Journal of Physical Activity and Health, 2018, 15, 247-254
https://doi.org/10.1123/jpah.2017-0035

Human Kinetics
ORIGINAL RESEARCH

Self-Reported Participation in Sport/Exercise Among Adolescents and Young Adults With and Without Mild to Moderate Intellectual Disability

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Background: Physical inactivity is a leading risk factor for mortality. Adults with intellectual disability are extremely inactive, but less is known about physical activity levels in children and youth with intellectual disability. This paper examines the participation by adolescents and young adults with and without mild to moderate intellectual disability in sport/exercise. **Methods:** Secondary analysis was undertaken of *Next Steps*, an annual panel study that followed a cohort from early adolescence into adulthood. Participants with mild to moderate intellectual disability were identified through data linkage with educational records. **Results:** Sport/exercise participation rates were consistently lower for adolescents and young people with mild to moderate intellectual disability than for their peers without intellectual disability. Matching participants on between-group differences in exposure to extraneous risk factors did not impact on these between-group differences in participation in sport/exercise. **Conclusion:** The results support limited existing evidence regarding the low level of participation of children and young people with intellectual disability in sport/exercise compared with their peers. Future work on promoting sport/exercise and physical activity in children and young people with intellectual disability may play a role in helping to reduce the health inequalities experienced by people with intellectual disability.

Keywords: physical activity, health, secondary analysis, developmental disabilities

The regular practice of physical activity and sport provides both men and women, of all ages and conditions, including persons with disability, with a wide range of physical, social, and mental health benefits.[1] Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure.[2] Exercise is a subcategory of physical activity that is planned, structured, and repetitive, with the objective of improving or maintaining physical fitness.[2] Sport is a subset of exercise where participants adhere to a common set of rules or expectations and a defined goal exists.[3]

The World Health Organization identifies physical inactivity as the fourth leading risk factor for global mortality.[4] It is noted that participation in regular physical activity reduces the risk of coronary heart disease and stroke, diabetes, hypertension, colon cancer, breast cancer, and depression. It is also fundamental to energy balance and weight control, positively related to cardiorespiratory fitness and muscular strength, and bone-loading physical activity increases bone mineral content and bone density.[4] Sport is one of the domains through which people can be physically active[5] with sport also having a role in promoting psychological well-being and increasing social capital.

Intellectual disability refers to a significant general impairment in intellectual functioning that is acquired during childhood, typically operationalized as scoring more than 2 standard deviations below the population mean on a test of general intelligence.[6] Although estimates of the prevalence of intellectual disability vary widely, it has been estimated that approximately 2% of the adult population have intellectual disability.[7,8] A systematic review of physical activity levels in adults with intellectual disability found that they are "incredibly inactive" with only 9% of participants across 15 studies achieving minimum physical activity guidelines.[9] More severe intellectual disability was the strongest predictor of not meeting physical activity guidelines. A lack of physical activity in people with intellectual disability has been linked to cardiac atrophy[10] and is likely to be linked to high-reported obesity rates in children and adults with intellectual disability.[11–14]

Research has mostly focused on physical activity in adults with intellectual disability,[15–17] and there is little evidence on physical activity levels in children and youth with intellectual disability.[18] For children and adolescents with physical disabilities, intellectual impairment has been found to be consistently and negatively associated with physical activity.[19] Small-scale studies have reported low levels of physical activity in adolescents and young adults with mild to moderate intellectual disability, especially women[20] and children and young people with intellectual disability.[21–23] A large-scale study in Taiwan found that less than one-third of adolescents with intellectual disability took part in regular physical activity and only 8% met Taiwanese recommendations for physical activity.[24]

Little is known about the extent of and factors associated with participation in sport by either adults or children with intellectual disability. One large-scale survey of adults with intellectual disability in England found that 59% of participants had not participated in sport at all in the last month, and of these, over one-third said that they would like to participate in sport.[25] Participants who were poor, who were living in more deprived neighborhoods, and who felt unsafe in the area where they live were less likely to take part in sport. In the United States, 6- to 8-year-old children with intellectual disability participated in a lower number of sports than children without intellectual disability, and the number of sports

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was positively related to maternal education and positive perceptions of the impact of the child on the family and negatively related to maternal employment.[26] Children with intellectual disability have also been reported to be less likely to take part in 2 or more hours per week of organized sport after school than children without intellectual disability, with most children with intellectual disability taking part in low-intensity sport.[27]

In this paper, we present the results of a secondary analysis of a large-scale survey, which includes information relating to participation in sport/exercise by adolescents and young adults with and without mild to moderate intellectual disability. The aims of this paper are as follows: to compare participation in sport/exercise by those with and without mild to moderate intellectual disability, to identify sociodemographic predictors of participation, and to estimate the extent to which any between-group differences in participation may be attributable to between-group differences in exposure to extraneous risk factors.

Methods

This paper is based on a secondary analysis of data collected in waves 1–7 of *Next Steps* (formerly known as the Longitudinal Study of Young People in England).[28] *Next Steps* is an annual panel study that followed a cohort from early adolescence into adulthood. It has collected information about their education and employment, economic circumstances, family life, physical and emotional health and well-being, social participation, and attitudes. *Next Steps* data have also been linked to the Department for Education's National Pupil Database (NPD). *Next Steps* is currently managed by the Centre for Longitudinal Studies at University College London and is funded by the Economic and Social Research Council. Prior to 2013, it was managed and funded by the Department for Education. *Next Steps* data files and documentation were obtained from the UK Data Service. Full details of the method and design of *Next Steps* are available in a series of user guides.[29] Key aspects are summarized below.

Sampling

Fieldwork commenced in 2004 when the sampled children were aged 13–14 years (school year 9). The initial (wave 1) sample was drawn from a sampling frame based on children attending maintained schools, independent schools, and pupil referral units in England who in February 2004 were in year 9 (or equivalent) and were born between September 1, 1989, and August 31, 1990. Schools in deprived areas and students from minority ethnic groups were oversampled. At wave 1, 73% of selected schools participated leading to an issued sample of approximately 21,000 young people. The attained sample at wave 1 was 15,770 children (75% response rate). This cohort was followed-up every year until 2010 (age: 19–20 years).

Identification of Participants With Mild to Moderate Intellectual Disability

Data linkage with the 2004 and 2006 NPD was undertaken to identify participants with special educational needs (SEN). Linkage was successful for 15,240 young people present at wave 1 (97% of the *Next Steps* sample). Linkage included data on stage of assessment and primary/secondary category of SEN. Following the example of previous studies,[30,31] we used the SEN category of moderate learning difficulty, if the child was at the School Action Plus stage of assessment of SEN or had a formal statement of SEN, as an indicator of mild to moderate intellectual disability. School Action Plus and statements require the involvement of professionals external to the school in the categorization of SEN. Current guidance defines moderate learning difficulty in relation to pupils having "attainments significantly below expected levels in most areas of the curriculum despite appropriate interventions [and having] . . . much greater difficulty than their peers in acquiring basic literacy and numeracy skills and in understanding concepts."[32]

Of the children sampled, 527 children (3.5% of unweighted linked sample) were identified as having mild to moderate intellectual disability in either 2004 or 2006. Consistent with the data from existing epidemiological research, the prevalence of mild to moderate intellectual disability was significantly higher among boys than girls [4.3% vs 2.5%; prevalence ratio = 1.75 (1.46–2.09)] and among children who were eligible for free school meals (FSMs), an indicator of household poverty [8.0% vs 1.9%; prevalence ratio = 4.10 (3.14–5.35)].[7,33,34]

Procedure

Data in the first 4 waves were collected by face-to-face interviews using computer-assisted personal interviewing with the young person and his or her parents. Waves 5–7 used a mixed-mode approach in which information, which was only collected from the young person, was collected by his or her choice of method (online, telephone, or face to face).

Measures

Sport/Exercise. At waves 1, 2, and 4, participants were asked: How often do you do sports like football, aerobics, dance classes, or swimming—is it . . . (response options were as follows: 1, most days; 2, more than once a week; 3, once a week; 4, less than once a week; and 5, hardly ever; and 6, never)? At waves 6 and 7, participants were asked: How often do you do any kind of physical exercise? This could include activities like cycling, going to the gym, going for long walks, going to dance classes, and playing football or any other kind of sports (response options were same as for waves 1–4 question)? From these data, we created 2 binary variables at each wave: frequent exercise (response options: most days/more than once a week vs rest) and exercise (response options: most days/more than once a week/once a week/less than once a week vs rest).

Sociodemographic Variables

Family Socioeconomic Position. Linkage to the 2004 (wave 1) and 2006 (wave 3) NPD included linkage to data on eligibility for FSMs. Eligibility for FSMs is determined by data linkage to government records of receipt of at least one of a defined list of means-tested welfare benefits by the child's parent(s). It should be noted that this indicator is of eligibility for, not uptake of, FSMs. We created a binary variable of FSM eligibility scored 1 if the child was eligible at wave 1, wave 3, or both waves of *Next Steps*, and scored 0 if the child was not eligible at both waves. FSM eligibility is a commonly used proxy indicator of low household socioeconomic position (SEP).[35]

We extracted data from *Next Steps* on the employment status of parental figures living in the household at waves 1–4 inclusive. We created a binary variable of living in a workless household scored 1 if no resident parental figure was in employment or full-time education at any of the 4 waves and scored 0 if at least 1

resident parental figure was in employment or full-time education in each of the 4 waves.

Young Adult SEP. We extracted data from *Next Steps* on the self-reported employment, education, and training status of the young person at waves 5–7. We created a binary variable of not in employment, education, or training scored 1 if the young person was not in employment, education, or training at any of the 3 waves and scored 0 if he or she was in employment, education, or training in each of the 3 waves.

Household Composition. We extracted data from *Next Steps* on household composition at waves 1–4 inclusive. We created a binary variable of single parent household scored 1 if only one parental figure was resident at any of the 4 waves and scored 0 if 2 parental figures were resident in each of the 4 waves.

Area Deprivation. Linkage to the 2004 (wave 1) and 2006 (wave 3) NPD also included linkage to data derived from the postal code of the child's residence to the Income Deprivation Affecting Children Index (IDACI).[36] IDACI scores are the percentage of children in each lower level super output area that families live in that are considered income deprived. Income deprivation is defined by receipt of means-tested welfare benefits. Lower level super output areas are neighborhoods with an average population of 1500 (range: 1000–3000). IDACI scores were transformed into sample quintiles. We created a binary variable of high neighborhood deprivation scored 1 if the child was living in the lowest IDACI quintile at wave 1, wave 3, or both waves of *Next Steps* and scored 0 if the child was not living in the lowest IDACI quintile at both waves.

Peer Victimization. We extracted data from *Next Steps* child self-reported experience of peer victimization (bullying) at waves 1–3. At each of these waves, children were asked about exposure to 5 types of peer victimization experienced in the last 12 months: (1) Have you ever been upset by being called hurtful names by other students, including getting text messages or e-mails from them? (2) Have you ever been excluded from a group of friends or from joining in activities? (3) Have other students at your school ever made you give them money or personal possessions? (4) Have other students ever THREATENED to hit you, kick you, or use any other form of violence against you? and (5) Have other students ever ACTUALLY hit you, kicked you, or used any other form of violence against you?

If the young participant selected a "yes" option, he or she was then asked about the frequency of exposure. (Response options were as follows: everyday, a few times a week, once or twice a week, once every 2 weeks, once a month, less often than this, and it varies.) Preliminary analysis of responses indicated a strong association between threat of and actual violence, but weak associations between other forms of peer victimization. As a result, we combined self-report of threat of or actual violence at each of the 3 waves. For each of the 4 types of peer victimization (name calling, social exclusion, theft, and violence), we created 1 binary variable: whether this had happened at all in any 12-month period in waves 1–3 (contrasted with it having never happened in any of the 3 waves).

Friendships. We extracted information on friendships from waves 2, 6, and 7 of *Next Steps*. At wave 2, participants were asked: When you have free time, do you mainly: (1) go out somewhere with friends; (2) go round to a friend's house (or friends come round to yours); (3) spend time with brother(s)/sister(s); (4) spend time with other members of your family; or (5) spend time by yourself? We created a binary variable, wave 2 spends time with friends, scored 1 if they selected option 1 or 2 and scored 0 if they selected options 3–5.

At waves 6 and 7, participants were asked: How many close friends do you have—that is, friends you could talk to if you were in some sort of trouble? We created a binary variable, wave 6 or 7 few friends, scored 1 if they reported at either wave they had no or only one close friend and scored 0 if they reported at any wave they had 2 or more close friends.

Information on rate and predictors of sample retention can be found in Online Supplementary Material.

Approach to Analysis

In the first stage of analysis, we made simple bivariate comparisons between participants with and without intellectual disability with regard to the frequency of participation in sport/exercise. In the second stage of analysis, we investigated for the outcome "frequent participation in sport/exercise," the strength of association between sociodemographic factors, and participation separately for participants with and without intellectual disability. Missing data among sociodemographic variables were imputed using multiple imputation routines in IBM SPSS 22 (IBM Corp, Armonk, NY) to create 5 parallel imputed datasets. The subsequent analysis used the following approach: (1) 5 blocks of variables were created (SEP, neighborhood, family type, peer victimization, and friendships) and entered sequentially; (2) variables within blocks were entered in order of bivariate strength of association with the outcome of interest; and (3) variables were only retained in the model if *at the point of entry* they were significantly related to the outcome of interest or had a prevalence ratio of 1.50 or greater. Poisson regression with robust standard errors was used to estimate prevalence ratios uniquely associated with each variable in the model.[37,38]

In the final stage of analysis, we estimated the strength of association between intellectual disability and frequency of participation in sport/exercise while controlling for between-group differences in exposure to sociodemographic variables that have been established as important social determinants of poorer health. We used Propensity Score Matching routines in IBM SPSS 22 to match each participant with intellectual disability with a participant without intellectual disability with a similar propensity score for intellectual disability based on exposure to sociodemographic variables.[39–41] We used the lowest tolerance for matching (0.05) that allowed complete matching for all participants with intellectual disability.

Results

Frequency of Participation in Sport/Exercise Among Participants With and Without Intellectual Disability

At all waves, frequency of participation in sport/exercise on the original ordinal measure was higher among participants without intellectual disability. At 4 of the 5 waves, this difference was statistically significant (wave 1: Mann–Whitney $z = 5.06$, $P < .001$; wave 2: Mann–Whitney $z = 5.71$, $P < .001$; wave 4: Mann–Whitney $z = 3.43$, $P < .001$; and wave 7: Mann–Whitney $z = 5.96$, $P < .001$). Unadjusted and adjusted (see below) prevalence ratios are presented in Table 1 for the 2 derived binary measures of participation separately for men and women at each wave. At all waves and for both measures of participation, girls/young women

Table 1 Frequency of Participation in Sport/Exercise Among Participants With and Without Intellectual Disability Unadjusted and Adjusted for Differential Exposure to Sociodemographic Variables

		Participants with intellectual disability		Other participants		Unadjusted prevalence ratio	Prevalence ratio for propensity score matched groups (tolerance 0.05)
	Sex	Total n	%	Total n	%		
Frequent exercise							
Wave 1 (age 13/14)	Men	356	61	6931	77	0.80** (0.73–0.87)	0.77** (0.69–0.85)
	Women	179	33	6837	52	0.63** (0.51–0.78)	0.66** (0.52–0.83)
Wave 2 (age 14/15)	Men	295	55	5956	73	0.76** (0.69–0.84)	0.82** (0.72–0.93)
	Women	161	21	5898	43	0.49** (0.36–0.66)	0.53** (0.37–0.75)
Wave 4 (age 16/17)	Men	240	41	5161	56	0.73** (0.63–0.85)	0.71* (0.58–0.87)
	Women	135	12	5157	23	0.51** (0.32–0.80)	0.46* (0.27–0.80)
Wave 6 (age 18/19)	Men	199	70	4273	75	0.94 (0.85–1.03)	0.90 (0.78–1.04)
	Women	129	45	4416	53	0.85 (0.76–1.03)	0.83 (0.65–1.06)
Wave 7 (age 19/20)	Men	166	65	3740	77	0.84** (0.75–0.95)	0.77** (0.69–0.85)
	Women	115	45	3892	52	0.87 (0.71–1.06)	0.66** (0.52–0.83)
Exercise							
Wave 1 (age 13/14)	Men	356	83	6931	92	0.90** (0.86–0.95)	0.92** (0.87–0.98)
	Women	179	67	6837	80	0.84** (0.76–0.94)	0.75** (0.66–0.85)
Wave 2 (age 14/15)	Men	295	81	5956	90	0.90** (0.85–0.95)	0.95 (0.88–1.01)
	Women	161	57	5898	75	0.75** (0.65–0.86)	0.73** (0.62–0.85)
Wave 4 (age 16/17)	Men	240	68	5161	80	0.85** (0.78–0.93)	0.85* (0.77–0.95)
	Women	135	33	5157	51	0.65** (0.52–0.83)	0.58** (0.43–0.77)
Wave 6 (age 18/19)	Men	199	88	4273	92	0.96 (0.91–1.01)	0.97 (0.91–1.05)
	Women	129	74	4416	79	0.93 (0.84–1.03)	0.88 (0.76–1.02)
Wave 7 (age 19/20)	Men	166	86	3740	93	0.92* (0.87–0.98)	0.92* (0.87–0.98)
	Women	115	65	3892	80	0.82** (0.72–0.94)	0.75** (0.66–0.85)

*$P < .01$. **$P < .001$.

with intellectual disability were more disadvantaged in relation to participation (when compared with their peers) than boys/young men with intellectual disability.

Predictors of Participation in Sport/Exercise Among Participants With Intellectual and Without Intellectual Disability

Analyses of sociodemographic predictors of frequent sport/exercise were undertaken separately for men and women with and without intellectual disability at waves 2 (contemporaneous with friendships indicator) and 7 (most recent; see Table 2).

At wave 2 (age: 14–15 years), boys with intellectual disability were more likely to frequently participate in sport/exercise if they were not being bullied and if they tended to spend their spare time with friends. Girls with intellectual disability were more likely to frequently participate in sport/exercise if they were not being bullied and if they lived in an area of high social deprivation. Although the latter effect was not statistically significant, it would generally be considered to be a moderate effect size. Interestingly, the opposite association between participation and area deprivation was evident among girls without intellectual disability (higher participation if not living in an area of high social deprivation).

At wave 7 (age: 19–20 years), young men with intellectual disability were more likely to frequently participate in sport/exercise if they had frequently participated in sport at age 14–15 years, had been brought up in a single parent household, and had been bullied. No variables significantly predicted participation for young women with intellectual disability.

Frequency of Participation in Exercise When Controlling for Differences Between People With and Without Intellectual Disability in Family Circumstances and Exposure to Peer Victimization

As expected (see Table 3), participants with intellectual disability were significantly more likely than their peers to be brought up by lower SEP families, live in more socially deprived neighborhoods, be bullied, and have fewer friends. However, matching on these factors had no impact on between-group differences in frequency of participation in sport/exercise (see Table 1, final column).

Discussion

Sport/exercise participation rates were consistently lower for adolescents and young people with mild to moderate intellectual disability than for their peers without intellectual disability. Differences were particularly marked for waves 1, 2, and 4, where questions only asked about sports participation (as opposed to sport and any physical exercise in waves 6 and 7). Furthermore, girls with intellectual disability were more disadvantaged in relation to participation (compared with girls without intellectual disability) than boys. Matching participants on between-group

Table 2 Predictors of Frequent Participation in Sport/Exercise for Participants With and Without Intellectual Disability

Outcome/Group	Variable	People with ID	People without ID
Boys	Workless household		0.94* (0.88–1.00)
Wave 2	High neighborhood deprivation		0.92* (0.86–0.99)
	Bullied (threat of or actual violence)	0.71* (0.53–0.97)	0.89*** (0.85–0.93)
	Bullied (names)		0.94* (0.90–0.99)
	Bullied (socially excluded)		0.93** (0.88–0.98)
	Wave 2 spare time spent with friends	1.68** (1.19–2.37)	1.25*** (1.18–1.32)
Girls	FSM eligibility		0.82* (0.69–0.96)
Wave 2	Workless household		0.86* (0.75–1.00)
	High neighborhood deprivation	1.86 (0.98–3.53)	0.78*** (0.68–0.90)
	Bullied (threat of or actual violence)	0.50* (0.27–0.95)	
	Bullied (robbed)	0.46 (0.13–1.69)	
Boys	Wave 2 frequent sport/exercise	1.21** (1.05–1.40)	1.31*** (1.24–1.38)
Wave 7	High neighborhood deprivation		0.93* (0.87–0.99)
	Single parent HH	1.17* (1.04–1.33)	
	Bullied (robbed)	1.18** (1.07–1.30)	
	Wave 6 or 7 no or only one close friend		0.84*** (0.76–0.93)
Girls	Wave 2 frequent sport/exercise	1.17 (0.88–1.38)	1.28*** (1.20–1.36)
Wave 7	Bullied (socially excluded)		1.11** (1.05–1.18)

Abbreviations: FSM, free school meal; HH, household; ID, intellectual disability.
*$P < .05$. **$P < .01$. ***$P < .001$.

differences in exposure to extraneous risk factors did not impact on these between-group differences in participation in sport/exercise.

Predictors of frequent participation in sport/exercise varied between those with and without intellectual disability and between boys and girls. However, for boys, both with and without intellectual disability at age 14–15 years, those who spent spare time with friends and who were not bullied with threats of or actual violence were more likely to participate in sport/exercise frequently. Girls with intellectual disability at age 14–15 years were twice as likely to take part in sport/exercise frequently if

Table 3 Exposure of Participants With and Without Intellectual Disability to Established Social Determinants of Poorer Health

	PWID, %	Others, %	PR adjusted for sex
Socioeconomic position			
FSM eligible wave 1 or 3	45	17	2.82* (2.52–3.17)
Workless HH waves 1–4 (any wave)	48	19	2.77* (2.50–3.08)
NEET waves 5–7 (any wave)[a]	38	15	2.40* (2.09–2.75)
Household composition			
Single parent household waves 1–4 (any wave)	46	30	1.58* (1.42–1.75)
Neighborhood			
Lowest Q of IDACI wave 1 or 3	30	16	2.02* (1.73–2.36)
Friendships			
Spare time mainly spent with friends (wave 2)	56	75	0.70* (0.64–0.77)
No or only one close friend (wave 6 or 7)[a]	20	8	2.61* (2.09–3.27)
Peer victimization (waves 1–3 any wave)			
Threatened with violence/attacked	51	40	1.26* (1.15–1.38)
Robbed	16	6	3.00* (2.41–3.74)
Called names, etc	56	41	1.51* (1.39–1.64)
Socially excluded	43	30	1.58* (1.42–1.76)

Note. Data weighted using wave 1 cross-sectional rates unless specified.
Abbreviations: FSM, free school meal; HH, household; IDACI, Income Deprivation Affecting Children Index; NEET, not in employment, education, or training; PR, prevalence ratio; PWID, people with intellectual disability; Q, quintile.
[a]Data weighted using waves 5–7 cross-sectional weights.
*$P < .001$.

they were not bullied with threats of or actual violence. It is unclear why high neighborhood deprivation appeared to have a different association to frequent participation in sport/exercise for girls with and without intellectual disability. Future research could consider the association of a wider range of variables (eg, ethnicity, disability) to participation in sport/exercise.

This study has a number of strengths including (1) the use of a large population-based sample that (with appropriate weights) is reasonably representative of children attending maintained and independent schools in England, (2) the use of multiple and robust measures of household and neighborhood disadvantage, and (3) the use of multiple imputation methods to take account of item nonresponse on sociodemographic variables. However, there are a number of limitations to this analysis. First, mild to moderate intellectual disability was ascertained from educational administrative status (SEN of moderate learning difficulty). Although this categorization shows expected associations with gender and socioeconomic disadvantage and provides similar prevalence rates to mild to moderate intellectual disability,[34] the degree of correspondence between the 2 constructs has not been formally validated. Second, the measurement of participation in sport/exercise is based on responses to a single question, the wording of which varied over different waves, with the question for waves 6 and 7 being more inclusive of any physical exercise than that for waves 1, 2, and 4, which focused on sport. Third, data are based on retrospective recall of participation in sport/exercise. Fourth, FSM eligibility is a relatively crude indicator of family SEP.[35]

Despite these limitations, this paper adds to the limited evidence regarding participation in sport/exercise by younger people with intellectual disability. It is clear that adolescents and young adults with mild to moderate intellectual disability participated in less sport/exercise than peers without intellectual disability, with the difference being particularly marked for sports and for women. In light of the health inequalities experienced by people with intellectual disability,[42] it is important that this crucial part of a healthy lifestyle is promoted in children and young adults with intellectual disability. However, the evidence base for how to improve participation in physical activity among people with intellectual disability is underdeveloped.[43] A recent trial of a walking program to increase physical activity in adults with intellectual disability (mainly with mild to moderate intellectual disability) found no change in walking or other secondary outcomes.[44] The authors note that increasing physical activity may require more intensive programs or upstream approaches to address the multiple social disadvantages experienced by people with intellectual disability.[44]

Common barriers to physical activity for people with intellectual disability include cost, transportation, lack of support, lack of awareness of options, and risk assessment concerns.[45] A recent study suggests that centralization of sports clubs for children with disabilities may have contributed to low levels of physical activity in children with intellectual disability due to the travel time and dependence on parents for commuting.[27] Furthermore, safety reasons, lack of understanding of the environment, and longer travel distances to centralized schools may have contributed to those with intellectual disability being significantly less likely to walk or bike to school. Adolescents with intellectual disability are also less likely than other children to have someone with whom to do physical activity and more likely to perceive that physical activities are too hard to learn.[46] Future studies should consider these multiple barriers and aim to overcome the difficulties people with intellectual disability experience in participating in physical activity.[47]

Conclusion

The results of this analysis support the limited evidence regarding the low level of participation of children and young people with intellectual disability in sport/exercise compared with their peers. It has been found that a physically active lifestyle starts to develop very early in childhood and that there is moderate or high stability of physical activity along the life course from youth to adulthood.[48] As such, it is important to promote physical activity in children and adolescents.[49] This is particularly important for children and young people with intellectual disability who display lower levels of sport/exercise than their peers and who are likely over time to become part of the "incredibly inactive"[9] population of adults with intellectual disability. Future work on promoting sport/exercise and physical activity in children and young people with intellectual disability may play a role in helping to reduce the health inequalities experienced by people with intellectual disability.[42]

Acknowledgments

This work was supported by Public Health England. However, the findings and views reported in this paper are those of the authors and should not be attributed to Public Health England.

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