

Correlation between functional capacity and health-related quality of life in chronic obstructive pulmonary disease patient



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Background

Chronic obstructive pulmonary disease (COPD) is associated with pronounced exercise intolerance resulting in an impaired health-related quality of life (1). Various interacting factors are potentially responsible for the mechanism(s) of exercise limitation with reduced maximal oxygen consumption ($VO_2\max$), and as such not limited by any single component of the O_2 transport/utilization process, but rather by their collective quantitative interaction(s) (2). Since most activities of daily living are performed in a non-incremental fashion and at a submaximal level of exertion, the 6-min walk distance test (6MWD) is representative of daily life activities and can therefore accurately reflect the functional capacity of patients (3).

Purpose

The purpose of this study was to observe the correlation between functional capacity and health-related quality of life in CPOD patient.

Methods

Sixty five men with moderate COPD (FEV1 55.8±8.8%) were randomly assigned; age 65±8.6 yrs; weight, 1.2±8.3kg; height, 169±8.1m. Cardiopulmonary exercise (2) test and 6MWD (4), were performed and we evaluated the health status through two questionnaires, St. George's Respiratory Disease (SGRQ) and the Medical Outcomes 36-item Short Form Health Survey (SF-36). The study was approved by the Ethics Committee of the Garcia de Orta Hospital and all participants gave their informed consent.

Results

A significant positive correlation was found between ($p<0.01$) $VO_2\text{peak}$ (16.58±6.3 mLkg⁻¹min⁻¹), 6MWD (496.7±68.1m) (Fig. 1) and the dimensions of physical function, physical role and vitality measured by SF-36 (Fig. 2), and significant negative correlations were found between the domains of symptoms, activity, impact and total assessed by the SGRQ ($p<0.01$) (Fig. 3).

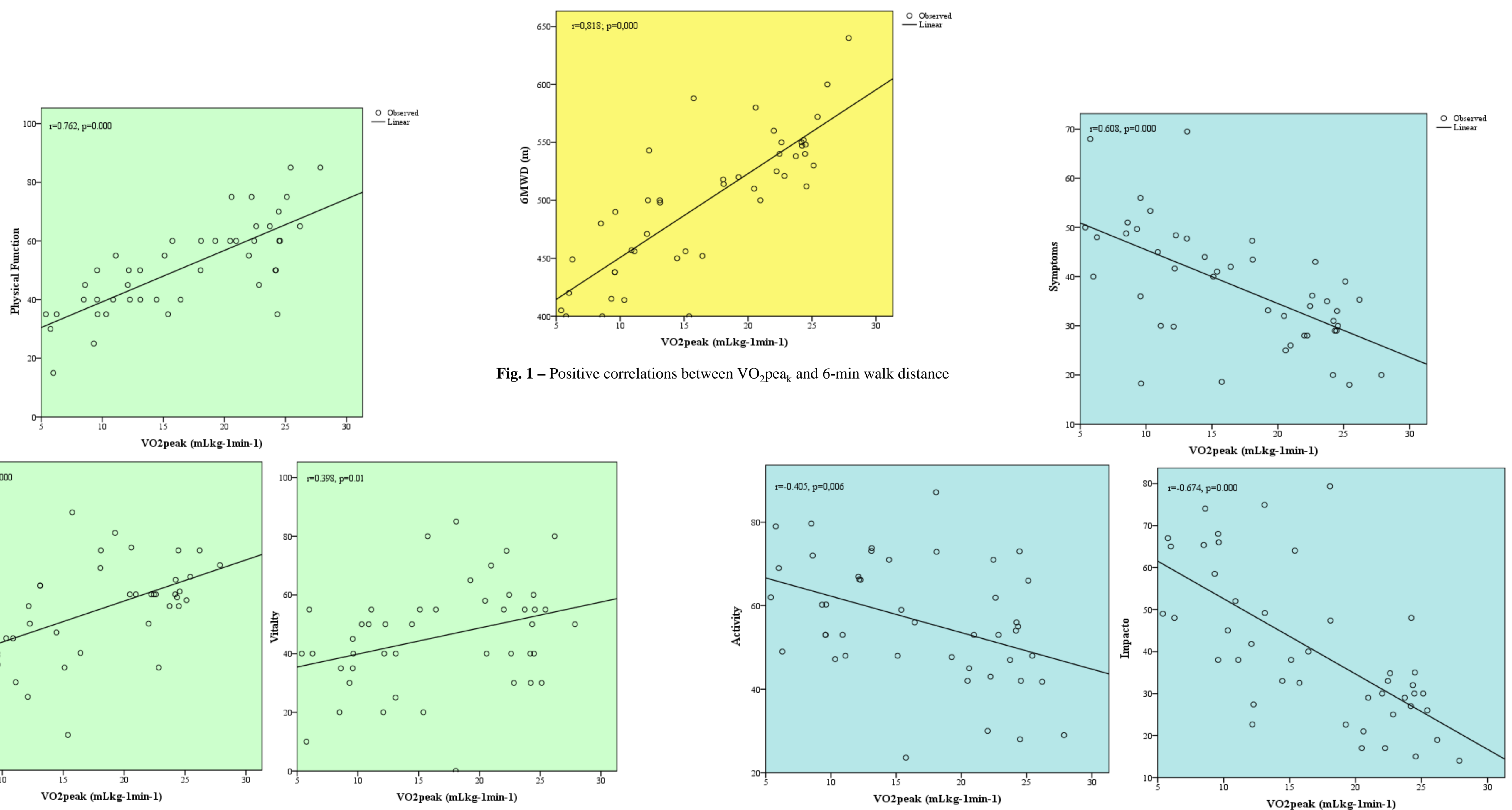


Fig. 1 – Positive correlations between $VO_2\text{peak}$ and 6-min walk distance

Fig. 2 – Positive correlations between $VO_2\text{peak}$ and SF-36 dimensions, physical function, physical role and vitality

Fig. 3 – Negative correlations between $VO_2\text{peak}$ and SGRQ domains of symptoms, activity and impact

Conclusions

From the results analysis, it was possible to observe that the functional capacity, evaluated by the peak oxygen consumption or the distance measure of 6MWT, are correlated with health status measured by both specific and generic instruments. These findings corroborate the fact that functional capacity may play a significant role in exercise tolerance and health related quality of life in patients with COPD (5), despite there is little evidence about the relationship between subjective complaints in COPD and physiologic parameters (6).

References

- (1) Jones PW. Activity Limitation and Quality of life In COPD. COPD. Journal of Chronic Obstructive Pulmonary Disease. 2007;4(3):273-8.
- (2) American Thoracic Society; American College of Chest Physicians. ATS/ACCP statement on cardiopulmonary exercise testing. Am J Respir Crit Care Med 2003; 167(2):211-77
- (3) Spruit MA, Polkey MI, Celli B, Edwards LD, Watkins ML, Pinto-Plata V et al. Predicting outcomes from 6-minute walk distance in chronic obstructive pulmonary disease. J Am Med Dir Assoc 2012;13(3):291-297
- (4) ATS statement: guidelines for the Six-minute Walk Test. Am J Respir Crit Care Med. 2002;166:111-7.
- (5) van Gestel AJR, Batty F, Rausch-Osthof AK, Brutsche MH. Cardiopulmonary and Gas-Exchange Responses during the Six-Minute Walk Test in Patients with Chronic Obstructive Pulmonary Disease. Respir. 2014;88(4):307-14.
- (6) Mirdamadi M, Rahimi B, Safavi E, Abtahi H, Peiman S. Correlation of cardiopulmonary exercise testing parameters with quality of life in stable COPD patients. Journal of Thoracic Disease. 2016;8(8):2138-2145.

