frielink et al., 2018) was used. The questionnaire was adapted to physical-sports activity contexts by replacing the original phrase "In my life..." with "When I do sport...". This instrument consists of 24 items and comprises six dimensions that measure the satisfaction and the frustration of autonomy, competence, and relatedness needs. All dimensions are measured with four items. A five-point Likert scale from 1 (no/totally disagree) to 5 (yes/totally agree) was used to measure all the items. For this study, only items measuring satisfaction were considered. Internal consistencies were satisfactory, with Cronbach's alphas of 0.70 for autonomy, 0.75 for competence, and 0.73 for relatedness. Confirmatory factor analysis (CFA) for this instrument is provided in the results section.

Motivation. The Spanish version of the Self-Regulation Questionnaire (SRQ-SUPPORT; Frielink et al., 2021) adapted to physical activity and sport contexts was used. This instrument comprises six dimensions: amotivation, external social regulation, external material regulation, introjected regulation, identified regulation, and intrinsic motivation. All dimensions are measured with three items except for social external regulation, which consists of four items, and material

external regulation, which consists of two items. A Likert scale from 1 (no/totally disagree) to 5 (yes/totally agree) was used to measure all the items. 5-point internal consistencies were satisfactory, with Cronbach's alphas of 0.60 for amotivation, 0.65 for external regulation, 0.64 for introjected regulation, 0.60 for identified regulation, and 0.65 for intrinsic motivation. CFA for this instrument is provided in the results section.

SDI was used in this study. SDI is composed of intrinsic motivation, identified motivation, external motivation, and introjected motivation. It is calculated using the following formula (Grolnick & Ryan, 1989): $(-2 \times \text{External}) + (-1 \times \text{Introjected}) + (1 \times \text{Identified}) + (2 \times \text{Intrinsic})$.

Social inclusion. The social inclusion dimension from the INICO-FEAPS scale (Verdugo et al., 2013) was used. The tool consists of 72 items referring to eight dimensions: self-determination, rights, emotional well-being, social inclusion, personal development, interpersonal relationships, material well-being, and physical well-being. All dimensions comprise nine items answered on a Likert-type scale from 1 to 4 (1 = "never", 2 = "sometimes", 3 = "often", and 4 = "usually"). Cronbach's alpha for the social inclusion dimension was 0.59.

2.3 | Statistical analysis

All data were subjected to preliminary descriptive analyses using IBM SPSS Statistics (version 28.0; IBM Corp., Armonk, NY). Pearson's bivariate correlations were computed to examine the relationships among the 11 study variables. An inspection of the data sets found no violations of the assumptions of collinearity.

Structural equation modeling (SEM) was performed to test the hypothesized sequence. The fit of the observed data to the proposed mediation model was calculated with the IBM AMOS (version 20.0; Chicago, IL) using the maximum likelihood estimation method; 5000 bootstrapping iterations were requested to calculate bias-corrected 90% confidence intervals. The comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA) were selected to evaluate the model fit. Concerning CFI and TLI, values greater than 0.90 and 0.95 indicate an appropriate and excellent fit to the data, respectively (Marsh et al., 2004). RMSEA and SRMR values of 0.08 or less are considered acceptable (Browne & Cudeck, 1993). All constructs were deemed latent variables in the SEM, except for the SDI deemed as an observed variable, and calculated with the formula presented in the "Instruments" section. Regarding the latent variables, construct-specific parcels were created in cases where the number of items per construct was higher than three to increase the parameter estimates' stability and improve the sample size ratio to estimated parameters (Bagozzi & Edwards, 1998). Following Matsunaga's recommendations (2008, p. 282), three parcels per factor were used in the analyses. Each parcel was created by pairing stronger and weaker loading items from the same scale (Little et al., 2002). When the number of items did not permit the creation of three parcels of

two items, one parcel was created by pairing the strongest and the weakest items from a scale, and the other items were used as indicators.

The resulting model was reanalyzed in a multigroup analysis to test its invariance across participants in terms of differences between informants (self-reported and proxies). This testing was achieved by comparing the unconstrained multigroup model with models constraining regression weights and covariances. This analysis was carried out following Byrne's (2001) guidelines. According to the recommendations of Cheung and Rensvold (2002), a difference between CFIs (ΔCFI) greater than 0.01 between two models with different constraints indicates a substantial decrease in model fit. Estimates for each group were then calculated to explore variations between models in self-reported and proxy measures.

3 | RESULTS

3.1 | Confirmatory factor analyses

BPN Satisfaction and Frustration. The CFA of the adaptation used in the current study resulted in a good model fit, $\chi^2(24) = 36.86$, $p < 0.001$, $\chi^2/\text{df} = 1.54$, CFI = 0.98, TLI = 0.98, RMSEA = 0.04, standardized root mean square residual (SRMR) = 0.04, and all indicator loadings were above 0.63.

Motivation. The CFA of the adapted scale used in the present study for a five-dimension solution (external social and material regulation considered as the only external regulation dimension) resulted in a good model fit, $\chi^2(69) = 175.54$, $p < 0.001$, $\chi^2/\text{df} = 2.54$, CFI = 0.91, TLI = 91., RMSEA = 0.07, standardized root mean square residual (SRMR) = 0.06, and all indicator loadings were above 0.52.

3.2 | Descriptive statistics

Table 1 presents the descriptive statistics and bivariate correlations. Participants generally showed high satisfaction values for the three BPN, with the relatedness being the variable with the highest scores. In terms of motivational regulations, it was found that intrinsic regulation had the highest values, followed by identified and introjected regulations. In contrast, external social regulation and amotivation had the lowest scores. As for correlations, low self-determined motivational regulations, such as amotivation or external social regulation, were negatively related to BPN's satisfaction. It should be noted that external material regulation was positively associated with all three BPN.

On the other hand, associations between self-determined motivational regulations (identified, introjected, and intrinsic) and the BPN's satisfaction were significantly positive. Likewise, the satisfaction of the BPN correlated positively with SDI. Finally, the associations between social inclusion with motivational regulations and competence satisfaction were significantly positive.

TABLE 1 Mean, standard deviation and bivariate correlations in study variables.

	1	2	3	4	5	6	7	8	9	10	11
1. Autonomy	1	0.54**	0.24**	0.40**	-0.07	0.02	0.36**	0.30**	0.54**	0.55**	0.15*
2. Competence		1	0.29**	0.33**	-0.04	0.05	0.34**	0.32**	0.43**	0.50**	0.23**
3. Relatedness			1	0.13*	0.08	0.06	0.13*	0.43**	0.19**	0.29**	0.04
4. SDI				1	-0.64**	-0.67**	0.32**	0.12*	0.56**	0.62**	0.02
5. Amotivation					1	0.54**	0.01	0.25**	-0.07	-0.04	0.18**
6. External social regulation						1	0.19**	0.31**	0.10	0.07	0.19**
7. External material regulation							1	0.36**	0.57**	0.61**	0.25**
8. Identified regulation								1	0.48**	0.53**	0.24**
9. Introjected regulation									1	0.73**	0.24**
10. Intrinsic regulation										1	0.25**
11. Social inclusion											1
M (SD)	3.79 (0.75)	4.01 (0.72)	4.09 (0.91)	2.89 (0.56)	2.46 (1.09)	2.33 (1.03)	3.50 (1.05)	3.81 (0.93)	3.72 (0.89)	4.18 (0.84)	2.49 (0.44)

Note: $N = 29$.

** $p < 0.01$, * $p < 0.05$.

3.3 | Structural equation model

Two univariate outliers (Iglewicz & Hoaglin, 1993) and three multivariate outliers (Kline, 2011; Leys et al., 2019) were removed prior to testing the structural equation model (thus, the final sample was composed of 286 participants; 153 male). The hypothesized predictive model was tested using SEM in the three BPN and previously discussed SDI (see Figure 1). The model demonstrated a good fit to the observed data $\chi^2(58) = 78.51$, $p < 0.05$, $\chi^2/df = 1.35$, CFI = 0.98, RMSEA = 0.04, SRMR = 0.04. The standardized output for all structural and covariate pathways specified in this model was significant ($p < 0.05$).

This model was reanalyzed in a multigroup analysis to test its invariance across the self-reported and proxies responses. Table 2 presents the fit indices of the three models tested. Configural invariance is observed, while the unrestricted model shows adequate fit indexes. This means that the number of factors and their association with the different indicators is similar in both groups. However, the decrease of 0.057 in the CFI when adding the restriction of regression weights and covariances indicates the absence of structural invariance (i.e., the association between the latent variables is not considered equivalent in both groups). Comparing the standardized regression weights in the metric invariance model (with restriction on factor loadings) shows that the association between the SDI and social inclusion is not significant when the participants themselves respond ($\beta = 0.07$; $p = 0.607$) but is significant when proxies respond ($\beta = 0.30$; $p = 0.019$). The adjusted R^2 of the SDI variable in the proposed model showed similar rates in the group answered by participants (67% of variance explained) and by proxies (74% of variance explained). In the case of the explained variance of

social inclusion, it was 1% for the participant-response group and 9% for the proxy responses.

4 | DISCUSSION

This study aims to test a model to predict the social inclusion of PWIDs according to which BPN's satisfaction in physical-sport activity contexts would be associated with SDI, which, in turn, would predict social inclusion.

Most part of the hypothesized associations were fully confirmed. According to the findings from the SEM, it was suggested that when PWIDs feel that their BPN are satisfied, they are more likely to experience self-determined motivation. While there is countless evidence of this association among people without disabilities in physical-activity-related contexts, the literature is scarcer for PWIDs. However, existing studies addressing the analysis of self-determination in this population point out that the psychological mechanisms proposed by SDT tenets are applicable to PWIDs (Frielink et al., 2018; Vicente et al., 2020). Research has shown that contextual variables aligned with autonomy satisfaction, such as choice opportunities, can predict self-determination scores (Wehmeyer & Garner, 2003).

Moreover, this autonomy domain has been shown to be particularly influential when opportunities are provided at home. According to the choice theory (Glasser, 1998; Wehmeyer & Schwartz, 1998), self-determination is associated not only with making choices and decisions but also with expressing wishes and needs and pursuing the realization of choices and needs. The present study adds to the existing literature by providing evidence on the association between autonomy

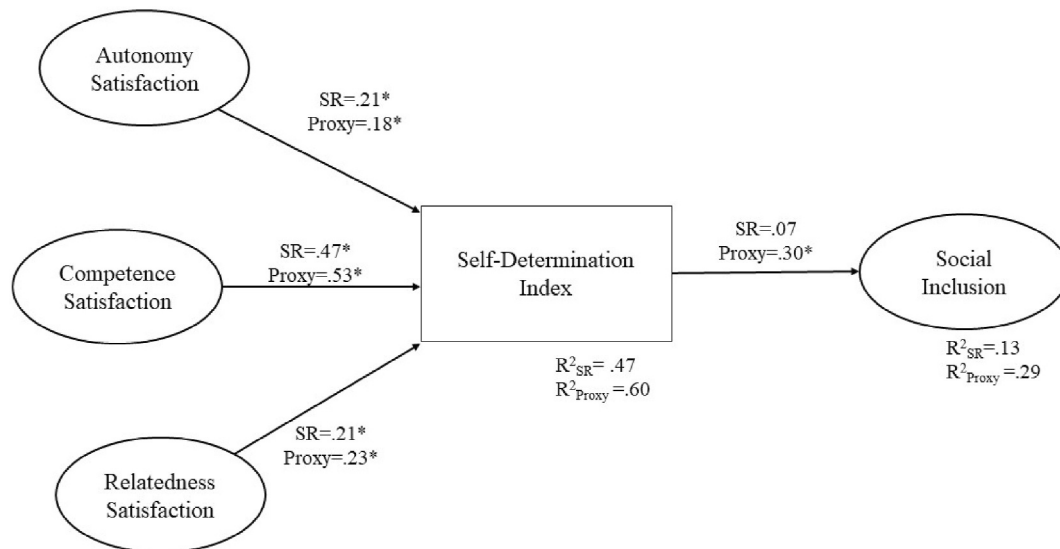


FIGURE 1 Results of the structural equation modeling. * $p < 0.05$; $N_{SR} = 158$; $N_{Proxy} = 128$.

TABLE 2 Fit indices of tested models in the multigroup analysis.

	χ^2	d.f.	$\chi^2/\text{d.f.}$	CFI	TLI	RMSEA	SRMR
Unconstrained model	137.26	117	1.17	0.981	0.975	0.025	0.030
Structural weights	281.26	141	2.00	0.870	0.856	0.059	0.066
Structural covariances	293.07	147	1.99	0.865	0.857	0.059	0.066

satisfaction and self-determined motivation in physical-activity contexts. Thus, providing opportunities to engage in voluntary actions with the required support seems to be an important step for regulating agentic actions within the context of physical activity.

Aside from autonomy satisfaction, competence satisfaction also emerged in the present study as a predictor of self-determined motivation. Interestingly, this psychological need showed the strongest association with self-determined motivation. This link, frequently found among the general population in physical activity contexts (Vanconcellos et al., 2020; Vlachopoulos et al., 2010), is of particular interest in PWIDs. According to the support model of Thompson et al. (2009), PWIDs experience a mismatch between their personal competence and environmental demands more often than other people. This results in an intensification of support needs. Such support, defined as the resources and strategies that enhance human functioning (Thompson et al., 2009), is specifically meaningful in physical activity contexts in which participants face cognitive and physical demands. Adapted physical activity might be the most evident expression of competence support for PWIDs (Reina, 2010). In this case, aspects such as the complexity of rules, number of participants, or equipment are adapted to meet participants' competence more realistically.

Lastly, relatedness satisfaction was also found to be positively linked with self-determined motivation. This finding also aligns with previous research suggesting that when PWIDs feel fulfilled with their relatedness need, they are more likely to experience

autonomous motivation (Frielink et al., 2018). The need for relatedness includes feeling connected and taking care of and by other people, and such feelings can be easily fostered through physical activity experiences in which participants interact among themselves. In a recent study carried out by Franco et al. (2023), it was found that PWIDs who practiced sport rated higher their interpersonal relationships in the physical activity context than those who were engaged in non-regulated physical activity. Previous works have suggested that sports can be a valid tool to improve interpersonal relationships (Moeijes et al., 2019). In this vein, it has been previously suggested that participation in a sports activity or a guided training program promoted feelings of empowerment and self-confidence (Bota et al., 2014). This seems to be particularly true when young adults with intellectual disabilities interact with their peers without disabilities during these activities (Asmus et al., 2017; Bota et al., 2014). Inclusive physical activity is defined as a context in which PWIDs participate actively and effectively in any physical activity at the maximum level their abilities allow (Ocete, 2021). The fostering of such practice that entails the participation of people with and without disabilities is a common global trend, being the subject of numerous studies such as that of Ocete et al. (2024), where they analyzed the impact of an inclusive basketball campus on the self-efficacy of practitioners with and without disabilities, concluding that the effect of carrying out inclusive practice can positively influence the self-efficacy of players with and without disabilities,

facilitating these spaces the interaction between young people with and without disabilities.

The confirmed associations between the three BPN's satisfaction and self-determined motivation among PWIDs support the claim that autonomy, competence, and relatedness needs are fundamental for optimal human functioning in physical activity contexts. Competence is the need that has received greater attention when providing physical activity opportunities for PWIDs. However, findings in the present study point out that the actions in these settings should not exclusively focus on the mismatch between the personal competence of PWIDs and environmental demands but also on pursuing the satisfaction of the needs for autonomy and relatedness.

The second part of the predictive model tested in the present study was the hypothesized relation between SDI as a predictor of social inclusion of PWIDs. It is interesting to highlight that the results obtained demonstrated a positive relationship between the SDI and the social inclusion of PWIDs when the proxies responded to the questionnaire acting as their reference persons. However, this relationship was not found when the PWIDs responded to the questionnaire themselves. These results could be attributed to the different perceptions that PWIDs and reference persons may have regarding the same situation.

This idea contrasts with previous studies that advocate for the importance of supporting PWIDs in decision-making through an external person who interprets their expressions or intentions (Watson, 2016). Similarly, other research supports that significant others (proxies) can successfully decode and validate the expressions of PWIDs while considering their abilities, interests, preferences, skills, and values (Nicholson et al., 2021; Nieuwenhuijse et al., 2019; van Tuyl van Serooskerken et al., 2022). In this same line, previous studies by Claes et al. (2010) and McVilly et al. (2000) found no differences in responses between PWIDs and proxies when assessing quality of life from a standardized approach.

In contrast, there is scientific evidence supporting the difference in perceptions between PWIDs and proxies when assessing various variables that make up the construct of quality of life (Balboni et al., 2013; Berástegui et al., 2021; Schmidt et al., 2010). Specifically, Berástegui et al. (2021) found differences in the perceptions of social inclusion, as reflected in the results of the present study. This discrepancy may be due to various factors, including the informant's knowledge of the individual with intellectual disability (Schmidt et al., 2010). Another determining factor could be the diagnosis presented by the person with intellectual disabilities or their level of dependence. Vicente et al. (2020) report that the greater dependence exhibited by individuals with intellectual disabilities, the more external support and opportunities they receive. Proxies may consider this a reflection of higher levels of self-determination and, therefore, perceived more social inclusion. Hence, the level of dependence and, consequently, the support received could be determining factors in the relationship between SDI and the social inclusion of PWIDs. However, further research on the topic is necessary to draw well-founded conclusions.

4.1 | Practical implications

In practical terms, the present study sheds light on various issues related to the physical activity practices of PWIDs.

Firstly, it appears that satisfying the BPN of PWIDs in physical-sports practice contexts has positive effects on their motivation and social inclusion. Thus, it is essential to promote the satisfaction of autonomy, competence, and relatedness for PWIDs in sports settings, as this could lead to an improvement in their overall quality of life.

Among the strategies found to promote the satisfaction of BPN, the training of professionals responsible for the physical activity and sports environments of PWIDs stands out. This training of coaches, trainers, and teachers is crucial for them to learn how to support and satisfy the BPN. Such training should focus on assimilating strategies to support the three BPN. For example, to support autonomy, it is necessary for the coach to allow the athlete to progress at their own pace, stimulate their curiosity, or provide additional resources to facilitate autonomous learning. To achieve competence satisfaction, the coach should learn to provide appropriate challenges, set self-referenced goals, give demonstrations with specific guidance, or ask questions to improve understanding. Lastly, concerning relatedness, it would be highly beneficial for the person responsible for the physical-sports practice to show a positive attitude, demonstrate understanding towards the athlete, and inquire about their progress, well-being, and feelings.

Additionally, given the disparity in results obtained regarding the relationship between motivation and social inclusion depending on the source of the response (self-report vs. proxy), a new line of action is opened. It would be of interest to ask both PWIDs and their caregivers to obtain different perspectives on the same reality and be able to contrast them when it comes to make management decisions affecting PWIDs.

4.2 | Strengths, limitations, and future research

This study adds to the existing literature by exploring the role of BPN and the motivation on the social inclusion of PWIDs. The study is nevertheless subject to some limitations.

Firstly, it is important to note that in this study, only the BNP satisfaction scale was utilized since the study was focused on the bright side of the motivational sequence. However, it has been proved that BPN thwarting can also play an important role in the explanation of behavioral outcomes. In future research, it would be interesting to also employ the BPN frustration scale to analyze its relationship with motivation and inclusion among PWIDs. Likewise, it is also necessary to acknowledge the weak levels of reliability and acceptance of the scale as a note of caution for readers when interpreting the findings of this study and generalizing the conclusions drawn.

Other limitation is the lack of theoretical consensus on whether proxies' perceptions accurately reflect the perceptions of PWIDs. There is literature supporting both realities. It appears that there is

agreement in some situations and under certain approaches, but under other approaches and considering certain variables, no solid relationship is found. That is why there is a need for research on the factors determining discrepancies, with possible factors including the level of dependence of PWIDs, the presented clinical diagnosis etc. Likewise, it would be interesting to address this issue with a qualitative approach to understand the main stakeholders' opinions and obtain additional subjective information about the factors that may be causing the mentioned discrepancies.

Furthermore, some aspects are linked to the type of physical activity or the context where the physical activity is practiced, which are likely to affect social inclusion and have not been considered in the present study. Future research could explore whether certain conditions might be moderating the association between motivational patterns and the perception of social inclusion in PWIDs.

Finally, future research could propose the design of an intervention program aimed at enhancing autonomous forms of motivation among PWIDs within physical-sports activity contexts. This intervention program could be based on a classification system of motivational behaviors, such as the one recently developed by Ahmadi et al. (2023). Additionally, its effectiveness could be tested to assess its impact on improving the motivation levels and participation of PWIDs in physical activities.

5 | CONCLUSIONS

The hypothesized model tested in the present study has been partially confirmed. In the context of physical-sport activity practice, the satisfaction of BPN in PWIDs seems to be associated with developing more self-determined motivation, with a strong association found between competence satisfaction and self-determined motivation. Similarly, in these contexts, SDI appears to have a positive relationship with the social inclusion of PWIDs. Discrepancies have been found between the perceptions of PWIDs and proxies regarding the terms of this relationship, necessitating research to understand better the factors that may be generating such discrepancies.

AUTHOR CONTRIBUTIONS

Evelia Franco y Carmen Ocete contributed to the conception and design of the work. Evelia Franco and Elena Pérez-Calzado contributed to the analysis and interpretation of the data. All the authors contribute to the discussion of the data and the drafting and revision of the manuscript.

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CONFLICT OF INTEREST STATEMENT

Authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author, E.P-C., upon reasonable request.

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REFERENCES

- Ahmadi, A., M.I. Noetel, P. Parker, R. M. Ryan, N. Ntoumanis, J. Reeve, M. Beauchamp, et al. 2023. "A Classification System for Teachers' Motivational Behaviors Recommended in Self-Determination Theory Interventions." *Journal of Educational Psychology* 115(8): 1158–76. <https://doi.org/10.1037/edu0000783>.
- Alvarez, O., L. Tormo-Barahona, I. Castillo, and J. A. Moreno-Murcia. 2021. "Examining Controlling Styles of Significant Others and Their Implications for Motivation, Boredom and Burnout in Young Swimmers." *International Journal of Environmental Research and Public Health* 18(11): 5828. <https://doi.org/10.3390/ijerph18115828>.
- Asmus, J. M., E. W. Carter, C. K. Moss, E. E. Biggs, D. M. Bolt, T. L. Born, K. Bottema-Beutel, et al. 2017. "Efficacy and Social Validity of Peer Network Interventions for High School Students with Severe Disabilities." *American Journal on Intellectual and Developmental Disabilities* 122(2): 118–37. <https://doi.org/10.1352/1944-7558-122.2.118>.
- Aujla, I., and S. Needham-Beck. 2020. "Subjective Well-Being Among Young Dancers with Disabilities." *International Journal of Disability, Development and Education* 67(5): 563–70. <https://doi.org/10.1080/1034912X.2019.1615607>.
- Bagozzi, R. P., and J. R. Edwards. 1998. "A General Approach for Representing Construct Is in Organizational Research." *Organizational Research Methods* 1(1): 45–87. <https://doi.org/10.1177/109442819800100104>.
- Balboni, G., A. Coscarelli, G. Giunti, and R. L. Schallock. 2013. "The Assessment of the Quality of Life of Adults with Intellectual Disability: the Use of Self-Report and Report of Others Assessment Strategies." *Research in Developmental Disabilities* 34(11): 4248–54. <https://doi.org/10.1016/j.ridd.2013.09.009>.
- Bartholomew, K. J., N. Ntoumanis, R. M. Ryan, and C. Thøgersen-Ntoumani. 2011. "Psychological Need Thwarting in the Sport Context: Assessing the Darker Side of Athletic Experience." *Journal of Sport & Exercise Psychology* 33(1): 75–102. <https://doi.org/10.1123/jsep.33.1.75>.
- Baumeister, R. F., and M. R. Leary. 1995. "The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation." *Psychological Bulletin* 117(3): 497–529. <https://doi.org/10.1037/0033-2909.117.3.497>.
- Berástegui, A., A. Santos, and G. Suárez. 2021. "The Reporters' Agreement in Assessing the Quality of Life of Young People with Intellectual Disabilities." *Research in Developmental Disabilities* 116: 104026. <https://doi.org/10.1016/j.ridd.2021.104026>.
- Bota, A., S. Teodorescu, and S. Șerbănoiu. 2014. "Unified Sports – A Social Inclusion Factor in School Communities for Young People with Mintellectual Disabilities." *Procedia Social and Behavioral Sciences* 117: 21–6. <https://doi.org/10.1016/j.sbspro.2014.02.172>.
- Browne, M. W., and R. Cudeck. 1993. "Alternative Ways of Assessing Model Fit." In *Testing Structural Equation Models*, edited by K. A. Bollen and J. S. Long, 136–62. Sage.
- Byrne, B. M. 2001. *Structural Equation Modeling with Amos: Basic Concepts, Applications, and Programming*. Erlbaum.

- Cecchini, J. A., J. L. Fernández-Losa, C. G. González de Mesa, and C. C. Applegate. 2013. "Aplicaciones del modelo de autodeterminación en la educación física de primaria." *Revista Latinoamericana de Psicología* 45(1): 97–109.
- Cheung, G. W., and R. B. Rensvold. 2002. "Evaluating Goodness-Of-Fit Indexes for Testing Measurement Invariance." *Structural Equation Modeling* 9(2): 233–55. https://doi.org/10.1207/S15328007SEM0902_5.
- Claes, C., G. Van Hove, J. van Loon, S. Vandeveld, and R. L. Schalock. 2010. "Quality of Life Measurement in the Field of Intellectual Disabilities: Eight Principles for Assessing Quality of Life-Related Personal Outcomes." *Social Indicators Research* 98(1): 61–72. <https://doi.org/10.1007/s11205-009-9517-7>.
- Connell, J. P., and R. M. Ryan. 1984. "A Developmental Theory of Motivation in the Classroom." *Teacher Education Quarterly* 11(4): 64–77. <http://www.jstor.org/stable/23474551>.
- Deci, E. L., and R. M. Ryan. 1985. *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum Press.
- Dorofeev, S., and P. Grant. 2006. *Statistics for Real-Life Sample Surveys: Non-simple-random Samples and Weighted Data*. Cambridge: Cambridge University Press.
- Franco, E., C. Ocete, E. Pérez-Calzado, and A. Berástegui. 2023. "Physical Activity and Quality of Life Among People with Intellectual Disabilities: The Role of Gender and the Practice Characteristics." *Behavioral Sciences* 13(9): 773. <https://doi.org/10.3390/bs13090773>.
- Frielink, N., C. Schuengel, and P. J. C. M. Embregts. 2018. "Autonomy Support, Need Satisfaction, and Motivation for Support Among Adults with Intellectual Disability: Testing a Self-Determination Theory Model." *American Journal on Intellectual and Developmental Disabilities* 123(1): 33–49. <https://doi.org/10.1352/1944-7558-123.1.33>.
- Frielink, N., C. Schuengel, and P. J. C. M. Embregts. 2021. "Evaluating the Self-Determination Continuum towards Seeking Support Among People with Mild to Borderline Intellectual Disabilities." *Journal of Intellectual Disability Research* 65(4): 348–60. <https://doi.org/10.1111/jir.12819>.
- Glasser, W. 1998. *Choice Theory: A New Psychology of Personal Freedom*. HarperPerennial.
- Grolnick, W. S., and R. M. Ryan. 1989. "Parent Styles Associated with Children's Self-Regulation and Competence in School." *Journal of Educational Psychology* 81(2): 143–54. <https://doi.org/10.1037/0022-0663.81.2.143>.
- Hästbacka, E., M. Nygård, and F. Nyqvist. 2016. "Barriers and Facilitators to Societal Participation of People with Disabilities: A Scoping Review of Studies Concerning European Countries." *Alternative* 10(3): 201–20. <https://doi.org/10.1016/j.alter.2016.02.002>.
- Iglewicz, B., and D. C. Hoaglin. 1993. *Volume 16: How to Detect and Handle Outliers*. Quality Press.
- Kang, S., K. Lee, and S. Kwon. 2019. "Basic Psychological Needs, Exercise Intention and Sport Commitment as Predictors of Recreational Sport Participants' Exercise Adherence." *Psychology and Health* 35(8): 916–32. <https://doi.org/10.1080/08870446.2019.1699089>.
- Kline, R. B. 2011. *Principles and Practice of Structural Equation Modeling*. 3rd ed. Guilford Press.
- Leo, F. M., A. Mouratidis, J. J. Pulido, M. A. López-Gajardo, and D. Sánchez-Oliva. 2022. "Perceived Teachers' Behavior and Students' Engagement in Physical Education: the Mediating Role of Basic Psychological Needs and Self-Determined Motivation." *Physical Education and Sport Pedagogy* 27(1): 59–76. <https://doi.org/10.1080/17408989.2020.1850667>.
- Leys, C., M. Delacre, Y. L. Mora, D. Lakens, and C. Ley. 2019. "How to Classify, Detect, and Manage Univariate and Multivariate Outliers, with Emphasis on Pre-registration." *International Review of Social Psychology* 32(1). <https://doi.org/10.5334/irsp.289>.
- Little, T. D., W. A. Cunningham, G. Shahar, and K. F. Widaman. 2002. "To Parcel or Not to Parcel: Exploring the Question, Weighing the Merits." *Structural Equation Modeling* 9(2): 151–73. https://doi.org/10.1207/S15328007SEM0902_1.
- Louw, J. S., B. Kirkpatrick, and G. Leader. 2020. "Enhancing Social Inclusion of Young Adults with Intellectual Disabilities: A Systematic Review of Original Empirical Studies." *Journal of Applied Research in Intellectual Disabilities* 33(5): 793–807. <https://doi.org/10.1111/jar.12678>.
- Marsh, H. W., K.-T. Hau, and Z. Wen. 2004. "In Search of Golden Rules: Comment on Hypothesis-Testing Approaches to Setting Cutoff Values for Fit Indexes and Dangers in Overgeneralizing Hu and Bentler's (1999) Findings." *Structural Equation Modeling: A Multidisciplinary Journal* 11(3): 320–41. https://doi.org/10.1207/s15328007sem1103_2.
- Matsunaga, M. 2008. "Item Parceling in Structural Equation Modeling: A Primer." *Communication Methods and Measures* 2(4): 260–93. <https://doi.org/10.1080/19312450802458935>.
- McVilly, K. R., R. M. Burton-Smith, and J. A. Davidson. 2000. "Concurrence between Subject and Proxy Ratings of Quality of Life for People with and without Intellectual Disabilities." *Journal of Intellectual and Developmental Disability* 25(1): 19–39. <https://doi.org/10.1080/132697800112767>.
- Moeijes, J., J. T. van Busschbach, T. H. Wieringa, J. Kone, R. J. Bosscher, and J. W. R. Twisk. 2019. "Sports Participation and Health-Related Quality of Life in Children: Results of a Cross-Sectional Study." *Health and Quality of Life Outcomes* 17(1): 64. <https://doi.org/10.1186/s12955-019-1124-y>.
- Nicholson, C., W. M. L. Finlay, and S. Stagg. 2021. "Forms of Resistance in People with Severe and Profound Intellectual Disabilities." *Sociology of Health and Illness* 43(3): 642–59. <https://doi.org/10.1111/1467-9566.13246>.
- Nieuwenhuijse, A. M., D. L. Willems, and E. Olsman. 2019. "Physicians' Perceptions on Quality of Life of Persons with Profound Intellectual and Multiple Disabilities: A Qualitative Study." *Journal of Intellectual and Developmental Disability* 45(2): 176–83. <https://doi.org/10.3109/13668250.2019.1580117>.
- Ocete, C. 2021. "El deporte como facilitador de la inclusión de personas con discapacidad: deporte inclusivo." In *Deporte Inclusivo: Aplicaciones Prácticas*, edited by C. Ocete Coord, 17–38. Instituto Andaluz del Deporte. Consejería de Educación y Deporte.
- Ocete, C., A. Roldan, R. Reina, G. Ortega, and J. Pérez-Tejero. 2024. "Effect of a Four-Day Inclusive Basketball Campus on the Self-Efficacy of Youths with or without a Physical Disability: the Case of the Real Madrid Foundation." *European Journal of Special Needs Education*: 1–8. <https://doi.org/10.1080/08856257.2024.2323337>.
- Reina, R. 2010. *La actividad física y el deporte adaptado ante el espacio europeo de enseñanza superior*. Wanceulen.
- Ryan, R. M. 1995. "Psychological Needs and the Facilitation of Integrative Processes." *Journal of Personality* 63(3): 397–427. <https://doi.org/10.1111/j.1467-6494.1995.tb00501.x>.
- Ryan, R. M., and E. L. Deci. 2002. "Overview of Self-Determination Theory: An Organismic Dialectical Perspective." In *Handbook of Self-Determination Research*, edited by E. L. Deci and R. M. Ryan, 3–33. University of Rochester Press.
- Ryan, R. M., H. Patrick, E. L. Deci, and G. C. Williams. 2008. "Facilitating Health Behaviour Change and its Maintenance: Interventions Based on Self-Determination Theory." *The European Health Psychologist* 10: 2–5.
- Schalock, R. L., and M. A. Verdugo. 2007. "El concepto de calidad de vida en los servicios y apoyos para personas con discapacidad intelectual." *Siglo Cero Revista Española sobre Discapacidad Intelectual* 38: 21–36.
- Schmidt, S., M. Power, A. Green, R. Lucas-Carrasco, E. Eser, E. Dragomirecka, and Marcello Fleck. 2010. "Self and Proxy Rating of Quality of Life in Adults with Intellectual Disabilities: Results from the DISQOL Study." *Research in Developmental Disabilities* 31(5): 1015–26. <https://doi.org/10.1016/j.ridd.2010.04.013>.

- Schreiber, J. B., A. Nora, F. K. Stage, E. A. Barlow, and J. King. 2006. "Reporting Structural Equation Modeling and Confirmatory Factor Analysis Results: A Review." *The Journal of Educational Research* 99(6): 323–37. <https://doi.org/10.3200/JOER.99.6.323-338>.
- Standage, M., J. L. Duda, and N. Ntoumanis. 2006. "Students' Motivational Processes and Their Relationship to Teacher Ratings in School Physical Education." *Research Quarterly for Exercise & Sport* 77(1): 100–10. <https://doi.org/10.1080/02701367.2006.10599336>.
- Standage, M., and R. M. Ryan. 2020. "Self-Determination Theory in Sport and Exercise." In *Handbook of Sport Psychology*, edited by G. Tenenbaum and R. C. Eklund, 37–56. Wiley.
- Thompson, J. R., V. J. Bradley, W. H. E. Buntinx, R. L. Schallock, K. A. Shogren, M. E. Snell, M. L. Wehmeyer, et al. 2009. "Conceptualizing Supports and the Support Needs of People with Intellectual Disability." *Intellectual and Developmental Disabilities* 47(2): 135–46. <https://doi.org/10.1352/1934-9556-47.2.135>.
- United Nations Convention on the Rights of Persons with Disabilities. 2006. New York: USA: United Nations General Assembly.
- Vallerand, R. J., and G. F. Losier. 1999. "An Integrative Analysis of Intrinsic and Extrinsic Motivation in Sport." *Journal of Applied Sport Psychology* 11(1): 142–69. <https://doi.org/10.1080/10413209908402956>.
- Vansteenkiste, M., B. Soenens, and R. M. Ryan. 2023. "Basic Psychological Needs Theory: A Conceptual and Empirical Review of Key Criteria." In *The Oxford Handbook of Self-Determination Theory*, edited by R. M. Ryan, 84–123. Oxford library of psychology series.
- van Tuyl van Serooskerken, J. M., A. M. Willemsen, A. de la Croix, P. J. C. M. Embregts, and Carlo Schuengel. 2022. "Satisfying Basic Psychological Needs Among People with Complex Support Needs: a Self-Determination Theory-guided Analysis of Primary Relatives' Perspectives." *Disabilities* 2: 330–47. <https://doi.org/10.3390/disabilities2020024>.
- Vasconcellos, D., P. D. Parker, T. Hilland, R. Cinelli, K. B. Owen, N. Kapsal, J. Lee, et al. 2020. "Self-determination Theory Applied to Physical Education: A Systematic Review and Meta-Analysis." *Journal of Educational Psychology* 112(7): 1444–69. <https://doi.org/10.1037/edu0000420>.
- Verdugo, M. A., L. Gómez- Sánchez, B. Arias, M. Santamaría, D. Clavero, and J. Tamarit. 2013. *Escala INICO-FEAPS: Evaluación Integral de la Calidad de Vida de Personas con Discapacidad Intelectual o del Desarrollo*. Publicaciones del INICO.
- Verdugo, M. A., P. Navas, L. E. Gómez, and R. L. Schallock. 2012. "The Concept of Quality of Life and its Role in Enhancing Human Rights in the Field of Intellectual Disability." *Journal of Intellectual Disability Research* 56(11): 1036–45. <https://doi.org/10.1111/j.1365-2788.2012.01585.x>.
- Vicente, E., C. Mumbardó-Adam, V. M. Guillén, T. Coma-Roselló, M.-Á. Bravo-Álvarez, and S. Sánchez. 2020. "Self-Determination in People with Intellectual Disability: The Mediating Role of Opportunities." *International Journal of Environmental Research and Public Health* 17(17): 6201. <https://doi.org/10.3390/ijerph17176201>.
- Vlachopoulos, S. P., N. Ntoumanis, and A. L. Smith. 2010. "The Basic Psychological Needs in Exercise Scale: Translation and Evidence for Cross-cultural Validity." *International Journal of Sport and Exercise Psychology* 8(4): 394–412. <https://doi.org/10.1080/1612197X.2010.9671960>.
- Watson, J. 2016. "Assumptions of Decision-Making Capacity: The Role Supporter Attitudes Play in the Realisation of Article 12 for People with Severe or Profound Intellectual Disability." *Laws* 5(1): 6. <https://doi.org/10.3390/laws5010006>.
- Wehmeyer, M. L., and N. W. Garner. 2003. "The Impact of Personal Characteristics of People with Intellectual and Developmental Disability on Self-Determination and Autonomous Functioning." *Journal of Applied Research in Intellectual Disabilities* 16(4): 255–65. <https://doi.org/10.1046/j.1468-3148.2003.00161.x>.
- Wehmeyer, M. L., and M. Schwartz. 1998. "The Relationship between Self-Determination and Quality of Life for Adults with Mental Retardation." *Education and Training in Mental Retardation and Developmental Disabilities* 33(1): 3–12.
- Wolf, E. J., K. M. Harrington, S. L. Clark, and M. W. Miller. 2013. "Sample Size Requirements for Structural Equation Models: An Evaluation of Power, Bias, and Solution Propriety." *Educational and Psychological Measurement* 76(6): 913–34. <https://doi.org/10.1177/0013164413495237>.
- World Health Organization. 2012. World Report on Disability: Chapter 1: Understanding disability.
- World Health Organization. 2018. Global Action Plan on Physical Activity 2018–2030: More Active People for a Healthier World.