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Title: Predictors for longitudinal change in 6-minute walk distance in COPD patients

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Body: INTRODUCTION: The 6-min walk distance (6MWD) is widely used to evaluate exercise capacity in patients with Chronic Obstructive Pulmonary Disease (COPD), and is predictive of mortality and exacerbations. AIMS: To examine the change in 6MWD over 3 yrs in COPD patients and elucidate factors at baseline that may predict the change. METHODS: This prospective observational study included 389 patients aged 40-75 yrs, with clinically stable COPD in GOLD stage II-IV. Measurements at baseline and after 1 and 3 yrs included 6MWD, spirometry, body mass index (BMI), and assessment of smoking habits and exacerbations by questionnaires. Adjusted generalized estimating equations (GEE) regression analyses were used to analyze predictors for change in 6MWD. RESULTS: There was no significant change in 6MWD from baseline to 1 yr for any GOLD stage, or from baseline to 3 yrs for patients in GOLD II. For GOLD III ($\beta = -36$ m, 95 % CI = -55, -17) and IV ($\beta = -86$ m, 95 % CI = -138, -33) 6MWD decreased (fig.1). In the multivariate GEE forced expiratory volume in one second (FEV₁) (p<0.001), forced vital capacity (p<0.001), age (p<0.001), exacerbations (p=0.018), BMI (p=0.001) and pack years (p=0.003) were predictors for 6MWD, though only FEV₁ predicted change over time (p=0.003). CONCLUSION: Patients in GOLD stage II maintained 6MWD at 3 yrs, while patients in GOLD III and IV reduced 6MWD significantly. FEV₁ was a strong predictor for longitudinal change in 6MWD.