



Mid Atlantic Regional Chapter of the American College of Sports Medicine

Annual Scientific Meeting, November 1st – 2nd, 2019
Conference Proceedings

International Journal of Exercise Science, Volume 9, Issue 8



Individual Factors Influencing Performance on The Tandem Gait Test in Healthy, Physically Active Adults

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Gait and balance abnormalities are common following concussion. The tandem gait test, which is part of the Sport Concussion Assessment Tool 3 (SCAT3), assesses lower body coordination and dynamic balance deficits after a suspected concussion. To improve clinical decision making, it is imperative to determine factors that may influence performance on the test. **PURPOSE:** To determine the effect of age, sex, level of physical activity, and concussion history on performance on the tandem gait test in healthy, physically active adults, and to determine if participants' performance improved across trials. **METHODS:** 59 healthy participants (22 males, 37 females, age = 20.49 ± 1.79 years, height = 165.60 ± 14.18 cm, weight = 67.56 ± 15.07 kg, 23 with a history of concussion and 36 without a history of concussion) completed a demographic questionnaire and the tandem gait test. The demographic form included a self-reported number of previous concussions, hours of vigorous and moderate activity per week, and days of resistance training per week. For the tandem gait test, times from the first four passed trials were recorded for analysis, and the best time was considered the tandem gait test score. Failed trials, in which the participant had a separation between their heel and toe, stepped off the line, or touched an object, were excluded from analyses. **RESULTS:** There were no statistically significant relationships between tandem gait test score and age ($p=0.39$), hours of moderate activity per week ($p=0.86$), hours vigorous activity per week ($p=0.24$) or days of resistance training per week ($p=0.31$). There was no significant difference between males (15.38 ± 2.76 s) and females (15.38 ± 2.76 s) on tandem gait test score ($t_{57}=-1.99$, $p=0.051$), or between those without a history of concussion (16.19 ± 2.89 s) and those with a history of concussion (16.39 ± 2.49 s) on tandem gait test score ($t_{57}=-0.28$, $p=0.78$). Participants performance improved over time with better performance on each trial compared to trial 1 (trial 1: 18.95 ± 4.15 s, trial 2: 17.75 ± 3.29 s, trial 3: 17.08 ± 2.85 s, trial 4: 16.87 ± 2.91 s; $F_{3,174}=24.84$, $p<0.005$). **CONCLUSION:** General findings demonstrate that there is no effect of age, sex, level of physical activity, or concussion history on performance of the test. Performance on the test improves across trials.