



Article

I feel more able, livelier, and stronger: Perceptions of adults with intellectual disability after a web-based physical activity intervention

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Abstract: A 12-week web-based physical activity (PA) intervention was designed based on the World Health Organisation's (2020) guidelines, to promote PA for adults with intellectual disability (ID) and create an alternative way to participate in PA during the COVID-19 pandemic. This study aimed to explore how the participants perceived PA and health in general, and how these perceptions were affected by participation in the web-based PA intervention. The study was conducted with a pragmatic qualitative approach, using semi-structured interviews pre- and post-intervention. Twenty-eight individuals in Sweden participated in the intervention, and seventeen of these were interviewed. The analysis revealed two key themes. Theme 1, "a sense of being 'stuck on the couch'" encapsulated the participants' pre-intervention experiences and included the subthemes of "inactive lifestyle", "understanding health benefits from PA", and "feeling unwell and out of shape". Theme 2, "motivation to enjoy 'the ride of' a web-based PA program" captured the participants' post-intervention experiences, including the subthemes of "feeling healthier", "social support", "mastering or not", and "multifactorial individual needs". This study highlights the potential of web-based PA as an accessible tool that meets the individual needs and promotes participation, motivation and enjoyment among adults with ID.

Keywords: adapted physical activity; health promotion; intellectual impairment; physical inactivity; sedentary lifestyle; web-based exercise

Introduction

About 1-3% of the world's population has an intellectual disability (ID) (Frey et al., 2017; Maulik et al., 2011). ID is characterized by limitations in intellectual functioning, defined as an intelligence quotient (IQ) of <70, and in adaptive functioning (Shogren & Turnbull, 2010). Individuals with ID tend to be less physically active compared to their counterparts without ID (Einarsson et al., 2015; Lund Ohlsson et al., 2026), even though the same physical activity (PA) recommendations apply (World Health organization [WHO], 2020). Studies show that people with ID rarely achieve the level of recommended PA (Einarsson et al., 2015) and that women with ID tend to engage in lower levels of PA compared to women without ID (Yanardag et al., 2013). A sedentary lifestyle (Hsieh et al., 2017; Melville et al., 2018) and obesity are becoming a greater challenge for individuals with ID, and research highlights the importance of addressing the challenge by guiding individuals as well as their

support systems to make healthy choices by providing education in health promotion (Hsieh et al., 2015).

The WHO's guidelines on PA and sedentary behaviour (2020) recommend a minimum of 150-300 minutes of PA at a moderate level of intensity or a minimum of 75-150 minutes of PA at vigorous intensity per week. In addition to these recommendations, to achieve additional health benefits and maintain functional abilities, a minimum of two activities that strengthen muscles and a minimum of three multicomponent activities that focus on balance and strength should be added to the weekly routine for individuals with ID (WHO, 2020). Individuals with ID need proper support, such as help in planning, organizing, transportation and for taking part in PA (Hansen et al., 2023; Lante et al., 2014; Wallén et al., 2013). A review by Verdonschot et al. (2009) states that if family or staff members are involved in physical and communal activities for individuals with ID, activity and participation levels are notably higher. Family, staff and other care providers need knowledge, resources and skills to promote higher levels of PA participation and health for people with ID (Buttimer & Tierney, 2005; Stanish & Frey, 2008; Thorn et al., 2009). In addition to support, environmental factors play a part in daily life (Obrusnikova et al., 2019). Transportation and a lack of nearby leisure and recreation facilities are considered significant barriers when it comes to activity participation and PA (Verdonschot et al., 2009; Buttimer & Tierney, 2005).

Research has shown that PA has positive effects on the experience of health, such as well-being, and quality of life among individuals with ID (Hansen et al., 2023). Further, PA and exercise are beneficial for the individual's mood, as they increase self-confidence and social acceptance. According to motivation theory, there are different types of motivation, for example, self-determination theory (SDT) contains amotivation, intrinsic motivation and extrinsic motivation. According to Frielink et al., (2017) there is some initial evidence for a universal use of the four subtypes of extrinsic motivation: 1. external regulation, 2. introjected regulation, 3. identified regulation and 4. integrated regulation, across both people with ID and those without ID. These forms exist on a continuum that might lead from amotivation to intrinsic motivation (Deci & Ryan, 2000; Ryan & Deci, 2000). Underlying SDT, there are some basic psychological needs like the feelings of competence, relatedness and autonomy, which affect choices made that are influenced by internal and external factors. PA conducted in a social environment can be a motivational factor for people to continuously pursue and facilitate PA (Hansen et al., 2023; Vogt et al., 2012). Furthermore, greater participation in PA can be achieved when an activity or exercise has a strong connection to enjoyment and the feeling of reinforcement, making it important to involve the individual in an activity that he/she finds amusing and reinforcing (Lotan et al., 2009; Temple, 2007).

This study is part of an overarching intervention study (Fjellström et al., 2022) investigating the feasibility of a web-based PA intervention program for individuals with ID, focusing on physical outcomes that initiates that web-based training interventions can overcome some of the barriers to PA for this target group. The primary aim of the present sub-study focused on how the participants perceived PA and their health in general, and how these individuals were affected by their web-based PA participation. Studies like Fjellström et al., (2022); Frey et al., (2017), Hansen et al., (2023), and Wallén et al., (2013) have studied the effects, or experiences of, various PA programs for individuals with ID. To the best of the authors' knowledge, this is the first study looking at participation in a web-based PA program for adults with ID.

Materials and Methods

In this study, a pragmatic qualitative approach was used with semi-structured interviews before and after a web-based PA intervention. The pragmatic approach was chosen because of its alignment with sociocultural perspectives on communication and its flexibility in guiding practical research decisions (Jackman, 2016). The purpose of the interviews was to capture thoughts on and perceptions of the participants' health and PA pre- and post-intervention, including how the respondents experienced it and what they felt may have changed afterwards. Qualitative research is intended to gain deeper insight at a personal level as the people interviewed share their information, which is treated as valuable data to be evaluated and published (Hollomotz, 2018; Patton, 2015). This approach gave the participants interviewed a better opportunity to express their understanding than would have been possible through questionnaires or untailored interviews, allowing them to communicate their opinions and thoughts in their own way (Stuckey, 2013). Since the research was conducted in this specific field ID and PA, an extra effort was needed. Didactical advice from a special pedagogue was incorporated to create adaptable and flexible interviews, including staff support and easier language, that would achieve successful communication with individuals with ID in an interview situation (Hollomotz, 2018).

Intervention

The PA intervention consisted of two web-based PA videos (25 min each) provided through a commercially available platform *MyMOWO* (Virtual Gym Sweden AB, Sweden; <https://www.mymowo.com>). The participants were instructed to use the two videos three times per week for a duration of 12 weeks (3 x 50min/week), as the WHO's recommendations for PA are a minimum of 150 minutes per week of moderate-intensity PA (WHO, 2020). The PA intervention has been described in more detail previously by Fjellström et al. (2022) and there a supplementary video is available. The PA videos (2 x 25 min) were pre-recorded, led by a training instructor and consisted of a combination of strength, endurance, flexibility and balance training. The PA videos were adapted and designed by professionals with consideration given to the specific needs of individuals with ID. The group of professionals consisted of a special-education teacher, an educator, a physiotherapist and a training instructor from the commercial platform. Adaptations of the PA exercise videos included simplified language and less speaking, longer time repeating each exercise, exercises at a slower pace and requiring less coordination, additional water-breaks and a graphic countdown timer.

Recruitment of participants and inclusion criteria

The web-based PA intervention included individuals with ID living in supported accommodation (a residence for people who receive support and service under The Swedish Act concerning Support and Service for people with certain functional impairments, LSS) located in central Sweden. To meet the inclusion criteria, the participants needed to be over 18 years of age and have a mild to moderate level of intellectual disability. The classification of the severity of ID (mild-profound) can in some cases be based on clinical findings and judgment, but it is not always possible to determine the level of ID an individual has (Patel et al., 2018). Therefore, the support professionals' judgment of the severity of participants' ID was relied upon. The participants had to be able to move without any walking aids to be able to do all the exercise movements. Additionally, participants needed to be able to understand and answer questions in an interview situation and be able to understand the information given regarding the project and what the consent indicated and implied. Assistance in recruitment and information regarding supported accommodation suitable for the intervention was received from the participating municipalities.

In total, 28 individuals with ID from 11 different supported accommodation residences located in central Sweden participated in the PA intervention (Table 1). Seventeen of these participants agreed to be interviewed. Sixteen of these participants took part in the interview's pre-intervention, and 13 participated in the interviews post-intervention. One participant, who did not participate in the interview's pre-intervention, took part in the post-intervention interviews. The group of participants interviewed consisted of ten males and seven females, ranging between the ages of 23 to 49. Participants included in the interviews came from each of the four included municipalities.

Table 1. Number of participants interviewed pre- and post-intervention by gender.

	Participants in the web-based PA intervention	Respondents	Respondents who completed the intervention	Respondents who did not complete the intervention	Respondents who did not participate in the post- interviews
Pre-interview	28	16			
Post-interview	22	13 ¹	9	4	4
Female/Male		7/10	4/5	1/3	

¹ One of the respondents in the post-interview did not participate in the pre-interview, 12 respondents participated in both pre- and post-interviews.

Interviews

Semi-structured, qualitative interviews were conducted by two researchers, one being the main interviewer and the other noting and asking extra questions in the native language, Swedish, both pre- and post-intervention. The pre-intervention interviews were conducted in person. Due to COVID-19 restrictions, the post-interviews were conducted digitally online. The interview situation was explained to the participants before starting, and consent to record the interviews was asked for. Interviews were conducted in a way that the discussions stayed private between the interviewer(s) and the respondent. The participants were reminded that they could ask for a support professional to assist, stop the interview at any time or refuse to answer a question.

The interviews were conducted with the help of a semi-structured interview guide (Table 2). The interview topics varied, covering PA, health and well-being, social life and daily life. The interview questions were divided into five categories: demographics, PA, web-based PA, health and motivation.

Table 2. Sample interview questions pre-, and post-intervention

	Demographics	PA	Web-based PA	Health and well-being	Motivation
Pre-intervention	-Background (age, gender...) -What do you do in your free time? -Do you have friends/family? -What do you do together?	-What do you think about when you hear the words physical activity? -What kinds of activities are available where you live/near where you live?	-The project's goal is for you to be physically active three days a week, what do you think about that? -Have you tried web-based PA before?	-How are you? What makes you feel good/bad? -Do you think it is important to be physically active? Do you think it affects how you feel?	-Do you prefer doing activities alone or with someone else? -How does it feel to try to decide which activities to do?
Post-intervention	-How do you travel to your job/free time activities? (walk, taxi, bike, bus...)		-How did it (the intervention) go? -What did you think of the different PA programs?	-How does your body feel after exercising? -Do you think it is important to exercise? -Has exercising affected how you feel?	-What worked well during the PA programs? -Did you exercise alone or with someone else?

Pictograms were available during the interviews for those who needed them, and notes were taken during the interviews to help with the analysis process. The semi-structured interview guide was combined and incorporated with follow-up questions such as why and how, so that the data collection during the interviews flowed in a conversational manner (Adams, 2015; Harrell & Bradley, 2009).

Data analysis

For data analysis, a reflexive thematic analysis approach was used to identify, analyse, and report patterns as themes (Braun & Clarke, 2006; Braun & Clarke, 2019) was chosen to identify, analyse and reporting patterns as themes. Each interview in the dataset was transcribed, handled confidentially and saved anonymously, followed by a more rational step by step thematic reflexive analysis for understanding the study of experiences and perceptions. The approach used can be described as essentialist or realist, aiming to capture participants' experiences and the meanings they attribute to them (Braun & Clarke, 2006; Braun & Clarke, 2019). Including direct quotations from respondents brings their voices to the forefront of the study and helps answer the research questions.

The six steps were as follows: 1. Familiarization yourself with your data, 2. Generating initial codes, 3. Searching for themes, 4. Reviewing themes, 5. Defining and naming themes, 6. Producing the report. The data analysis was guided by two questions: 1. What kind of perceptions do individuals with ID have of PA and health in general? and 2. How do individuals with ID experience a web-based PA intervention program?

The transcribed interviews were read multiple times to gain an overview of all the collected data material (1). Central units of meaning were identified, coded (2), and then sorted into two key themes covering seven sub-themes (3). The preliminary themes you could say was investigated and reflected on to ensure that they captured answers as something important in relation to the two research questions, and in this way represented the participants' outspoken perceptions and experiences (4). The process included both an inductive and deductive way of reporting the data by defining and naming themes (5). To structure the information into codes, names and themes is a way of working deductive, at the same time as the wording or name on a "code" or "title" is more inductive way of working based on the respondents' answers. This involves letting the participants' voices come to the surface, while the two research questions guided the authors in the interpretation and finally reporting the data. Additionally, all authors contributed by reading the interviews and discussed the themes. The final process of analysis and reporting was carried out by the first author with carefully reading, reflections and input from the last author (6). Although the analytic process followed a step-by-step structure, the stages inevitably overlapped. Moving back and forth between the steps enabled the authors to reveal patterns and clarify which themes were most distinct.

Ethical considerations

Participation in the interviews was voluntary, and recruitment of respondents was assisted by support professionals at their supported accommodation. The quotes used in the presentation of the results are marked with identifiers to show the variety of participants (R1-17, male/female, pre/post). Upon personal contact with a potential interview respondent and after they had been provided with information about the study, respondents were asked to sign a consent form. By signing, the participants confirmed that they understood what the project involved, that it was voluntary, and that they had the possibility to withdraw from participating in the project at any given time, without needing to say why. Participants received information regarding the project in easy-to-read Swedish together with pictograms prepared by a special-education teacher. Video-based information was also

available to the participants, in which the researchers presented the training and the outcome measurements in pictures and videos to ensure that participants were aware of the project's different aspects and the intervention. This study was pre-approved by the Swedish Ethical Review Authority (Dnr 2019-06495 and Dnr 2020-02607).

Results

The analysis resulted in two key themes that included seven sub-themes. Key theme 1, “a sense of being ‘stuck on the couch’” pre-intervention including the subthemes of (a) “inactive lifestyle”, (b) “understanding health benefits from PA”, (c) “feeling unwell and out of shape”. Key theme 2, “motivation to enjoy the ride of web-based PA” post intervention including the subthemes of (a) “feeling healthier”, (b) “social support”, (c) “mastering or not”, (d) “multifactorial individual needs”. Table 3 presents a summary of participants’ demographics, perceptions and intervention completion levels.

Table 3. Demographics and perceptions of participants interviewed

Participant code	Gender	Age	Perception of participation pre-intervention	Completion/non-completion of intervention	Exercised alone/with others
R1	Female	44	Positive	3 times/week	With others
R2	Male	27	Sceptical	-	-
R3	Male	30	Positive	3 times/week	With others
R4	Male	30	Positive	3 times/week	With others
R5	Female	49	Positive	3 times/week	With others
R6	Female	49	Positive	1 time/week	With others
R7	Female	41	Positive	3 times/week + extra	Alone
R8	Male	42	Sceptical/Positive	0 sessions completed	-
R9	Female	49	Positive	-	-
R10	Male	42	Positive	3 times/week	Mostly with others
R11	Female	23	Positive	3 times/week	Alone
R12	Male	-	-	2 times/week	Alone
R13	Female	32	Positive	-	-
R14	Male	42	Positive	3 times/week	Mostly with others
R15	Male	38	Sceptical/Positive	Tried, did not complete	-
R16	Male	26	Sceptical	Tried, did not complete	-
R17	Male	38	Sceptical/Positive	Tried, did not complete	-

1. A sense of being ‘stuck on the couch’

When participants were encouraged to reflect on their views of PA, a contrasting mix of thoughts arose with both positive and negative perceptions. Some participants enjoyed being physically active whilst most of the participants identified and expressed negative past experiences when it came to PA.

1(a) Inactive lifestyle

During pre-intervention interviews, the participants (13/17) described mostly sedentary activities when asked about how they spend their free time. Weekdays became even more sedentary during the pandemic, and some (6/17) participants mentioned not working due to various factors and spending a lot of time at home doing nothing, “It’s mostly video games and stuff like that right now.” (R11, female, pre), “I do not enjoy physical activities that

much.” (R17, male, pre), and “I used to work, but there was nothing to do. (Now) It’s mostly sitting at home and being bored” (R13, female, pre).

Participants described reasons why they connected physical inactivity to different aspects. Five out of sixteen individuals said PA was linked to negative experiences in the past, which then resulted in physical inactivity. PA was described as exhausting, awkward and sweaty, “Yes, it’s hard, hard to get started with anyway, and continue with, to have continuity” (R16, male, pre) and, “Yes (laughter) that’s probably what I do least (PA)...//...When I think about working out hmm yeah... sweaty and really tough (laughing)” (R2, male, pre).

Past negative experiences led some participants (4/16) to link PA to pain and injuries. Pain and injuries were also linked to challenges with being overweight. Knee problems were a frequently mentioned factor, and six out of sixteen participants mentioned wanting to lose weight.

“Hmm, future back, neck or knee pain. That’s like the only thing I can think of ...//... I want to get rid of this (stomach). My goal this year was to lose weight, but it became more difficult because I hurt my back ...//... my knees are not good from me being overweight.” (R15, male, pre)

When asked about PA possibilities in the supported accommodation, as well as in the surrounding areas, the answers varied from there being many possibilities to not having anything to do. Out of seventeen participants, seven felt there were no PA possibilities available in their area, while six mentioned there were many options to choose from. Participants mentioned not taking advantage of all the possibilities as well as not knowing what was available. PA options were found mostly outdoors and only taken advantage of in the summertime due to the cold climate. The COVID-19 pandemic has also affected both activity possibilities and work opportunities due to restrictions and closed facilities, “Yeah, there’s space for – a little bit of everything outdoors, there’s a sports holiday village anyway.” (R15, male, pre) ... “They have closed the bowling alley, that’s kind of negative” (R16, male, pre).

Participants living in supported accommodation located outside of the city centres felt that there were not many possibilities available in their areas. One participant specifically mentioned living in an environment where there were no interesting options available to him, “The climate is nice, nice people, but there are not as many opportunities as you would hope – neither for jobs nor for finding like-minded people...//...no opportunities that interest me anyway.” (R15, male, pre) and, “Not that much – most are located in the city, but I haven’t done anything there, so no” (R11, female, pre).

1(b) Understanding health benefits of PA

Even though PA provoked ambivalent responses, all participants acknowledged the importance of PA and recognized its health benefits even if they did not regularly participate in PA themselves. The connection between regular PA and weight loss was acknowledged, “I realized the importance of exercise and the benefits of it, humans are not meant to only sit still...//...Insight and using insight to take action, are two things that do not properly connect for me.” (R16, male, pre) and, “When you aren’t feeling so well – take a walk...//...Then the sadness might pass” (R6, female, pre).

Factors such as support professionals, routines and motivation affect whether the participants can pursue PA and do it regularly to achieve health benefits. In addition to intrinsic motivators and support, external factors can act as motivators for pursuing PA. Extrinsic motivational factors (rewards) were only mentioned by two participants during the pre-intervention interviews. The rewards mentioned were money-related, receiving an

allowance for completing steps in certain tasks. One participant who was motivated by receiving prizes also described feeling “ashamed” for wanting a prize.

If I participate, then I will of course, but then I should receive a reward (from the support professionals) .../... I can receive a reward for what I have completed. That would help a lot, but it may – someone might think that I’m spoiled or... (R2, male, pre)

Another participant said, “Some sort of short-term reward is required in some way.../...The more I move, the more money my guardian would give me to spend, because money has the power to drive society and the individual” (R16, male, pre). Motivation to pursue PA seemed to be affected by mental health challenges. One participant mentioned that it would require serious health concerns to find motivation to pursue PA regularly.

I want to try to lose weight but at the same time – it’s not just a general reluctance but some other mental factors that have an impact, like a feeling of it being meaningless in the end... some heavy thoughts, but I have to try it first before I say anything else.../...Yes, it might feel tough for a while before it becomes a habit.../...Only if I feel like continuing and not just sink back to doing nothing like has happened every single time before.../...It doesn’t feel exactly negative. It will hopefully make me feel better. (R16, male, pre)

1(c) Feeling unwell and out of shape

In conjunction with past experiences regarding PA, physical appearance as well physical abilities were raised during the interviews. Themes brought up by the participants were comparisons with others as well as feeling ashamed, “I am almost ashamed of how unphysical I am, it’s a bit hard when you are as untrained as I am .../... I feel like I’m still open to trying out new things” (R2, male, pre) and, “I have the worst (physical) condition by far” (R15, male, pre).

Participants provided thoughts on health and well-being. Feeling tired and sore were words used to describe their general health pre-intervention, “Sometimes I don’t feel well, sometimes I feel worse...I’m usually tired” (R8, male, pre) and, “My body is a bit – a bit sore, but it tends to be like that” (R16, male, pre).

Mental health becomes relevant when the effects of the pandemic were discussed, as access to proper health care was negatively affected by the restrictions. Participants felt isolated and did not have the possibility to meet family, friends or significant others. All participating individuals mentioned being affected by the pandemic in some way, “I haven’t had access to anyone to talk to – any professional” (R16, male, post) and, “You are only allowed to be locked inside your apartment” (R14, male, pre).

2. Motivation to enjoy ‘the ride’ of web-based PA, post intervention

During the pre-intervention interviews, all participants, even if some were also sceptical, expressed that they looked forward to starting to be physically active, and a few even mentioned just looking forward to having something to do during the days. Participants mentioned that the intervention was the push they needed to get going with PA, “Yeah, something to do during these Corona times too” (R15, male, pre) and, “It feels fun – it feels good to get to do something.../...It feels like I’m getting an extra push, I feel like I need that” (R11, female, pre).

After the program participation, the importance of being physically active was firmly acknowledged by all participants who completed the intervention. All participants interviewed acknowledged a positive change in their health and well-being after starting to be physically active regularly, “I’ve felt much better since I started exercising.../...much better.../... like I’m coming back to life again” (R4, male, post) and, “I feel super good –

Can't feel better than I feel right now. It's good for the soul, it's good for the heart to start being active" (R1, female, post).

2(a) Feeling healthier

Program participation seemed to have brought about positive changes in different aspects of health for all participants (9/13) who completed the intervention. Various examples given include improved vitality, muscle strength, sleep, balance and experiencing less pain. Six out of the nine participants who completed the PA intervention described that they felt "livelier" after beginning with regular PA, "Not as tired anymore, much happier, and livelier and strong...//... I feel great. Yes, I'm a bit stronger, it feels like I've gained some muscles in my arms, legs and even my stomach" (R1, female, post) and, "It has felt great. Hmmm much... It has felt much like... I've noticed a change in my muscles and joints...//... livelier. Much livelier" (R11, female, post).

Six out of nine participants mentioned that the PA intervention period had a positive effect on their sleep. A support professional (who assisted in the interview) mentioned one participant's increased ability to concentrate on work and other tasks due to better sleeping habits, "I've slept much better." (R3, male, post), followed by the support professional: "I've noticed that your concentration has improved a bit."

Participants mentioned balance movements and jumping as being challenging, mostly due to knee problems, poor balance or being overweight. Six out of nine participants who completed the intervention described the balance exercises as challenging, but that their capacity improved during the PA intervention period. Three participants were not able to answer the question regarding balance, did not see a change in balance, nor did they mention balance during the post-intervention interviews, "Some (movements) in the first (video) were hard, I couldn't do the jumping, and it immediately became too much ...//... It's hard for me to jump, my balance is not that great...//... then it becomes difficult to jump" (R3, male, post) and, "I've gained some balance and strength back, I really have" (R10, male, post).

A positive change in pain experienced was noticed during the post-interviews, as participants reported experiencing less pain or even no pain at all after starting to exercise regularly. Three participants specifically acknowledged this being a result of exercising regularly. As one of the men said, "I rather felt like the pain that usually tends to occur – disappeared. A bit of like locks knots and stiffness in the neck and back" (R12, male, post).

2(b) Social support

Given that supported accommodation is facilitated by professional caregivers, combined with the fact that several participants have poor or non-existent family relationships, staff become an important part of the participants' daily life. Staff or support professionals were described by participants as providing "security" and "support". Participants realise that they need support and help in planning, transportation to and carrying out activities, "It's mostly psychological support – and a little physical support too." (R11, female, pre) and, "Yes, but the staff can help me" (R10, male, pre).

During both pre- and post-intervention interviews, activities were more enjoyable and fun when doing them with others. Words like "security" and "support" arose when performing activities with others was discussed. Six out of nine participants who completed the intervention worked out with someone else. One of the nine would have enjoyed having someone to exercise with and two participants worked out alone, "It's exhausting and sweaty but it's usually quite pleasant as long as you have someone to talk to while you walk...//... I love talking" (R16, male, post).

Doing activities with others was described as having a positive effect on motivation as it enhanced the feeling of connectedness,

Yeah, it sounds like... it (exercising alone) works, but it's always fun to have someone with you who really enrages and triggers you so that you really get out the – get out of those bloody zones within yourself and feel that now you'll damn well get so see something else. (R12, male, post)

2(c) Mastering or not

All participants who completed the intervention thought that web-based PA was a fun form of exercise, that the PA intervention went well, and they reported making progress after following the PA program consistently, “Superb. And fun – They (workouts) were great – You could say that I’m like a new person” (R1, female, post) and, “I think it’s gone very well; it’s been fun. A bit complicated sometimes, what you were supposed to do.../...then it got better and better” (R14, male, post).

Participants who completed the intervention period expressed wanting to continue exercising as it made them feel good. Most (8/9) participants also expressed wanting to continue with the same, or some form, of web-based exercise, “I want to continue with this exercise, I really do. It feels great” (R10, male, post) and, “Yes, I really want to do that. I feel like I must do that to continue feeling good” (R11, female, post).

The amount of weekly PA during the intervention period was “moderate” and being able to complete the workouts and the intervention made the participants feel like they were capable of being physically active. The answers indicate a perceived increase in quality of life, with participants describing feeling proud and victorious, “I am extremely happy and proud” (R10, male, post) and, “Like a victorious feeling.... maybe...the fact that – I’m satisfied when I have accomplished something that’s been difficult, but I’ve still managed to complete it” (R12, male, post).

The participants (4/13) who did not complete the PA intervention period felt the exercise videos were too challenging or too complicated. The workouts were too exhausting and energy demanding, while they were also described as being easy to follow. Participants even mentioned some movements as being too challenging due to various factors like being overweight or having knee problems.

For me personally, it hasn’t gone that well ...//... I haven’t done many of the intended workouts, and the few I did, got pretty tough ...//... not more than two (workouts) ...//... I thought the tempo was generally too fast so the other workout, which I did multiple weeks after the first one, was more suitable for me so I chose that one ...//... No, the instructions and movements were clear but a bit – they required a lot of energy and then there was jumping too and I – my knees do not feel good from jumping and skipping. (R16, male, post)

Participants who did not complete the PA intervention were not satisfied with the composition of the exercise videos and hoped for a more progressive program to follow. One participant mentioned being annoyed by how the videos were compiled, “I participated in the first workout and then – then I was so irritated on how the first two videos were compiled that I refused to participate in the rest.../...Better to be compiled in the right order” (R15, male, post) and, “Yes a – I’m thinking that a longer period with a bit easier training methods before starting with something heavier – that would have been good” (R16, male, post).

However, two out of four participants who did not complete the intervention mentioned being interested in trying out web-based exercise again if the workouts were modified and composed differently. One participant stated that he did not feel like web-based exercise was a natural form of PA for him. One participant did not manage to log in to the platform and was not able to answer questions regarding the platform or the exercise program, “If there is going to be an upgrade, find me and I will gladly test it again.” (R15, male, post). The support professional followed up with: “Just that it – it becomes a bit complex I think, it doesn’t feel natural.” Another participant expressed: “No, but that – I feel like, after you’ve

done it (workout) – you’re just really tired and can hardly do anything after but when you’re outdoors you get super lively” (R17, male, post).

2(d) Multifactorial individual needs

Participants described experiencing some multifactorial challenges in both using the web-based exercise platform and participating in web-based exercise. Various factors like tempo, music, the technology and progression and variation were brought up when participants were asked to describe their experience and individual needs of both the exercise platform and the workouts designed, “The technology was a bit challenging in the beginning” (R14, male, post). “It was mostly trying to keep up with her movements and then the music disappeared in the background, so there was not that much listening” (R15, male, post).

Three out of nine participants who completed the whole 12-week intervention felt that the two different workouts were enough, while the rest of the participants felt that variation and/or progression was needed. Four participants mentioned enjoying the lower-tempo exercise video more and the faster one being too challenging. Participants who completed the PA intervention period hoped for variation or alternative lower-tempo exercises. One woman expressed, “Yes exactly. A bit tougher exactly.../... Hmm like a little different, similar but some more movements so to speak – variation.” (R11, female, post).

One participant mentioned that the program did not have a good enough effect because of lack of progression, which in turn affected his motivation,

Hmm... I think it's gone well, maybe a little hard to motivate oneself sometimes but.../... there was quite a long break in this particular exercise form as I felt like it didn't give a good enough effect... So, I started replacing it with something else.../... No but in the end the movements became – there was no increase in difficulty. (R12, male, post)

Four participants mentioned the exercise program or music becoming boring towards the end,

Yes. It's gone well – it was better in the beginning, then I felt like it became a bit the same in the end (laughing) .../...That you get bored in the end as it is the same video but it has gone well anyway.” (R11, female, post)

Another example was,

I enjoyed the easier tempo – Because I have a poor level of fitness so that it is... Yes it was tough, but it got easier and easier.....Yes it became easier in the end, it really did, but it got boring when it got easier. (R10, male, post).

Discussion

This study aimed to explore how individuals with ID perceived PA and health, and how these perspectives were affected by their participation in a web-based PA intervention. In the results, participants expressed that their health was positively affected, similar to a previous study by Ballin et al. (2020). Web-based PA can be used as a tool to meet the individual needs for adapted PA for people with ID, to enhance motivation for participation, improved health and foster enjoyment. This is summarised by the two key themes: 1. “a sense of being ‘stuck on the couch’” pre-intervention, and 2. “motivation to enjoy ‘the ride’ of web-based PA”.

The two key themes represent perspectives on PA and health pre- and post-intervention, as well as thoughts specifically concerning the web-based format for PA intervention. In line with past research studies, participants in the current study presented low levels of PA prior to the intervention and described their daily life in mostly sedentary terms. Easily accessible leisure and PA facilities were described as rarely being available,

which is consistent with findings from Melbøe & Ytterhus (2017) and Temple (2007), that easily accessible possibilities or options are seldom available or designed for groups of people with ID who have low activity levels. The current study's PA intervention was designed in accordance with the PA recommendations from WHO (2020). It was conducted in a web-based format in the participants' living environments, and as such it was easily accessible. Most of the participants were able to achieve the PA recommendations during the intervention period by following the program (Fjellström et al., 2022), which aligns with Lante et al.'s (2014) research regarding individuals with ID having the potential to meet PA recommendations with proper support. Research by Stanish et al. (2017) reported that individuals with ID wanted to be more physically active than they currently were. The present study showed the same pattern expressed through the key theme (1) a sense of being 'stuck on the couch' by describing their (a) inactive lifestyle, but still (b) understanding the health benefits of PA. Some of the explanation behind the lack of PA, and motivation for PA, could be their experiences of (c) feeling unwell and out of shape.

More than one of the participants, including the sceptical ones, described the amount and frequency of the PA intervention as moderate. This statement might indicate that their expectations were low and prompts the question of why PA levels for individuals with ID are generally low and their lifestyles mostly sedentary. This is once again mirrored by the sub-theme 1(a) inactive lifestyle.

Individuals with ID have more health issues (Osugo et al., 2017), and have lower levels of fitness, balance and coordination abilities (Temple et al., 2022) than the general population and are therefore in need of adapted physical exercise. Furthermore, Hansen et al. (2023) showed that individuals with ID living in supported accommodation located outside of the city centers, felt that there were not many options available. Participation in activities in general was not obvious and gave the participants "a sense of being 'stuck on the couch'", as well as it depended on the "motivation to enjoy the ride of web-based PA program".

This was compounded by the fact that the participants are reliant on others, indicated by the subtheme "social support", like support professionals planning, supporting and motivators in general, and assistance in transportation if needed. The social aspect of having a companion to participate with in PA was described as important for enjoyment, accompanied by "feeling healthier". To our understanding, the sub-themes, including quotes, verify the interpretation of the data set and thereby raise the participant's voices. Additionally, by giving the signal of how crucial it was and still is for the participants experience of the subtheme "mastering or not", as well as their "multifactorial individual needs" are acknowledged.

These aspects are consistent with results from previous research (Buttimer & Tierney, 2005; Centers for Disease Control and Prevention [CDC], 2019; Doherty et al., 2017; Obrusnikova et al., 2019; Verdonshot et al., 2009; van Schijndel-Speet et al., 2014) showing that enabling independent exercise at home is a natural way to support autonomy, self-determination and to promote PA. Digital, home-based exercise reduces barriers to PA participation such as money and transportation, and also relieves the pressure off the professional caregivers at the supported accommodation.

In the pre-interviews the participants expressed knowledge of health benefits connected to PA but had mostly negative experiences of PA. The participants' subconscious linking of PA to uncomfortable feelings aligns with the findings of Bossink et al. (2017), Hansen et al. (2023) and van Schijndel-Speet et al. (2014). In addition to the negative perceptions expressed pre-intervention, the findings indicate low levels of PA and increased mental health problems due to the pandemic and its restrictions. This supports Theis et al.'s (2021) research regarding the negative effects of the pandemic restrictions on both mental health

and PA levels. In contrast, the post-intervention interview results indicated a positive impact on both mental and physical health after participation in the PA intervention program. The positive impact on physical health is further strengthened by the quantitative measurements from the co-study (Fjellström et al., 2022) where positive effects on decreased fat mass and waist circumference were observed.

The participants' "motivation to enjoy the ride of web-based PA" was given by the description of "feeling healthier", which aligns with previous research (Vogt et al., 2012) suggesting that PA positively affects experienced health, well-being and quality of life among individuals with ID. Further, the findings indicated by "social support", as well as "mastering or not", and the sub-theme "multifactorial individual needs" are in line with studies (van Schijndel-Speet et al., 2014) aiming at a healthier and more active lifestyle. Hence, this study confirms the demand for adapted PA as shown by the themes mentioned above. These results indicate the need to match the level of difficulty/intensity of the exercise to the individual's function and fitness. They also indicate that to achieve a positive feeling of enjoyment and well-being, the individual needs to feel that he/she is successful in performing/understanding the task, i.e. has the ability and can progress. It appears that if the individual feels that the exercise is too difficult or has too high a level of intensity, there seems to be a negative impact on enjoyment of the exercise. Therefore, adapted forms of exercise need to take into consideration the individual's specific needs regarding level of intensity, functionality related to impairment, progression, variation, and use of technology including clear instructions (Perez-Crusado, 2017).

The exercise videos in this study were pre-recorded, with no interaction between the participants and the instructor. However, the result "social support" indicated that the social aspect of performing the web-based exercise with someone else seemed effective in providing a feasible form of PA for individuals with ID, thereby creating a PA routine to follow that included a social aspect. This addition of social support to the otherwise independent PA form shifted several of the participants' attitudes to PA. Following the program with other participants or supporting professionals enhanced the enjoyable motivation and desire to continue being physically active in the future. This is in line with the findings of van Schijndel-Speet et al. (2014) and Peterson et al. (2008) who highlight the connection between social support and PA. Participants who considered PA and being physically active as "fun" were intrinsically motivated to continue doing regular PA, which is consistent with the findings of Michalsen et al. (2020). Participants were able to identify a number of key factors that affect their motivation to do web-based exercise, in support of properly adapted PA. Variation and the possibility to progress, the feeling of being capable, a sense of achievement and enjoying exercising with the program were experienced by participants as contributing factors boosting their motivation to continue with regular PA. Participants acknowledged that this led to their feeling healthier and was a way for them to achieve personal goals, such as losing weight and gaining more independence. Making progress and the feeling of being capable can be viewed as stronger motivators than the extrinsic factors, such as the rewards described by participants pre-intervention.

An interesting finding was the relationship between the pre-intervention attitudes towards exercise participation and completing the full intervention (Table 3). A positive and excited perspective pre-intervention resulted in more consistent exercise and completion of the intervention, while a sceptical or questioning attitude led to non-completion of the PA intervention. Consequently, recognizing the positive effects of the PA program resulted in continued motivation and desire to pursue PA more regularly in the future. When comparing gender differences, one interesting observation is that four out of five participants who were sceptical about the program pre-intervention were males, which then resulted in non-completion of the PA intervention. One female participant who did not complete the

intervention described having problems with internet access and due to this was not able to participate.

Limitations

Given that both pre- and post-interviews were conducted amid the COVID-19 pandemic, when many restrictions applied, this may have affected the trustworthiness of the results (as described by Graneheim & Lundman, 2004). Due to COVID-19 restrictions, the interview situations were not standardized as pre-interviews were conducted with the interviewer and participants wearing facemasks and sometimes outdoors, and post-interviews had to be held online. This might have affected the non-verbal communication and the possibility to observe body language, thereby reducing follow-up questions.

The support professionals made the judgment on the individual's level of ID and thereby made the first selection of which individuals were asked to participate in the study. While the participant selection process might have affected credibility, the quotes included representative thoughts of a variety of participants representing all the municipalities.

Conclusions

This study demonstrates that individuals with ID shared a positive view on PA and health in general, but face challenges in being physically active. Participation in a 12-week web-based PA intervention, that was specially adapted for individuals with ID, was feasible and promoted participation, with participants expressing that they felt healthier, including better sleep, liveliness, feeling of joy, and enjoyment when having social support and mastering. The participants felt able when exercise was adapted to functionality and the fitness level of the individual. This study highlights the potential of web-based PA as an accessible tool that meets the individual needs, and promotes participation, motivation and enjoyment among adults with ID.

Perspectives

This study helps to reveal the opinions of needs and prerequisites for web-based PA specifically adapted for adults with ID. The findings reinforce existing knowledge (Bondar et al., 2020; Bossink et al., 2017), and explore new knowledge in the field of adapted exercise, health and PA. As noted previously, to the best of our knowledge, this is the first web-based PA intervention adapted for individuals with ID.

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