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To dance or not to dance? A comparison of balance, physical fitness and quality of life in older Irish set dancers and age-matched controls



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ABSTRACT

Objective: The objective of this study is to determine if older adults regularly participating in Irish set dancing have superior balance, physical fitness and quality of life compared to age-matched controls.

Study design: This study used a community-based, observational cross-sectional design.

Methods: Regular set dancers ($n = 39$) and age-matched controls ($n = 33$) were recruited. Participants were assessed using the physical activity scale for the elderly (physical activity levels), mini-BESTest (balance) and senior fitness test (battery of functional fitness tests). Quality of life was also assessed using the EuroQol EQ visual analogue scale.

Results: When controlling for between-group differences in levels of physical activity (ANCOVA analysis), the dancers had significantly better balance, functional capacity and quality of life (all $P < 0.05$) compared to controls. No differences between the groups were observed in other measures of functional fitness.

Conclusion: The findings of this study suggest regular participation in set dancing is associated with health benefits for older adults. These results may inform future studies prospectively examining the role of set dancing for falls prevention, emotional well-being and cognitive function in community-dwelling older adults.

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Introduction

Epidemiological studies suggest the global population is ageing.^{1,2} Consequently, healthcare costs, social burden and the prevalence of chronic disease are expected to increase.^{2,3} Strategies to promote health and well-being are paramount to optimize independence,^{4,5} functional performance^{6,7} and quality of life in older adults.⁸

Regular participation in exercise is one approach that may delay age-related decline and promote neuroplastic preservation of physical and cognitive function.^{9–11} Exercise programmes designed to prevent falls have been shown to improve balance,^{12,13} mobility¹³ and reduce the number¹² and rate of falls in older adults.¹⁴ Other exercise types including Tai Chi and dance may also afford beneficial effects on balance,^{15,16} physical performance and quality of life.¹⁵ Research has found that older adults with multiyear dance participation have superior physical performance,¹⁷ balance,^{17–19} cognitive performance¹⁸ and motor function¹⁸ compared to age-matched controls.

Irish set dancing is one form of dance which may have positive health effects for older adults. Irish set dancing is a social cultural dance genre, originating in Ireland. This dance genre incorporates socialization,²⁰ aerobic exercise,²¹ repetitive multidirectional movement in group formation²² and musical accompaniment.²³ This complex integration of stimulatory input creates an enjoyable and energetic setting^{20,24} and may stimulate neuroplastic preservation of balance and physical fitness.²⁵ Set dancing may also preserve and/or enhance quality of life as the enriched social, musical and cultural context foster community networks, social identity and cohesion.^{26,27} Since the 1970s, the popularity of set dancing has grown exponentially. Today, set dancing is practiced by older adults both nationally in Ireland and internationally.²⁰ This has led to the development of transcontinental social networks and friendships.

Despite the national and worldwide practice of Irish set dancing in this population and potential health implications aforementioned, no study has established if older adults who regularly participate in Irish set dancing have better balance, physical fitness and quality of life compared to those who do not engage in Irish set dancing. Given that effective health promotion strategies need to target multiple health-related issues associated with ageing, investigations into the potential multidimensional health benefits associated with Irish set dancing are warranted. Therefore, the aim of this study is to determine if older adults who regularly participate in Irish set dancing perform better in measures of balance, physical fitness and quality of life compared to age-matched controls. This study will provide important preliminary data to inform future large observational and experimental studies.

Methods

An observational cross-sectional design, with two groups was used for this study. The strobe guidelines were used to develop and report this study.²⁸ Ethical approval was obtained from the Education and Health Sciences Research Ethics

Committee (2014-04-13). Recruitment and data collection and analysis took place in 2014 and 2015. Procedures similar to optimal matching were used to match both groups,²⁹ using frequency scores for age.

Set dancers and age-matched controls were recruited from active retirement groups, a university campus and set dancing classes. To minimize selection bias, recruitment was done via email invitation sent by a gatekeeper, information sessions and word of mouth in a number of counties in Ireland. Written information about the study was provided to those interested in participating. Volunteers contacted the research team at a later date if they wished to participate in the study and a suitable day was arranged for screening to determine eligibility.

Volunteers were eligible to participate if they were over 55 years and had a basic level of English literacy or an identified person who can translate English to their first language. Volunteers were excluded if they self-reported a serious cardiovascular or pulmonary condition, musculoskeletal problem or neurological or cognitive deficit affecting their ability to participate in usual activities.³⁰ The Physical Activity Readiness-Questionnaire+ (PAR-Q+) was used to ensure volunteers had no health issues contra-indicating participation in physical activity and thus the study. These include cardiovascular conditions, osteoporosis, joint problems, diabetes or dizziness. The PAR-Q+ is considered the gold standard screening tool for general health.³¹ In accordance with the inclusion criteria, participants in the set dancing group were attending weekly or biweekly set dancing classes in the 6-month period prior to the study. Participants in the control group were not attending set dance classes at the time of recruitment or during the previous 6 months. All participants provided written informed consent before participating. All data collected were anonymized and stored in line with ethical guidelines.

Assessment

Assessments took place in a suitable location and were carried out by two assessors familiar with the testing procedure. Participants were assessed using outcome measures that have established psychometric properties.^{32–37} Physical activity levels were quantified using the physical activity scale for the elderly (PASE).³⁷ The mini-BESTest was selected to provide a comprehensive assessment of balance in four different areas including dynamic balance, sensory orientation and postural responses.³⁸ The EuroQol EQ visual analogue scale (EQ VAS) was used as a measure of quality of life. This outcome was assessed in a subsample of 29 set dancers and 23 controls. The EQ VAS uses a visual analogue scale, rated from 0 to 100 (0 represents ‘worst imaginable health state’ and 100 represents ‘best imaginable health state’), to determine an individual’s perception of their health status.³⁹ The senior fitness test was used to assess functional fitness. This measure uses a battery of six tests to assess strength, flexibility, aerobic fitness, and agility (chair stand, arm curl, chair sit and reach, back scratch, 6-min walk test and 8-foot up and go [8-ft up and go]).^{32,40,41} In this study, the 8-ft up-and-go test was adapted to a three metre length to match criteria for the timed up-and-go test that is part of the mini-BESTest. This was done to avoid

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