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Title: Reproducibility of metabolic parameters measured during endurance shuttle walking test in patients with COPD

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Body: RATIONALE: Cardiorespiratory adaptations to exercise can be monitored during endurance shuttle walking test (ESWT) using a portable telemetric gas analyser. The aim of this study was to investigate the reproducibility of metabolic parameters measured at the end of two ESWTs in patients with Chronic Obstructive Pulmonary Disease (COPD). METHODS: 97 patients with moderate to severe COPD (FEV1 = 49 ± 13% of predicted value, ranging from 31 to 78 % of predicted value) performed two ESWTs one week apart. ESWTs were performed at a speed corresponding to 85% of peak oxygen uptake, as predicted from the incremental shuttle walking test. Metabolic and cardiorespiratory parameters were monitored during both ESWTs using a portable Oxycon mobile device. Maximal values for oxygen uptake (VO2), heart rate (HR), ventilation (VE) and respiratory exchange ratio (RER) were compared using paired t-tests and Pearson correlations between maximal values of both tests were estimated. RESULTS: Mean differences between both ESWTs performances were -5.2 ± 66 sec and -6.8 ± 107 m for the endurance time and distance respectively. The mean differences for maximal values between ESWTs were not significantly different for each parameter. Significant correlations were found for each parameter between the maximal values of both tests, with good correlation coefficients (r2=0.79, 0.43, 0.63 and 0.53 for VO2, VE, HR and RER respectively). CONCLUSIONS: The results highlight a high level of reproducibility of the maximal values of metabolic and cardiorespiratory parameters measured during ESWTs. FUNDING: GlaxoSmithKline NCT01124422;ADC113877.