THE EFFECT OF ASSISTIVE DEVICES ON GAIT PATTERNS IN PARKINSON’S DISEASE
PRELIMINARY RESULTS

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INTRODUCTION
Parkinson’s disease (PD) is a neurodegenerative, progressive, and chronic disease. As the disease progresses, postural instability appears and eventually leads to gait abnormalities and falling. The use of Assistive Devices (ADs) to improve mobility is an important area of management of gait impairments. However, their true usefulness, risks and influence on gait patterns still need further research.

Our goal is to assess the influence of seven different ADs on gait patterns in patients with Idiopathic Parkinson’s Disease (IPD).

METHODS

Inclusion Criteria

• ≥ 18 years old
• Diagnosis of PD
• Ambulate independently (10m minimum, without assistance)
• Anti-parkinsonian medication
• No significant cognitive impairment
• No psychiatric, neurological, visual or orthopedics disorders that enable participants to perform the required tests

30 Participants

3 Groups (10 pax each)

• 1) PD with postural instability and freezing
• 2) PD with postural instability and no freezing
• 3) PD without postural instability and no freezing

7 Assistive Devices/8 Conditions

• 1 Cane (Cane)
• 1 Tripod cane (TCane)
• 2 Nordic walking sticks (NWS)
• 1 Standard walker (SW)
• 1 Two-wheeled walker (2WW)
• 1 Four-wheeled walker (4WW)
• 1 Mobilizer in a 1SW (MStW)

Analysis of differences between gait parameters across ADs showed:

• The SW and the MStW produced the most significant differences on the gait cycle (Figure 3);
• The 4WW, Cane and NWS produced the most similar pattern when compared with the ‘No AD’ condition (Figure 4).

RESULTS

Note: This results consider only 9 participants, performing the First Course.

Tabel 1. Subject characteristics (N=9; 5 males, 4 females)

<table>
<thead>
<tr>
<th>Subject characteristics</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>66 ± 9.86</td>
</tr>
<tr>
<td>Height</td>
<td>1.61 ± 0.1</td>
</tr>
<tr>
<td>Weight</td>
<td>70.09 ± 18.2</td>
</tr>
<tr>
<td>Years of PD</td>
<td>8 ± 4.9</td>
</tr>
</tbody>
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First Course – Straight line

• Walk in straight line, at a normal, comfortable pace
• 4 paths: Only the mean of the last 3 paths is calculated and analysed (first is a trial)

Second Course - Timed Up and Go Test (TUG)

• To test manoeuvrability around obstacles and fast walk
• 2 paths: Only the 2nd path is calculated and analysed (first is a trial)

CONCLUSION
At the end of this study, we expect that the results will add to current knowledge, how people with PD change their gait patterns when walking with different ADs. We also expect to deliver better guidance to health professionals to prescribe ADs properly and to provide proper additional gait training. This will lead to a more cautious clinical practice in gait rehabilitation using ambulatory ADs.

BIBLIOGRAPHY

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