AEROBIC FITNESS, BUT NOT BREATHELESSNESS, IS ASSOCIATED WITH PHYSICAL ACTIVITY STATUS IN IDIOPATHIC PULMONARY FIBROSIS

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RATIONALE

Idiopathic pulmonary fibrosis (IPF) is a disease of progressive scarring of the lung interstitium, leading to decreased expansion of the lungs as well as poor oxygen transfer to the pulmonary circulation, leading to increased breathlessness and inactivity. As IPF progresses, exercise and physical activity (PA) become increasingly important factors in the management of the disease, although the association between aerobic fitness – a prognostic marker of mortality – and PA is not known in IPF and warrants investigation.

METHODS

16 participants with IPF completed an incremental cardiopulmonary exercise test (CPET) to volitional exhaustion on an electronically braked cycle ergometer, with peak volume of oxygen consumption (pVO_2) and peak power output (PPO) recorded and normalised to age- and sex-predicted values. Participants also completed the General Practice Physical Activity Questionnaire (GPPAQ) and King's Brief Interstitial Lung Disease (K-BILD) questionnaire to evaluate activity and breathless respectively. For analysis, participants were split into ‘active’ and ‘inactive’ groups based on GPPAQ. Effect sizes (ES) identified differences between groups, with Cohen thresholds applied to determine the magnitude of differences (small, > 0.2; medium, > 0.5; large, > 0.8).

RESULTS

All patients successfully completed the CPET, reaching either volitional exhaustion (n = 8) or desaturating (spO_2< 88%) to an extent that warranted the test to be discontinued (n = 8). Based on GPPAQ results, n = 7 were defined as ‘active’ (active or moderately active) and n = 9 were defined as ‘inactive (inactive or moderately inactive). Active participants had a higher mean (± SD) PPO (72.2 ± 34.5 v 62.9 ± 17.4%, ES = 0.36) and pVO_2 (91.1 ± 28.4 v 73.4 ± 14.6%, ES = 0.82) relative to inactive participants. Means of breathlessness and activity (B&A) scores from the K-BILD were 47.4 and 47.5 for active and inactive participants respectively, and did not show any difference between the groups (ES = 0.01).

CONCLUSION

The study found a large difference in pVO_2, according to effect sizes, between participants of differing activity status with IPF. No effect was found on perceived breathlessness. These results suggest that physical activity is an important factor in IPF management. Further testing with a larger sample size and analysis with adjustment for factors such as sex, age and use of antifibrotics is warranted to confirm findings and establish causality between fitness and activity.