

INTRODUCTION

- Previous research has shown acute improvements in motor symptoms and mobility in people with Parkinson's disease (PD) following music and exercise interventions.
- Studies suggest dancing may improve rigidity, hand movement, finger tapping, and facial expressions in people with Parkinson's Disease.
- However, determining how long the state of improved motor function lasts has not been studied.



PURPOSE

The **purpose** of this research is to act as a pilot study to determine the duration of improved motor symptoms following 1 hour long session of dancing, which incorporates both music and exercise.

We **hypothesize** that 1 hour of dancing will result in 1 hour durations of improved motor functioning in people with Parkinson's Disease.

PARTICIPANTS

- Older adults with Parkinson's Disease (n = 4).

Table 1. Participant Demographics

Age (Mean ± SD)	73.6 ± 8.26
Female	n=4
Male	n=0

- Mini-Mental State Examination (MMSE < 24) was given as exclusion criteria.
- Formal diagnosis of PD, age between 60-90 years old, and on a stable dose of Parkinson's medication for the last 30 days were given as inclusion criteria.

METHODOLOGY

Measures

Unified Parkinson's Disease Rating Scale (UPDRS)

- Accounts for the progression of Parkinson's Disease through four parts:
 - Part 1: Intellectual function, mood, behavior
 - Part 2: Activities of Daily Living
 - Part 3: Motor Examination
 - Part 4: Motor Complications

3.15 POSTURAL TREMOR OF THE HANDS

Instructions to examiner: All tremor, including re-emergent rest tremor, that is present in this posture is to be included in this rating. Rate each hand separately. Rate the highest amplitude seen. Instruct the patient to stretch the arms out in front of the body with palms down. The wrist should be straight and the fingers comfortably separated so that they do not touch each other. Observe this posture for 10 seconds.

- 0: Normal: No tremor.
- 1: Slight: Tremor is present but less than 1 cm in amplitude.
- 2: Mild: Tremor is at least 1 but less than 3 cm in amplitude.
- 3: Moderate: Tremor is at least 3 but less than 10 cm in amplitude.
- 4: Severe: Tremor is at least 10 cm in amplitude.



Figure 1. Unified Parkinson's Disease Rating Scale: Part III, Postural Tremor of the Hands

- Participants were asked to complete the entire UPDRS test once before dance (pre).
- Participants were then asked to complete part 3, motor examination, of the UPDRS 3 times following the completion of a 60 minute dance lesson:
 - Immediately after (post 1)
 - 30 minutes after (post 2)
 - 60 minutes after (post 3)

Data Analysis

- Average total UPDRS scores were analyzed for each condition through a paired T-test to determine the difference between the 3 post conditions compared to part 3 of the pre condition.
- Significance was set at $\alpha = 0.02$ to control for multiple comparisons.
- Individual motor symptoms evaluated on the UPDRS were analyzed to see if improvements varied by participant.
- Scoring was masked.

RESULTS

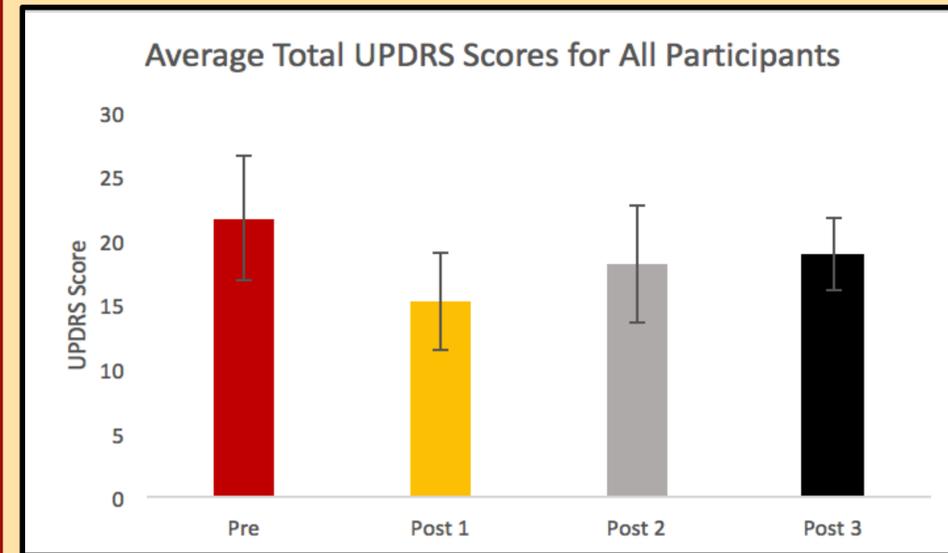


Figure 2. Total average motor examination UPDRS scores for all participants during the pre data collection, post 1 data collection, post 2 data collection, and post 3 data collection. Error bars reflect standard error. Significance was found in the post 1 condition.

Post 1 p= 0.016
Post 2 p= 0.027
Post 3 p= 0.10

Participant	Rigidity	Speech	Leg Agility	Finger Tapping	Gait
1	↑	↓	↓	↑	—
2	↑	↑	↑	↓	↑
3	↑	—	↑	↓	—
4	↓	↓	↑	↑	—

Figure 3. Change in total average UPDRS scores for individual motor symptoms for each participant when compared to the pre condition.

Arrow up indicates an improvement.
Arrow down indicates worsening.
Dash indicates no change.

DISCUSSION

The findings of this study strongly suggest that 1 hour of dance results in an improvement of various motor symptoms in people with Parkinson's Disease for some period of time following intervention. Significance was reached in 1 condition and was close in the other 2 conditions. Considering this was a pilot study and there were only 4 participants, this is remarkable and worth further evaluation with more participants. Further studies will explore whether this same pattern is seen following interventions of singing, boxing, and yoga.