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O.4.1-8 Association of sit-to-stand capacity and free-living performance using thigh-worn accelerometers among 60-90-year-old adults

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Introduction

Five times sit-to-stand (STS) test is commonly used as a clinical assessment of lower-extremity functional ability, but its association with free-living performance has not been studied. Therefore, we investigated the association between laboratory-based STS capacity and free-living STS performance using accelerometry. The results were stratified according to age and functional ability groups.

Methods

This cross-sectional study included 497 (63% women) participants aged 60–90 years from three independent studies. A thigh-worn tri-axial accelerometer was used to estimate angular velocity in maximal laboratory-based STS capacity and in free-living STS transitions over 3–7 days of continuous monitoring. Functional ability was assessed with Short Physical Performance Battery (SPPB).

Results

Laboratory-based STS capacity was moderately associated with the free-living mean and maximal STS performance ($r = 0.52 - 0.65$, $p < .01$). Angular velocity was lower in older compared to younger and in low- versus high-functioning groups, both in capacity and free-living STS variables (all $p < .05$). Overall, angular velocity was higher in capacity compared to free-living STS performance. The STS reserve (test capacity – free-living maximal performance) was larger in younger and in high-functioning compared to older and low-functioning groups (all $p < .05$).

Conclusion

Laboratory-based STS capacity and free-living performance were found to be associated. However, capacity and performance are not interchangeable, but rather provide complementary information. Older and low-functioning individuals seemed to perform free-living STS movements at a higher percentage of their maximal capacity compared to younger and high-functioning individuals. Therefore, we postulate that low capacity may limit free-living performance.

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