MEASURING OLDER ADULT GAIT SPEED IN COMMUNITY SETTINGS USING THE 30 FOOT-WALK AT PREFERRED AND MAXIMUM SPEED

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INTRODUCTION
Gait velocity is a commonly reported temporal variable that has been shown to be predictive of community ambulation skills, disability, and risk for falls in the older adult population (Cho & Kamar, 1998; Holton et al., 2006; Lerner-Frankel et al., 1990). Gait speed has been measured over a variety of distances, ranging from 12 feet to 100 feet at all different speeds (Gibson & Tardif, 2001; Tirosh & Sparrow, 2006). Measurement protocols have also differed across studies (Holton et al., 2006; Kwon et al., 2001). The development of a standardized test that can be reliably performed by practitioners in field settings, particularly in a community setting, is highly desirable. Evaluating gait speed under unconstrained and constrained conditions, likely to be encountered during daily living, may also provide practitioners with valuable information about the older adult’s ability to adapt their gait speed under different task conditions.

PURPOSE
To identify a reliable and valid gait speed test protocol for use in community settings and to compare performance on the selected test across age groups in two walking conditions: Preferred and maximum speed. The study involved four phases.

Phase One: Determine whether gait speed performed over a 30-foot (3.54 meter) walking course is similar to the performance over a shorter 30-meter (31.5 feet) walking course.

Phase Two: Determine the single and multiple walking trials affect the test’s reliability.

Phase Three: Establish test-retest reliability for the selected gait test.

Phase Four: Identify age-associated differences in gait velocity for the selected walking distance.

PARTICIPANTS
A total of 209 participants volunteered to participate in one or more phases of the study. The only exclusion criteria for inclusion was that participants be able to perform both tests without the use of an assistive device.

METHODS
Phase One: A total of 106 participants (60-89 years) were measured on the 30- and 50-foot walking tests at preferred and maximum speed in a single testing session.

Phase Two: A second group of 76 participants (60-92 years) performed two trials of the 30-foot walking test at preferred and maximum speed.

Phase Three: A random sub-sample of 15 participants (65-87 years) recruited from phase one were also tested on a second occasion (7-10 days later) over the shorter of the two distances to determine test-retest reliability.

Phase Four: A total of 205 community-dwelling male and female adults (60-92 years) were measured on the 30-foot walk test performed once at a preferred and once at a maximum speed in a single testing session.

RESULTS
Phase One: Performance on the longer and shorter distance walking tests across both speed conditions was significantly correlated. Correlation coefficients of .84 and .95 were obtained for the preferred speed and maximum speed conditions, respectively.

Phase Two: Interclass correlation coefficients (ICC 2.3) of .98 (preferred speed) and .95 (maximum speed) were obtained between the first and second walking trials on the 30-foot walk test.

Phase Three: Test-retest reliability for the 30-foot walk test was very high for both speed conditions.

Phase Four: Gait velocity for the 80+ age group was significantly less than the younger age groups (60-79) in the preferred condition. For the maximum speed condition, age-associated differences were evident between all three age groups (60-80, 70-79, 80+).

DATA ANALYSIS
All statistical analyses were performed using SPSS (version 13.0). Pearson’s Moment correlation analyses were performed to determine the relationship between the two walking distances. Intraclass correlation coefficients (ICC 2.3) analyses were performed to determine the inter-trial and test-retest reliability for the 30-foot walk test. Age-associated difference was also measured using a two way ANOVA with age (1.16 ± 0.30, 1.23 ± 0.30, 1.57 ± 0.41) (60-80, 70-79, 80+)

REFERENCES


DISCUSSION
The 30-foot walk test (single trial) is a reliable and valid method of measuring gait speed in older adults. This test is also able to discriminate between age groups, particularly when performed at maximum speed. Measuring gait speed under different walking environments appears to yield different information about age-associated changes in gait and the underlying mechanisms may be a long-term outcome of this study. It is to develop national performance standards for older adults between 60 and 80 years old (using 60 feet tests in the study). This information will assist practitioners compare the test results of individual to other older adults of the same age and gender as currently provided by the Senior Fitness Test (Bick & Jones, 1998). Establishing a criterion threshold for the loss of community ambulation skills will also be an important outcome of the large-scale study currently in progress.