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Title: Effect of hospitalization on exercise capacity in patients with chronic obstructive pulmonary disease (COPD)

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Body: Introduction: Exercise capacity has become an important measure to assess COPD functional status, response to medical interventions and prognosis. However, the determinants of exercise capacity change over time in COPD patients are poorly known. Aim: To estimate the effect of hospital admissions on exercise capacity decline in COPD patients. Measurements: 226 patients with moderate-to-severe COPD from our original PAC-COPD Study had their exercise capacity measured when clinically stable using the six minute walking distance (6MWD) both at baseline and 1.7 years after. Sociodemographic variables, lifestyle, co-morbidities, and clinical and functional status were also assessed. Hospital admissions (timelines and causes) during the follow-up were gathered from centralized government datasets. Linear regression was used to model changes in exercise capacity. Results: At baseline, patients were mostly male (92%), aged mean (SD) 67(8) years, postbronchodilator FEV1 54(17)%, and 6MWD 444(83) m. During the follow-up period, patients decreased their exercise capacity (mean -20m/y). Moreover, 87 (39%) had at least one hospitalization (more than a half due to COPD). After adjusting for dyspnea, lung hyperinflation (RV/TLC), and baseline 6MWD, COPD admissions rate increased the 6MWD decline: -18m/y and -30m/y in ≤ 1 admission/year and > 1 admission/year, respectively, compared to patients with no admissions ($p=0.001$). Remaining variables were not related to the 6MWD decline, after adjusting for hospital admission. Conclusions: These findings show that hospital admissions due to COPD exacerbation have a great impact on exercise capacity deterioration in moderate-to-severe COPD patients.