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Title: To ascertain usefulness of chester step test in pulmonary rehabilitation programmes

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Body: Background The Chester Step Test assesses aerobic capacity in healthy subjects. It has not been tested in patients with COPD pre and post rehabilitation. Aim To ascertain the utility of the Chester Step Test (CST) in measuring exercise capacity in patients with COPD, by comparison with a validated Incremental Shuttle Walk Test (ISWT) which is shown to reflect peak exercise capacity. Method Thirty-two patients with stable COPD underwent each exercise test, before and after completion of a 6 week pulmonary rehabilitation programme. Tests were conducted by a blinded assessor who recorded data including heart rate, oxygen saturations. Results Baseline mean characteristics were as follows: age 66 years (SD 8.5); SpO₂ 94.5 (SD 2.40); FEV₁ 52% predicted (SD 17.7%). Participants completed a mean 171.3m (SD 75.65) of the ISWT, and 157seconds (SD 92.3) of the CST. Seventeen patients completed the rehabilitation programme. Correlation by linear regression (r²) between each ISWT and CST was 0.31 before rehab (p=0.001), and 0.25 afterwards (p=0.039). Pre and post rehab percentage change was significant for ISWT (p<0.005) but not CST (p=0.062). Change in the ISWT was greater but not significantly (46% vs. 32% p=0.30). There was no correlation between change in ISWT and CST (r²=0.16, p=0.106). Conclusions Although these two tests correlate significantly at each visit, the ISWT appears more sensitive to change following rehab, but sensitivity can potentially be increased with a modification of the protocol. Further studies are required to explore this.