



AGREEMENT OF 4- AND 10-METER GAIT SPEED ON INDIVIDUALS WITH CHRONIC STROKE

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Introduction: Stroke is the leading cause of long-term disability in the United States. A stroke can leave many unable to walk and speak. Gait speed has been recognized as a successful measure of ambulation performance in health and disease states. Changes in gait speed correlate with balance deficits, falls, performance in activities of daily living, need for assistive devices, and mortality. In stroke rehab, the 10-meter walk test (10mWT) is the gold standard for assessment of gait speed. 10-meters can be a challenge to perform in outpatient settings with limited space availability or may create fatigue and fall risk for stroke survivors. Therefore, identifying a reliable walking test with a shorter distance is necessary. The 4-meter (4mWT) has been recommended by the NIH Toolbox, but has not been assessed for reliability in a population of individuals with chronic stroke.

Purpose: Determine the reliability and agreement of the 4mWT to the gold standard 10mWT in individuals with chronic stroke.

Methods: Individuals post-stroke entering a University of Utah outpatient rehabilitation facility. Participants had to be 18 years of age and older, distinguished as chronic stroke (> 6 months), and ambulate independently with any type of assistive device or bracing. Participants were asked to walk at their usual pace either 4 meters or 10 meters (random assignment), then the opposite. Correlations (p-value of < 0.05) and a Bland Altman analysis were performed (95% confidence interval).

Results: There was a strong and significant correlation between the 4mWT and the 10mWT. Fifty individuals (31 males), mean age 60.2 (SD 15.7) years, 5.29 (SD 5.22) years post stroke were assessed. The mean gait speed of 4mWT was 0.78 (SD 0.36) m/sec, and for the 10mWT was 0.78 (SD 0.39) m/sec. The Bland-Altman plot showed a mean bias at zero and a limit of agreement at ± 1.96 SD. There are a few data points outside of these limits but most of them are aligned, which indicates that there is a systemic relationship between the two variables (**Figure 1**). The gait speed tests were significantly correlated (0.94, $p < 0.01$).

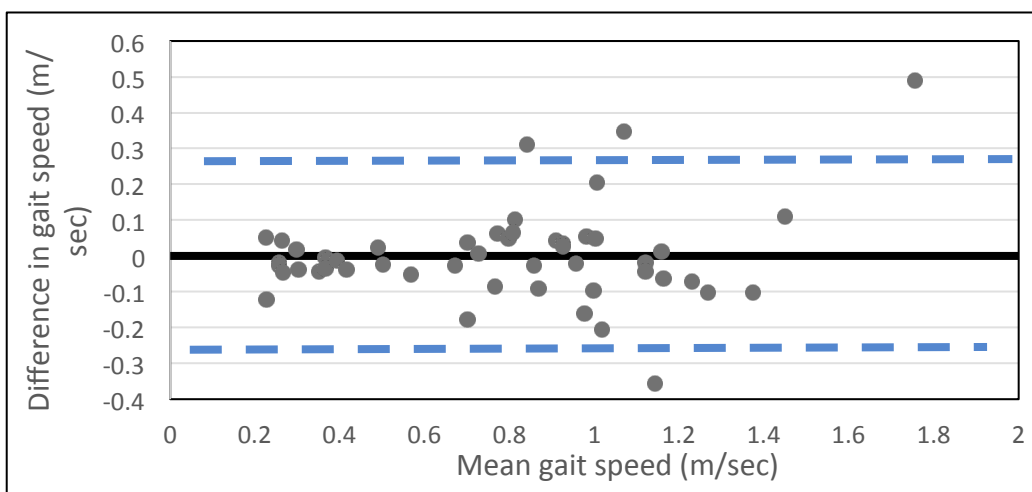


Figure 1. Bland Altman plot. The difference between gait speed assessed by the 10mWT and the 4mWT plotted against the mean of the two methods. The black line represents the mean bias and the dotted lines represent the limits of agreement (± 1.96 (SD))

Discussion: The results of this study find a strong correlation between the 4mWT and the 10mWT for individuals with chronic stroke. Furthermore, there is good agreement between the 10mWT and the 4mWT as evidenced by the Bland-Altman plot. However, results suggest that as gait speed increases to > 0.8 m/sec there is less agreement. Based on these results, the 4mWT is a reliable measure for individuals with post-stroke.