

**THE EFFECTS OF A 6-MINUTE ENDURANCE WALK ON SELECTED GAIT CHARACTERISTICS IN INDIVIDUALS WITH MULTIPLE SCLEROSIS**

Christina Burke, PT, DPT1; John R. Magel, PhD2
1 South Shore Neurologic Associates, Patchogue, New York United States; 2 Touro College, Doctor of Physical Therapy Program, Bay Shore, New York, United States

**Background:**
- Multiple Sclerosis is a progressive disease of the Central Nervous System that causes widespread demyelination of the axons of sensory and motor neurons.
- Clinical impairments include decreased muscle strength, sensory disturbances, spasticity and ataxia with impaired gait and fatigue as the most common functional complaints.
- There are few published reports describing the effects of fatigue on gait characteristics in individuals with Multiple Sclerosis.

**Objective:**
The purpose of this study was to determine the effects of a six minute walk (6MWT) on selected gait characteristics in individuals with Multiple Sclerosis.

**Methods:**
Twenty-four individuals with Multiple Sclerosis (EDSS 0-6) and 24 age and gender-matched normal controls.
- Selected gait parameters (velocity, stride length and double support time) were measured with the GAITRite system.
- Two trials (test-retest) at a comfortable self-selected walking speed were used to assess reliability and reproducibility of the GAITRite system.
- A modified 6MWT was utilized to simulate motor fatigue with gait parameters measured prior to and following the test.
- Reliability and reproducibility were assessed with Pearson product-moment correlation coefficients and paired t-tests, respectively.
- Within and between group changes in gait characteristics following the 6MWT were analyzed with dependent and independent t-tests, respectively.

**Physical Characteristics and EDSS Scores of Subjects:**

**Results:**
- The GAITRite system demonstrated very good to excellent test-retest reliability and reproducibility for:
  - Velocity: r=0.953, r2=0.907, (P<.001)
  - Stride length: r=0.956, r2=0.913, (P<.001)
  - Double support time: r=0.959, r2=0.918, (P<.001)
- Gait velocity and stride length both decreased significantly (P<.01), while double support time increased significantly (P<.01) following the 6MWT in individuals with Multiple Sclerosis.
- Comparison of pre- to post-test change scores between controls and individuals with Multiple Sclerosis showed significant decreases (P<.01) in velocity and stride length for Multiple Sclerosis patients.
- There were no significant changes for 26 time between groups.

**Conclusions:**
- These results indicate that the GAITRite system is reliable and reproducible for the measurement of velocity, stride length and double support time in individuals with Multiple Sclerosis.
- Individuals with Multiple Sclerosis appear to demonstrate greater impairment in gait velocity and stride length following a 6MWT when compared to controls.