



Improving Cognitive Functioning and Quality of Life Through Dance for PD: A Pilot Intervention Trial

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BACKGROUND

- Parkinson's disease (PD) can result in motor and non-motor symptoms, including cognitive and emotional impairments¹.
- Current exercise rehabilitation interventions primarily target motor symptoms of PD while ignoring cognitive and emotional deficits that may also contribute to decreased quality of life².
- **Our goal was to systematically evaluate the effects of dance on motor, cognitive and emotional functioning in people with PD. We also wanted to explore how dance can impact quality of life.**

METHODS

Motor measures:

- 1) Timed Up and Go
- 2) Timed Gait Speed
- 3) Standing Balance

Cognitive measures:

- 4) Alternate Uses
- 5) Action Fluency
- 6) Digit Span
- 7) Test of Everyday Attention (TEA)

Emotional & Quality of Life:

- 8) Geriatric Depression Scale (GDS)
- 9) Falls Efficacy Scale-International (FES-I)
- 10) Parkinson's Disease Questionnaire – 39 (PDQ-39)
- 11) PDQ-39 Activities of Daily Living (ADL)

Other measures:

- 12) Hoehn & Yahr (H&Y)
- 13) Mini-Mental State Exam (MMSE)
- 14) Full-scale IQ (FSIQ)

| Group | Intervention (N=8) | Control (N=7) |
|------------------------------|--------------------|---------------|
| Age (SD) | 71.8 (3.6) | 70.4 (5.5) |
| Sex | 8F | 5F, 2M |
| Years of Education | 16.9 (3.5) | 17.8 (1.1) |
| H&Y [range] | 1-2.5 | 1-2 |
| Time Since Diagnosis (years) | 6.1 (3.1) | 4.3 (2.6) |
| MMSE [range] | 29 [28-30] | 29 [29-30] |
| FSIQ | 116.7 (6.1) | 112.8 (7.5) |

RESULTS

Fig 1. Timed Gait Speed

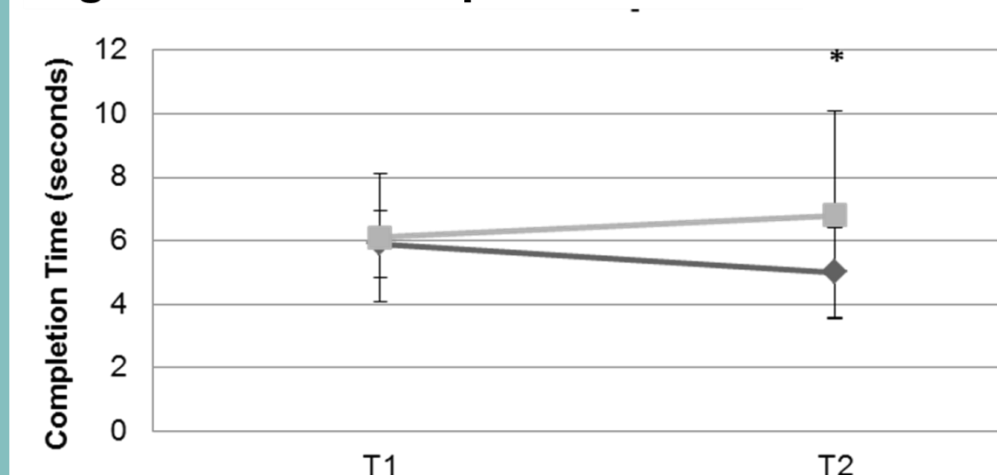


Fig 2. Cognitive Switching

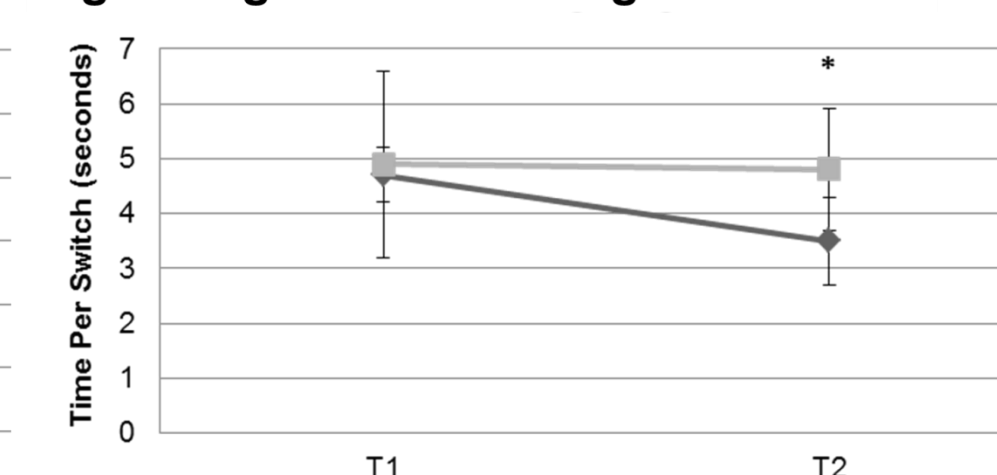


Fig 3. Falls Efficacy Scale

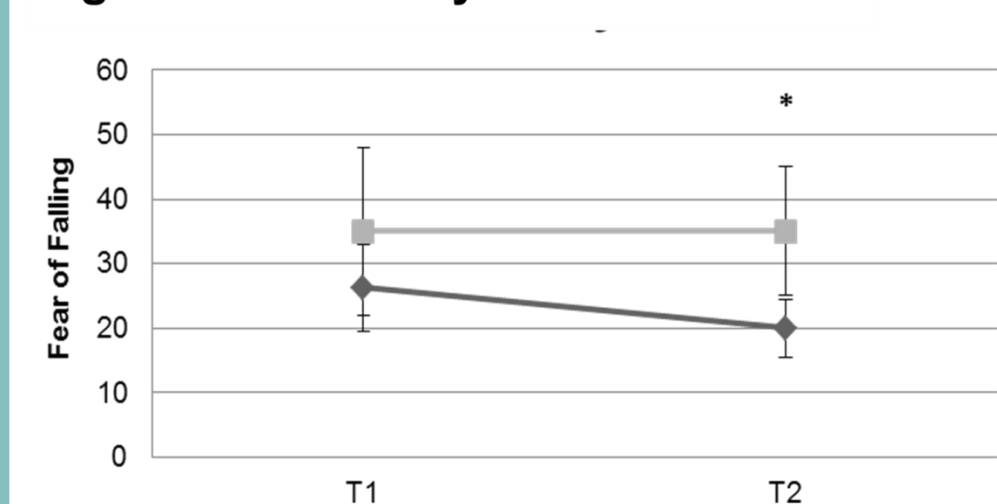


Fig 4. PDQ-39 Activities of Daily Living

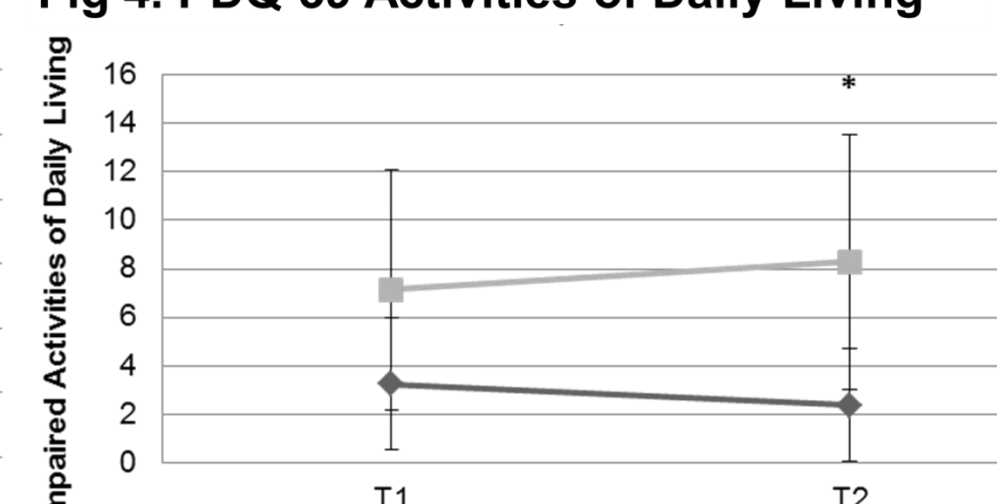


Fig 5. PDQ-39 Quality of Life

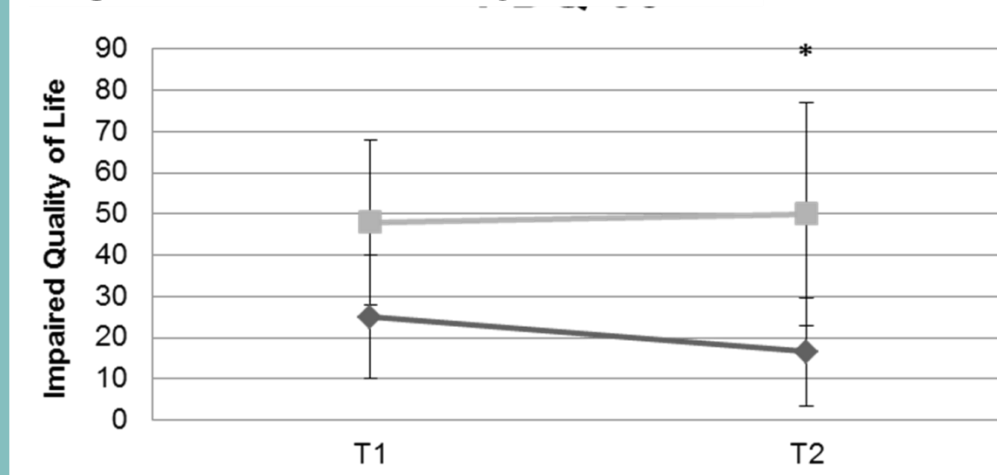
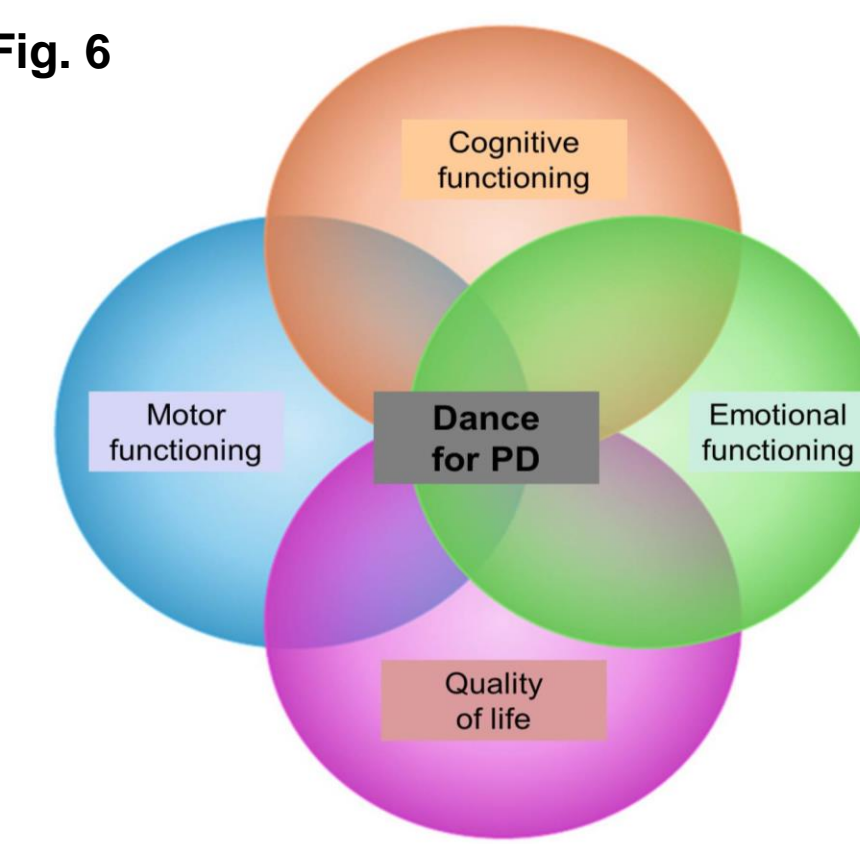


Fig. 6



| Measure | Effect Size Between Groups |
|---------------------------|----------------------------|
| TUG | 0.23 |
| Gait Speed | 0.90 |
| Balance: affected leg | 0.41 |
| Balance: non-affected leg | 0.37 |
| Alternate Uses | 0.59 |
| Action Fluency | 0.38 |
| Digit Span Forward | 0.50 |
| Digit Span Backward | 0.12 |
| Digit Span Total | 0.32 |
| TEA | 0.53 |
| GDS | 0.64 |
| FES-I | 0.71 |
| PDQ-39 | 0.68 |
| PDQ-39 ADL | 0.52 |

DISCUSSION

- Repeated measures analysis of variance revealed significantly improved gait speed (**Fig. 1**) and cognitive switching (**Fig. 2**), reduced fear of falling (**Fig. 3**), increased satisfaction in activities of daily living (**Fig. 4**) and overall improved quality of life (**Fig. 5**) in participants who completed the 10 week dance intervention compared to controls.
- Dance may simultaneously improve motor, cognitive and emotional functioning and improve quality of life in people with PD (**Fig. 6**).
- We calculated clinically meaningful effect sizes (≥ 0.20) for almost all measures of motor, cognitive and emotional functioning.
- Larger, randomized controlled trials are warranted in order to rigorously evaluate the multi-modal benefits of dance for people with PD.

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Dance for PD three-part class structure³:

1: Seated warm-up



2: Standing supported movement



3: Movement across the floor

