European Respiratory Society
Annual Congress 2013

Abstract Number: 1562

Publication Number: P5132

Abstract Group: 4.1. Clinical respiratory physiology, exercise and functional imaging

Keyword 1: Chronic disease **Keyword 2:** Physical activity **Keyword 3:** Quality of life

Title: Daily physical activity across COPD risk groups

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Body: Background: The new COPD classification into risk groups promoted by the revised GOLD guidelines allows a combination of spirometer-based classification and symptom estimation using COPD assessment test (CAT) or Modified Medical Research Council (mMRC) dyspnea scale. Aims: This study aimed to examine physical activity (PA) across COPD risk groups based on CAT and mMRC and to test their interrater agreement. Methods: In this cross-sectional study conducted at the University Hospital Basel (CH), 78 patients with stable COPD (57.7% male, age 66.6±9.7yrs) were investigated and classified into risk groups A to D using CAT A (n=27), B (n=36), C (n=1) and D (n=14) and using mMRC A (n=10), B (n=47), C (n=0) and D (n=14). Risk groups C and D were combined for statistical analysis. To test the interrater agreement, Cohen's Kappa was calculated. PA was measured by the SenseWear Mini Armband on 7 days. Daily number of steps, time spent in PA above 3 METs (PA3), active energy expenditure (AEE) and PA level (PAL) were analysed. Results: The interrater agreement between CAT and mMRC was found to be good (kappa=0.73). Moreover, CAT and mMRC showed a strong correlation (r=0.47, p<0.001). Based on CAT, steps were higher in risk group A compared to B (p=0.003) and C+D (p<0.001), while AEE showed a significant difference between A and B (p=0.007). Using mMRC, steps (p=0.015), AEE (p<0.001), PAL (p=0.006) and PA3 (p=0.001) were found to be reduced in risk group B compared to A. Steps (p=0.002) and AEE (p=0.010) also showed a significant difference between A and C+D. Conclusions: This study provides evidence that daily PA is impaired in severe COPD risk groups compared to mild ones. Moreover, mMRC dyspnea scale might be a shorter alternative to CAT.