Title: The Effect of Exercise on the Progression of Parkinson Disease: An Observational Study

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Background: Parkinson disease (PD) is a progressive neurological disorder that primarily affects the elderly.[1] One cardinal motor symptom of PD is postural instability, defined as the state when one cannot keep their body in a stable or balanced position. Postural instability is identified as an independent predictor of falls in persons with PD.[2] Falls occur in approximately 50% of persons with PD, of which about 30% are injurious.[2] A fall can also elevate the level of disease severity, making impairments worse than they were to begin with.[3] This in turn can cause increased stress on loved ones and caregivers, as well as decreasing one's will to live.[4]

Evidence has shown that exercise improves strength, neuromuscular control, balance, and quality of life for people with PD.[5] Therapeutic exercise interventions have been created specifically for PD, but only some are held in group or community settings. Group exercise facilitates a connection to others diagnosed with PD, creates social support, and provides patient education.[5] Prior to this observational study, a thorough systematic review of the literature was conducted regarding the effects of group exercise on balance outcomes in persons with PD. Our conclusions revealed that while group exercise has short term benefits on balance outcomes in persons with PD, more research is needed.

This observational study is a novel way to further explore the effects of individual and group exercise on persons with PD who reside in the Ithaca community. It is hypothesized that individuals with PD who participate in group or individual exercise will maintain or improve scores in outcome measures including: the Mini-BESTest, Parkinson's Disease Questionnaire-39 (PDQ39), Functional Reach Test (FRT), 10 Meter Walk Test (10MWT), and Activities-Specific Balance Confidence Scale (ABC Scale). This would demonstrate exercise has a positive effect on functional mobility, gait velocity, balance, and fall risk; ultimately slowing the effect of the disease process and improving quality of life and confidence. Additionally, it is anticipated that exercise including high intensity methods at increased frequency will influence these factors to a greater degree as compared to low intensity, intermittent bouts of physical activity. And lastly, a better understanding of the impact of the physical and social aspects of exercise on delaying the progression of PD is sought from this study.

Methods: Seven participants diagnosed with idiopathic PD, presented to the Ithaca College OT/PT clinic for initial testing. Participants were specifically targeted in 2 group exercise programs, the Parkinson Wellness Recovery and Rock Steady Boxing. Individuals not currently participating in these group exercise classes were not excluded from the study. Functional mobility, gait velocity, balance, fall risk, and quality of life were measured using the Mini-BESTest, PDQ39, FRT, 10MWT, and ABC Scale during a 2 hour session conducted by two student physical therapists and a physical therapy faculty advisor. At the end of the initial examination, each participant was provided a subjective weekly activity checklist to document their exercise for 16 weeks, with a student researcher as their weekly contact. Final testing will be measured at the conclusion of the 16 weeks, which will be conducted in the same manner as initial testing. A comparison of initial and final measurements will be made and shared with the participants. Lastly, results will be compiled to determine the effect exercise has contributed to the improvement, decline, or maintenance of the subjective and objective outcome measures initially assessed.

Results: Post testing is scheduled for April 2017; results yet to be obtained.

Conclusion: Results of this observational study will provide information about how intensity, frequency, and type of exercise influence functional mobility, gait velocity, balance, fall risk, and quality of life with respect to seven individuals with PD. It is anticipated results will likely demonstrate that participation in physical activity and exercise is beneficial regarding the maintenance of one's physical condition in delaying this progressive-natured disease.

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