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# Measurement properties of muscle strength tests in AECOPD

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Article

Figures &amp; Data

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## Abstract

Appropriate management of acute exacerbations of COPD should address peripheral and respiratory muscle strength, as they are severely compromised during these events. However, the measurement properties of strength tests have been poorly studied in AECOPD, which limits their use. This study assessed the reliability, validity and sensitivity-to-change of quadriceps and respiratory muscle strength in AECOPD.

Non-hospitalised patients with AECOPD performed 3 tests of the 5 times sit-to-stand (5TSS), isometric quadriceps muscle strength (MicroFET2 dynamometer) and maximal inspiratory/expiratory pressure (MIP and MEP - MicroRPM). Tests were repeated after 3 weeks. Patients were followed up for 3 months. Within day reliability (Intraclass Correlation Coefficients-ICC), standard error of measurement (SEM), minimal detectable change (MDC95), predictive validity (Cox analysis-hazard ratio) and sensitivity-to-change (standardize response of the mean-SRM) were calculated.

33 patients were enrolled (22♂, 67.1y, FEV1 49.2±21.3predicted). Results are presented in table 1.

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The 5TSS test presented adequate reliability and sensitivity-to-change to monitor functional muscle strength. Quadriceps and respiratory muscle strength assessed with a hand held dynamometer and with a pressure meter, respectively, presented excellent reliability but low sensitivity-to-change, and thus may not be adequate to monitor AECOPD. None of the tests presented significant validity to predict 3 months exacerbations. Further studies should be conducted for enhancing muscle monitoring in AECOPD.