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Title: Validity of the six-minute stepper test in pulmonary rehabilitation

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Body: Introduction The six-minute stepper test (6-MST) is an easy, sensitive and secure field test used to evaluate the exercise tolerance. In a previous study, we have demonstrated the reproducibility and sensitivity of this test in patients with COPD (Borel B, et al. Clin Rehabil. 2010). The aim of this new study was to compare the 6-MST to the six-minute walk distance (6-MWD) and the cardiopulmonary exercise testing (CPET) before and after pulmonary rehabilitation (PR). Methods We enrolled 138 consecutive patients with chronic lung diseases who underwent a PR in a monocenter, prospective study (CEPRO 2011-036). Number of steps per six minutes on a stepper GoSport®, 6-MWD, oxygen uptake (VO₂ in ml/kg/min) and workload at peak exercise (peak) and ventilatory threshold (VT) were measured at the beginning and the end of a six week PR. Results 6-MST was correlated with the 6-MWD (r=0.51, p=0.01), the VT and peak workload (r=0.53, r=0.63 respectively, p=0.01). There was a weak correlation with the VT and peak VO₂ (r=0.35, p=0.05). After PR, there was a significant increase of the 6-MST (500 vs 437 steps, p<0.001), the 6-MWD (417 vs 390m, p=0.02), the VT workload (55 vs 44W, p<0.001) and the peak workload (91 vs 79W, p<0.001) and the VT VO₂ (10.8 vs 10.2, p=0.025). There was no change of the peak VO₂. Conclusions The 6-MST is correlated with the 6-MWD and the CPET workload. Our data demonstrate the clinical interest of this field test to evaluate the exercise tolerance in PR.