



# Psychometric properties of the BESTest and the Berg balance scale in COPD

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## Abstract

The Berg Balance Scale (BBS) is largely used to assess balance in patients with COPD. A more comprehensive scale, the Balance Evaluation Systems Test (BESTest) has been developed, however, its psychometric properties have not yet been fully explored. This study compared the psychometric properties of the BESTest with the BBS in patients with COPD.

28 (73.8±4.8yrs, 15 male, FEV1 62±18.8pp) participants were included. BESTest and BBS were performed twice within 3 days. Disease severity (spirometry), balance confidence (ABC Scale), quadriceps strength (hand-held dynamometry), functional performance (Sit-to-Stand Test) and health status (COPD Assessment Test) were recorded in the first visit. Inter-rater (2 raters) and test-retest reliability were calculated using the intraclass correlation coefficient (ICC<sub>2,1</sub>). Absolute reliability was analysed with Bland & Altman plots, concurrent validity and associations with the Pearson correlation coefficient (r).

Inter-rater reliability was similar for both tools (ICC BESTest .90 and BBS .94), whereas test-retest reliability was higher for the BESTest (ICC .87 vs .66). Good agreement for test-retest was found for both BESTest (mean difference (d) -.83) and BBS (d -.59). BESTest (86.5±7.8) and BBS (52.6±4.3) scores were highly correlated (r=.86). BESTest had stronger significant correlations with disease severity (r=-.38 vs -.14), quadriceps strength (r=.48 vs .43), functional performance (r=-.76 vs -.69) and health status (r=-.54 vs -.38) than BBS, the only exception was with balance confidence (r=.73 vs .75).

The two scales behave similarly in terms of reliability, but the BESTest presented stronger correlations with variables associated with fall risk.