

# PHENOTYPIC CHARACTERISTICS ASSOCIATED WITH SLOW GAIT SPEED IN IDIOPATHIC PULMONARY FIBROSIS

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## ABSTRACT

**Background and objective** Usual gait speed over 4 m (4MGS) is an established functional performance measure in older adults that consistently predicts adverse health outcomes, but few data exist in idiopathic pulmonary fibrosis (IPF). We assessed the reliability of 4MGS, its relationship with established outcome measures and its responsiveness to pulmonary rehabilitation.

**Methods** In four prospective IPF cohorts, 4MGS inter-observer ( $n=46$ ) and test-retest ( $n=46$ ) reliability, concurrent validity ( $n=65$  and  $n=62$ ) and responsiveness ( $n=60$ ) were determined. The phenotypic characteristics of all patients stratified according to slow 4MGS ( $<0.8$  m/s) were compared, including lung function parameters, HRCT of the chest, 6-min walking distance (6MWD), Medical Respiratory Council (MRC) dyspnoea score, King's Brief Interstitial Lung Disease (KBILD) questionnaire and Gender, Age and lung Physiology (GAP) prognostic index.

**Results** Intra-class correlation coefficients for inter-observer and test-retest reliability were 0.996 and 0.983, respectively. There was a strong association between 4MGS and 6MWD ( $r=0.76$ ;  $P<0.0001$ ) and moderate correlations with MRC ( $r=-0.56$ ), KBILD ( $r=0.44$ ) and GAP index ( $r=-0.41$ ); all  $P<0.005$ . 4MGS improved significantly with pulmonary rehabilitation (mean (95% CI) change: 0.16 (0.12–0.20) m/s), effect size 0.65. Patients with

slow 4MGS had significantly worse exercise performance (6MWD: -167 (-220 to -133) m), dyspnoea, health status and prognosis index than those with preserved 4MGS, despite similar lung function and HRCT parameters.

**Conclusion** 4MGS is a simple, reliable, valid and responsive tool that may detect a patient phenotype with worse exercise performance, dyspnoea, health status and prognosis index in stable IPF.