COMPARISON OF PERCENT PREDICTED AND PERCENTILE VALUES FOR VO2MAX IN PEOPLE WITH INTERSTITIAL LUNG DISEASE

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Introduction and Objectives: The use of cardiopulmonary exercise tests (CPETs) has been advocated by the European Respiratory Society (ERS) and the Association for Respiratory Technology and Physiology (ARTP) for diagnosis and treatment of chronic lung conditions. Results from CPETs, especially the maximal oxygen uptake (VO2max), are of prognostic importance in many conditions, including interstitial lung disease (ILD). However, the ERS and ARTP utilise different methods and equations to determine an 'abnormal' exercise response. The 'percent predicted method' is used by the ERS (using data from Jones et al 1985), whereas the ARTP favours a 'percentile method' (using data from Gläser et al 2013). However, the use of different reference values/equations and methods makes it difficult to compare studies and it is unknown whether the classifications can be used interchangeably. Therefore, the aim of this study was to compare the 'percent predicted method' with the percentile-based method for the classification of VO2max values obtained through a CPET.

Methods: Twenty-four participants (7 females) with ILD, 69.6 ± 7.5 years, completed a total of 67 CPETs as part of a wider feasibility study into CPET for ILD. Attained VO2max values were classified according to both the 'percent predicted method' and the 'percentile method'. A VO2max was presumed abnormal when it was less than 80% predicted or lower than the 5th percentile.

Results: Based on the 'percent predicted method', 48 CPETs (72%) were classified as abnormal. Additionally, 44 CPETs (66%) were classified as abnormal when the 'percentile method' was employed. Both methods were in agreement in only 47 tests (70%). Cohen's Kappa revealed poor agreement for classifying VO2max as abnormal between the two methods ($k = 0.31$, $P = 0.01$).

Conclusion: The current study showed significant discrepancies between methods recommended by the ERS and ARTP, suggesting that these methods cannot be used interchangeably. In order to make study results more comparable, a standardisation of reference values is recommended.