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# P44 VALIDATION OF A PEDOMETER TO MEASURE DAILY PHYSICAL ACTIVITIES IN COPD PATIENTS

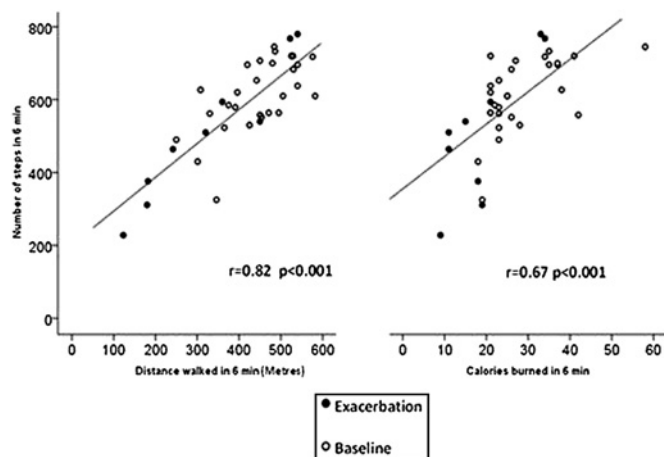
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**Introduction** Physical activity is reduced at COPD exacerbation but there is little information on the quantification of this activity. Activity can be assessed using walking tests or questionnaires or with expensive accelerometer based monitoring devices that require regular clinic visits to download data. Both approaches are not well suited to prospectively capturing activity during an exacerbation in a large observational cohort as patients will need to be monitored continuously in order to capture the prodrome and early stages of these events. The aim of this study was to determine whether step-counts measured by a pedometer (Yamax Digi-Walker SW-200) were sufficiently correlated with other measures of physical activity prospectively, to show that the device can be used in COPD patients.

**Methods** Patients with COPD (n=33) wore the pedometer and a SenseWear Armband (BodyMedia, Inc.) during a 6-min walk test (6MWT). FEV<sub>1</sub>, height, age and gender were recorded prior to the test. The pedometer was worn on a belt on the left-hand side and a SenseWear device on the left arm. Patients performed a 6MWT according to ATS protocols when stable and while having an exacerbation.

**Results** The 33 patients had a mean age (±SD) 71.5 (±6.2) and FEV<sub>1</sub> % predicted 48.2% (±13.2); 26 were men. The patients walked a mean 415 (±117) metres in 6 min, taking 587 (±132) steps and expending 26.3 calories (±9.8). Twenty-four patients completed the 6MWT when stable and five completed it during an exacerbation. Four patients were assessed at both baseline and exacerbation. Abstract P44 figure 1 shows that there was a strong correlation between steps counted by the pedometer and distance covered [ $r=0.82$ ;  $p<0.001$ ], and little change in this relationship between the stable and exacerbation state. The correlation was significant between steps and calories [ $r=0.67$ ;  $p<0.001$ ].



Abstract P44 Figure 1 Relationship between steps measured by pedometer (Yamax Digi-walker SW-200) in 6 min with distance covered and calories burned in the same period.

**Conclusion** Step count correlates well with 6 min walking distance and energy expenditure in COPD patients. Thus pedometers may be a useful way to prospectively monitor and quantify

physical activity during COPD exacerbations in a large observational cohort.

# P45 CO-MORBIDITIES IN ALPHA-1-ANTITRYPSIN DEFICIENCY

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**Introduction** Chronic obstructive pulmonary disease is well recognised to be a multi system inflammatory condition with systemic manifestations, including co morbidities such as diabetes, ischaemic heart disease and osteoporosis. Patients with alpha-1 antitrypsin deficiency (A1ATD) have a similar spectrum of lung disease and increased levels inflammation and recognised associations with vasculitis and panniculitis. Our aim was to characterise the co morbidities of the UK cohort of patients with A1ATD.

**Methods** A retrospective review of the notes of patients with the ZZ phenotype was undertaken for patients who attended the Alpha-1-Antitrypsin Deficiency Assessment and Programme for Treatment (ADAPT) Project in Birmingham, between the years 2001 and 2011.

**Results** 764 sets of notes were reviewed. Of the patients included, 75 had died. The most common known co morbidity encountered was hypertension (94 patients, 12.3%), followed by depression (34 patients 4.5%) and osteoporosis (40 patients 5.2%). Interestingly, 10 patients in the cohort had been diagnosed with ulcerative colitis (UC), 4 had proven factor V Leiden deficiency and 25 were hypothyroid.

**Conclusion** Depression and osteoporosis are recognised co morbidities in usual COPD, and are among the most common findings in the A1ATD patients, together with hypertension. The figures are lower than reported in usual COPD. There were more patients than expected who had Factor V Leiden deficiency (56 in 12 000 vs 10 in 12 000 of the UK adult population) and 11 potential patients on long-term anticoagulation in whom it was no longer possible to measure factor V Leiden. UC has a prevalence of 3–9 cases per 10 000 in the UK but our figures suggest 130 per 10 000. Finally, thyroid disease is usually more common in women, affecting 15 in 1000 in the UK. In our patient group, the incidence is double (32 in 1000). Overall, the incidence of several inflammatory/autoimmune diseases was higher than predicted for the UK population and a potential link to a coagulopathy was identified.

# P46 GENDER DIFFERENCES IN THE PREVALENCE OF COMORBIDITIES IN COPD PATIENTS

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**Introduction** Effective recognition and appropriate management of comorbidities is an important aspect of modern COPD care. In particular, cardiovascular diseases are a leading cause of morbidity and mortality. There is increasing interest in the differential impact of gender in COPD. This study aims to characterise gender differences in the profile of comorbidities in COPD.

**Methods** We analysed the recruitment records of 386 well-characterised patients enrolled into the London COPD Cohort. Comorbidities, medication, age, gender, height, weight, spirometry, St George's Respiratory Questionnaire (SGRQ) and MRC dyspnoea scores were recorded.

**Results** There were no significant differences between females (n=164) and males (n=222) in terms of mean ± SD age; 67.5±8.3 vs 69.0±9.0 years,  $p=0.102$ , median (IQR) smoking pack year history 47 (27–62) vs 44 (27–65),  $p=0.769$  or body mass index 25.3 (22.1–29.4) vs 25.5 (22.8–29.0),  $p=0.311$ . Females had milder airflow limitation at recruitment with a higher mean ± SD FEV<sub>1</sub> %