

CPS: TTP Option: Medium: Robotic Apparel to Enable Low Force Haptic Cueing for Improving Parkinson's Gait

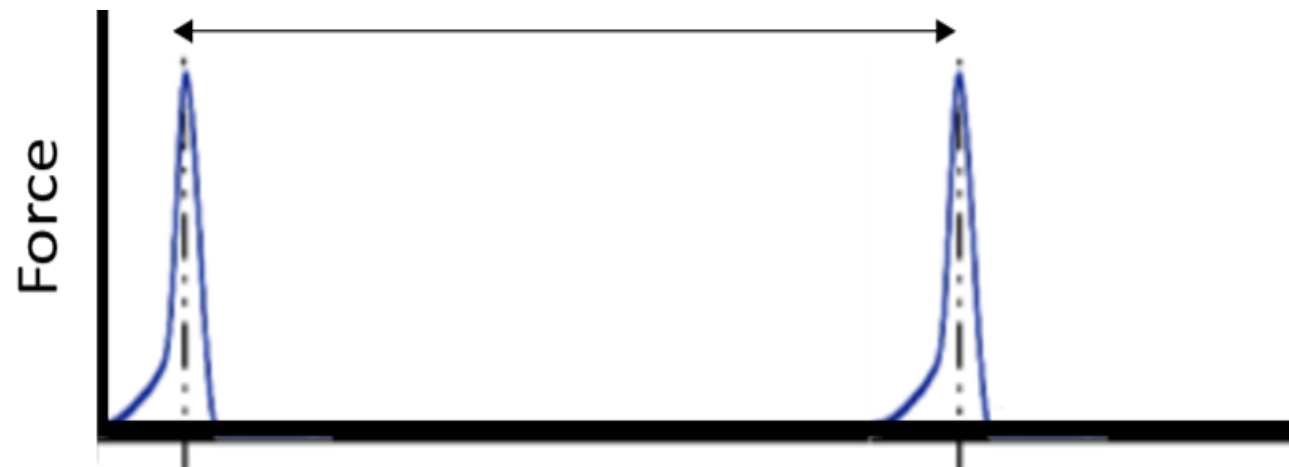
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Opportunity for Targeting PD Walking Impairments

Early stage

- Reduced arm swing
- Arm swing asymmetry
- Reduced axial rotation
- **Reduced step length**
- **Slower gait speed**
- Postural changes

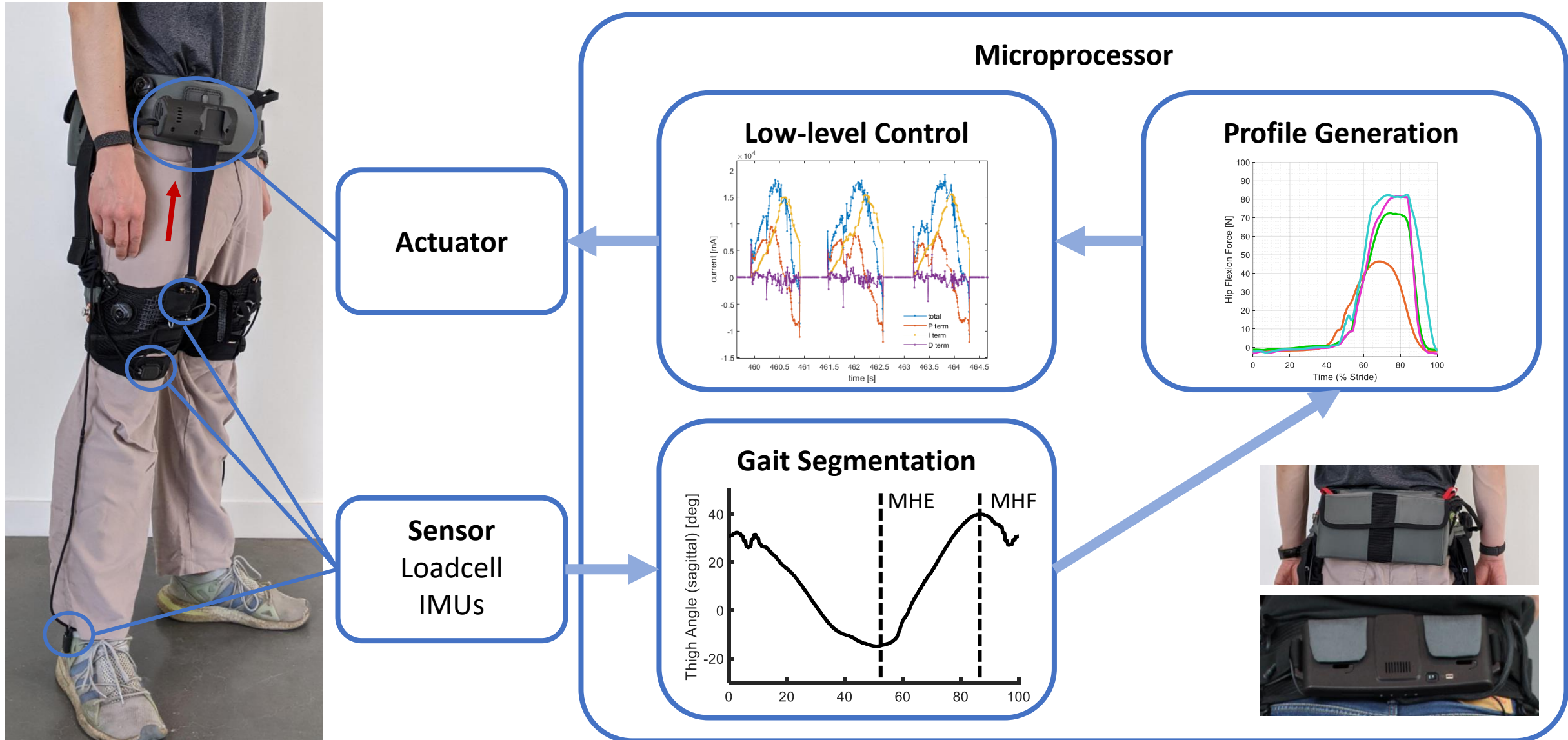
Mild to moderate stage

- Bilateral arm swing reduction
- **Reduced step length**
- **Bradykinesia (slowness)**
- **Shuffling steps**
- **Increased cadence**
- Reduced postural control and stability
- Stooped posture

Advanced stage

- **Reduced step length**
- **Bradykinesia (slowness)**
- Reduced postural control and stability
- Severe postural changes and postural control
- Reduced walking capacity
- Defragmentation of turns
- Freezing of gait during turns, dual task, and gait initiation

Hip Flexion Assistance Approach

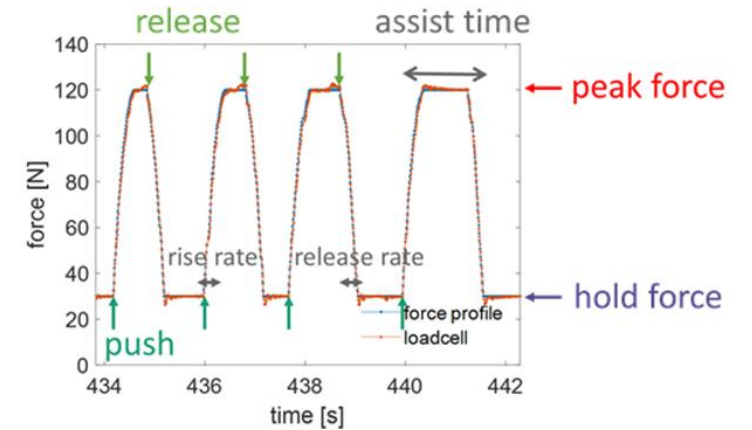


System Improvement for Testing

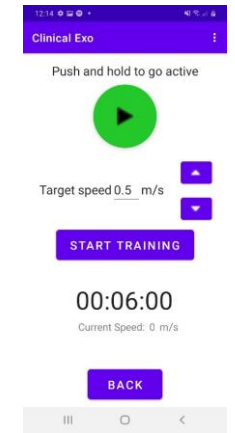
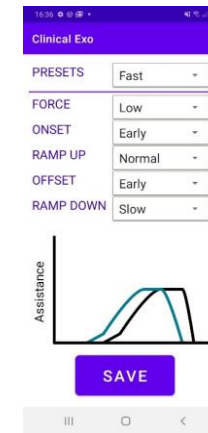
Small Pulley Mobile System



Manual Trigger



Smartphone App



Evaluation with Individual with PD

