

Engaging and sustaining people with intellectual disabilities in physical activity: a narrative review of existing evidence

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Background: People with intellectual disabilities (ID) experience many health and social inequalities. Increasing physical activity is a proven intervention to address such inequalities, yet the physical activity rates of this population are substantially lower than the general population.

Aim: Research has been growing to understand why this is and how to intervene to increase the physical activity levels of people with ID.

Method: Using a behavioural epidemiological framework, the research in this area from barriers and facilitators of physical activity to translational research testing interventions within natural settings is reviewed. Findings from a total of 14 reviews and eight empirical studies and protocols were included.

Results: Whilst there are multiple investigations into what promotes or enhances physical activity for people with ID, findings from intervention studies show few successful outcomes. Gaps within the existing research are identified and recommendations about how intervention efficacy might be improved are provided to inform future research and practice.

Conclusion: Findings from previous research on barriers and facilitators can be further capitalised on and intervention studies should be underpinned by better links to theory and more systemic approaches.

Keywords: developmental disabilities; participation; exercise; evidence; interventions

Introduction

People with intellectual disabilities (ID) have a much higher prevalence of co-existing health conditions than the mainstream population. In one of the largest studies to date 98.7% of people with ID showed multi-morbidity and on average had 11 additional health conditions (Kinnear *et al.* 2018). Some of these are primary conditions related to the ID diagnosis (e.g. respiratory problems in Down Syndrome) and some are secondary conditions related to the common life situations of people with ID (e.g. obesity due to a more sedentary lifestyle) (Hatton and Emerson 2015). Likewise, mental health problems are much higher in this population, both stemming from the stigma attached to the diagnosis and the reduced opportunities leading to outcomes such as poverty, social isolation and lack of employment (Iwanaga *et al.* 2021). Engaging in sport and physical activity is a well-evidenced intervention which helps to prevent these health conditions and reduce the impact of

existing conditions, in addition to promoting general well-being in people with ID (Kapsal *et al.* 2019).

Across the world, interventions have been put in place to facilitate and sustain engagement of people with ID to participate in sport and physical activity. However, this is challenging as people with ID are a very heterogeneous group, which requires adaptations to be tailored to cater across the range of needs and consideration given to factors such as health status, intellectual capacity, age and environmental context. Research shows that participation levels are well below that of the general population, for example, one systematic review reported only 9% of adults achieving minimum physical activity guidelines, and those with severe/profound ID being the least active (Dairo *et al.* 2016). This raises the question of what adaptations need to be made to engage and sustain people with ID in sport and physical activity. Whilst research into the physical activity engagement of people with ID is growing, the work is fragmented and as yet systematic approaches to translate this body of work into practice are limited. This was well evidenced in a scoping review which examined the state of physical activity research and people with ID between 2000 and 2014

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Table 1. Percentage and number of articles relating to physical activity research in intellectual disability across the five phases of research (Pitchford et al. 2018).

Type of research	% (N)
Phase 1: association between physical activity and health outcomes	48% (172)
Phase 2: examined the reliability, validity, and/or protocols of physical activity measurement	9% (14)
Phase 3: correlates of physical activity behaviour in this population	34% (122)
Phase 4: directly intervening to change physical activity behaviour	8% (29)
Phase 5: translating intervention into community-based programming	1% (5)

(Pitchford, et al. 2018). This review used the ‘Behavioral Epidemiological Framework’ (Sallis et al. 2000) to characterise research across a five stage developmental model of research. The results show a substantial body of research (362 papers to 2014) but a lack of progression from basic research to translational research (table 1).

Currently, there is little debate as to the evidenced importance of physical activity to improve health outcomes, broadly and more specifically for people with ID, however, given the previous lack of research attention to effective interventions and the paucity of translational research it is timely to review progress since 2014. The present review focuses on research relating to correlates of physical activity (stage 3), interventions to increase activity (stage 4) and translational research (stage 5) for people with ID, since the review by Pitchford et al. (2018). The overall aim is to distil from this body of research evidence-based commonalities associated with more successful interventions promoting physical activity to engage and sustain people across the broad spectrum of ID in physical activity, i.e. ‘what works’. To focus the review and drawing on the taxonomy used in the previous scoping review (Pitchford et al. 2018), three questions were asked, first ‘What does the research tell us about the barriers and facilitators to promoting sport and physical activity for people with ID?’ (phase 3 correlates). As there is considerable research in this area this question was addressed through a review of published reviews (search 1). Second, ‘What does the research tell us about how effective interventions are in this area (phase 4 intervention) and third, how they can be more effective?’ (phase 5 translational research)’. Question two was addressed by a review of published reviews on interventions in this area (search 2), and question 3 by a review of translational studies published since the previous review (search 3). The contribution of this review is to update the research landscape in this area since Pitchford et al. (2018) and other associated reviews, identify current research gaps and findings worthy of integration into practice.

Methods

As the purpose of the review was to integrate the progression of research from correlates of physical activity

to effective interventions to increase participation, three literature searches were conducted (Figure 1). This review differs from a systematic review in that different bodies of the literature were examined to provide a narrative overview and where substantial work exists only reviews were included (search 1 and 2). The steps to increasing the quality of a narrative review outlined by Green et al. (2006) were followed including the approach to ‘best-evidence synthesis’ advocated by Slavin (1995) which includes both review-generated and study-generated evidence. A meta-analysis approach was not taken due to the mixed designs of the studies. Electronic searches used the following databases: SportDiscus (EBSCO), PsychINFO (OVID), CINHAL Complete (EBSCO), ASSIA (EBSCO) and MEDLINE (Web of Science). A list of key word and alternatives were created and combined with Boolean operators. The search strings included:

1. All searches ‘intellectual disability*’ OR ‘mental retardation’ OR ‘developmental disability*’ AND ‘physical activity *’ OR ‘PA’ OR exercise OR sport;
2. Search one ‘systematic review*’ AND correlate* OR factor* OR predictor * OR barrier* OR facilitator* (inception - August 2022);
3. Search two ‘systematic review*’ AND effective* AND intervention* OR program* AND participation* NOT impact (inception - August 2022);
4. Search three intervention* AND Community (January 2015 - August 2022). Additional inclusion criteria were: Primary aim increase in physical activity and intervention community based.

The results of each of the searches are shown in the PRISM diagram (Figure 1). Data were abstracted from each included paper in a systematic way in relation to the question being addressed by each of the three searches. When necessary individual studies cited in reviews were consulted to provide illustrative examples. Quality assurance to check for objectivity, consistency and appropriate inclusion was conducted at each stage by a two-step process, of data abstraction by two of the researchers independently and then cross-checked and agreement reached. In addition, the scale for assessing the quality of Narrative reviews (SANRA) was used to reflectively enhance the quality of review (Baethge et al. 2019).

Results

Barriers and facilitators that impact on sport and physical activity engagement of people with ID

There has been a substantial amount of research identifying the facilitators and barriers influencing the engagement of people with ID in sport and physical activity including eight systematic reviews of this area, the first published in 2009 and the latest in 2022 (Bodde and Seo 2009; Bossink et al. 2017a; McGarty et al. 2018; Scifo et al. 2019; Sutherland et al. 2021; Vancampfort et al., ; Jacinto et al. 2021; Yu et al. 2022). Hence it is

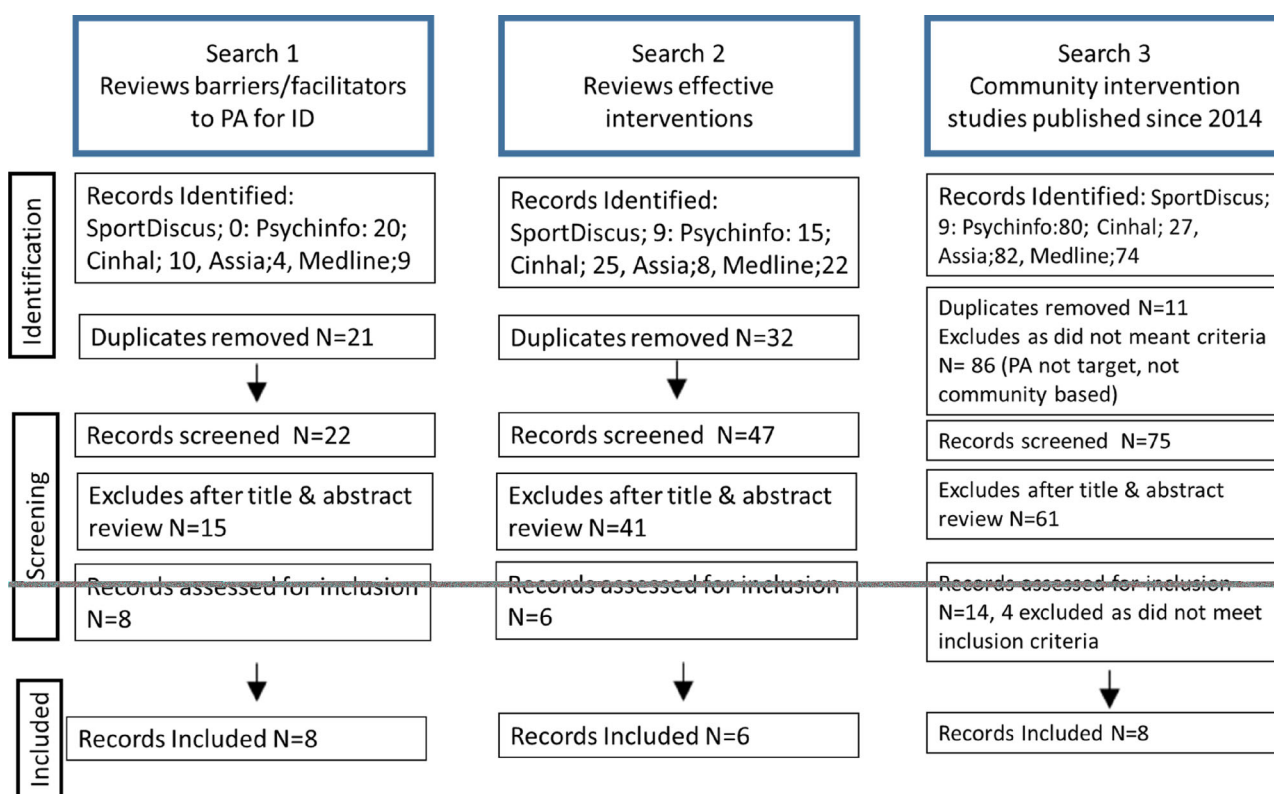


Figure 1. PRISMA diagram illustrating the phases and results of each search.

unnecessary to add a further review at this time, but the findings of these reviews are worthy of analysis, comparison and summary. The characteristics of those reviews focusing on the ID population are shown in Table 2.

What is clear from these reviews is that across the life-span there are many facilitators and barriers implicated in engaging people with ID in sport and physical activity. It is also the case that many of the barriers are also facilitators, e.g. the lack of resources is a barrier but when available, is a facilitator. Some of the reviews took a socioecological approach, which is helpful as it positions these barriers/facilitators within a systematic framework, encouraging a multifaceted approach in terms of interventions. Two of these reviews took a more stringent approach only including studies that explicitly examined correlates of physical activity (Sutherland *et al.* 2021; Vancampfort *et al.* 2021). One review used the socioecological model to position correlates as either intrapersonal, interpersonal, organisational or environmental, acknowledging these multiple levels of influence and identified 48 correlates, the majority of which were categorised as intrapersonal (i.e. influenced by the characteristics of the person) (Sutherland *et al.* 2021). However, only six correlates were identified by more than one study and only motor development was significantly associated with levels of physical activity. In the most stringent and recent review to date a standard was set with a significant correlate having to be reported in at least four studies and associated with a minimum of 60% of cases (Vancampfort *et al.* 2021). Of the 45 potential

correlates associated with increased physical activity within the studies reviewed only three were found to meet this standard; age, severity of disability, and mobility issues.

There is a clear contrast between the findings of the six reviews identifying multiple barriers and facilitators and the two reviews, which took the further step of examining the statistically significant correlates of physical activity for this population. Whilst many factors are implicated in influencing physical activity engagement, few studies identify consistent correlates of physical activity, and those identified are interpersonal variables. These findings are in contrast to those of children and adolescents without ID, where more consistent correlates are identified, suggesting engagement in physical activity in the ID population should be seen as different and distinct from their typically developing peers (Sutherland *et al.* 2021). All the reviews emphasise the necessity of understanding the wider socioecological system to better understand the necessary environment to promote engagement in physical activity, however, given the wide range of factors implicated, it is this very complexity that is possibly leading to few consistent correlates. This calls for more robust and controlled studies within this area and application of the emerging science of systems change with a focus on the effective translation of evidence into routine care (Braithwaite *et al.* 2018; Deenik *et al.* 2020). The consistent correlates found suggest that older people, those with more severe ID and those with additional physical mobility problems may be at great risk of not being engaged in physical activity.

Table 2. Summary of reviews of research into barriers and facilitators to engagement in physical activity for people with ID.

Authors (date)	Population	Focus	Number of papers included (range of dates)	Conclusions
Bodde & Seo (2009)	Adults with ID	Barriers to PA	7 studies (1999–2007)	10 barriers identified, most common being cost, transport and lack of support. Concluded all barriers were modifiable.
Bossink, et al. (2017a)	People with ID, including children	Identify barriers to and facilitators of PA	24 studies (1998–2016)	14 personal and 23 environmental barriers and/or facilitators found.
McGarty et al. (2018)	Children with ID	Parental perceptions of facilitators and barriers to PA	10 studies (1991–2017)	Perceived barriers/facilitators to PA were family, child factors, inclusive programmes and facilities, social motivation, and child’s experiences of PA.
Scifo et al. (2019)	People with ID, including children	Main factors influencing participation in Sport Intervention Programs (SIPs)	24 studies (1998–2018)	Essential factors identified were suitable places for SIP development, adequate implementation of (PA) programs in school and extra-school contexts, education, and teacher/instructor training.
Jacinto et al. (2021)	People with ID no age limitation	Barriers to PA for people with ID	5 studies (not reported)	27 barrier identified systemized in to 5 groups. Concluded identification of barriers useful when promoting PA in ID population
Sutherland, et al. (2021)	Children and adolescents with ID (aged 0–19)	Correlates of PA	15 studies (2010–2020)	Concluded there is ‘limited and inconclusive evidence about correlates of physical activity in children and adolescents with ID.’
Vancampfort, et al. (2021)	Children and adolescents, adults, and older adults with ID	Correlates of PA across the socio-ecological model (i.e. intra-personal, inter-personal, environmental and policy level)	39 studies (not reported)	Found consistent evidence for only three correlates reliably being related to PA – Older age, more severe ID and physical mobility problems.
Yu, et al. (2022)	Children and adolescents with ID	Identify and map the barriers and facilitators	32 (1992–2020)	34 factors identified. Concluded further exploration required to improve design of effective interventions.

Interventions reported as successfully engaging and sustaining people with ID in sport and activity

Whilst there has been much research on the barriers and facilitators to engaging in physical activity for people with ID, there has been less on evaluating effective interventions, and even less that has met the highest levels of evidence to demonstrate effectiveness and translate it into practice. To date, there are six reviews of the research into the effectiveness of interventions, one focusing on adults and children with ID (Hassan et al. 2019), three on adults with ID (Brooker et al. 2015; MacDonald et al. 2022; Nutsch et al. 2022a) and two on children and youths with ID (Frey et al. 2017; McGarty et al. 2018) (Table 3). Some of these intervention studies are included in the 29 studies reported in phase four of

the original scoping review (Pitchford et al. 2018), but there are omissions and additions. Omissions may have occurred, as the study may not have met the inclusion criteria of the Pitchford et al. (2018) review and additions due to being published after the previous review’s inclusion period (2000–2014).

In terms of reported effective interventions, findings varied considerably across the six reviews. Two reported no studies to have adequately shown effective interventions (MacDonald et al. 2022; McGarty et al. 2018). Three reviews had mixed results with Brooker et al. (2015) reporting three out of eight interventions as increasing physical activity, Nutsch et al. (2022) eight of 12 and Frey et al. (2017) nine of 11, and the fifth review reported three RCTs out of nine as having effective interventions (Hassan et al. 2019). All the reviews

acknowledge the paucity of research in this area and the need for more rigorous research to establish effective interventions, which promote physical activity for people with ID. The heterogeneity of the interventions in terms of factors such as type, duration, providers and locations was also noted, and the lack of documented detailed intervention protocols. Given this research landscape, clear conclusions cannot be drawn about what interventions are most effective for this population. However, there are commonalities and overlaps indicating elements of interventions, which may add to their effectiveness, which will be discussed later.

Generally, the most effective interventions are those that can be translated into community-based interventions. In the 2018 scoping review only 1% ($n = 5$) of the identified literature related to translational research, defined as ‘research that translates into the dissemination of evidence-based practices’ p. 148 (Pitchford et al. 2018). A search from 2015 to 2022 was carried out to update this review using similar search terms and inclusion criteria, but with the additional inclusion criteria that the intervention had to be community based and an increase on physical activity the primary aim. This identified eight additional studies and one published protocol (Table 4).

There are a number of things to note from these translational studies. The majority of the interventions were multi-component including both education and engagement in physical activity. They also directed the intervention at both people with ID and caregivers. Whilst there is some consistency in outcome measurement for physical health (e.g. BMI), other outcomes and measures of model fidelity are varied, making comparison between the effectiveness of studies difficult. Likewise, documentation of

the intervention is often brief, using inconsistent terminology and introducing new innovative components, meaning replication is challenging. However, it is encouraging to see this being addressed by the publication of research protocols followed by outcome studies (Elinder et al. 2010; van Schijndel-Speet et al. 2013). Similarly, the majority of these studies included an educational element often developing unique resources. However, some studies have developed effective educational packages, which could be incorporated to increase the consistency of approaches (Marks et al. 2013). A recent study is exceptional as it was uni-dimensional and focussed specifically on adolescent women with ID implementing a community based dance intervention (Must et al. (2022)).

In terms of intervention efficacy, the results are very mixed. A number of studies assessed process variables as well as outcomes and on the whole the interventions were found acceptable to both people with ID and carers (Bossink et al. 2017b; Matthews et al. 2016; van Schijndel-Speet et al. 2014, Must et al. 2022). Softer outcomes such as increased knowledge seemed easier to achieve than statistically significant increases in measured physical activity, which only three studies demonstrated (Bergström et al. 2013; Pérez-Cruzado and Cuesta-Vargas 2016; van Schijndel-Speet et al. 2017). Improvements in physical health were the hardest outcomes to achieve with only two studies documenting some improvements (Pérez-Cruzado and Cuesta-Vargas 2016; van Schijndel-Speet et al. 2017). In terms of explanation of this lack of proven efficacy studies considered the challenges to intervention fidelity, the low intensity of interventions balanced with acceptability and engagement, and duration, with most interventions lasting matters of weeks, which may be

Table 3. Summary of reviews of research into interventions to engage people with ID in physical activity.

Authors (date)	Population	Study design inclusion criteria	Quality assessment	Number of papers included (range of dates)
Brooker et al. (2015)	Adults with ID	PA as outcome variable. All methodologies included.	Ranking system by Whitt-Glover and Kumanyika (2009).	6 (2004–2012)
Frey et al. (2017)	Adults with ID	PA specified as dependent variable. Quantitative and qualitative research included	None described	6 (inception to 2015)
McGarty et al. (2018)	Children and adolescents with ID	Measure PA pre and post intervention	Standard Quality Assessment Criteria for Evaluating Primary Research Papers from a Variety of Fields	5 (not reported)
Hassan et al. (2019)	Adults and children with ID	Randomised control designs and objective outcome measurement	Bias of risk assessment	9 (inception to 2017)
MacDonald, et al. (2022)	Adults with ID	Empirical studies (incl. qualitative, quantitative and mixed methods)	Mixed Methods Appraisal Tool (MMAT)	5 (1946–2018)
Nutsch, et al. (2022)	Adults with ID	Studies which described concepts, programmes or efforts to promote PA in everyday life of people with ID	Template for Intervention Description and Replication (TIDieR)	12 interventions (21 attached papers) (1998–2018)

Table 4. Intervention studies and protocols since 2014.

Authors (date)	Population	Intervention	Study design	Outcome
Sundblom et al. (2015)	17 staff members working in community homes, designated as managers or health ambassadors	Multi-modal with three components: health education, appointment of health ambassador and a staff study circle in each residence	Qualitative interviews (<i>n</i> = 17)	Protocol and positive outcomes published prior to 2014. Findings indicated importance of supporting motivation for change in managers, caregivers, and residents. Intervention seen as flexible and participatory
Melville et al. (2015)	102 adults with ID	12-week physical activity consultation-led walking intervention	Single-blind cluster RCT	No significant between-group differences in percentage time, percentage time in moderate-vigorous physical activity, BMI or subjective well-being
Matthews et al. (2016)	102 adults with ID	12-week physical activity consultation-led walking intervention	Process evaluation of above study	Intervention can be feasibly delivered. More intensive intervention may be required and steps to increase motivation of carers to support participants
Chow et al. (2016)	62 adults with ID in group homes	30 group exercise sessions over 10-week period and 3 educational lessons	Protocol – multi-component delayed treatment control group design	Yet to be reported
Pérez-Cruzado and Cuesta-Vargas (2016)	40 adults with mild ID	Multimodal – including education, strength, flexibility, balance, aerobic training, in 2-hour sessions over 8 weeks	Quasi-experimental single group pre and post evaluation	Significant improvement in quality of life, professional and peer support for activity, abdominal strength and walking metabolic equivalent of tasks
Dixon-Ibarra et al. (2018)	5 adults with ID and 7 staff in group homes	Menu-choice intervention to increase physical activity opportunities	Qualitative interviews	Programme requires simplifying, more targeting identified barriers and increased agency support and policy change highlighted
Bossink et al. (2017b)	Adults with severe and profound ID in residential facilities	Group power-assisted intervention, 3 times a week for 30mins for 20 weeks	Pilot randomised control design, physiological, functional and psychological outcome measures	Feasible and acceptable intervention, oxygen saturation increased, but no significant change on other measures
Must et al. (2022)	18 adolescent girls with ID (13–21) who engaged in less than 60 mins aerobic exercise a day	12-week intervention based in YMCA or mainstream school. Group dance sessions, twice weekly for 75 mins.	Pilot pre and post-test design measuring engagement, satisfaction and fitness.	Participants engaged in high intensity activity for more than half the 75 min sessions and satisfaction was high, although no sig, change in cardiovascular fitness

insufficient to induce changes for this population. It was striking that the only study to address the needs of people with more profound and severe ID was Bossink et al. (2017b).

Moving forward, the behavioural epidemiological framework placed over this body of research in the original scoping review (Pitchford et al. 2018) has quantified and hence highlighted the large gap between the numerous studies showing the positive correlates of sport and physical activity involvement, and the lack of translation of this research into effective interventions. Another area highlighted, which has not been the focus of this review but is relevant in developing robust research methodologies, is

the approach to measuring physical activity in this population, however there are recent reviews which address this topic (Leung et al. 2017; Melville et al. 2017). From this review, a number of research gaps have been identified concerning how research can assist in promoting engagement and sustaining physical activity in people with ID.

Discussion

Identified research gaps

Links between barriers/facilitators and how interventions are structured

The use of the socioecological model to frame interventions at different systemic levels in which a person with

ID is held has become an accepted approach, which has encouraged multi-component approaches targeting different areas of influence. The research on barriers/facilitators provides rich insight into what these influential factors might be. However, there seems to be a gap between known barrier/facilitators to physical activity and how interventions are engineered to specifically reduce barriers and enhance facilitators. This is especially the case at the structural/organisational level. For example, a known barrier is the availability of resources such as care staff time, but no study reported here specifically added in resources to release care staff time to support physical activity interventions. To date, there has been one example of a multi-component approach, which includes an organisational element with a detailed published protocol and advice on institutional policies to support physical activity (Chow et al. 2016; Chow et al. 2018). Many of the studies cited the complexity of the systems in which they were trying to intervene as reasons for lack of efficacy, yet no study audited the barriers/facilitators active within the context of the intervention and purposely engineered the intervention to address these.

Hence, it is suggested that there needs to be greater connection between identified barriers/facilitators to physical activity and the construction of interventions to enhance physical activity for this population. Such an approach has been embodied within the four steps of the PRACTIS guidelines (PRACTical planning for Implementation and Scale-up) which aims to guide how physical activity interventions generally might be more effectively translated and sustained in practice (Koorts et al. 2018). Four steps are suggested: (1) characterise the parameters of the implementation setting; (2) identify and engage key stakeholders across multiple levels within the delivery system(s); (3) identify contextual barriers and facilitators to implementation; and (4) address potential barriers to effective implementation.

Population specific research

'People with ID' covers a vast heterogeneity of ages, levels of impairment, co- and multi-morbidities, levels of independence and interests. However, many of the studies included in this review have wide inclusion criteria, sometimes including both children and adults and paying little attention to the level of severity of ID. The heterogeneity of the sample is then implicated as a reason for a lack of effectiveness of interventions (McGarty et al. 2018). A notable exception to this is an intervention programme which has focused on the often neglected group of aging adults with ID (van Schijndel-Speet et al. 2017; van Schijndel-Speet et al. 2013). Only one paper included in this review focused specifically on people with more severe/profound impairments, even though their need to engage in physical activity may be greater (Bossink, et al. 2017b). Within the mainstream literature a recent systematic review and meta-analysis of intervention efficacy

found 'good evidence' for 'behaviour change maintenance effects in healthy inactive adults' (Howlett et al. 2019, p. 147). However, the outcomes of interventions in the general ID population are less encouraging and suggest that tailoring interventions to be more population specific is required to promote physical activity effectively.

Focus on staff/carers

Many of the interventions described in this review are reliant on staff/carers for their delivery. Staffs have been involved in these interventions in three main ways (1) to educate them in the importance of physical activity and to translate this message to people with ID¹ (Bodde and Seo 2012); (2) to be trained to deliver and support the direct intervention (Scifo et al. 2019); and (3) as 'ambassadors' promoting the importance of physical activity (Sundblom et al. 2015). Generally, these components have been well received, however they are largely focused on personnel who already see the merits of engaging in physical activity. In the lives of people with ID caregivers have been described as the 'gatekeepers' to how people spend their time (Powers et al. 2021) and within the research on barriers/facilitators care staff have been identified as potentially having a major influence and having their own support needs in this area (Overwijk, et al. 2021a).

Attention is now beginning to shift to not only apply theories of behavioural change to people with ID but also the support staff around them. For example, using direct observational coding Overwijk et al. (2021b) examined the everyday use of behaviour change techniques by support staff to promote healthy lifestyles for a group of people with profound and severe ID. They found staff used a range of techniques, but were over reliant on just nine, suggesting that there is scope to enhance the effectiveness of support provided by staff, using behavioural theory. In a later study Overwijk et al. (2022) focussing on the same population used a theory-based program of e-learning and groups sessions and demonstrated improvements in the food intake of people in their care, staff attitudinal changes, but no improvement in physical activity. Implications for future implementation emphasised the need for communication and alignment with all stakeholders. However, such research does suggest that to create behavioural change in people with ID, it may be necessary to create behavioural change in the staff delivering routine care through theory driven, evidence-based, and targeted interventions, increasing their commitment to physical activity.

Whilst there are research gaps to be addressed, the findings of the extant literature do offer some suggestions about how the effectiveness of physical activity interventions may be improved for the population with ID.

Improving the success of interventions

From a synthesis of this literature, four main pillars to building successful interventions are identified: (1) Whole systems approach; (2) Whole person approach; (3)

Education and health promotion; (4) Supporting staff and carers. Between these pillars, attention should be paid to the needs of the specific population being served, their environmental context and the barriers/and facilitators likely to influence success, and build the intervention attending to those specifications.

Whole systems approach

Systems thinking emphasises the need to identify and study the whole system and the dynamic interrelationships, rather than discrete elements in isolation, and is an increasingly accepted approach in the study of the promotion of physical activity (Faghy et al. 2021). This is especially the case for people with ID who because of their increased dependency needs are usually embedded within a system involving multiple networks and ecological hierarchies, impacting on the person's agency to make behavioural changes. The research on barriers and facilitators has orientated interventions to taking a multi-dimensional, multi-component approach to interventions, often organised within a socioecological framework, which are proving more effective.

Yet, more could be done in terms of mapping these systems, measuring the size of influencing factors and targeting interventions to have the greatest impact. A particular approach suggested is asset mapping², which is an economical approach to increasing capabilities and opportunities for physical activity (Faghy et al. 2021). Elements of this approach have been adopted in a recent intervention led by a UK charity MENCAP, called the Round the World Challenge, where community assets are located, then engaged and supported to deliver a structured, fun, approach to increasing physical activity (Spear 2020, 2022).

Whole person approach

Many of the reviews have mentioned that interventions should be based on clear theories of behaviour change and there is a mixed picture in the existing research with some specifying the theoretical models on which they are based and others not. Such models help to clarify the behavioural change outcomes expected and drive objective measurement of these, e.g. measures of physical activity using pedometers. Many of these change theories (e.g. Social cognitive theory, Self-determination theory) within the general physical exercise promotion literature are based on changes in motivation as a central drive (Knittle et al. 2018). However, within the research on people with ID less attention has been paid to influencing their motivation, despite clear motivations to engage or disengage in physical activity being identified in the facilitators/barriers research. For this population long term health gains may be insufficient motivation to engage in physical activity, especially if this is more challenging than for their peers, hence other motivational needs should be addressed. The positive socioemotional impact of

engaging in sport and physical activity for this population is well evidenced (Shields et al. 2012; Taliaferro and Hammond 2016), hence, interventions which give emphasis to these type of outcomes in addition to health related outcomes may be more effective.

Education and health promotion

One of the earlier research gaps identified is the need to develop interventions, which are more person specific. It is surprising that despite the health inequalities faced by people with ID and the evidence supporting effective health education, its application to people with ID is relatively neglected and the associated challenges are not well-understood (Roll 2018). The need for high quality, well-adapted educational resources and health promotion is emphasised in the majority of systematic reviews included in this review, and the more successful multi-component interventions included these elements effectively. In terms of examples of these approaches, one review evaluated 12 interventions all of which have attached educational and/or health promotional resources (Nutsch et al. 2022). In addition, a suggested future direction, proving successful in other sectors, is to use social marketing as a systematic approach to understanding and strategically responding to the specific characteristics of this population and tailor health promotion to these needs (MacDonald et al. 2022).

Supporting staff and carers

Staffs have been described as the gatekeepers to how people with ID spend their time (Powers et al. 2021). The behaviour of both staff and families have been implicated in the barriers/facilitators to accessing sport and physical activity, and focussing on their behaviour can be as equally important as changing the behaviour of people with ID. Many of the interventions reviewed incorporated training, education and support into their programmes, which was well received. Indeed, where interventions were not effective, the absence of the opportunity, capacity or capability of the staff team was cited as a possible contributory factor (Dixon-Ibarra et al. 2018). Supporting the staff team to support people with ID is especially important for those with more severe ID due to their higher dependency needs. The important role paid support workers play in the activities of people with ID has been recognised and it has been suggested that at a policy level providing support to engage in physical activity could be encouraged by this role being explicitly included in support staff's job description (MacDonald et al. 2022). Collaborative engagement in physical activity, integrating both people with ID and paid carers, has been shown to be both enjoyable and motivating for both parties (Spear 2020, 2022).

Conclusion

Participation in physical activity for people with ID is an important way of addressing the health and social inequalities they experience. However, their physical activity engagement levels are lower than for peers without ID and effective interventions are required to increase and sustain this engagement. Considerable research is available detailing the potential barriers and facilitators to this engagement, yet studies demonstrating proven correlates are limited. Research into effective interventions to increase physical activity is increasing, however with mixed results and little consistency across studies. Both the research on barriers/facilitators and intervention efficacy contrasts with the mainstream literature where more consistent results and effective strategies have been found. This suggests that interventions for the ID population need to be population specific and the earlier findings used more effectively to tailor interventions to enhance facilitators and reduce barriers within the specific context of the person with ID. Theory based interventions structured around a socioecological framework to develop multi-component interventions are more likely to be successful. Ideally, the components of interventions should address the different levels of the socioecological framework and promote not just behavioural outcomes but socioemotional outcomes to increase motivation of all stakeholders. Interventions should also include education about physical activity and care staff supported to make the changes necessary to facilitate people with ID to engage in physical activity.

Disclosure statement

None

Notes

1. This is sometimes called 'communicative health literacy' and is a common approach to a number of health issues for people with ID who may not have the literacy skills or opportunities to access mainstream health educational material, however its effectiveness to produce behaviour change in the person with ID is as yet not conclusive (Chinn 2017)
2. Asset mapping is a collaborative, participatory methodology which brings together stakeholders to identify potential resources and partnerships within a community to enhance knowledge and access opportunities (Allar et al. 2017).

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