

4-13-2022

## Exploration of the Transference of Cognitive Skills Gained from a Movement-Based Program Incorporating Modified Dance to Occupational Performance for Individuals with Parkinson's Disease

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### Recommended Citation

Kronstadt-Trapasso, A. (2022, April 13). Exploration of the Transference of Cognitive Skills Gained from a Movement-Based Program Incorporating Modified Dance to Occupational Performance for Individuals with Parkinson's Disease. Poster presented at the Virtual OTD Capstone Symposium, University of St Augustine for Health Sciences. Retrieved from <https://soar.usa.edu/otdcapstones-spring2022/26>

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# Exploration of the Transference of Cognitive Skills Gained from a Movement-Based Program Incorporating Modified Dance to Occupational Performance for Individuals with Parkinson's Disease

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## BACKGROUND

Parkinson's disease is a progressive neurodegenerative disease impacting occupational performance in everyday life that impacts more than six million individuals worldwide (Armstrong & Okun, 2020). Cognitive impairments (CI) are observed in 40-80% of individuals with PD which presents challenges with occupational performance during ADLs and IADLs (Agawane, et al., 2020). Currently, individuals with PD are offered various intervention options including standard occupational, physical, and speech therapy treatment sessions. Boxing and other movement-based classes allow for these individuals to work toward increased strength, hand-eye coordination, postural stability, balance, and reaction time. As cognitive improvements are observed with movement-based programs for PD, dance has also been shown to offer benefits in cognitive functioning (Aiello, et al., 2017).

## PROBLEM

The problem is the gap in literature between changes in occupational performance secondary to cognitive improvements gained from dance and movement-based interventions for patients with Parkinson's disease (Agawane, et al., 2020).

## PURPOSE

The purpose of this qualitative type capstone project is to explore differences in occupational performance for individuals with PD after participation in a movement-based program incorporating modified dance.

## METHODS

### Weeks 1-3:

- ❖ A needs assessment was conducted at an outpatient site to learn the occupational deficits experienced by patients with PD.
- ❖ Recruitment of participants via research flyers and PD support group as well as collaboration with team members was focused on in preparation for the start of research.
- ❖ **9 participants with mild-moderate PD symptoms were recruited and completed the informed consent process, 6 participants finished the study to completion.**
- ❖ Development of movement-based strategies appropriate for the research study population were based on research of benefits in various dance styles, participant limitations, and participant preference of dance styles.
- ❖ Pre-research study administration of assessments

## METHODS

- ❖ **Inclusion criteria:** Individuals who have been diagnosed with Parkinson's disease, experience PD-related symptoms that interfere with everyday functioning, are at least 18 years of age, and must be capable of participating in physical activity for 1 hour with rest breaks included.
- ❖ **Exclusion criteria:** Individuals who have not been diagnosed with Parkinson's disease or who have PD but demonstrate moderate to severe imbalance concerns as measured by the Mini-BESTest in which requires greater than the level of assistance the student investigator can offer.

### Weeks 4-19:

- ❖ The student investigator arranged and instructed 1-hour movement-based modified dance sessions held 3 times per week for 16 weeks with the participants. Environmental modifications were made for safety such as chairs or physical assistance from rehab staff to assist with balance. A HEP was provided each week including various dance movements practiced during sessions. Participants were asked to practice movements for a minimum of 30 minutes per day on non-class days.
- ❖ Movements utilized include:
  - ❖ Various styles of modified dance including salsa, tango, waltz, line dancing, and others
  - ❖ Stretching and warm-up/cool down exercises at the beginning and end of each session
  - ❖ LSVT movements and traditional exercise methods such as walking, circuit training, boxing, or seated/standing body weight or dumbbell weighted exercises were used within the last 15 minutes of each session to accommodate participant requests for variety.

### Weeks 20-22:

- ❖ Post-research administration of assessments
- ❖ Analyzation of data collected, and conclusions drawn from research based on assessment scores
- ❖ Creation of interdisciplinary approaches for PT/OT to work together addressing cognition as it relates to occupational performance.

### General Program Goals:

1. Improve occupational performance and participation through improved cognitive function
2. Create a social environment in which participants can feel supported and encouraged to improve function
3. Promote engagement in daily exercise through a HEP to manage PD-related symptoms and decrease progression of disease
4. Highlight the importance of dance as a possible movement-based intervention for the PD population
5. Create opportunities for PT and OT to work together in addressing PD-related deficits

## RESULTS

### Research Questions:

- ❖ **R1:** Are there changes in pre and post COPM scores after participation in a 16-week movement-based program incorporating modified dance?
  - ❖ Post COPM scores reflected changes in the positive direction for all participants following the 16-week research study. Participants demonstrated a 1.1 increase for COPM performance scores, with a pre-assessment average of 7.1 and post-assessment average of 8.2. Participants demonstrated a 1.2 increase for COPM satisfaction scores, with a pre-assessment average of 6.7 and post-assessment average of 7.9.
- ❖ **R2:** Are there changes in pre and post MoCA scores after participation in a 16-week movement-based program incorporating modified dance?
  - ❖ There were inconsistent results on post MoCA scores, with some changes in the positive or negative directions, and some scores remaining neutral without change following the 16-week research study. *Participants demonstrated a minimal group average improvement in MoCA scores, with a pre-assessment average of 21.6 and post assessment average of 22.3.*
  - ❖ *Of the 7 scored sections of the MoCA, delayed recall and visuospatial/executive were among the categories of highest improvement. (This is shown in the bar graph to the right.)*
- ❖ **R3:** Are there changes in perceived occupational performance as reported on pre and post surveys following participation in a 16-week movement-based program incorporating modified dance?
  - ❖ Post survey answers reflected change in the positive direction for most participants following the 16-week research study. 83.33% of participants reported improvements in maintaining attention during tasks and performing two tasks at once, while 100% of participants reported improvements in completing tasks within a timely manner and remembering steps of a task.

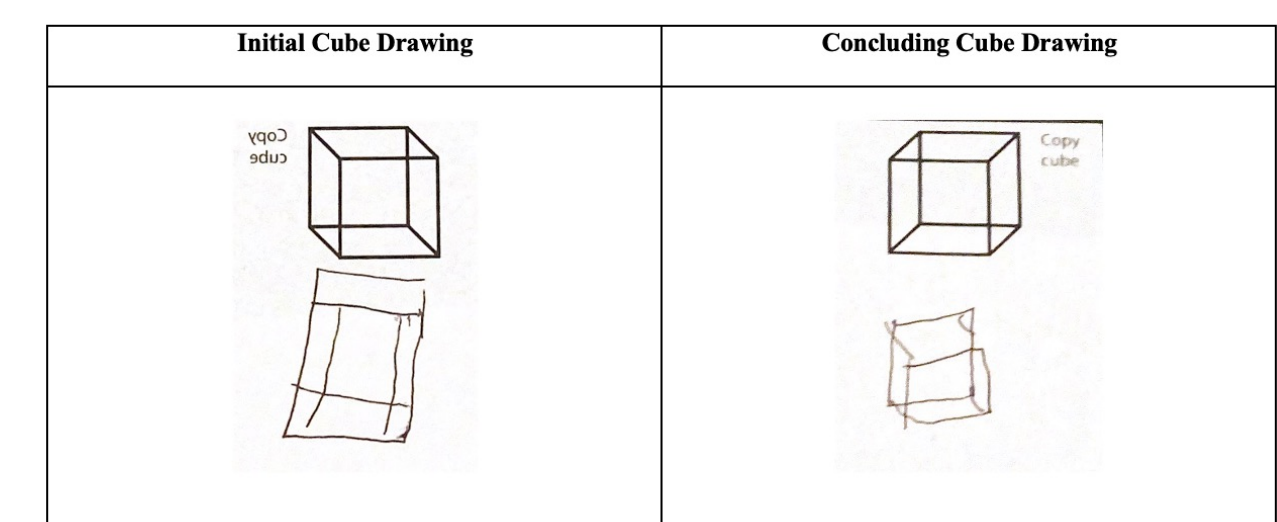
### Theoretical Frameworks:

1. Person-Environment-Occupation-Performance model (PEOP)
2. Model of Human Occupation (MOHO)

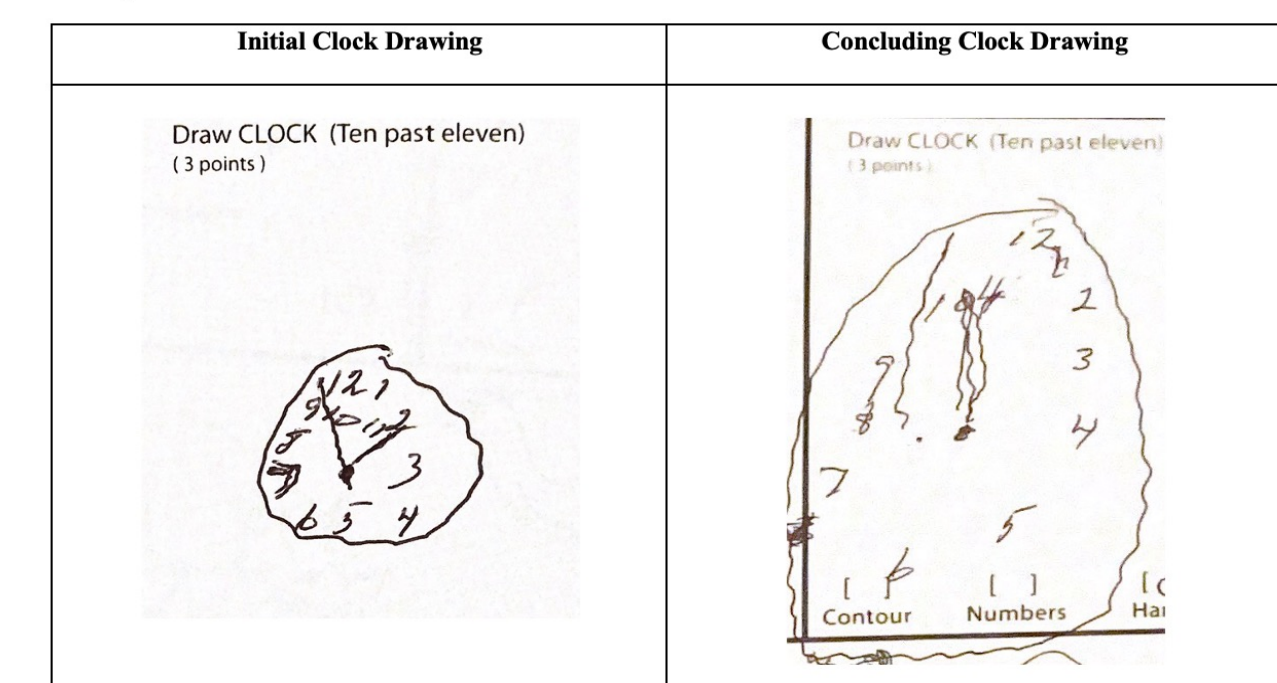
### Assessment Tools:

- ❖ The Canadian Occupational Performance Measure (COPM)
- ❖ The Montreal Cognitive Assessment (MoCA)
- ❖ Qualitative surveys
- ❖ The Mini-BESTest

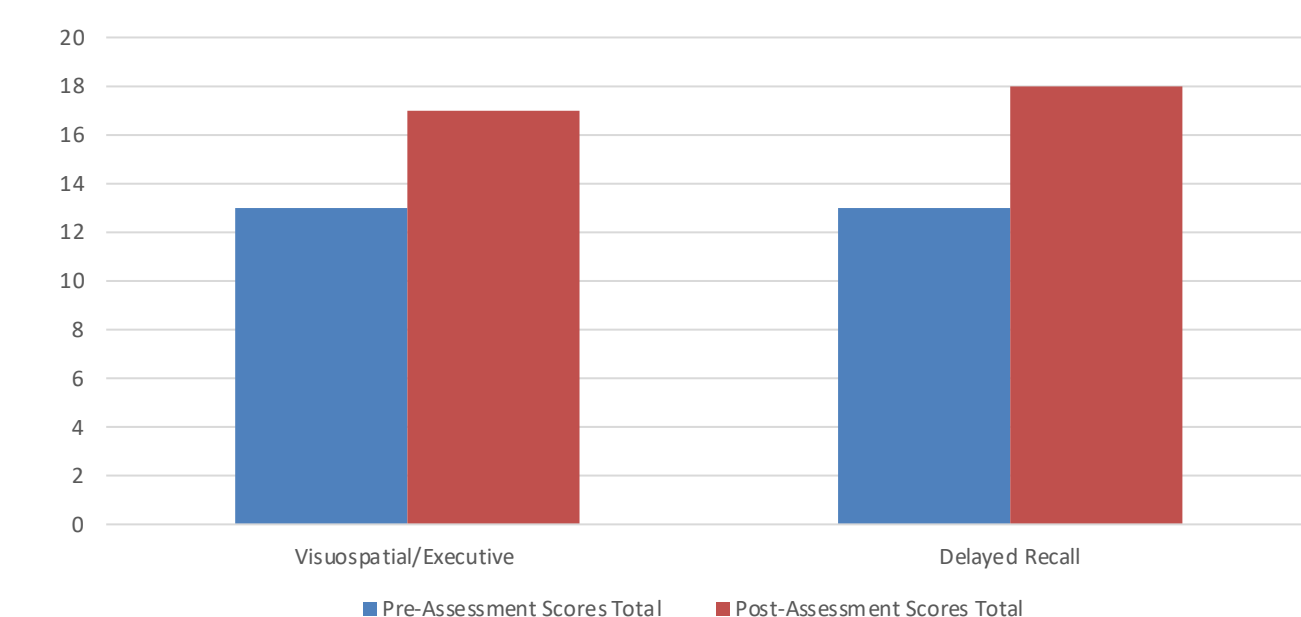
Participant A1:



Participant A3:



Visuospatial/Executive and Delayed Recall Scores



### References

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