

0.57 ($p < 0.001$), in COPD and CHF, respectively. Mean change in $ICE_{VO_{2pk}}$ was 28 (-14 to 69) $ml \cdot min^{-1}$, ES 0.09 ($p = 0.19$) and 50 (-15 to 120) $ml \cdot min^{-1}$, ES 0.16 ($p = 0.12$). There was no difference in responsiveness, between COPD and CHF, for the ISWT and $ICE_{VO_{2pk}}$, $p = 0.44$ and $p = 0.67$, respectively.

Conclusions Both the ISWT and ICE are similarly repeatable in patients with COPD and CHF. A 60 m change in ISWT distance and 260mls in $ICE_{VO_{2pk}}$ represents, with 95% certainty, a true change within an individual. $ICE_{VO_{2pk}}$ was similarly unresponsive to PR in both conditions.

REFERENCES

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P40 SYSTEMATIC REVIEW OF THE REPEATABILITY, REPRODUCIBILITY, SENSITIVITY AND COMPARABILITY OF KEY EXERCISE CAPACITY TESTS USED IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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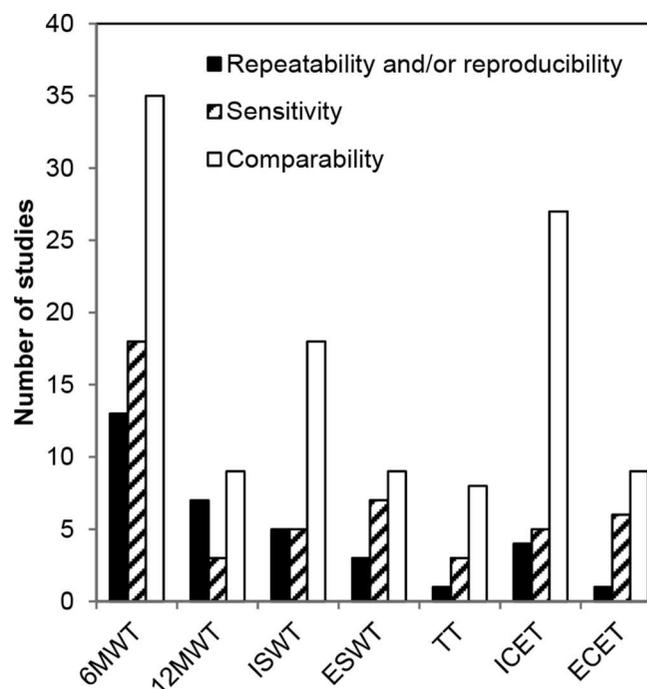
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Introduction and Objectives Various exercise tests are used as endpoints to evaluate the functional status of patients with COPD. While individual studies have compared different tests, a systematic assessment of this data has not been performed. We therefore aimed to review the repeatability (variation in tests performed on the same day), reproducibility (variation in tests performed on different days), sensitivity and comparability between and within exercise tests in adult patients with COPD.

Methods A systematic review of Embase, MEDLINE® and the Cochrane Library identified primary manuscripts in English reporting relevant data on the following exercise tests: six- and twelve-minute walk tests (6MWTs and 12MWTs), incremental and endurance shuttle walk tests (ISWTs and ESWTs), treadmill test (TT), and incremental and endurance cycle ergometer tests (ICETs and ECETs). Comparability within exercise tests was assessed by examining studies that compared different protocols of the same test type.

Results We identified 90 relevant studies (Figure 1). The majority of studies exploring repeatability and/or reproducibility examined the 6MWT, 12MWT and ISWT; no studies examined repeatability in treadmill and cycle tests. Only four studies reported the intra-class correlation coefficient (ICC); two examined repeatability and reproducibility of the 6MWT (ICCs = 0.94 and 0.88, respectively), and a further two reported reproducibility of the ECET and endurance TT (ICCs = 0.85 and 0.84, respectively). These data indicate good repeatability/reproducibility, but other studies contradict these findings. Prior familiarisation consistently improved repeatability and reproducibility of tests. Most relevant studies reported that exercise tests were sensitive to interventions, but the magnitude of response varied between test types and depended on the intervention and outcome assessed. Protocol variations, such as in track layout or supplemental oxygen use, affected performance in the majority of studies identified. Studies with pair-wise comparisons between walk tests, cycle tests, and walk and cycle tests reported inconsistent comparability between test types.

Conclusion This review found varied repeatability, reproducibility and sensitivity of exercise tests often resulting from inconsistencies in protocol administration (e.g. variations in protocols used, outcomes analysed, or protocol familiarisation). Such within- and between-test variations make comparisons difficult, even between studies ostensibly reporting the same test.



Abstract P40 Figure 1. Breakdown of the relevant studies. Numbers of studies that contain data examining the repeatability, reproducibility, sensitivity and comparability (within and between different tests) for the different exercise tests. As some studies fall into more than one category, the combined number of studies in this figure exceeds 90.

P41 PULMONARY REHABILITATION (PR) ENDURANCE SHUTTLE WALK TEST DISTANCES: DIFFERENCES BETWEEN INTERSTITIAL LUNG DISEASE (ILD) AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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Background There is evidence to suggest that Pulmonary Rehabilitation (PR) is beneficial for patients with chronic lung diseases other than COPD (AAP/AACVPR guidelines 2007, ILD consultation document 2013). However, there is little evidence to suggest that PR provides exercise tolerance benefits comparable to COPD patients who participate in the same PR programmes.

Aim To determine whether walking distance improvements differ significantly between ILD and COPD patients following PR.

Method Retrospective data of PR Endurance Shuttle Walk Test distances (ESWTD) pre- to post-PR were analysed and compared between 55 Interstitial Lung Disease (ILD) and 440 COPD patients from February 2005 to December 2012. Patients participated in a PR programme run by the same clinical team. Independent sample two-tailed t-tests were performed on data for pre-PR ESWTD, post-PR ESWTD and ESWTD change.

Results There were no significant differences between group ESWTD prior to PR ($t = -0.049$, $p = 0.961$), following PR ($t = -0.227$, $p = 0.820$) or change in ESWTD ($t = -0.228$, $p = 0.820$).

Abstract P41 Table 1.

	No.	Mean (SD) Pre PR (m)	Mean (SD) Post PR (m)	Mean (SD) Change (m)
COPD	440	365 (339)	804 (605)	440 (530)
ILD	55	363 (309)	785 (502)	422 (443)

Conclusions These data indicate there is no significant difference between ILD and COPD patients' walking distances. ILD patients with a reduced exercise tolerance should be included and referred to PR programmes.

P42 DOES PULMONARY REHABILITATION IMPROVE EXERCISE CAPACITY AND HRQOL IN PATIENTS WITH ASTHMA?

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Introduction Pulmonary rehabilitation (PR) benefits patients with COPD, however to date there is limited evidence demonstrating its effectiveness in patients with chronic asthma.

We hypothesised that patients with asthma would have a significant improvement in exercise capacity and HRQOL following a standard PR programme. The aim of this study was a) to evaluate the impact of PR on exercise capacity and HRQoL in patients with asthma and b) to identify the factors influencing attendance and completion.

Methods We retrospectively audited PR outcome in a cohort of asthmatic patients referred for PR at the Royal Brompton Hospital between 2008 and 2012. Exercise capacity (ISWT), quadriceps maximal volitional contraction (QMVC) and HRQoL (HADS, SGRQ, LINQ, MRC) were assessed before and following PR. Logistic regression analysis was used to determine factors predicting PR completion.

Results 49 patients were referred of whom 25 completed (69.2% female; mean age: 58.7 ± 12.5 years; mean BMI: 31.27 ± 30.1) Completers were moderately obstructed (mean FEV₁% pred: 57 ± 22.9, FEV₁/FVC: 0.63 ± 0.14). 4% of them were current smokers and 8% were ex-smokers (mean history of 11.25pack/yrs). Mean classes attended were 15.3 1 ± 5.4 per patient. There was a significant improvement in QMVC (p = 0.02) and ISWT (p = 0.036) following PR. Other than LINQ score (p = 0.016), there was no improvement in HRQoL measures following PR. Patients with a higher%Fat, according to bioelectrical impedance, were less likely to complete PR once they had been referred. No other statistically significant differences were found between completers and non-completers.

Conclusions Asthmatic patients benefit from attending a PR course in terms of functional capacity and muscle strength. Further prospective studies utilising asthma specific quality of life indices are required to evaluate disease specific benefits of PR and delineate factors predicting successful PR.

Does pulmonary rehabilitation improve exercise capacity and HRQoL in patients with asthma?

Abstract P42 Table 1. Patient characteristics pre and post PR.

	Pre PR	Post PR
Number	25	25
ISWT (m)	220 (210)	370 (302)*
Best QMVC (kg)	21.8 (10)	24.4 (9.9)*
HAD A	8.85 (4.3)	8.63 (5.1)
HAD D	6 (5)	6 (7)
SGRQ Total score	49.6 (14.1)	48.9 (14.9)
LINQ	7.85 (2.86)	6.11 (2.5)*
MRC	3.23 (0.92)	3.08 (0.68)

Data presented as Mean (SD) or Median (IQR). *P<0.05

P43 PATIENTS' EXPERIENCES OF EARLY POST-HOSPITALISATION PULMONARY REHABILITATION: A QUALITY IMPROVEMENT INITIATIVE

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Background Early post-hospitalisation pulmonary rehabilitation (PR) following acute exacerbation of COPD (AECOPD) improves health-related quality of life, increases exercise capacity and reduces rate of hospital readmission. However, only a minority of eligible patients are referred to or receive this intervention (Jones *et al* Thorax 2013). We explored patient acceptability for post-AECOPD PR and the referral process through face-to-face audio- and video-taped interviews.

Methods Ten patients were interviewed using experience based co-design (EBCD) methodology: six PR "completers", one PR starter who subsequently withdrew, and 3 patients who declined PR. The films were analysed and edited to represent the common themes. A patient-staff event was held to co-design a patient information leaflet and video.

Results Overall, the patient completers were positive about their experience. They most liked: the atmosphere; the equipment; group social interaction; doing more exercise than they thought they could; learning how to manage their lung condition. They least liked: getting there; being 'shattered' afterwards; no tea and coffee break; no introductions. For patients who declined, the reasons given were: "I don't know what rehab is no-one has explained it"; "I was never offered rehab"; "It is too far away- I would go if transport was paid for." A recurring theme was that patients had poor recall of information provided during hospital admission.

Conclusion The findings highlighted the complexity of interactions between patient and healthcare professionals. In response to this, an information leaflet and video are being produced using the filmed interviews and feedback from the patient staff co-design event to facilitate the referral process. The best timing and delivery of patient information is currently being evaluated. Other themes were improving PR accessibility and enhancing social aspects of PR. Two new community sites were opened to provide wider coverage of the borough and refreshments are now offered routinely during education classes. Furthermore, patients and staff are introduced to each other routinely at the beginning of PR classes. 159 referrals for post-AECOPD PR have been made in the past 18 months and patient satisfaction rates are 98%. The EBCD approach was ideal in engaging patients in the co-design of service improvements.

P44 MAINTENANCE OF SPACE FOR COPD (A SELF-MANAGEMENT PROGRAMME OF ACTIVITY, COPING & EDUCATION): A SIX MONTH QUALITATIVE STUDY

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