

established. Two small studies have previously shown no benefit; this may have been due to study power or methodology. Our study investigated whether ambulatory oxygen provides additional benefit to patients undergoing PR who meet the 2006 UK Department of Health criteria for ambulatory oxygen use.

Methods A single blind (researcher) randomised controlled trial compared the effect of a 6 week PR programme either with or without ambulatory oxygen. The study was powered to show an 80% difference between groups. Eligible patients were those who desaturated on baseline exercise testing by >4% to <90% and whose exercise tolerance improved by >10% with ambulatory oxygen. Outcome measures included the Endurance Shuttle Walk Test (ESWT) and the self report Chronic Respiratory Questionnaire (CRQ-SR).

Results Between September 2007 and June 2009 62 patients consented; one patient withdrew choosing to use ambulatory oxygen, ten dropped out of PR. The majority of subjects had Chronic Obstructive Pulmonary Disease; eight had another chronic respiratory condition. Groups were similar at baseline except for weight and BMI (higher in the room air (RA) group). A far greater improvement in ESWT was found in the oxygen group ($p=0.000$) (Abstract S71 Table 1). When the acute effect of oxygen is excluded the oxygen group improved by 75% more than the RA group; this did not meet statistical significance since the study was powered to show an 80% improvement. The oxygen group gained improvements in three CRQ-SR domains (emotion, fatigue and mastery) above the minimally clinically important difference (MCID) but this was not the case for the RA group; the difference between groups for these domains also reached the MCID. Improvements in the dyspnoea domain were similar between groups, although the oxygen group walked 490 m (122%) further.

Abstract S71 Table 1 ESWT outcome

| | RA group | O ₂ group | Difference | 95% CI | p |
|-----------------------|-----------|----------------------|------------|------------|--------|
| Mean change m (SD) | 401 (391) | 891 (477) | 490 | 245 to 735 | 0.000* |
| Mean change % (SD) | 77 (76) | 199 (214) | 122 | 32 to 211 | 0.009* |
| Mean change secs (SD) | 380 (358) | 682 (311) | 302 | 113 to 491 | 0.002* |

*Unpaired t-test.

Conclusion For patients who desaturate and with an acute positive response to oxygen, ambulatory oxygen significantly enhances the effect of PR.

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THE UTILITY OF THE MODIFIED BODE INDEX (INCORPORATING THE INCREMENTAL SHUTTLE WALKING TEST) IN ASSESSING SURVIVAL IN PATIENTS WITH COPD SCREENED FOR PULMONARY REHABILITATION (PR)

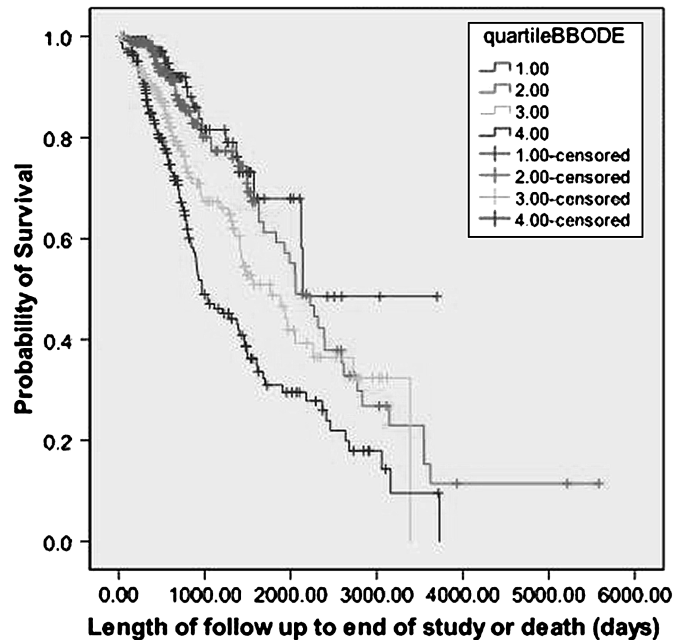
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Background We have previously reported that distance walked on the Incremental shuttle walking test (ISWT) can be substituted for the 6 min walking distance (6MWD) as the exercise ("E" component) of the BODE index (ERS 2009). This study examines 5 year survival in a cohort of patients with COPD and examines the validity of the modified BODE index as an independent predictor of survival in COPD.

Method Hospital records of 1127 patients with COPD referred to PR (mean (SD) FEV₁ 46.1 (16.2)% predicted, age 68.4 (9.0) years) were examined to assess 5-year survival. A multivariate cox proportional

Survival Functions



Abstract S72 Figure 1 Kaplan-Meier survival curves for the four quartiles of the BODE index.

hazards model including the variables gender, age, pack years, FEV₁, FVC, BMI, MRC dyspnoea score and ISWT was used to identify independent factors predicting all cause mortality. A BODE score was then assigned to 626 patients with sufficient data for analysis. Cut-off points for the ISWT quartiles were as follows: <80 m=3, 80–149 m=2, 150–249 m=1, >250 m=0. Cox regression was used to predict hazard ratios for the modified BODE index, adjusted for the independent prognostic factors identified by initial analysis. Kaplan-Meier analysis of survival by quartile of the BODE index was then performed and compared with the log rank test.

Results Overall 5-year survival was 41.9%. Three of the four factors in the BODE index (BMI, exercise capacity, and MRC dyspnoea) were statistically significant independent predictors of survival whilst the fourth, FEV₁% predicted was of borderline significance ($p=0.08$). In addition age and pack years smoked were also independent prognostic factors. The mean (SD) BODE index was significantly higher in patients who had died at 5 years (5.9(2.2)) than those that had survived (4.8(2.2)), $p<0.0001$. The modified BODE index was a significant predictor of death even corrected for age and pack years smoked (adjusted hazard ratio (95% CI) 1.26 (1.17 to 1.35), $p<0.0001$). Kaplan-Meier survival analysis confirmed that each quartile increase in the BODE index was associated with increased mortality ($p<0.0001$) (Abstract S72 Figure 1).

Conclusion The BODE index using the ISWT as the exercise component, is a useful tool for predicting survival in patients with COPD.

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4-METRE GAIT SPEED AS A FUNCTIONAL OUTCOME MEASURE IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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Introduction Well-established functional outcome measures in COPD include the 6-min walk test (6MW) and incremental shuttle