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Title: Subjective sensation of dyspnea relates to physical inactivity in COPD

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Body: Background: The importance of physical activity in COPD has been recognised. Physical inactivity relates to exacerbations, hospitalisations and mortality. We dont know why significant proportion of patients who have severe disease can maintain physical activity, while others turn inactive at early stages of the disease. More information is needed about the factors behind physical activity. Aim of the study: The aim was to study physical activity in well defined COPD patient cohort. We asked about daily life activity, history in sports and barriers for exercising. Methods: The study was postal survey of the COPD cohort (N=719) recruited in Helsinki and Turku University Central Hospitals and followed since 2005. Validated questions were chosen to evaluate physical activity, dyspnea, and quality of life. Results: Fifty percent of the participants exercised >2 times a week throughout the year. Participants showed great variation in activity and sport choices. Active patients did not differ from inactive by gender, age, smoking status, somatic co-morbidities, or BMI. Activity correlated significantly with patients' reported dyspnea ($r=0.32$, $p<0.001$), quality of life ($r=0.25$, $p<0.001$), mobility disability ($r=0.37$, $p<0.001$), and bronchial obstruction ($r=0.18$, $p<0.001$). Sensation of dyspnea (captured by Medical Research Council dyspnea scale) was significantly stronger among inactive patients. Conclusion: Co-morbidities did not explain physical inactivity. Even though proportion of inactive patients increased with disease progression, many patients with severe disease exercised. Dyspnea related to physical inactivity. When COPD patient suffers from dyspnea, actions should be taken to promote physical activity.