Association between Patient Reported Outcomes and Gait in People with Multiple Sclerosis with Differing Disabilities

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- Multiple Sclerosis (MS) is a disease characterized by ambulation deficits, fear of falling and subjective fatigue.
- Ambulation is frequently reported by persons with multiple sclerosis (PwMS) as an important bodily function.
- Altered ambulation and fear of falling have been correlated with spatiotemporal gait parameters, however evidence for the correlation between subjective fatigue and gait parameters in people with multiple sclerosis (PwMS) is unclear.

In previous studies, a reduction in walking speed correlated with higher scores on the MSWS-12, as well with a higher disability score of the EDSS.

Background

Purpose

The purpose of this study was to examine the relationship between patient reported outcomes (PROs) and gait parameters in different disability levels of PwMS.

We hypothesized that in PwMS, there would be a significant difference between perceived ambulation disability, fear of falling and gait parameters but no difference between subjective fatigue and gait parameters in PwMS at all disability levels.

Methods

The experimental group consisted of a convenience sample of 47 PwMS.

Temporal and spatial gait measures including gait velocity, cadence, stride length and double support time were recorded and analyzed using the ProtoKinetics ZenoTM System.

Subjects ambulated at their self-selected gait speed for one pass (20 ft).

Subjects completed the following PROs: Modified Fatigue Impact Scale (MFIS) with subsets, Modified Falls Efficacy Scale (MFES) and the 12-item MS Walking Scale (Amb-12).

Demographics

<table>
<thead>
<tr>
<th>Average Age (years)</th>
<th># of Females</th>
<th># of Males</th>
<th>Average PDSS Score</th>
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<tbody>
<tr>
<td>53.8 ±11.2</td>
<td>33</td>
<td>14</td>
<td>2.96 ± 1.99</td>
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Results

- When comparing the low to medium disability group and the low to high disability group, differences were noted in all gait parameters (velocity, stride length and double support time) and all PROs, except MFIS-cognitive (p<0.05).
- When comparing the medium to high disability group, differences were only seen in the Amb-12 and gait velocity (p<0.05).
- Cognitive fatigue showed no significance between groups.
- Results of the total cohort showed correlations (p<0.05) between the Amb-12 and the above gait parameters.
- The MFES correlated with stride length and velocity but not double support. Of the MFIS categories, only the physical subset had a correlation with velocity (p<0.05).

Clinical Relevance

- Results further support evidence that perceived fatigue should not be considered as highly correlated with gait parameters as other PROs are.
- Reports of fatigue do not seem to correlate with different disability levels in PwMS.

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References