Retrofitting a Standard Walker for Parkinson’s Patients Experiencing Retropulsion

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**PROBLEM**

**Medical Need**
- 1M Parkinson's Disease (PD) patients in the US
- 25% of PD patients report retropulsion
- Retropulsion is a leading predictor of falls

**Objective**
- Retrofit a standard walker
- Reduce likelihood of falls
- Accessibility & affordability

**INPUTS**

R3. Applied Weight Capacity – Withstand ≥ 106.5lbs applied force

R7. Wheel Pacing – Device should maintain acceleration ≤ 90% that of the standard walker.

**TESTING**

<table>
<thead>
<tr>
<th>Test</th>
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<th>P/F</th>
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Added 55 lbs on each handlebar (total of 110 lbs on system)

Compared user acceleration with the standard & modified walker on a gait testing track

**SOLUTION**

1. **Handlebar Design** - Maintains stability & normal pelvic tilt of the patient

2. **Swivel wheels** - Maintain safe gait speed & limit disturbances

3. **Glides** - Promote smooth gait & limit disturbances

**FUTURE**

**Impact**
- Retropulsion-specific walking aid that is reliable, affordable, & portable
- Builds upon the most widely used mobility device, making it more easily accessible

**Possible Revisions**
- Construct the final handlebar from aluminum
- Make the final handlebar design adjustable
- More ergonomic handgrip
- Perform testing with patient population