Journal of Intellectual Disability Research doi: 10.1111/jir.12731

VOLUME 64 PART 7 pp 512–523 JULY 2020

Individual and contextual predictors of retention in Special Olympics for youth with intellectual disability: who stays involved?

J. A. Weiss,[1] S. Robinson,[1] M. Harlow,[2] A. Mosher,[2] J. Fraser-Thomas,[2] R. Balogh[3,4] & Y. Lunsky[5,6]

1 *Department of Psychology, York University, Toronto, Ontario, Canada*
2 *School of Kinesiology and Health Science, York University, Toronto, Ontario, Canada*
3 *Faculty of Health Sciences, University of Ontario Institute of Technology, Oshawa, Ontario, Canada*
4 *Department of Physical Therapy, University of Toronto, Toronto, Ontario, Canada*
5 *Azrieli Adult Neurodevelopmental Centre, Centre for Addictionand Mental Health, Toronto, Ontario, Canada*
6 *Department of Psychiatry, University of Toronto, Toronto, Ontario, Canada*

Abstract

Background Despite the recognised benefits of sport, participation is often reported to be low for youth with intellectual disability (ID). The current study was the first to longitudinally examine sport retention in this population, a critical aspect of ensuring participation.
Methods Study participants were parents/caregivers of athletes with ID involved in community Special Olympics (SO), 11–22 years of age ($N = 345$). Participants completed an online survey in 2012 that included caregiver demographic and athlete intrapersonal, interpersonal and broader contextual variables. Retention rates for 2019 were determined using the SO provincial registration lists.
Results Of the 345 survey participants, 81.7% remained active athletes in 2019. Caregiver demographic and athlete intrapersonal factors were largely unrelated to retention. In contrast, retention was associated with the frequency and number of sports athletes participated in, the perceived psychosocial gains of SO involvement and the environmental supports that were available to facilitate participation; frequency of sport participation was the strongest predictor of remaining a registered athlete.
Conclusions This study has implications for future initiatives aimed at increasing sport retention in a population that struggles to be engaged in sport. Efforts should focus on the athlete experience and sport-specific factors. Coaches and caregivers can foster positive experiences and play an important role in continued sport participation.

Keywords intellectual disability, participation, retention, Special Olympics, sport

There are numerous benefits to participating in sport for children and youth with and without disabilities. Benefits of sport for people with intellectual disability (ID) include fitness and health (Balic, Mateos, & Blasco, 2000; Draheim, Williams, & McCubbin, 2002), social acceptance (Harada & Siperstein, 2009), social competence (Dykens & Cohen, 1996; Weiss, Diamond, Demark, & Lovald, 2003) and positive self-concept (Gibbons &

Correspondence: Dr Jonathan Weiss, Department of Psychology, York University, 4700 Keele St, Toronto, Ontario M3J1P3, Canada (e-mail: jonweiss@yorku.ca).
[The copyright line for this article was changed on 02 July 2021 after original online publication]

Bushakra, 1989; Riggen & Ulrich, 1993; Weiss & Bebko, 2009). Unfortunately, youth with ID are often marginalised from participating in sport (Lotan, Henderson, & Merrick, 2006) and are less physically active within and outside of school than youth without ID (Foley, Bryan, & McCubbin, 2008).

Youth with ID that do participate are at risk of withdrawal because of high levels of social rejection, isolation and failure (Mansell, Sobsey, & Moskal, 1998). Research on sport participation among children and youth without ID suggests that long-term sport involvement begins in childhood through engagement in a variety of sports (i.e. sampling) and continues through adolescence at a recreational level or with greater investment in a limited number of sports (i.e. specialising and investment) (Côté & Fraser-Thomas, 2016). Understanding the reasons for becoming involved and remaining in sport is critical to youth retention efforts, as well as building lifelong athlete development.

Theoretical models of youth sport (e.g. Côté, Turnnidge, & Evans, 2014; Holt *et al.*, 2017) highlight the need to take into account intrapersonal, interpersonal and contextual factors. Intrapersonal factors include individual characteristics such as gender and age, attitudes and beliefs, self-competence and mental health; contextual factors include broader environmental considerations such as structural factors (i.e. frequency of training and types of sport) and ecological considerations (i.e. socio-economic barriers to participation); additionally, interpersonal factors include relationships experienced within contexts, such as parent support, peer interactions or coach–athlete relationships (Côté *et al.*, 2014).

A handful of studies have described why individuals with ID are motivated to participate in sport, highlighting intrapersonal, interpersonal and contextual variables. Most research in sport among individuals with ID centres on Special Olympics (SO), as the largest national and global sport organisation for people with ID, in both school and community environments. Farrell, Crocker, McDonough and Sedgwick (2004) interviewed 38 adult SO athletes and noted that athletes seek out experiences of competence, autonomy and relatedness, while Harada and Siperstein (2009) interviewed adult SO athletes and their families and found that enjoyment, happiness, friendship and achievement were common reasons for participation. A more recent photo-elicitation study of five SO athletes (ages 13 to 33) identified themes of connectedness (with friends, teammates and coaches) and training in sport (dedication to sport, competition and trophies) as being central to athlete perceptions of why sport matters to them (Weiss *et al.*, 2017). Further, qualitative research with parents of young athletes in SO suggests parents believe SO offers an instructional environment that fosters personal competence, instils a sense of self-efficacy, encourages athletes to set and work towards physical and social goals and is a secure and accepting environment that fosters relatedness and happiness (Goodwin, Fitzpatrick, Thurmeier, & Hall, 2006). Cross-sectional methods also indicate higher frequency of sport participation is correlated with less athlete behaviour problems, a more positive coach–athlete relationship, broader community participation and greater parental support for child involvement (Ryan, Fraser-Thomas, & Weiss, 2018). A missing piece to this work is a longitudinal investigation of changes in involvement.

Within the context of SO, it is possible that contextual and interpersonal factors are stronger correlates than intrapersonal ones. Robinson, Fraser-Thomas, Balogh, Lunsky and Weiss (2018) reported that after controlling for key intrapersonal variables (e.g. age and health), the athlete–coach relationship, parental support for sport and positive psychosocial sport experiences continues to predict frequency of involvement. Despite factors associated with sport involvement, only one study has questioned why athletes with ID leave SO programming, citing a lack of interest, issues with accessing programmes, injuries and a lack of opportunity for competition (Harada & Siperstein, 2009), which was based on a retrospective cross-sectional method.

The overall goal of this study was to examine the degree of, and contributors to, retention in SO over time for youth with ID. We expected that a combination of caregiver demographic (e.g. age, gender and relationship to athlete), athlete intrapersonal (age, gender, autism status, health quality, adaptive behaviour and emotional and behavioural problems) and interpersonal and broader contextual factors (sport diversity, frequency and successes, friendship quality in SO, engagement in non-sport SO activities, caregiver support of sport, coach–athlete relationship, psychosocial gains related to SO participation and environmental and resource support for SO participation) would predict who would remain in sport over a 7-year period.

Methods

Procedure

The current study employed a longitudinal design to determine the Time 1 variables that would predict continued registration in community-based SO sport programming, from 2012 (Time 1) to 2019 (Time 2). Following approval from the York University Research Ethics Board, SO volunteers accessed the SO Ontario 2012 registration list of all athletes aged 11–22 years of age in that year. This age was selected to maximise reach to athletes engaged in community-based sports, where family caregivers were highly involved (i.e. prior to athletes living in residential placements outside of family caregiver situations). Of these, approximately 2800 had legal guardians who could be contacted by e-mail or regular mail with a letter of invitation to participate in the study, providing either an online link to a survey or contact information to request a paper version. A modified Dillman *et al.* (2009) recruitment method was used, which involved initially providing information about an upcoming study via postcards and then an information letter, followed by an invitation to participate via letter or email. All guardians provided informed consent prior to completing the survey. Completed surveys were matched to the 2012 registration list by ensuring that at least two of the following identifiers were in common: parent/caregiver name or email address combined with child year of birth, child gender or postal code. To determine if an athlete was registered in 2019, a manual search was completed of each of the 2012 athletes that completed the Time 1 survey to confirm their status in the 2019 master database using their unique SO identifier numbers and identifying athlete information. Exclusion criteria included: (1) only being registered in a school-based SO programme (as these individuals engage in occasional SO school events rather than regular SO community sport programmes), (2) having reported not participating in any SO sport in 2012 (i.e. despite being in the database, they did not actually participate in SO programmes in 2012) and (3) having no caregiver-reported ID diagnosis. A dropout was defined as an individual who was not registered as a SO participant in 2019. The outcome variable (retention status) was coded as dropout (0) vs. retained (1).

Participants

Of the initial recruitment, 415 caregivers completed the survey and indicated the athlete had some form of ID. From this, n = 44 were excluded for being only involved in school-based SO sports, n = 18 for not having participated in any SO sport in 2012, and an additional n = 8 were removed because of insufficient information to identify during the matching process. The final sample of n = 345 consisted of active community-based participants in 2012.

At Time 1, respondents were on average 49.4 years of age (SD = 6.2, range = 29–74), including mothers (79.9%), fathers (13.7%), foster parents (1.2%), relatives (3.5%) and other guardians (1.7%). Respondents primarily identified as female respondents (84.3%), 'White, Caucasian, Anglo, European Canadian' (87.7%), and born in Canada (83.6%). Respondents reported varying levels of education attainment, including high school diploma or less (19.6%), college, apprenticeship or trades certificate (36.3%) and university degree (43.9%). Families showed considerable variability in geographic residence, spanning self-identified urban (25.3%), suburban (44.9%), rural (25.9%) and remote (3.9%) Ontario communities. Twenty-two respondents (7.2%) reported a before-tax household income under $25 000, and 132 (43.4%) reported over $100 000. Approximately 30% of caregivers were reported to have at least one recurrent health problem. As shown in Table 1, caregivers of athletes who dropped out did not differ significantly from those that remained in SO.

Athletes had a mean age of 17.3 years (SD = 3.0, range = 11–22 years) at Time 1, 64.1% being male athletes. In addition to a diagnosis of ID, 27.8% of athletes were reported to have a diagnosis of autism spectrum disorder (ASD). Forty-three athletes (12.5%) were reported to have at least one psychiatric disorder, such as attention deficit hyperactivity

Table 1 Caregiver demographic and intrapersonal factors of remained and dropout athletes

	Remained *M* (SD) or %	Dropout *M* (SD) or %	X^2/Z-score	*P* value
Caregiver demographics				
Caregiver age	49.59 (5.87) Median: 49.0	48.73 (7.40) Median: 50.0	Z-score: 0.89	0.37
Caregiver gender (% female)	84.6	82.5	0.17	0.68
Caregiver relationship to athlete (% mother)	80.9	75.8	0.81	0.37
Single-parent/caregiver household (% yes)	18.6	25.0	1.21	0.27
Household income (% under $25 000)	7.3	7.0	0.01	0.94
Caregiver education level (% high school diploma or less attained)	20.4	16.1	0.59	0.44
Caregiver recurrent health problems (% yes)	31.9	22.0	2.22	0.14
Family financial barriers	2.72 (1.14) Median: 3.0	2.95 (1.25) Median: 3.0	Z-score: 1.41	0.16
Community size (% remote/rural)	28.8	34.5	0.75	0.39
Athlete intrapersonal factors				
Athlete age	17.32 (2.99) Median: 17.0	17.11 (3.17) Median: 17.0	Z-score: 0.46	0.65
Athlete gender (% female)	36.5	33.3	0.23	0.63
Autism Spectrum Disorder diagnoses (% yes)	36.5	33.3	0.23	0.63
Athlete health	4.31 (0.75) Median: 4.0	4.05 (0.71) Median: 4.0	Z-score: 2.89	0.004
Adaptive behaviour (WADL Score)	21.41 (5.76) Median: 22.0	21.00 (6.31) Median: 21.0	Z-score: 0.36	0.72
Emotion and behavioural problems (SDQ total score)	12.76 (6.30) Median: 12.0	13.02 (5.57) Median: 13.0	Z-score: 0.52	0.61

SDQ, Strengths and Difficulties Questionnaire; WADL, Waisman Activities of Daily Living.

disorder, obsessive compulsive disorder or a mood/anxiety disorder.

Predictor variables and measures

Caregiver demographics

A demographic form was used to collect information on caregiver age, gender, relationship to athlete (e.g. mother, father and other relative), ethnicity, time in Canada, marital status, single-parent household status (yes/no), highest level of education attained, presence of at least one recurring physical health condition that requires regular ongoing care (yes/no) and self-appraised community size (rural, remote, suburban and urban).

Financial challenge. Caregivers rated their subjective financial difficulties by answering, 'Which of the phrases best describes how you and your family are managing financially these days?' (Lyon, Tait, & Scholes, 2005). Responses were recorded on a Likert scale, ranging from 1 ('very well') to 6 ('We are in deep financial trouble.'). Scores ranged from 1 to 6 (M = 2.8, median = 3.0, SD = 1.2).

Athlete intrapersonal factors

A demographic form was used to collect information on athlete age, gender and caregiver-reported ASD diagnosis (yes/no).

Health quality. Perceived athlete health quality was measured through a single item, where caregivers were asked, 'How is your child's health in general?' (Emerson & Hatton, 2007), with responses ranging from 1 ('very poor') to 5 ('very good'); perceived ratings ranged from 2 to 5 (M = 4.3, median = 4.0, SD = 0.74).

Adaptive behaviour. Athlete adaptive skills were assessed using the Waisman Activities of Daily Living (Maenner *et al.*, 2013). An individual's ability to complete daily tasks (e.g. dressing, toileting, drinking from cup and simple food preparation) was assessed through 17 items, with responses ranging from 0 ('does not do') to 2 ('does on own/independently'). A total score out of a possible 34 is reported. The Waisman Activities of Daily Living is used extensively in research involving individuals with ID (e.g. Taylor & Mailick, 2014) and shows strong psychometric properties. The scale showed solid internal consistency ($\alpha = 0.90$) in the current study. Scores ranged from 3 to 34 ($M = 21.3$, median = 22.0, SD = 6.0).

Emotional and behavioural problems. Child problem behaviour was measured with the 25-item Strengths and Difficulties Questionnaire (Goodman, 1997). The Strengths and Difficulties Questionnaire is made up of a prosocial scale (e.g. considerate of other people's feelings) and four behaviour problem subscales: emotional symptoms (e.g. many fears and easily scared), hyperactivity (e.g. constantly fidgeting and squirming), conduct problems (e.g. often argumentative with adults) and poor peer relationships (e.g. rather solitary and tends to play alone). Caregivers rate each item on a 3-point Likert scale in reference to the last 6 months, ranging from 0 ('not true') to 2 ('certainly true'); the four behaviour problem subscales are summed to obtain a total problems score. The scale has shown good reliability in studies with similar samples of youth with ID (e.g. Emerson, Einfeld, & Stancliffe, 2010). For the purposes of this study, the total problem score was used, with an internal consistency of $\alpha = 0.71$. Scores ranged from 0 to 34 ($M = 12.8$, median = 13, SD = 6.2).

Interpersonal and contextual factors

Sport variables

Sport information included the total number of sports each athlete participated in within the last 12 months (sport diversity), number of gold medals earned in total from all competitions (sport success) and average sport participation frequency in the last 12 months [a single-item 6-point Likert scale, ranging from 1 ('never') to 6 ('several times a week')]. Because inclusion criteria involved having been active in 2012, no athletes had frequency ratings of 'never'. Scores in frequency ranged from 2 to 6 ($M = 4.8$, median = 5, SD = 1.3). The number of gold medals obtained ranged from 0 to 20 ($M = 1.5$, median = 0, SD = 3.5). The number of sports ranged from 1 to 9 ($M = 2.5$, median = 2.0, SD = 1.5).

Friendship quality in Special Olympics and engagement in non-sport Special Olympics activities

Friendship quality was assessed through a single-item, 5-point Likert scale, asking caregivers to rate how they perceived the overall quality of the friendships that the athlete had in SO, ranging from 1 ('very poor') to 5 ('exceptionally good'). Scores ranged from 1 to 5 ($M = 3.4$, median = 3.0, SD = 1.0). Caregivers also reported whether the athlete participated in non-sport SO events (e.g. SO banquets, fundraisers, social events) through a yes/no question (58.5% were rated as having attended).

Caregiver support of sport

Parent/caregiver support was assessed through a five-item scale developed from a past study of parental influence on non-ID youth physical activity (Trost *et al.*, 2003). Items assessed the frequency of supportive behaviours in the last week (e.g. 'provided transportation so their child could go to a place where he or she can do physical activities or play sports'; 'encouraged your child to do physical activities or play sports'; and 'watched their child participate in physical activity or sport'). Responses are recorded on a 5-point Likert scale ranging from 1 ('none') to 5 ('daily'), offering a total score up to 25. Internal consistency in the current study was $\alpha = 0.80$. Mean scores ranged from 1 to 5 ($M = 3.1$, median = 3.0, SD = 0.92).

Coach–athlete relationship quality

Coach–athlete relationship quality was measured with four items adapted from the Coach Athlete Relationship Questionnaire (Jowett & Ntoumanis, 2004), such as 'coach(es) are committed to my child' and 'my child likes their coach(es)'. Items were rated on a 7-point Likert scale, ranging from 1 ('strongly disagree') to 7 ('strongly agree'). The current study showed adequate reliability ($\alpha = 0.72$). Scores ranged from 2 to 7 ($M = 5.7$, median = 6.0, SD = 1.1).

Psychosocial gains in Special Olympics

The Special Olympics Sport Experiences Survey (SOSES; Mosher, Fraser-Thomas, MacDonald, & Weiss, 2017), a modified version of the Youth Experience Survey for Sport (YES-S; MacDonald, Côté, Eys, & Deakin, 2012), was used to assess the experiences of SO athletes. The YES-S is a self-report tool designed to measure the developmental experiences of youth without ID in organised sport in five specific domains. The SOSES was developed through an exploratory factor analysis of the original YES-S, with a focus on positive experiences that could be best answered through parent/caregiver proxy of youth with ID (i.e. eliminating negative experiences, cognitive skills and goal setting subscales). The final 11-item measure is composed of two subscales: (1) social experiences (seven items) and (2) initiative (four items). Items are anchored with 'Based on your child's recent involvement in SO, please rate how much you think they have …'. A sample item for social experiences is '… learned to work with others in a group'; a sample item for initiative is '… put all his or her energy into the activity'. All items were measured on a 4-point scale from 1 (not at all), to 4 (yes, definitely). Within the current sample, all inter-item correlations for each subscale were >0.5, and both subscales showed excellent internal consistency (social experiences α = 0. 91; initiative α = 0.90). Average scores for the initiative subscale ranged from 1 to 4 (M = 2.99, median = 3.0, SD = 0.77), as did scores on the social subscale (M = 2.72, median = 2.7, SD = 0.75).

Environmental and resource support for Special Olympics participation

Environmental/resource support to enable participation in SO activities was assessed through an adapted version of the Environmental Overall Supports Community subscale of the Participation and Environment Measure for Children and Youth (Coster *et al.*, 2011). The Environment Overall Supports Community subscale measures 16 environmental features (e.g. physical layout of space and cognitive demands of activities) and resources (e.g. access to transportation and time) that impact community participation. The subscale was used exactly as originally designed, except that participants were asked to specifically answer how these 16 features impact athletes' SO participation. Caregivers rated perceived impact of each feature (4-point scale: not an issue, usually helps, sometimes helps and sometimes makes harder and usually makes harder) and perceived adequacy of each resource (4-point scale: not needed, usually yes, sometimes yes/sometimes no and usually no). The overall support score ranges from 0 to 100, with higher scores indicating greater environmental/resource support for SO participation. The Participation and Environment Measure for Children and Youth was designed to be used by parents/caregivers of children with and without ID and has solid psychometric properties (Coster *et al.*, 2011). Internal consistency for the Environment Overall Support SO subscale was acceptable (α = 0.79). Scores ranged from 58.3% to 100% (M = 90.5%, median = 93.3%, SD = 8.8%).

Data analysis

First, the bivariate association between each predictor and the outcome (retention status) was evaluated using non-parametric chi-square tests of independence for categorical and Mann–Whitney U tests for continuous variables. Second, variables with a $P < 0.05$ in the bivariate analysis were included in a logistic multiple regression analysis to identify how these significant variables predict regression in an overall model. The threshold for statistical significance was set at $P < 0.05$.

Results

Of the 345 respondents, a large percentage remained registered active athletes in 2019 (n = 282) (81.7%). Special Olympics Ontario assessed its level of retention over the same period by examining who in this same age range was registered in 2012 and 2019 and reported a retention rate of 78–83%, with the range a result of the different parameters that could be used in identifying registered athletes (in this period, there was a change in how athlete registration was tracked and how some programmes were delivered) (J. Noronha, personal communication, 4 March 2020).

Bivariate comparisons

As shown in Table 1, caregivers of athletes who remained were not significantly different from caregivers of athletes who dropped out, nor was family financial challenge associated with retention. Most athlete intrapersonal factors were unrelated to group. Athletes who remained did not differ from athletes who dropped out in terms of age, gender, the percentage with an ASD diagnosis, adaptive behaviour or emotional and behavioural problems. Athletes who remained had significantly better rated health compared with athletes who dropped out ($P = 0.004$).

As shown in Table 2, a number of interpersonal and contextual factors were associated with remaining in SO. In terms of sport-specific variables, athletes who remained participated in more sports ($P = 0.002$) and participated more frequently in the last 12 months ($P < 0.001$). Overall environmental supports to enable participation in SO were higher in athletes who remained involved ($P = 0.04$). Athletes who remained had significantly greater psychosocial gains, including in opportunities to take initiative ($P = 0.005$) and social experiences ($P = 0.004$), were rated to have more positive friendships with others in SO ($P = 0.02$) and were more involved in more non-sport SO activities ($P = 0.03$). Not all interpersonal or sport-related variables were associated with retention; for instance, no differences emerged in the athlete–coach relationship, and caregiver support of physical activity and the number of gold medals were not associated with retention.

Logistic Regression Analyses

The previously noted significant variables were entered together into a logistic multiple regression to predict retention, with the exception of the SOSES social subscale, which was highly correlated with the SOSES initiative subscale ($r = 0.76$, $P < 0.001$), risking collinearity. Almost all the other variables were significantly correlated with each other but with small associations. The overall estimated variance accounted for by the model was small (Nagelkerke $R^2 = 0.14$). Only the average frequency of SO training at Time 1 emerged as a significant predictor. For every one-unit increase in frequency of SO training, there was a corresponding 1.4-fold increase in the odds of retention ($P < 0.009$) (Table 3).

Table 2 Interpersonal and contextual factors of remained and dropout athletes

	Remained athletes *M* (SD)	Dropout athletes *M* (SD)	X^2/*U*-score/*Z*-score	*P* value
Number of sports involved in the last 12 months	2.56 (1.5) Median: 2.0	1.9 (1.1) Median: 2.0	*Z*-score: 3.15	0.002
Success in sport (total number of gold medals)	1.60 (3.55) Median: 0	1.17 (3.06) Median: 0	*Z*-score: 1.02	0.31
Average frequency of SO participation in the last 12 months (5 = once a week)	4.90 (1.22) Median: 5.0	4.06 (1.57) Median: 5.0	*Z*-score: 3.95	<0.001
Friendship quality	4.17 (1.28) Median: 4.0	3.68 (1.50) Median: 4.0	*Z*-score: 2.36	0.02
Involved in non-sport SO activities (% yes)	61.3	45.9	4.88	0.03
Caregiver support of participation	3.13 (0.91) Median: 3.0	2.84 (0.95) Median: 3.0	*Z*-score: 1.83	0.07
Athlete–coach relationship average score	5.77 (1.02) Median: 6.0	5.46 (1.23) Median: 5.8	*Z*-score: 1.68	0.09
SOSES initiative gains	3.05 (0.76) Median: 3.0	2.73 (0.76) Median: 2.7	*Z*-score: 2.82	0.005
SOSES social gains	2.78 (0.73) Median: 2.9	2.46 (0.81) Median: 2.4	*Z*-score: 2.91	0.004
Environmental support (PEM-CY)	90.96 (8.52) Median: 93.8	88.24 (9.72) Median: 89.6	*Z*-score: 2.05	0.04

PEM-CY, Participation and Environment Measure for Children and Youth; SO, Special Olympics; SOSES, Special Olympics Sport Experiences Survey.

Table 3 Correlations among predictors and the logistic regression predictive Special Olympics retention

	(0 = dropout; 1 = remained)					
	B	**S.E.**	**Wald**	***P***	**Exp(*B*)**	**CI (95%)**
Number of sports involved in last 12 months	0.25	0.14	3.20	0.07	1.28	0.98–1.68
Athlete health	0.34	0.21	2.67	0.10	1.41	0.93–2.12
SOSES initiative gains	0.23	0.22	1.06	0.30	1.25	0.82–1.92
Average frequency of SO participation	0.33	0.13	6.87	0.009	1.40	1.09–1.79
Caregiver supports of physical activity	0.11	0.17	0.38	0.54	1.11	0.79–1.56
Environmental support (PEM-CY)	0.01	0.02	0.25	0.62	1.01	0.97–1.05
Friendship quality	−0.06	0.13	0.23	0.63	0.94	0.72–1.22
Non-SO events	−0.10	0.35	0.09	0.77	0.90	0.45–1.80
Constant	−3.44	1.55	4.94	0.03	0.03	

PEM-CY, Participation and Environment Measure for Children and Youth; SO, Special Olympics; SOSES, Special Olympics Sport Experiences Survey.

Discussion

This was the first study to examine individual and contextual correlates of retention in a large multisport organisation for athletes with ID. Over the 7 years, a large percentage of athletes remained involved (approximately 81.7%). Although it is not possible to provide a matched comparison with rates for non-ID athletes, our retention rate does appear higher than those of other studies that report youth sport dropout rates in North America average 35% in any given year, meaning only 65% remain engaged (Petlichkoff, 1996). Normative theories of youth sport development suggest that while recruitment may be facilitated by others and access to local sport programming, retention may have more to do with athlete motivation and socialisation and the resources needed to remain involved (Green, 2005). Many of the variables identified in the current study reflect aspects of socialisation and commitment to sport, all of them having to do with experiences within the SO context – friendship, psychosocial gains (social and initiative), environmental supports and the frequency of participation, all centred around SO specifically. More distal variables, such as caregiver demographic and athlete intrapersonal factors, were not associated with remaining an active athlete.

The most notable predictor involved the frequency of participation. Frequency of participation in sport is a corollary of many other sport-related variables. Most notably, extensive research has linked engagement in deliberate practice (i.e. intensive, focused and effortful sport training) with high levels of sport performance (see Baker & Young, 2014, for a review). Additional work has explored dosage of sport (i.e. frequency and duration) and psychosocial developmental outcomes (e.g. confidence, identity, social skills and emotional regulation), showing that generally, greater frequency is associated with more positive outcomes; however, too much involvement may be problematic, and benefits may be greatest when combined with other organised activities and with maturation (Hansen & Larson, 2007; Mahoney, Harris, & Eccles, 2006; Zarrett *et al.*, 2009). Other research has correlated SO frequency of involvement with positive psychosocial experiences, adaptive behaviour, access to resources, positive coach–athlete relationships and parental support (Ryan *et al.*, 2018). In reference to the current logistic regression model, participation may function as a proxy for a number of other variables that do not directly impact the decision to participate or only do so in a way that explains a very small portion of the variance. For instance, the current results reveal small positive correlations of sport participation frequency with other potential predictors, and past research has linked multiple intrapersonal and contextual factors to physical activity and sport (Biddle, Atkin, Cavill, & Foster, 2011). It may be that frequency of participation acts as a mediator of other variables, and future cross-lagged analyses with multiple time points are warranted to test this hypothesis.

There are a number of additional potentially meaningful correlates of retention, at least at the bivariate level, which speak to the social experiences gained from SO participation. Social and initiative experiences were associated with remaining registered. Considerable research demonstrates that connectedness to others and 'belonging' is a major reason that individuals elect to become involved in SO and is an important outcome of involvement (Castaneda & Sherrill, 1999). In a qualitative photo-elicitation study of SO athletes, connectedness emerged as a central theme, with photographs centring on friendship with other athletes, informal socialising around training events and positive interactions with coaches and teammates (Weiss *et al.,* 2017). In a scoping review, Mahar, Cobigo and Stuart (2013) suggested that belonging involves subjectivity (i.e. self-perceptions of being valued and fitting in), groundedness (i.e. 'belonging to something'), reciprocity (i.e. shared experience between the individual and the specific group), dynamism (i.e. ongoing interplay between facilitators and barriers to connection) and self-determination (i.e. a person's choice to belong), all of which could be explored as a more in-depth operationalisation of the consistent role that connection serves in the decision around becoming and staying involved in sport for people with ID. Research among youth without ID has highlighted social relationships (e.g. being with friends and sense of belonging) among the most consistent reasons for sport take-up and continued involvement (see Côté & Fraser-Thomas, 2016, for a review); strong interpersonal relationships with peers and coaches are also consistently associated with the most positive developmental outcomes among participating athletes (see Holt *et al.*, 2017, for a review).

The degree of environmental supports to enable participation in SO and the degree of parent support for physical activity were also significant correlates of remaining active. Collectively, these variables reflect an in-depth examination of environmental features (physical layout, sensory qualities, physical/cognitive/social demands, peers, attitudes of others, weather and safety) and resources (transportation, services, information, equipment and supplies, family time to support and money to support) that impacted participation specifically in SO. As expected, the greater the degree to which the environment helped to enable access, the more likely athletes remained registered in SO. The availability of resources is known to be critical to enable participation in community activities for children with disabilities (Coster *et al.*, 2011). At the same time, the financial costs of participation and parent support of participation were not specifically correlated. This is not particularly surprising given that there are limited costs to enrolment in SO, which is a not-for-profit largely implemented by volunteers, and thus finances would not pose a considerable challenge to register. The presence of enabling factors beyond finance suggests that even within this context, programmes should pay attention to potential barriers, including those that may be present in social settings, in the environment, in transportation, in scheduling or in activity demands (Anaby *et al.*, 2013; Tint, Maughan, & Weiss, 2017).

Despite some research indicating that the frequency of SO participation is associated with athlete clinical characteristics such as physical health, emotional and behavioural problems and adaptive behaviour (Robinson *et al.*, 2018), the current findings revealed only an association between parent ratings of athlete physical health and retention. Even so, the mean rating of health in the dropout group was still described as 'good'. Given that SO is an organisation designed to support the needs of people with ID, clinical issues may factor into how much a person is involved but not into whether they can be involved at all. This speaks to the importance of ensuring developmentally appropriate supports and activities to enable access to recreation and leisure (King, Petrenchik, Law, & Hurley, 2009) and that inclusive organisations must strive to support and accommodate people with a range of emotional, behavioural and physical challenges (Scholl, Smith, & Davison, 2005).

The current study has a number of limitations. There was no adjustment made for the potential increase in Type I error associated with the multiple bivariate analyses. At the same time, if our results were due to increased chance findings, we would expect to find significant results across demographic, intrapersonal, interpersonal and contextual factors. Instead, significance emerged typically only for variables proximally linked to the SO experience. We also lacked experimental control in the analyses, as all participants were already registered in SO at Time 1, which was not a true baseline. It may be that other factors prior to our initial assessment time point, or for that matter over the course of time between Time 1 and Time 2, are important to consider. Our follow-up window was 7 years, and a longer period of time may indicate different predictors. This is particularly important to consider given that only 18.7% of the sample was deemed as having dropped out by 2019; with such a small rate, it is possible that this sample is not representative of the experience of the larger population of athletes with ID. Lastly, we were not able to follow up families who were no longer registered with SO in 2019, which would be an important next step, especially using mixed methods to complement the statistical data, to understand the dynamics of what was involved in their lack of continued involvement.

Determining the predictive characteristics of retention is the first step towards applying experimental procedures that can manipulate identified variables, determine causal directions and consequently, improve and maintain sport engagement. A focus on SO involvement, psychosocial outcomes and environmental resources may maintain registration in sport, and this has important implications for policy and programming. Over the short term, SO appears to have a very high rate of retention, and a focus on how to continue to support this model and attend to the relative minority who do not continue will be important and may provide some indications of the multiple factors involved in access. Directing further resources to enhancing early engagement, reducing barriers to participation and improving the measurement of social outcomes can serve to enable ongoing sport participation. This is important for people with ID, who are often excluded from sport and are more likely to miss out on its benefits to health and well-being.

Acknowledgements

We would like to thank the families who contributed their time to complete this survey. Data for this study were collected as part of the Sport Participation in Youth with Intellectual Disabilities (SPY-ID) Project. Principal Investigator: Dr Jonathan Weiss. Co-investigators: Dr Lunsky, Dr Balogh and Dr Fraser-Thomas. Collaborators: Dr Jean Côté and James Noronha. A particular thanks to Dr. Tamara Yee for her assistance with initial matching processes.

Conflict of Interest

The authors do not have any conflicts of interest to declare.

Source of funding

The article are funded by Canadian Heritage (Sport Canada) and the Social Sciences and Humanities Research Council.

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Accepted 31 March 2020