

Is the International Physical Activity Questionnaire (IPAQ-sf) valid to assess physical activity in patients with COPD? Comparison with accelerometer data

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Topic: Health Assessment and Intervention

Introduction: The International Physical Activity Questionnaire short form (IPAQ-sf) is primarily designed for physical activity (PA) surveillance, presenting good psychometric properties in people with an age range of 15-69 years. However, studies conducted in older people have shown conflicting results, suggesting that it may not be adequate for this population. Therefore, the use of the IPAQ-sf for the assessment of PA in patients with chronic conditions such as chronic obstructive pulmonary disease (COPD), in which patients are frequently older, remains unclear.

Objective: To preliminary evaluate the validity and test-retest reliability of the IPAQ-sf in patients with COPD.

Methods: This exploratory cross-sectional study included 10 patients with COPD (71.6±7.3 years old, 7 male, FEV₁ 77.2±20.7%_{predicted}). Participants completed the IPAQ-sf on two occasions separated by 1 week and wore an accelerometer (Actigraph GT3X+) for 7 consecutive days. The following statistical analyses were conducted: 1) Pearson's correlation coefficient (r) to assess correlations between the results obtained from the IPAQ-sf (PA in METs-min/week; sitting time in min/day) and the accelerometer (PA: total moderate-to-vigorous physical activity [MVPA] per week and recommended MVPA per week – i.e., MVPA conducted in bouts of at least 10-min as internationally recommended¹; sedentary time in min/day); 2) percentage of agreement (%_{agreement}) and Cohen's kappa to assess the agreement between categorical scores obtained from the two measures (i.e., 'sufficiently' and 'insufficiently' active patients); 3) Intraclass Correlation Coefficient (ICC_{2,1}) and 95% limits of agreement (LoA) to assess test-retest reliability and agreement.

Results: Significant correlations were found between IPAQ-sf METs-min/week and total MVPA (r=0.729, p=0.017), but not between METs-min/week and recommended MVPA (r=0.346, p=0.327) or between IPAQ-sf sitting time and accelerometer-based sedentary time (r=-0.383, p=0.308). Agreement between the IPAQ-sf and accelerometer-based data in identifying 'sufficiently' and 'insufficiently' active patients was low (total MVPA: kappa=-0.538, %_{agreement}=20%; recommended MVPA: kappa=-0.087, %_{agreement}=50%). Test-retest reliability of the IPAQ-sf was poor to moderate (PA: ICC_{2,1}=0.439 [-0.267→0.838]; sedentary time:

ICC_{2,1}=0.511 [-0.178→0.864]) and the agreement was low (PA: LoA: -10361→4548 METs-min/week; sedentary time: LoA: -194→148 min/day).

Conclusions: Findings suggest that the IPAQ-sf has limited validity and reliability in the assessment of PA in patients with COPD. Further research with a larger sample is needed to support these findings.

¹American College of Sports Medicine (ACSM) (2011). *Med Sci Sports Exerc*, 43(7), 1334-59.

Keywords: accelerometer; chronic obstructive pulmonary disease; psychometric properties; physical activity; self-report measure.