

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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Background

- The International Physical Activity Questionnaire short form (IPAQ-sf) was primarily designed for physical activity (PA) surveillance 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.
- Thus, 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.

Aims

- This exploratory cross-sectional study aimed to preliminary evaluate the validity and test-retest reliability of the IPAQ-sf to assess PA in patients with COPD.

Methods

Procedures:

- 10 stable patients with COPD (71.6±7.3yrs, 7 ♂, FEV₁ 77.2±20.7%_{predicted}) were included.
- Participants completed the IPAQ-sf¹ on 2 occasions separated by 1 week (T1, T2) and wore an accelerometer (Actigraph GT3X+) for 7 consecutive days.

Statistical analysis:

1. Pearson's correlation coefficient (r) was used to assess correlations between the results obtained from the IPAQ-sf (PA in METs-min/week; sitting time in min/day) and the accelerometer (total moderate-to-vigorous physical activity [MVPA] per week; recommended MVPA per week – i.e., MVPA conducted in bouts of ≥10min, as internationally recommended²; sedentary time in min/day);

2. %_{agreement} and Cohen's kappa were used to assess the agreement between categorical scores obtained from the two measures, i.e., 'sufficiently'/'insufficiently' active according to the guidelines² (further information on the classification is provided in the QR code).

3. Intraclass Correlation Coefficient (ICC_{2,1}) and 95% limits of agreement were used 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'/'insufficiently' active patients was low (Table 1):

Table 1. Comparison of 'sufficiently' and 'insufficiently' active patients according to the IPAQ-sf and the accelerometer results (n=10).

		Total MVPA (accelerometer)				Recommended MVPA (accelerometer)			
		Active	Inactive	% _{agreement}	Kappa (95% CI)	Active	Inactive	% _{agreement}	Kappa (95% CI)
IPAQ-sf (T1)	Active	1	3	20%	-0.538 (-1.081→0.005)	1	3	50%	-0.087 (-0.679→0.505)
	Inactive	5	1			2	4		

- Test-retest reliability of the IPAQ-sf was poor to moderate (METs-min/week: ICC_{2,1}=0.439, 95%CI -0.267→0.838; sitting time/day: ICC_{2,1}=0.511, 95%CI -0.178→0.864).
- Wide limits of agreement were found for the variables 'METs-min/week' and 'sitting time/day', suggesting that test-retest agreement of the IPAQ-sf was low (Fig. 1):

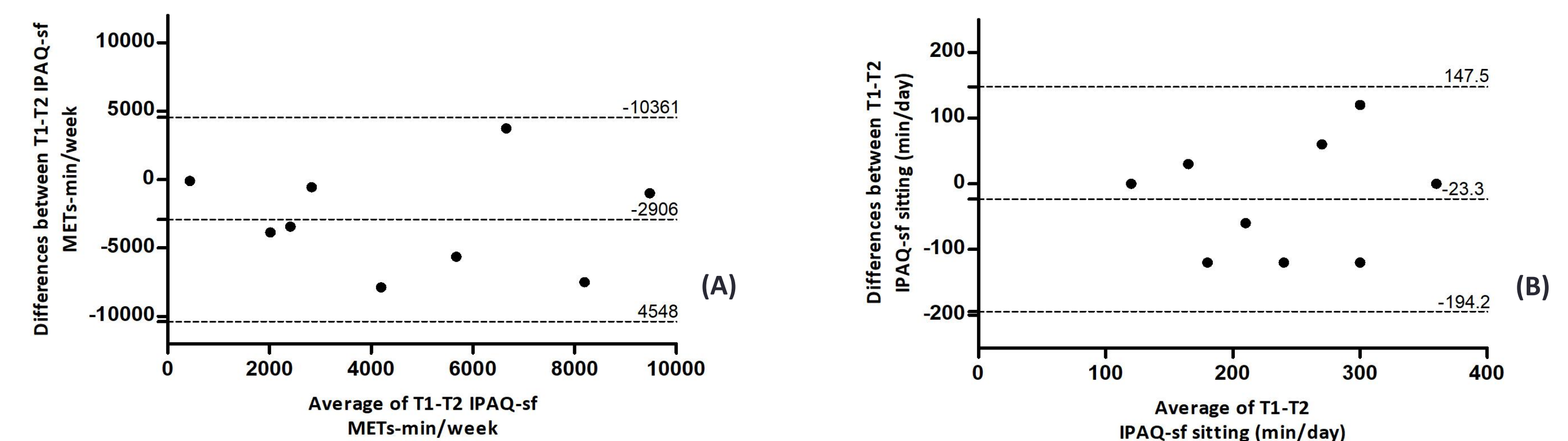


Figure 1: Bias and limits of agreement of the IPAQ-sf test-retest: (A) physical activity in METs-min/week; (B) sitting time in min/day (n=10).

Conclusion

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