

Functional Capacity and Health Status in Patient with Chronic Obstructive Pulmonary Disease



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Background

The daily life of Chronic Obstructive Pulmonary Disease (COPD) patients is characterized not only by chronic respiratory symptoms but also by exercise intolerance due to their breathlessness. Proper diagnosis and management of this disease consequently includes evaluation of exercise tolerance (1), frequently associated with a reduced functional exercise performance (2), thereby adversely affecting health status (3). Since most activities of daily living are performed in a non-incremental fashion and at a submaximal level of exertion, some field tests, representative of daily life activities, should integrate physical performance assessment broadly and accurately in order to predict the evolution of the disease (2-3).

Purpose

The purpose of this study was to analyze the impact of COPD on objectively-measured daily physical activity (DPA) through functional capacity and quality of life in these patients.

Methods

Seventy one men with moderate COPD (FEV1 54.6±7.1%); age 63.8±3.1 yrs; weight, 71.2±8.3 kg; height, 169±8,1 cm constituted the COPD group (COPDG), and 150 healthy subjects, age 64.2±5.8 yrs; weight, 76.2±11.3 kg; height, 169.8±7,5 cm, were included as the healthy group (HG). The physical parameters assessed were strength, aerobic endurance, flexibility and agility/balance, by the Fullerton's functional fitness tests (fig. 1). The health status was evaluated through the 36-item short form of the medical outcomes (SF-36). The study was approved by the Ethics Committee of the Garcia de Orta Hospital and all participants gave their informed consent. Data normality and homogeneity were tested by Kolmogorov Smirnov test and Brown-Forsythe test. A t-student test was used to compare both groups. The level of significance was set at $\alpha = 0.05$.

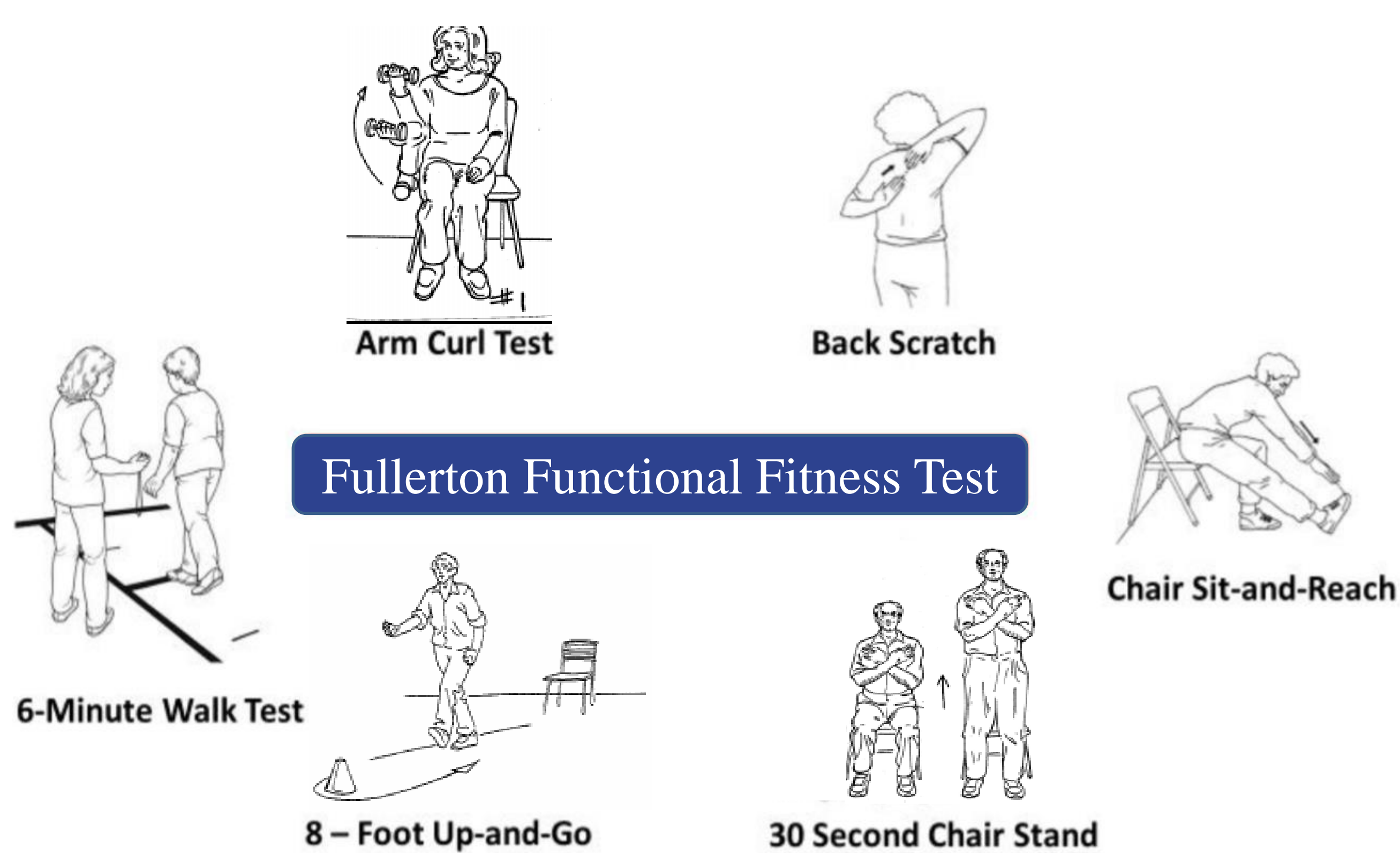


Fig. 1 - Assess functional fitness

Results

The values of the functional fitness test were significantly different ($p < .05$) between COPDG and HG for the following variables, respectively: body mass index, 25.9±3 vs 27.7±4,1 kg.m²; 30-second chair stand 14.1±1,7 vs. 18.2±1,9 times; arm curl 15.7±2.8 vs. 18.8±4.9 times; 6-minute walk 498.8±58.3 vs. 589.7±88.6 m; 8-foot up-and-go 4.7±0.8 vs. 5.1±1.0 sec; chair sit-and-reach 0.81±9.9 vs. -7.1±10.6 cm. No differences were observed for the back scratch test (DPOCG, -11.2±9.7 cm and HG, -12.7±11.6 cm) (Table 1). In health status DPOCG presented a significant decrease ($p < .05$) on perception of all domains of SF-36, except on body pain (fig. 2).

Table 1 - Mean and standard deviation values for basal and final values of Fullerton's functional fitness tests

	COPDG n=71	HG n=150	p*
30-second chair stand (rep)	14.1±1.9	18.2±1.9	0.000
Arm curl (rep)	15.7±2.8	18.8±4.9	0.000
Chair sit-and-reach (cm)	0.81±9.9	-7.1±10.6	0.000
Back scratch (cm)	-11.2±9.7	-12.0±11.6	0.146
8-foot up-and-go (sec)	4.5±0.8	5.1±1.0	0.000
6-minute walk (m)	498.8±58.3	589.7±88.6	0.000

* Differences between groups $p < .01$

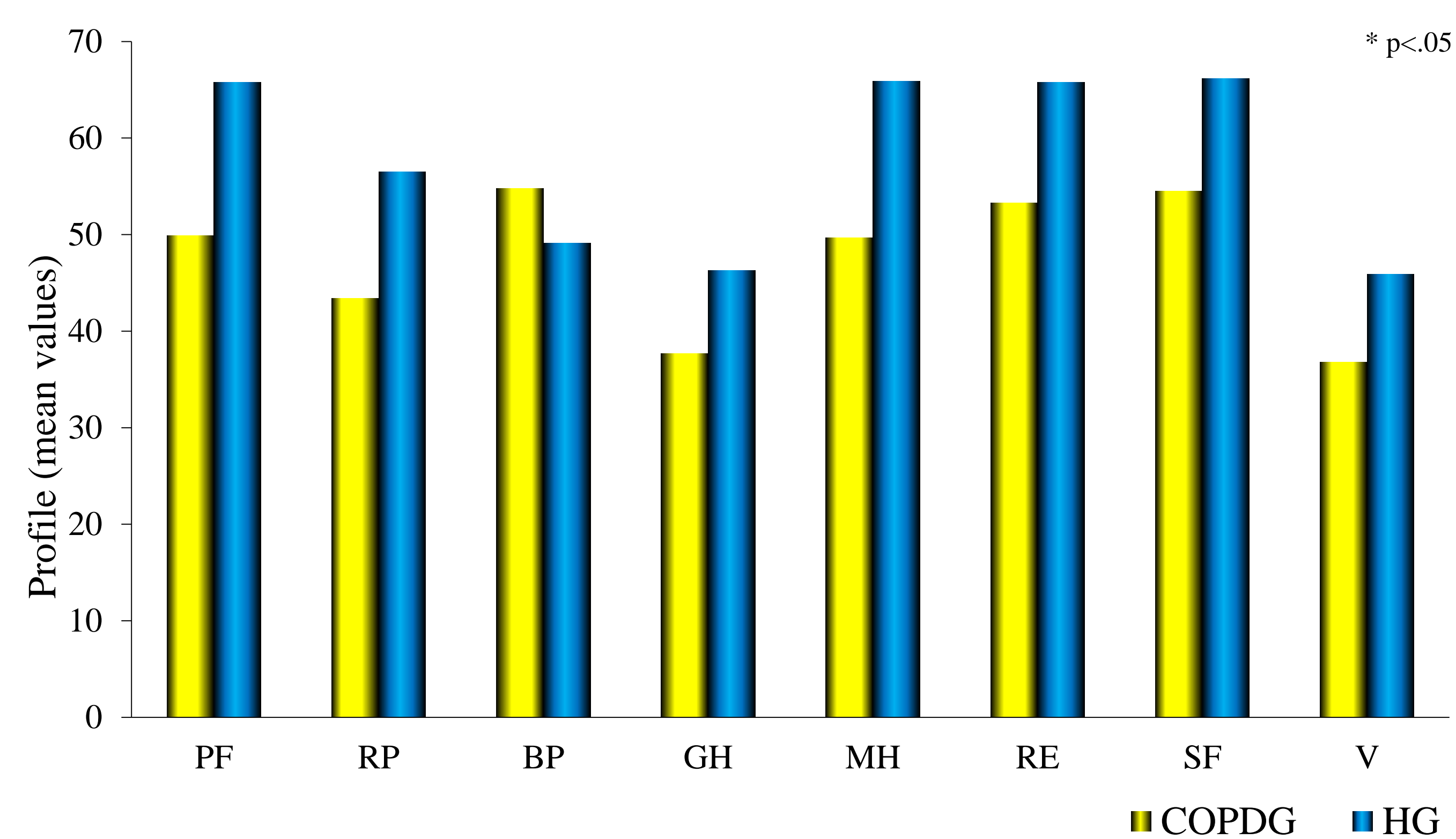


Fig. 2 - Health Status SF-36

Conclusions

In this study COPD patients have lower levels of functional capacity compared to healthy subjects. However, they were able to perform short tasks with higher speed. This trend was also evident in other study where COPD patients performed short term activities faster than healthy persons (4). Limitation of activity and impaired quality of life are important outcomes of COPD and there is an association between physical activity and overall health status (5), which was also verified in this study. If functional capacity could be improved, by exercise training integrated in rehabilitation programs, probably we could also improve health status on these patients.

References

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