RELIABILITY OF AN ISOKINETIC STRENGTH TESTING PROTOCOL OF THE ANKLE IN OLDER ADULTS

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Introduction: Power declines faster in the aged compared to decreases in isometric strength. Several tasks of daily life (climbing stairs, walking, chair rise, etc) are above all related to the ability to generate power around the ankle joint [1,2]. Because only few studies have investigated changes of power output in response to disuse and strength training in the aged, little is known about the reliable use of isokinetic tests at the ankle in older adults. Connelly et al., however, were able to show that for older people effects of learning the (isokinetic) motor task should be accounted for [3]. The purpose of the current study, therefore, was to determine the reliability of a newly developed isokinetic test protocol in older adults.

Methods: 19 older subjects (5 men, 14 women, mean age 71.8 ± 5.6 years) twice performed three maximal concentric ankle dorsal- and plantarflexions at 60°/s with the dominant limb, seven days apart with a familiarisation session one week in advance on a Biodex dynamometer. The maximum peak torque, average peak torque and average power were evaluated. The intraclass correlation coefficient (ICC-2,1), the standard error of measurements (SEM and SEM%) and its associated 95% confidence interval, the smallest detectable difference (SDD and SDD%) and the limits of agreements were determined as outcome measures.

Results: The ICC-2,1 ranged from 0.93 to 0.98 and from 0.93 to 0.94 for the dorsal- and plantarflexion, respectively. The SEM% and SDD% ranged between 9-13% and 25-35% for the dorsalflexion and 13-15% and 36-40% for the plantarflexion.

Conclusions: The test-retest reliability of an isokinetic strength testing protocol of the ankle that includes a familiarisation session in advance suggested high reliability (ICC-2,1) in aged individuals. The more informative indices of reliability that allow judgements on an individual level, i.e. the SEM% and SDD%, showed moderate to large measurement errors. Isokinetic ankle muscle strength can be used to detect real improvements following an intervention for groups of older, healthy adults. This testing protocol is not recommended for detection of ankle power property changes for individuals.


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