Background

- Parkinson’s disease (PD) is a neurodegenerative disorder that increases an individual’s fall risk.
- In recent studies, an 8-week tandem bike forced exercise program was effective in reducing overall parkinsonian symptoms.
- The feasibility of a tandem bike forced exercise program in a community setting has not been studied previously.
- Additionally, there has not been a published study evaluating balance and health outcomes after participation in a forced exercise program.

Aims

- **Aim 1:** To assess the feasibility of an 6-week tandem bike forced exercise protocol conducted in community setting for individuals with PD.
- **Aim 2:** To assess balance and health outcomes of a 6-week tandem bike forced exercise protocol conducted in community setting for individuals with PD.

Methods

**Design:** Quasi-experimental pre- and post-test

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<tr>
<th>Pre-test</th>
<th>6-week Intervention</th>
<th>Post-test</th>
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**Setting:** Medically Oriented Gym (MOG)

- Specialized fitness center
- Wellness focused
- Members with complex health conditions
- Inter-professional team

**Participants:** 5 individuals with early to mid-stage PD (3 male, 2 female, 72 ± 6 years)

**Measures:**

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<tr>
<th>Feasibility</th>
<th>Quantitative</th>
<th>Qualitative</th>
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<tr>
<td>Attendance</td>
<td>Mini-BESTest</td>
<td>Participant GRC*</td>
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<td>Satisfaction</td>
<td>Brief-BESTest</td>
<td>&quot;Captain&quot; GRC*</td>
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<td>Exercise Tolerance</td>
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*Global Rate of Change

**Intervention:**

- Bi-Weekly 1 hr tandem bike forced exercise
- Intensity: 80-90 RPM at target HR
- Community member on front seat (Captain)
- Person with PD on rear seat (Stoker)

Results

**Aim 1: Feasibility**

- Satisfaction: All participants viewed program as valuable.
- Attendance: 85%
- Avg. ex. tolerance per session: 39.65 min

**Aim 2: Balance Outcomes**

**BESTest**

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**Mini-BESTest**

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4/5 participants perceived no significant change in balance (mean GRC = 1.42) or ADLs (mean GRC = 0.32).

**Secondary Health Outcomes**

- No decrease in health (5/5)
- Improved health (4/5)
- Program was valuable (5/5)

Discussion

- Data supported the feasibility of a tandem bike program in a community setting.
- Data did not support the effectiveness of forced exercise for improving balance.
- Brief-BESTest items seem to be more sensitive to the observed changes.

Limitations

- Difficulty recruiting Captains
- Electronic data collection and storage errors
- High staffing requirements
- Scheduling biking sessions

Recommendations and Future Research

- Recommendations for future implementation in a community setting:
  - Appropriate staff training in data collection and management
  - Partnership with local biking clubs for recruitment of experienced riders as captains
  - Appoint exclusive staff coordinator
- Future Research:
  - Forced exercise on a tandem bike involving individuals with PD as both the captain and the stoker

We would like to thank Jim Cavanaugh, PT, PhD, NCS, Jaclyn Morrill-Chadbourne, MS, ACSM, ABD, Michelle Oswald, BS, L-ATC, and Megan Gilbert, MS