**ABSTRACT**

**Background:** Previous researchers have suggested that balance control deficits are detected more accurately with dual-task testing than single-task testing. However, it is necessary to examine the clinimetric properties of dual-task testing before employing it in clinical and research settings.

**Objective:** To examine and compare the relative and absolute reliability of the Balance Error Scoring System (BESS), Tandem Gait Test (TGT), and Clinical Reaction Time (CRT) under single and dual-task conditions in uninjured active youth and young adults.

**Study Design:** Single-group, repeated-measures study.

**Methods:** Twenty-three individuals [9 female; median age 17 years] completed three trials of the BESS, TGT, and CRT under single and dual-task testing conditions during testing session one. Two raters assessed participants to assess inter-rater reliability. Either later on the same day or the following day, the protocol was repeated by one rater to assess intra-rater reliability. The average of three trials was used to calculate intra-rater (between-session) and inter-rater (within-session) intraclass correlation coefficient (ICC), standard error of measurement (SEM), minimal detectable change (MDC), and Cohen's Kappa coefficient for tests as appropriate under both conditions. Bland-Altman plots (mean difference and 95% limits of agreement) were used to assess for a systematic error associated with a learning effect.

**Results:** Only one participant attended the second session on the following day, while 22 participants (95%) attended the second session within four hours after testing session one. Under single-task testing, estimated ICCs, SEMs, MDCs, and Kappa coefficients ranged from 0.24 to 0.99, 0.3 to 23, 0.8 to 64, and 0.03 to 0.64, respectively. Under dual-task testing, estimated ICCs, SEMs, MDCs, and Kappa coefficients ranged from 0.70 to 0.99, 0.4 to 17, 1.1 to 47, and 0.39 to 0.83, respectively. A learning effect was identified for all tests under all conditions.

**Conclusion:** The BESS is the only clinical test that demonstrated acceptable reliability for clinical use under single-task testing conditions. The BESS, TGT, and CRT all demonstrated acceptable reliability for clinical use under dual-task testing conditions. A practice session should be used to reduce the possible learning effect seen. Further studies examining sources of the systematic error observed are needed.

**Level of Evidence:** 2b.

**Keywords:** Adolescent, gait, psychometrics, reaction time, sport, young adult, movement system.