

Height of chair seat influenced thirty-second chair stand test in community-dwelling older adults

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Background. The 30-second chair stand test (30 CST) has been widely used as a proxy measure of lower body strength for older adults living in the community. For individuals at different heights and with different lower leg lengths, the fixed height of a chair seat can affect the burden on the lower limbs when performing the task of sit-to-stand.

Objectives. To examine the influence of the chair seat height, the scores for the 30 CST with 6 chair seat heights were compared.

Methods. 32 older adults in Taiwan (15 males, 19 females; age 71.1 ± 5.5 years, mean \pm SD) undertook the 30 CST in each seat height condition. The chair seat height was adjusted to 80, 90, 100, 110 and 120% of each participant's lower leg length in a random sequence. Participants also performed the test using the standard chair (seat height = 43 cm).

Results. The 30 CST was significantly influenced by the chair-seat height ($F_{2.5, 76.1} = 25.3, p < 0.001$). Planned contrasts revealed that performing the 30 CST in the 100-120% lower leg-length conditions significantly increased the number of the chair stands compared to performing the test in the standard condition (100% vs. standard: $F_{1, 30} = 38.8, p < 0.001$; 110% vs. standard: $F_{1, 30} = 23.3, p < 0.001$; 120% vs. standard: $F_{1, 30} = 9.57, p = 0.004$). No significant difference was found between two lower seat heights and the standard seat height ($p > 0.05$).

Conclusions. When interpreting the score for the 30 CST between individuals, the height of the chair seat relative to the lower leg length should be considered. For the elderly with lower leg length ranged 35.8-39.1 cm, the standard 30 CST would overestimate the lower body strength.

Keywords: Chair stand test, aged, physical fitness