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Title: Correlations between daily physical activity using a compact accelerometer and clinical parameters in patients with IPF

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Body: Background: Physical activity (PA) in daily life has been recognized as an important outcome parameter in patients with COPD. However, PA in interstitial lung disease has not yet been well studied. Methods: We studied PA in 27 stable IPF patients (23 males; 67.0±6.3 years of age; %FVC 87.7±18.7%) using a single-axis accelerometer (Lifecorder, Suzuken, Japan) for 1 month. Five PA measures were monitored: number of steps (/day), walking distance (meters/day), the time spent performing PA (minutes/day) at light (1-3 metabolic equivalent values [METs]) and moderate (3–6 METs) intensities, and PA-related energy expenditure (PAEE) (kcal/day). We also measured clinical parameters; age, BMI, MRC scale, KL-6, SP-D, %FVC, %DLco, and six minute walk test (6MWT; distance, oxygen saturation, heart rate, dyspnea and fatigue on Borg scale). We evaluated the correlations between the PA measurements and these clinical parameters with univariate and multivariate analyses. Results: Significant correlations ($p<0.05$) with PA were observed for age (1 PA measure; light intensity), KL-6, 6MWT distance (4 measures; steps, distance, light intensity, PAEE), and maximal heart rate during 6MWT (4 measures; steps, distance, moderate intensity, PAEE) with univariate analysis. Furthermore, with multivariate analysis, significant correlations ($p<0.05$) with PA were observed for KL-6 (4 measures; steps, distance, light intensity, PAEE), 6MWT distance, and maximal heart rate during 6MWT (3 measures; steps, distance, PAEE). Conclusion: KL-6, 6MWT distance, and maximal heart rate during 6MWT showed strong correlations with PA and may be important indicators in a multifaceted evaluation of IPF patients.