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Is Irish set dancing feasible for people with Parkinson's disease in Ireland?☆

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A B S T R A C T

Objective: To investigate if community-based Irish set dancing is feasible in Irish adults with Parkinson's disease.
Methods: Over an eight week period, ten participants attended one set dancing class per week and completed a home programme in parallel. Feasibility was assessed by monitoring adverse effects, participants' verbal feedback, compliance rates and feedback from an exit questionnaire. Participants were assessed using the Berg balance scale, 6-min walk test, UPDRS-3 and PDQ-39, before and after the intervention.
Results: No adverse effects were detected. Attendance at classes was 86%. Compliance with the home programme was 67%. Findings from the exit questionnaire showed participants enjoyed participating and reported improvements in aspects of health including balance. Quality of life improved with the dance programme and there was a trend toward improvement on the UPDRS-3.
Conclusion: These findings suggest community-based Irish set dancing is a feasible form of exercise that can positively influence quality of life.

1. Introduction

Parkinson's disease (PD) is a movement disorder characterized by bradykinesia, tremor and rigidity [1]. As the disease progresses, postural instability and mobility difficulties can have a compromising effect on physical functioning [2,3], quality of life [4,5], and social engagement [6]. Physical activity is advocated in the management of PD [7] but it is estimated more than 50% do not meet the recommended activity levels [8] of 30 min per day [9]. It is argued that an optimum exercise intervention for those with PD integrates cueing strategies, balance training, focuses attention and improves physical capacity [8]. Irish set dancing appears to be one effective form of physical activity for some people with PD [10] as it incorporates dynamic balance activities with gait and skilled movements. Movement generation may also be enhanced through musical cues [11]. Set dancing could enhance long-term compliance with physical activity as it incorporates exercise, socialisation and spousal participation, which are desirable elements required to motivate adherence to physical activity for people with PD [12]. A recent study identified six months of set dancing improved balance and mobility to a greater extent than traditional exercise in a sample of Venetians with PD [10]. Whilst this study showed the feasibility and benefit of set dancing for some people with PD, the intervention was delivered in a rehabilitation setting and may not reflect the realities of everyday practice [13]. As the number diagnosed with PD is expected to double by 2030 in several European countries [14], healthcare professionals need intervention studies to investigate the feasibility and acceptability of translating evidence into practice. Therefore, there is a need to investigate if set dancing is feasible in community settings. Additionally, set dancing originates in Ireland and has a traditional and fundamental social

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and cultural identity role in Irish communities [15,16]. Given the past experiences, cultural values and familiarity associated with this dance genre in Ireland [15,16], it is impossible to identify if the findings of Volpe et al. [10] are applicable to an Irish population with PD. With this in mind, the overall aim of this study is to examine the feasibility and benefit of set dancing for people with PD in Ireland. This study was conducted as a prerequisute to a randomized control trial to identify:

- The suitability of outcome measures to quantify change after the intervention
- If participants are willing to participate in a set dancing intervention
- Aspects of the intervention participants are satisfied with and areas needing adaption

As this was a feasibility study of short duration, it was hypothesised participants would be able to partake fully in the intervention without reporting adverse effects. It was also hypothesised gains in functional exercise tolerance, balance, motor performance and quality of life would be evident after the eight weeks of set dancing classes.

2. Methods

This study was approval by the Mid-Western Regional Hospital Scientific Research Ethics Committee.

Ten participants (7 males, 3 females) were recruited through public talks where verbal and written information about the study was provided. Written consent was obtained from all participants prior to taking part along with approval from their general practitioner.

In accordance with inclusion and exclusion criteria, all participants had a diagnosis of idiopathic PD, stages 1–2.5 on the modified Hoeln and Yahr scale [17]. They were able to walk 3 m unaided and had a DVD player to enable participation in the home dance programme. No participant had a serious cardiovascular/pulmonary condition, neurological deficit other than PD, evidence of a musculoskeletal problem, issues contraindicating participation in exercise, or a cognitive or hearing problem which affected their ability to follow instructions or hear music. Participants had not taken part in regular dance classes in the six months prior to the trial [18].

2.1. Assessment

Assessments took place the week before the dance classes began and the week after classes finished [19]. Assessments were carried out by two qualified healthcare professionals, blinded to the hypothesis of the study. A standardised script was used for assessments. Participants were assessed at the same time of day in all assessments to avoid fluctuations in performance [20]. They were instructed not to change their exercise habits or usual care unless advised by their practitioner. Participants were instructed to inform the researcher if changes were made to any aspect of their usual care or exercise habits. Participant's data was eliminated if any changes were made [21].

2.2. Outcome measures

The Unified Parkinson's disease rating scale-motor subscale 3 (UPDRS-3) was used to assess the severity of motor impairments associated with PD [22,23]. Quality of life was assessed using the Parkinson's disease questionnaire-39 (PDQ-39) [24]. This questionnaire assesses the impact of PD in eight different areas including mobility and communication. The summary index provides an overall score of the impact of PD on quality of life. The 6-min walk test was used to asses functional exercise tolerance [25,26]. Balance was assessed using the Berg balance scale [27]. All of these measures have been found valid and reliable in those with PD and have been used in previous studies investigating the benefit of dance for individuals with PD [19,21,28–31]. A screening questionnaire designed to investigate participants past dance experiences was filled in before classes commenced. An exit questionnaire developed by Hackney et al. [20] was used to evaluate the intervention. The questionnaire asked participants if they noticed improvements in different aspects of health on a Likert scale from 1 to 5. Feasibility was assessed by monitoring for adverse effects (falls, muscle soreness, excessive fatigue), participants' verbal feedback, attendance at classes, compliance with the home dance programme and feedback from the exit questionnaire. Demographic information was collected via interview.

2.3. Intervention

Participants attended one set dancing class per week [22] for eight weeks. A day and time for class was chosen in collaboration with participants. Each class lasted 1.5 h and took place in a community hall. Classes were led by a set dancing teacher who was also a chartered physiotherapist. Participants were encouraged to take rests and inform the instructor if they felt unwell and express opinions on class structure. Each participant with PD was partnered with a spouse, caregiver or family member during the class [22,32].

The dance class started with a warm up consisting of range of motion, aerobic and postural exercises [22,33]. During the main part of the class participants learned various set dancing steps including the polka and reel steps [15]. These steps were then combined with patterns of movement in a group formation to create a set. Sets including the Corofin Plain Set and the Plain Set were taught [34]. These sets use stepping strategies similar to gait and contain turning movements that allow a partner to be used as visual cues. They also provide repetitive practice initiating and terminating movement and adjusting centre of gravity in different directions. The class ended with each couple practicing gait patterns to the music [35] and gentle flexibility exercises [36]. Exercises and dance material were progressed from sitting to supported standing using the back of a chair and finally to unsupported standing in line with participants abilities.

To complement classes, a set dancing-based exercise programme was performed at home for 20 min, twice per week. Exercises involved seated active practice of class material and mental rehearsal to facilitate learning [37,38] and optimise safety. A standardised interactive DVD, developed by the dance instructor was given to aid learning [39]. Compliance with the home exercise programme was monitored using a home exercise diary.

3. Statistical analysis

Data was analysed using Predictive Analytics Software ("PASW") version 20. Frequency analysis was done to give a descriptive account of participants and to analyse questionnaire data. As data was non-parametric, the Wilcoxon Signed Ranks Test was used to compare pre and post intervention data. A significance level of <0.05 was set for all statistical tests.

4. Results

All participants completed the study. Data from one participant was excluded from all analysis due to medication changes. The