Association of daily physical activity volume and intensity with COPD severity

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PURPOSE: The purpose of this study was to assess whether daily walking activity is indicative of disease severity in patients with COPD. METHODS: Daily activity was measured by accelerometry in 107 COPD: GOLD II (N=28), GOLD III (N=51), and GOLD IV (N=25). Steps per day and times (min/day) spent passively, actively, walking (WLK, 0-5km/h), and fast walking (FWLK, >5km/h) were analyzed. Total walking time (TWT) was computed. RESULTS: Times spent WLK (P=0.031), FWLK (P=0.001), TWT (P=0.021), and steps per day (P=0.013) differed significantly between GOLD stages. There was a significant negative correlation between TWK and GOLD stage (R=-0.35; P<0.0001), BODE index (R=-0.58; P<0.0001), and MMRC dyspnea scale (R=-0.65; P<0.0001). Logistic regression analysis showed that both TWT and FWLK were independently and significantly associated with BODE index >/=6 (P=0.029 and P=0.040, respectively). The corresponding AUC-value with 95% CI for TWT was 0.80 (95% CI: 0.70 to 0.90) and 0.87 (95% CI: 0.81 to 0.94) for FWLK. The corresponding optimal cut-off value for TWT was 33.3min/day (sensitivity: 86%; specificity 70%) and FWLK was 0.10min/day (sensitivity: 93%; specificity 76%). CONCLUSION: Daily walking activity, in particular walking intensity, is significant predictor of disease severity in patients with COPD. Objective measures of habitual activity might provide additive value in assessing the likelihood of poor prognosis in this patient cohort
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