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Title: Does the energy expenditure of patients with COPD reflect their time spent walking and intensity of walking in daily life?

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Body: Introduction: The level of physical activity in daily life (PADL) is frequently expressed by energy expenditure (EE) measurement. However, patients with chronic obstructive pulmonary disease (COPD) often present high EE due to increased work of breathing, systemic inflammation and other factors. Thus, EE might not be a good outcome to characterize PADL in this population. Aim: To verify the influence of time spent walking, movement intensity and other PADL variables on EE of patients with moderate to severe COPD. Methods: The PADL of 53 patients (35men, 66±9yrs, FEV1 38±15%pred) was evaluated by two activity monitors (DynaPort MiniMod and SenseWear). The DynaPort mainly registers time spent walking (TW), standing, sitting, lying (TL), and movement intensity during walking (MI). The SenseWear mainly registers total energy expenditure (TEE) and active energy expenditure (AEE). Patients wore both motion sensors in daily life during two consecutive weekdays (12hs/day). Results: Only TW ($r=0.41$) and TL ($r= -0.31$) significantly explained TEE ($r^2=0.40$, $p<0.001$). AEE was explained only by TW ($r^2=0.19$, $p<0.001$). MI did not help explaining TEE ($p=0.16$) or AEE ($p=0.24$). Conclusions: Time spent walking and lying in daily life explained together 40% of the variation in TEE, whereas time spent walking explained only 19% of AEE. Furthermore, movement intensity did not affect significantly any variation in EE. This suggests that assessment of time spent actively and inactively, movement intensity and energy expenditure in daily life do not provide similar or related information on the assessment of PADL in patients with moderate to severe COPD.