

## 5 Estimated nocturnal sleep impairment in patients with COPD in daily life and its association with daytime physical activity

*Sleep disturbance is common in patients with chronic obstructive pulmonary disease (COPD). However, factors associated with objective sleep impairment have not been investigated before in a large patient population nor has the association between sleep impairment and the ability to engage in physical activity on a day-to-day basis been studied. Data were analysed from 932 patients with COPD (65.5% male, 66.4±8.3 years, FEV<sub>1</sub> % predicted = 50.8±20.5). Participants had sleep and physical activity continuously monitored using an activity monitor for a median of six days. The main factors associated with sleep impairment were identified and the association of nocturnal sleep impairment with patients' subsequent physical activity, and daytime sleep, was investigated. Objectively measured sleep impairment was greater in patients with worse airflow limitation and worse exertional dyspnoea. Nights characterized by more sleeping bouts (>2), shorter sleeping bouts (<225 minutes), lower sleep efficiency (<91%) and more time spent awake after sleep onset (>57 minutes) were followed by days with lower levels of physical activity. There is clear relationship between COPD patients sleep and the amount of activity they undertake during the waking day. Identifying groups with specific sleep characteristics may be useful information when designing physical activity enhancing interventions.*