

Comparison of 3-minute Step Test (3MStepT) and 6-minute Walk Test (6MWT) in Patients With COPD

Marc Beaumont^{1 2}, Antoine Losq³, Loïc Péran¹, Anne-Cécile Berriet¹, Francis Couturaud⁴, Catherine Le Ber¹, Grégory Reyckler^{3 5}

Affiliations + expand

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Abstract

Chronic obstructive pulmonary disease (COPD) is frequently associated with a reduced functional exercise capacity. This parameter is usually evaluated using 6-minute walking test (6MWT). New tools appear regularly. The aim of this study was to validate the 3-minute step test (3MStepT) and to compare 3MStepT and 6MWT in stable patients with COPD as a tool to quantify the functional exercise capacity. Patients with COPD admitted for a pulmonary rehabilitation program in a dedicated center were recruited and randomly performed both tests: 6MWT and 3MStepT. A training test was performed systematically before each test. Walking distance and number of repetitions (3MStepT) were measured. Cardiorespiratory parameters, dyspnea and lower limb fatigue (Borg) were recorded pre and post the tests. Fifty patients with COPD (FEV1: 45.2 ± 18.3) were included. 6MWT (423.6 ± 96.3 m) was strongly correlated with 3MStepT (62.1 ± 18.0 ; $r = 0.780$; $p < 0.001$). Heart rate and SpO₂ were significantly different at the end of the 6MWT and 3MStepT (respectively, 106.2 ± 16.3 vs. 112.9 ± 13.4 bpm, $p = 0.002$; 87.6 ± 5.4 vs. 89.6 ± 5.3 bpm, $p = 0.001$). Lower limb fatigue was significantly higher after the 3MStepT (2.5 ± 2.6 vs. 3.4 ± 2.4 , $p = 0.01$). The 3MStepT is an alternative to the 6MWT to estimate functional exercise capacity in stable patients with COPD but cardiorespiratory adaptation and lower limb fatigue are not similar between these tests.

Keywords: COPD; evaluation; exercise capacity; physiotherapy; pulmonary rehabilitation.