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Research Paper

The Feldenkrais Method improves functioning and body balance in people with intellectual disability in supported employment: A randomized clinical trial

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ABSTRACT

Loss of functioning and age-related health problems tend to appear earlier in individuals with intellectual disability (ID) than in their non-disabled peers. The Feldenkrais method (FM) is a movement-based form of learning that enhances body balance and physical functioning. We carried out an intervention based on Awareness Through Movement, a form of the FM. Thirty-two middle-aged (48.94 ± 6.01 years old) adults with ID who were in supported employment were recruited and randomly assigned to the experimental group (EG) or control group (CG). The EG received 30 Awareness Through Movement classes while the CG did not receive any movement-based intervention. Physical functioning (body balance, gait speed and chair stands) was assessed with the Short Physical Performance Battery (SPPB) and balance by stabilometry. After 30 FM classes, individuals in the EG had significantly improved their chair stand test score ($p < 0.005$) and SPPB total score ($p < 0.005$), and reduced their sway area ($p < 0.05$) in the stabilometric test. These results indicate that the FM could be a good tool for the prevention of loss of functioning and body balance in middle-aged individuals with ID.

What this paper adds?

This paper reports the effect of a programme of a movement-based therapy (Feldenkrais method) on the functioning and body balance of middle-aged men and women with intellectual disability who are in supported employment, comparing an experimental and a control group. All participants were assessed at the same time before and after the intervention. They showed physical capacities of older non-disabled people. After the intervention, improvements were observed in functioning and body balance in the experimental group. For the first time, this study demonstrates the effectiveness of the Feldenkrais method for improving the physical capacity of people with mental impairment.

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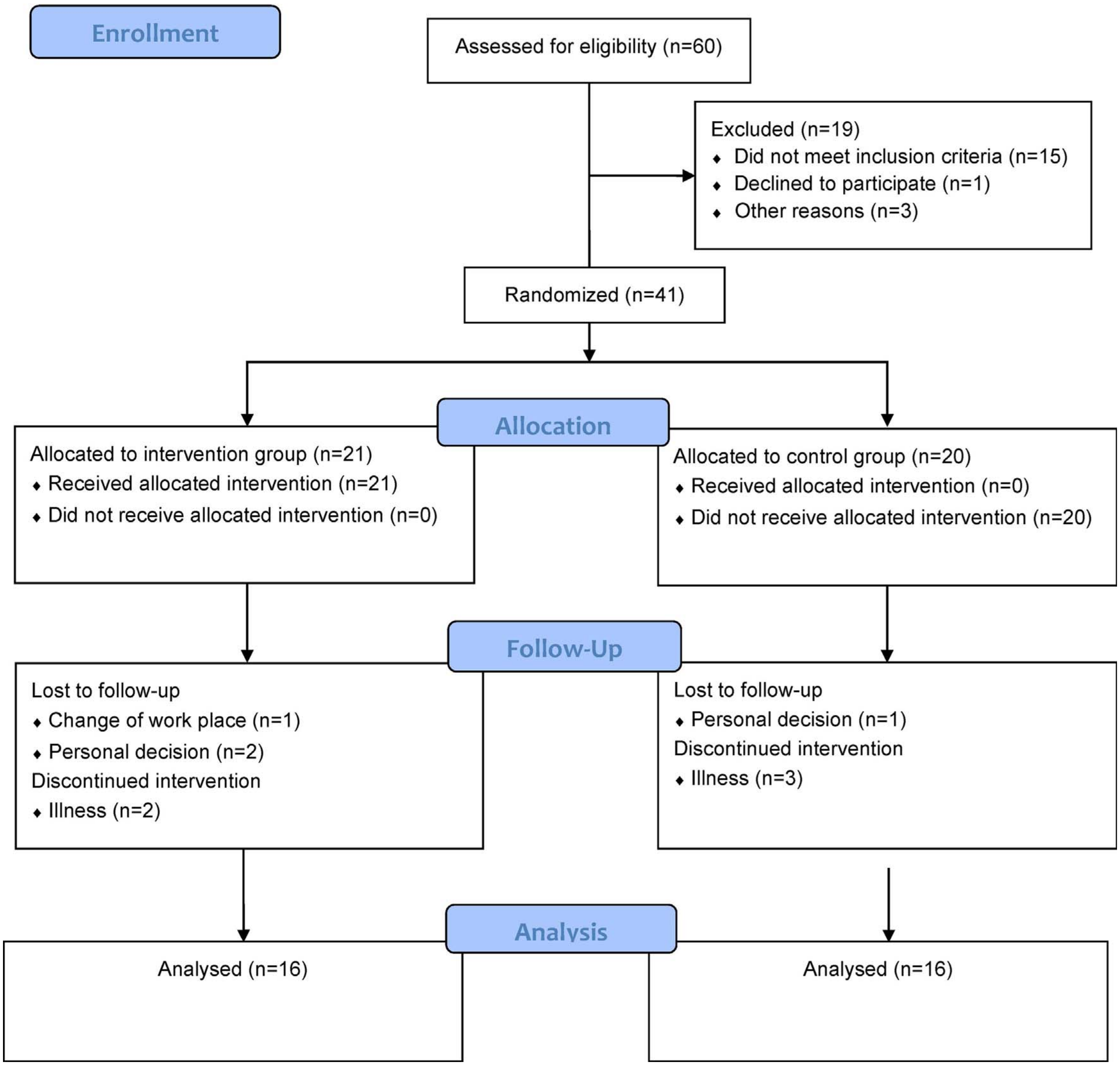

1. Introduction

The Feldenkrais method (FM) consists of individual or group classes in which a therapist gives verbal instructions to participants, providing different options on how to perform a specific movement task. That is, the therapist leaves the decision on how to do the movement up to the performer, who has to focus on thinking, feeling, sensing and doing the movement as easily as possible. In addition, participants are encouraged to generate many alternative movement solutions to the guided task in order to increase the opportunities for further distinctions and improvements to be made (Hillier & Worley, 2015). The purpose of these explorations is to practice the nonlinear process of sensing the difference between two or more ways to achieve the stated movement task; and then to discern which feels easier, that is, which requires less effort (Connors, Galea, & Said, 2011). Verrel, Almagor, Schumann, Lindenberger, and Kühn (2015) described changes in spontaneous cortical activity in functionally-related regions after an intervention based on the FM and suggested that this method might provide meaningful information to the nervous system by clarifying functional relationships throughout the body and with the environment. Feldenkrais (1990) hypothesized that his method could modify people's patterns of movement making them more efficient, including people with ID.

Intellectual disability (ID) is defined as a significantly reduced ability to understand new or complex information and to learn and apply new skills (impaired intelligence). This results in a reduced ability to cope independently (impaired social functioning), and begins before adulthood, with a lasting effect on development (WHO, 2016). For the first time in history, adults with intellectual and developmental disabilities are living to experience old age (Bowers, Bigby, & Webber, 2009). Although the impact of ID on life expectancy is variable, most people with mild-to-moderate mental impairment can now expect to live as long as their non-disabled peers (Bittles et al., 2002; Fisher and Kettl, 2009; Janicki, Dalton, Michael Henderson, & Davidson, 1999). Nevertheless, the ageing process and related functional problems seem to have an earlier onset in people with ID. In addition, they lose movement and balance skills, and this could lead to an increased risk of falls, and in turn, to a higher risk of disability and loss of quality of life (Evenhuis, Henderson, Beange, Lennox, & Chicoine, 2001). Furthermore, the International Association for the Scientific Study of Intellectual Developmental Disabilities highlighted that one of the conditions with the greatest impact on health and quality of life of people with ID is obesity (Lennox et al., 2002). It has been shown to be an increasing problem in adults with ID (Bennett, Kolko, Chia, Elliott, & Kalarchian, 2017; de Segal et al., 2016; De Winter, Bastiaanse, Hilgenkamp, Evenhuis, & Echteld, 2012). Due to the severity of the aforementioned problem but the limited data available, there have been calls for more research into the overweight process in adults with ID (Ranjan, Nasser, & Fisher, 2017).

The utility of FM has been demonstrated with different levels of evidence in a wide range of fields (Hillier & Worley, 2015). Studies have analysed the effect of the method on healthy people and have found reductions in levels of anxiety and perceived exertion (Hopper, Kolt, & McConville, 1999; James, Kolt, McConville, & Bate, 1998; Kolt and McConville, 2000). Other authors found reductions in perceived back pain after an FM intervention (Chinn, Trujillo, Kegerreis, & Worrell, 1994; Ruth and Kegerreis, 1992; Smith, McConville, & Kolt, 2001). In recent years, with the growing interest of the scientific community in ageing, researchers have started to explore the effect of this method on the process of ageing. Results have been promising, with evidence that the FM may be useful for improving balance and reducing the risk of falls, as a preventive measure in ageing populations (Connors et al., 2011; Hillier, Porter, Jackson, & Petkov, 2010; Ullmann, Williams, Hussey, Durstine, & McClenaghan, 2010). We have found no evidence, however, concerning the use of this method for improving the functioning of people with ID.

The social and health-related benefits of the integration of the people with ID in the workplace are well known. People with ID often want to participate in work (Donelly et al., 2010; Eggleton, Robertson, Ryan, & Kober, 1999) and organisations like the United Nations have called for their inclusion in the workforce (UN, 2006). However, they are much less likely to be employed than their non-disabled peers (Holwerda, van der Klink, de Boer, Groothoff, & Brouwer, 2013; Parmenter, 2011). In addition, people with ID who are in employment tend to need to retire earlier, producing social, economic and health problems. Taking into account that the loss of functioning observed could be a consequence of an early ageing process in these workers and the proposed benefits of FM, we hypothesized that the FM could be helpful to improve balance and functioning of employed people with ID.

2. Methods

This research was approved by the Human Research Ethics Committee of the University of the Basque Country (UPV/EHU).

2.1. Study design and participants

This was an experimental multicentre randomized study, with random allocation to a control group (CG) or to an experimental group (EG). It was open-label with the assessors, who were specialists experienced in working with people with ID (psychologists, nurses, physicians, physiotherapists), not being blinded to group allocation.

Participants were recruited from Lantegi Batuak (Loiu, Basque Country, Spain) a company that provides supported employment to people with ID. The study was carried out at two different sites of the aforementioned company where participants were working on similar tasks (assembling electrical devices). A list of individuals that met inclusion criteria was obtained from the database of the company. The recruitment strategy was through medical staff of the company inviting individuals on this list to join the study, after providing them and their parents or legal guardians with detailed information about the research: specifically, the objectives, measurement variables and details concerning the interventions were explained orally and in writing, to both potential participants and their parents or legal guardians. Written informed consent assent was obtained from the participants and written informed consent from their parents or legal guardians. Afterwards the individuals with ID were randomly assigned, in a 1:1 ratio by centre, to either the control or the intervention group, using a randomisation sequence generated by coin-tossing and placed in sealed opaque envelopes.

All of the participants fulfilled the inclusion criteria, namely, being between 40 and 60 years old with mild-to-moderate ID. Individuals were only excluded if it was considered that they would not be able to follow FM classes in a group or if they had previous experience of the FM.

2.2. Procedures

Participants were assessed at two stages: 1 week before the beginning the classes and just before the last of the 30 classes. The assessment included measurements of height, body weight and functioning.

Body height was measured (in cm) using a stadiometer (Marsden, T-226, UK) with the participant standing, without shoes. Body weight was measured using a digital floor scale (Tanita, HD-314w, USA) with participants wearing light clothes and no shoes. Body mass index (BMI) was calculated as weight divided by height squared.

The Short Physical Performance Battery (SPPB) and a stabilometric test were used to measure functioning. The SPPB is a composite score of performance (0–12) based on 3 functional tasks: walking speed, chair rise test and standing balance (Guralnik et al., 1994). To measure walking speed, two photocells (Seiko, S23751J, JP) connected with a recording chronometer were placed at the beginning and the end of 4-m course established at the study clinic. Participants were instructed to stand with both feet touching the starting line and to begin walking at their usual pace after a verbal command. The time between the activation of the first and the second photocell was recorded. The average of two walks was used to compute walking speed. In the chair rise test, performance was assessed as the time to complete five chair rises as quickly as possible. Categorical scores for above mentioned tests were based on previously established quartiles of timed performance according to methods developed by Guralnik et al. (1994). As a measure of balance, the standing balance test was scored with responses ranging between 0 and 4. On each task, subjects can score between 0 and 4, with the higher values representing the best performance. Based on their subsequent risk of disability, mobility limitations have been characterized as being mild (score ≥10), moderate (score 7–9), and severe (score 4–6). It has been shown to be a highly reliable test (Guralnik et al., 1994). Postural control was assessed with a static stabilometric platform (Winposture, Medicapteurs, FR) at an acquisition frequency of 50 Hz. Participants were asked to stand as still as possible, bare foot and with their eyes open, for 60 s. In order to ensure the same foot position for all the subjects, they were placed on the platform using a plastic device provided with this. Participants were instructed to look straight ahead at a mark placed onto the wall 2 m away at eye level. Data collection was initiated after participants adopted the required posture on the platform, stabilized their postural sway and signalled the experimenter that they were ready to begin. For safety reasons, an assessor remained near the participant without touching or providing additional instructions during the test. Displacements of the centre of gravity were expressed in terms of sway area (mm^2) and path length (mm).

All the assessments were carried out individually in well-lit, quiet, air-conditioned rooms at the company. Gender, date of birth, and level of ID were retrieved from medical records.

2.3. Intervention

The EG received 30 classes of Awareness Through Method, the model of FM that is delivered in a group and where the movement is verbally directed. The classes were conducted by a trained practitioner for 1 h, once a week. All classes were conducted sitting, standing or moving within the room. The CG did not receive FM or any other movement-based therapy.

2.4. Data analysis

Statistical analysis was performed using IBM SPSS Statistics for Windows (Version 22.0). Data were presented as mean ± standard deviation. Descriptive statistics were calculated for all outcome measures. Mean differences and relative changes (%) within the groups in the walking time (sec), walking speed (sec), chair stands (sec), standing balance (number), final SPPB scores and stabilometric outcomes were estimated using paired sample *t*-tests, while mean differences between the groups in these variables were estimated using repeated measures analysis of variance. Differences were considered significant at $p < 0.05$. To determine the magnitude of the interactions between time and group, the effect size or μ2 was calculated as described by Cohen (1998) and interpreted as small (> 0.01 and < 0.06), moderate (≥0.06 and < 0.14) or large (≥0.14).

3. Results

This study was carried out between September 2015 and May 2016. At the beginning of this period, 21 individuals were assigned to the EG and 20 to the CG. The EG received thirty 1-h FM classes once a week for 30 weeks, compatible with their work commitments in the company, while the CG did not receive any intervention. At the end of this 30-week period, nine people had abandoned the study or were not available for assessment for various different reasons (illness, change of workplace or personal decision). Finally, a mixed-sex group of 32 middle-aged adults between 40 and 56 years old (EG: 11 men, 5 women; CG: 10 men, 6 women) completed the study (Image 1). The sample did not include any individuals with Down's Syndrome. For the EG, overall class attendance was 97.91% ranging from 27 to 30 classes and dropouts were generally a result of health-related issues and other commitments, not related to the study. No injuries were reported during the classes.

Data for all variables were found to be normally distributed using the Shapiro-Wilk test and Levene's test showed that the

Table 1
Descriptive anthropometric and functioning data for all the participants (mean ± SD).

	All (n = 32)
Age (years)	48.94 ± 6.01
Anthropometry	
Height (cm)	162.25 ± 9.68
Weight (kg)	69.47 ± 14.20
Body mass index (kg/m^2)	26.36 ± 4.89
SPPB	
Standing balance (score)	2.90 ± 1.22
Gait speed (score)	2.81 ± 0.71
Gait speed time (sec)	3.71 ± 0.78
Chair stands (score)	2.42 ± 1.09
Chair stand time (sec)	14.67 ± 3.94
Total SPPB (score)	8.13 ± 1.94

Note: Short Physical Performance Battery (SPPB).

Table 2
Comparison of anthropometric characteristics before and after the Feldenkrais method intervention by grou (mean ± SD).

	Experimental group (n = 16)			Control group (n = 16)			§ Interaction	
	Pre	Post	%	Pre	Post	%	Sig.	η^2
Age (years)	49.56 ± 5.81			48.31 ± 6.34				
Anthropometry								
Height (cm)	159.14 ± 8.99	159.01 ± 9.01	−0.08	165.57 ± 9.57	165.54 ± 9.58	−0.01	0.123	0.080
Weight (kg)	67.97 ± 15.91	67.03 ± 16.01	−1.38	71.08 ± 12.47	71.62 ± 12.96	0.75	0.453	0.020
Body mass index (kg/m^2)	26.84 ± 5.97	26.51 ± 5.99	−1.22	25.93 ± 3.55	26.17 ± 3.67	0.92	0.471	0.018

Note: %: Differences between pre- and post-intervention results in percentages. §: Differences between experimental and control group.

assumption of equal variance was met. Table 1 lists the descriptive data for age, anthropometric characteristics, functioning as measured with the SPPB and body balance as measured by stabilometry at the beginning of the research for all participants. Anthropometry and SPPB results before and after the FM intervention by group are compared in Tables 2 and 3, respectively. In the anthropometric analysis, no significant changes were found in height, body weight or BMI within or between the groups at the beginning or the end of the intervention. Regarding the functional assessment, the participants of the EG performed tasks in less time and their scores in all the tests were better after the intervention than in the pre-test. Although no changes were detected in the standing balance for the CG, this group improved its performance in gait speed and chair stands tests from the first to the second assessment. Nevertheless, the relative improvements in these variables as well as in SPPB total score were higher in the EG than the CG. The EG showed a highly significant improvements ($p < 0.001$) in chair stand test performance (time and score) between pre- and post-intervention, significant changes were also observed in the CG ($p < 0.05$). A significant ($p < 0.005$) interaction between group and time for the SPPB total score indicated that the individuals in the EG improved their functioning more than controls.

In the stabilometry, there were also differences for each group between pre- and post-intervention tests in the sway area (mm^2) and in the path length (mm). No differences or interactions between groups were found for any of the stabilometric parameters (Fig. 1).

4. Discussion

The main purpose of this study was to evaluate the efficiency of an FM programme in adults with mild-to-moderate ID. Our data indicate that this type of programme is feasible and safe in this population and after 30 classes of this method people with ID had better functioning.

4.1. Anthropometry

The mean value of the BMI of the participants in this study was 26.36 ± 4.89 kg/m^2, which is considered overweight (WHO, 2017). No significant changes in body weight were observed. Given the nature of the FM intervention, it was not expected that there would be change in anthropometric parameters. Interestingly, some subgroups of adults with ID (specifically, those with mild ID) are more likely to be obese than the general population (Bhaumik, Watson, Thorp, Tyrer, & McGrother, 2008) and as occurs among the non-disabled population, between the 50 and 60 years old the risk of being obese increases dramatically for people with mild-to-moderate ID (Moran et al., 2005). It is interesting to note that we found a lower rate of overweight than that found by San Mauro-Martín et al. (2016) for adults with ID who were not work integrated.

Table 3
Comparison of functioning before and after the Feldenkrais method intervention by group (mean ± SD).

	Experimental group (n = 16)			Control group (n = 16)			§ Interaction	
	Pre	Post	%	Pre	Post	%	Sig.	η^2
Age (years)	49.56 ± 5.81			48.31 ± 6.34				
SPPB								
Standing balance (score)	2.56 ± 1.41	3.06 ± 1.28	19.53	3.29 ± 0.91	3.29 ± 1.13	0.00	0.251	0.047
Gait speed (score)	2.81 ± 0.75	3.07 ± 0.68	9.25	2.86 ± 0.67	2.86 ± 0.74	0.00	0.325	0.035
Gait speed time (sec)	3.78 ± 0.92	3.52 ± 0.72	−6.87	3.61 ± 0.58	3.55 ± 0.61	−1.66	0.280	0.042
Chair stands (score)	2.25 ± 1.06	3.50 ± 0.81	**55.55*****	2.58 ± 1.12	3.25 ± 0.85	**25.97***	0.136	0.083
Chair stand time (sec)	15.46 ± 4.56	10.72 ± 2.98	**−30.65*****	13.72 ± 3.10	11.09 ± 2.84	**−19.17****	0.121	0.090
Total SPPB (score)	7.63 ± 2.06	9.63 ± 1.71	**26.21*****	8.67 ± 1.61	9.25 ± 1.99	6.69	**0.002**	0.316

Note: %: Differences between pre- and post-intervention results in percentages. §: Differences between experimental and control group.
Experimental group: chair stands score ($p < 0.000$); chair stand time ($p < 0.000$); SPPB score ($p < 0.000$)/ Control group: chair stands score ($p < 0.039$); chair stand time ($p < 0.006$).

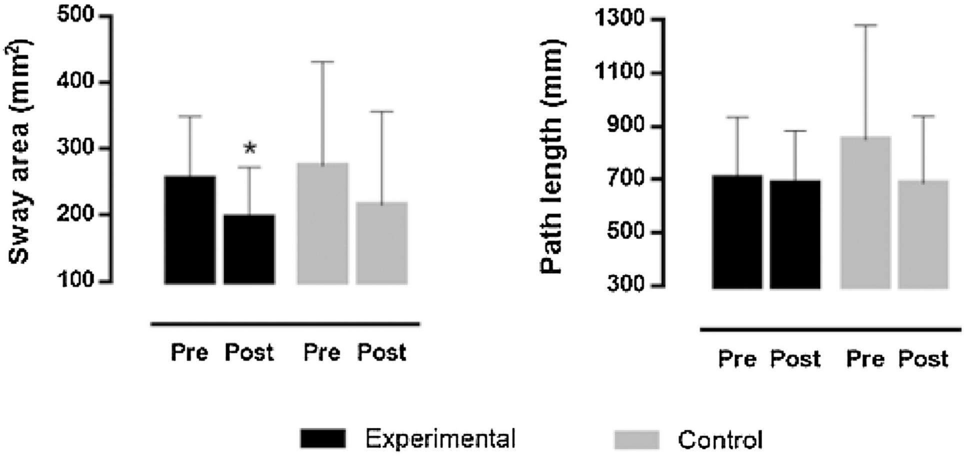

Fig. 1. Comparison of sway area (mm^2) and path length (mm) for the experimental and control group before (pre) and after (post) the intervention. Values are means and standard deviations. * $p < 0.05$.

4.2. Short Physical Performance Battery

The SPPB is used to assess physical functioning and predict disability across different populations, commonly in ageing adults. This battery of tests was selected for our research because we speculated that the physical fitness of our sample would be similar to levels in older adults. Comparing with the times (sec) for the chair stand and gait tests published by Guralnik et al. (1994), before the intervention, the participants in our research required approximately the same time as that needed by a population aged over 71 years. Further, the scores obtained before the intervention by both of our study groups for all the SPPB tests were relatively similar to the reference values provided by Cabrero-Garcia et al. (2012) for non-disabled people aged over 76 years. After the intervention, the improvement in the SPPB total score for the EG was 2 points, which can be considered clinically meaningful (Kwon et al., 2009; Perera, Mody, Woodman, & Studenski, 2006). In addition, the relative improvement in this variable was highly significant for the EG ($p < 0.005$) but for the CG. Another meaningful change was found in the chair stand test, where the participants of the EG improved their time by more than 25%. The CG also significantly improved both their time and score for the same test. Nevertheless, after the intervention, controls required more time and obtained lower scores than the EG. In this study, both groups became more proficient at the chair stand test, but there was a nearly two-fold stronger improvement in the EG (55.55% vs 25.97% in the CG). Furthermore, the improvement in the CG could be a bias caused by research participation effects, which are intrinsic to all human research designs as has been previously described (McCambridge, Kypri, & Elbourne, 2014). Previously, muscle strength has been associated with improved ability to perform daily activities in individuals with ID (Horvat, Pitetti, & Croce, 1997). Thus, the substantial improvements in the chair test observed in the present study could be attributable to improved lower limb muscle strength resulting from the FM programme.

At baseline, although not statistically significant, there were differences in functioning between the groups. Specifically, results indicated that the CG individuals had better standing balance, gait speed and performance in the chair stand test and, consequently, had higher SPPB total scores. Further, CG individuals showed improvement in chair stand performance ($p < 0.05$). This improvement observed in the chair stand test might be related to the activity level of the CG participants.

Individuals with ID are generally rather inactive and have lower physical fitness levels than the general population (Fernhall & Pitetti, 2001). However, we hypothesize that the participants in this study had a relatively high potential for improving their physical performance due to their regular activity related to their employment and this might have influenced the overall results obtained. Nevertheless, the other SPPB results showed no improvements, with no differences being found in the scores between the first assessment and 30 weeks later, at the end of the programme. With regard to the EG group, significant improvements were observed in the SPPB total score ($p < 0.005$). Interestingly, the significant interaction observed ($p < 0.01$) indicated that EG participants' improvements were larger than those observed in the CG group. Furthermore, although CG participants performed better than those in the EG group at the beginning of the study, by the end of the intervention the reverse was true. Overall, these findings indicate that individuals with ID significantly improved their physical functioning by participating in an FM intervention.

4.3. Stabilometry

A stabilometric platform is a common tool for measuring body balance in numerous health-related problems (Ishizaki et al., 2002; Jahn, Langhagen, & Heinen, 2015; Lopes, Almeida, Menezes, & Guimarães, 2014; Tropp, Ekstrand, & Gillquist, 1983) or other conditions related to physical or physiological changes (Gutierrez, Argothy, Ramírez, Rubiano, & Porras, 2015; Oliveira, Vieira, Macedo, Simpson, & Nadal, 2009; Sakaguchi, Taguchi, Miyashita, & Katsuno, 1994). Several authors have reported changes in body balance using stabilometry in people with neurological conditions such as Alzheimeŕs Disease, other types of dementia and certain psychiatric disorders (Leandri et al., 2009; Leandri, Campbell, Molfetta, Barbera, & Tabaton, 2015; Tsunoda et al., 2010). Further, a few researchers have used this technique for the assessment of young people with ID (Cabeza-Ruiz et al., 2011; Molloy, Dietrich, & Bhattacharya, 2003), and Dellavia, Pallavera, Orlando, and Sforza (2009) used it in athletes with ID, but to the best of our knowledge, this is the first study applying stabilometry to adults (aged over 40 years old) with ID.

Our results showed that adults with ID had elevated values of body sway with respect to the reference values for non-disabled people (AFP, 1985) and poorer balance than healthy adults (Rodriguez-Rubio et al., 2015). On the other hand, comparing with studies investigating movement disorders, the people who took part in our study showed better body balance than people with neurological disorders of movement (Nardone, Godi, Grasso, Guglielmetti, & Schieppati, 2009; Schieppati, Tacchini, Nardone, Tarantola, & Corna, 1999). Notably, in the second assessment, after the intervention, a significantly smaller sway area was observed in the EG ($p < 0.05$). Our findings are consistent with those of Enkelaar, Smulders, van Schrojenstein Lantman-de Valk, Weerdesteyn, and Geurts (2013), who demonstrated that people with ID have substantially poorer balance than older adults in the general population. Nevertheless, our data indicate that exercise and movement-based therapies improve body balance in people with ID, as other authors have concluded for non-disabled people (De Kam, Smulders, Weerdesteyn, & Smits-Engelsman, 2009; Korpelainen et al., 2010; Wolf, Coogler, & Xu, 1997).

Clark, Schumann, and Mostofsky (2015) highlighted that focussed attention is closely linked to better movement as a rationale behind the functional improvement obtained with the practise of mindful movement training, such as the FM. These factors could also explain the improvement in balance and functioning we observed after our FM programme of one session per week for 30 weeks.

4.4. *Clinical relevance of the FM*

The World Health Organization (2009) reported that countries do not provide the support necessary for ageing adults with ID to reach their potential, this creating a significant barrier to them achieving inclusion in everyday life, and called for more research including older and younger individuals to unravel effects of age and attitudes towards supported employment for people with ID.

In comparison with non-disabled people, low levels of physical activity were reported to be low for adults with ID (Stanish et al., 2016) and still lower for specifically older adults with ID (Hilgenkamp, van Wijck, & Evenhuis, 2012). It remains unclear, however, at what age the onset of loss of functioning occurs in people with ID. Maaskant et al. (1996) showed substantial decreases in the functioning of people with Down's syndrome at the age of 40 years. In line with this, we found that baseline SPPB scores in 40- to 56-year-olds with mild-to-moderate intellectual disability were close to those obtained by a population of non-disabled people aged over 76 years (Cabrero-Garcia et al., 2012). Even before it had been documented that a lack of physical activity affects the health of adults with ID earlier than the rest of population (Bhaumik et al., 2008; Mikołajczyk & Jankowicz-Szymańska, 2014), Robertson et al. (2000) suggested that increasing their levels of physical activity would be the single most effective way of improving the health of middle-aged people with ID, and it might also prevent the ageing process-related loss of functioning.

The care of dependent individuals, regardless of whether they have ID, is a major challenge for society, both because of the large number of persons that will require care in coming years and because of the high economic cost involved (Doran et al., 2012; Polder, Meerding, Bonneux, & Van Der Maas, 2002; Sosvilla & Moral, 2011; Strydom et al., 2010). Blick, Litz, Thornhill, and Goreczny (2016) found that individuals with ID integrated in the workforce reported a better quality of life, more activity and greater financial autonomy. In our opinion, the integration of people with ID in the workplace should be an opportunity for saving health care-related costs and optimizing social investment. In addition, movement-based therapies like those based on the FM would be a promising tool to include in work integration programmes for improving the functioning of workers with ID and preventing work-related illness, as has been described in non-disabled people (Koneru & Tanikonda, 2015; Raingruber & Robinson,2007).

The number of participants could be considered a limitation of this study, in particular regarding the interpretation of stabilometry data. In addition, more frequent classes might be more appropriate for investigating changes associated with the intervention. Nevertheless, though the timetable of classes was limited by the availability of the participants given their work commitments, we expected that changes might observed with weekly classes given the changes in non-disabled people reported by Hillier et al. (2010) with this frequency of classes over just 2 months. On the other hand, to our knowledge, it is the first study to determine the effect of an FM programme on individuals with ID and, further, no previous data were found on stabilometry in middle-aged people with ID, and hence, there is limited data with which to compare our findings.

5. Conclusions

This study indicates that a 30-week programme of FM classes is able to improve the functioning of middle-aged individuals with ID. Policy makers as well as authorities responsible for health and employment should take these findings into account in order to integrate people with ID into the workforce and reduce the economic, health and social costs of caring for this population.

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