

Measuring gait speed with usual walking pace between stopwatch and automatic timer in older adults

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Background

Measuring of 4-meter gait speed with the manual using a stopwatch is the gold standard Method for evaluating the health and functional status of older adults. Recently, measuring gait speed using devices have been reported to improve accuracy. In addition, the NIH suggests a standing start, but several studies have evaluated gait speed using the moving-start. The purpose of this study was to compare manual stopwatch and automatic measuring instrument of gait speed obtained from the individual's usual walking pace using a 4-meter walking test with different starting protocol (standing vs. moving) in healthy older adults.

Methods

One hundred fifty-three healthy older adults aged 65 years and older (n=153, 57 men, 96 women, age=75.21±5.14 years, SPPB=11.17±0.98) participated. The gait speed was measured from a 4-meter walking test using the manual stopwatch and automatic timing system with or without the 2-meter acceleration and deceleration phases. Each participant completed two consecutive trials for different starting protocol with a rest period of two minutes. Data were analyzed with independent t-test, and significance was set at p<0.05.

Results

On average, the timed gait speed by the automatic timer was 0.2 m/s faster in standing start (1.41±0.26 vs. 1.21±0.21 m/s, p<0.001) and 0.17 m/s faster in moving start (1.44±0.25 vs. 1.27±0.20 m/s, p<0.001) during 4-meters walking compared with the manual stopwatch, respectively. The moving start protocol the usual gait speed measured by the stopwatch was significantly faster than the standing start (1.27±0.20 vs. 1.21±0.21 m/s, p=0.019), while there was no difference between the start protocols when measuring with the automatic timer (1.44±0.25 vs. 1.41±0.26 m/s, p=0.327). In both men and women, the gait speed obtained from the start protocols was also different between the manual stopwatch and the automatic timer (p<0.001), but the gait speed according to the timing protocols did not show any significant difference between the standing start and the moving start.

Conclusion

Timed usual gait speed on a 4-meter course is affected by the measuring Method (manual stopwatch vs. automatic instrument), and in particular, the starting protocol (standing vs. moving start) should be considered when using the manual stopwatch in older adults. Therefore, we suggest that careful attention should be taken to be

misvaluated when measuring gait speed for functional assessment of older adults using the automatic instrument or using the moving start Method.