GAIT SUB STUDY

Anat Mirelman PhD
1. Evaluate motor function of patients with PD and individuals at risk using wearable sensors to establish sensitive markers of disease

2. Use this quantitative assessment of motor features related with PD to assess disease progression

The project include sites participating in the genetic cohort
Power spectral density (prs)
### PARTICIPANTS

77 first time assessments  
17 with longitudinal 1 year follow up

<table>
<thead>
<tr>
<th></th>
<th>PD patients</th>
<th>Unaffected carriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>44</td>
<td>33</td>
</tr>
<tr>
<td>Second visits</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Genetic status (NC/ LRRK2/GBA)</td>
<td>0/ 36/ 8</td>
<td>1/ 26 / 6</td>
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<tr>
<td>Age (years)</td>
<td>64.8±8.21 (37-76)</td>
<td>63.9±9.31 (41-78)</td>
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<tr>
<td>Gender (M/F)</td>
<td>23/21</td>
<td>20/13</td>
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<tr>
<td>H&amp;Y stage</td>
<td>1.8±1.7</td>
<td>0</td>
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<tr>
<td>Gait speed (m/s)</td>
<td>1.10±0.16</td>
<td>1.16±0.24</td>
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ARM SWING

Arm swing amplitude (deg)

UF
PD
Usual walk
DT walk

Arm swing Asymmetry

UF
PD
Usual walk
DT walk

p=0.003
p=0.007
p=0.001
p=0.001
p=0.04
p<0.05
GAIT MEASURES

**Stride time (sec)**

- **UF**: 2.1 ± 0.2 (Usual walk), 2.3 ± 0.3 (DT walk)
- **PD**: 2.0 ± 0.2 (Usual walk), 2.1 ± 0.2 (DT walk)

- p = 0.002 (Usual walk vs. DT walk for UF)
- p = 0.006 (Usual walk vs. DT walk for PD)

**Trunk smoothness (deg/3)**

- **UF**: 0.4 ± 0.1 (Usual walk), 0.3 ± 0.1 (DT walk)
- **PD**: 0.5 ± 0.1 (Usual walk), 0.4 ± 0.1 (DT walk)

- p = 0.02 (Usual walk vs. DT walk for UF)
- p = 0.002 (Usual walk vs. DT walk for PD)
- p < 0.001 (Usual walk vs. DT walk for PD)
LONGITUDINAL DATA

![Graph showing TUG Turn Duration for different groups](image)

- **Asymptomatic**
- **PD**

- **1st Visit**
- **Follow up**
NEXT STEPS

» Increase number of subjects in longitudinal

» Investigate most sensitive measures to be used for assessing progression

» Explore association between gait measures and clinical and imaging data

» Create composite scores and evaluate utility

» Combine with home based wearable data