

European Respiratory Society Annual Congress 2012

Abstract Number: 4016

Publication Number: P4153

Abstract Group: 9.2. Physiotherapists

Keyword 1: Physical activity **Keyword 2:** COPD - management **Keyword 3:** Physiotherapy care

Title: Correlation between daily physical activity using a compact accelerometer and clinical parameters in patients with COPD

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Body: Background: Physical activity (PA) monitoring is becoming increasingly important in patients with COPD. However, the correlation between clinical parameters in COPD and PA has not yet been well studied. Objective: To evaluate the correlation between PA using a compact accelerometer and clinical parameters in patients with COPD. Methods: We studied daily physical activity in 30 stable COPD patients (29 males; 72.1±9.5 years of age; %FEV₁ 54.8±23.3%; GOLD classification I – 5 patients, II – 11, III – 7, IV – 7; BMI 21.8±3.2 kg/m²) using a single-axis accelerometer (Lifecorder, Suzuken, Japan) for 1 month. Five PA measures were monitored: total energy expenditure (kcal/day), number of steps per day, walking distance (meters/day), and the time spent performing PA (minutes/day) at light (below 3 metabolic equivalent values [METs]) and moderate (3–6 METs) intensities. Clinical parameters included age, BMI, MRC scale, %FEV₁, six minute walk test (6MWT; distance, oxygen saturation (SpO₂), heart rate, dyspnea and leg fatigue on Borg scale), and nutritional conditions (serum pre-albumin, transferrin, and retinol-binding protein [RBP]). Results: Significant differences (p<0.05) were observed between GOLD classifications for age, BMI, MRC scale, serum pre-albumin, RBP, 6MWT distance, and minimal SpO₂ during the 6MWT. However, no significant differences were observed for Borg scale. Most clinical parameters were correlated significantly with at least 1 PA measure. Notably, Borg scale and MRC scale were correlated with 4 and 3 items, respectively. Conclusion: Borg scale, although not significantly different among GOLD classifications, and MRC scale were strongly correlated with PA.