Perception of aperture size at the end of a corridor is impaired in Parkinson’s disease patients with freezing of gait

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PURPOSE
To examine whether perceptual judgment is influenced by corridor configuration, and whether judgment is affected by the experience of corridor walking

HYPOTHESES
PD-FOG will have greater error when estimating the aperture size at the end of the narrowing corridor and walking through the corridor will influence their judgment

KEY FINDINGS
PD-FOG were more influenced by parallel corridor configuration and did not improve judgment with the experience of walking through the corridor

Background
• Freezing of gait (FOG) in Parkinson’s disease (PD) is described as a sudden inability to initiate or continue walking that can be triggered by confined spaces such as doorways [1]

Methods
• Participants were sitting 10 meters away from the end of the corridor and used an unmarked tape measure to estimate the width of the distal opening of the corridor
• Three judgments were repeated in each condition
• Participants walked through the corridors
• Participants were sitting 10 meters away from the end of the corridor and used an unmarked tape measure to estimate the width of the distal opening of the corridor

Results
• A main effect of corridor was found for all variables, showing that larger errors occur in the corridor with parallel walls and that its aperture was underestimated (AE: \(p=0.004\), CE: \(p<0.001\), VAE: \(p=0.023\), VCE: \(p=0.005\))

Discussion
• Regardless of corridor condition, PD-FOG patients were more variable in their judgments.
• PD-FOG patients were more affected by the parallel corridor, where they perceived the aperture smaller than PD and controls.

Conclusion
When performing a visuospatial judgment, PD-FOG are more influenced by corridor configuration than PD and controls and are unable to improve judgment with the experience of walking through the corridor.

Key References

Table 1. Participant's demographic and clinical information.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Age</th>
<th>UPDRS-III</th>
</tr>
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<tbody>
<tr>
<td>PD-FOG (n=14)</td>
<td>73.36 (6.69)</td>
<td>73.36 (5.61)</td>
</tr>
<tr>
<td>PD (n=15)</td>
<td>73.06 (6.69)</td>
<td>73.06 (5.69)</td>
</tr>
<tr>
<td>Controls (n=15)</td>
<td>73.06 (6.69)</td>
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Figure 1. Corridor with narrowing walls.

Figure 2. Corridor with parallel walls.

Figure 3. CE change score: the difference in perceptual judgment from the narrowing to the parallel corridor. Between groups comparison (F(2,41)=4.21, p=0.022); LSD post hoc, *p=0.03, **p=0.02

Figure 4. VCE change score: the difference in perceptual judgment from the narrowing to the parallel corridor. Between groups comparison (F(2,41)=4.21, p=0.022); LSD post hoc, *p=0.03, **p=0.02