

Comparison of oxygen consumption in performing daily activities between patients with chronic obstructive pulmonary disease and a healthy population

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摘要

Abstract

Objective: The purposes of this study were to compare the daily activity oxygen consumption (VO₂) and peak oxygen consumption (VO_{2peak}) for chronic obstructive pulmonary disease (COPD) patients and healthy individuals; to compare dyspnea levels found in COPD patients and healthy individuals when they performed daily activities and exercise tests; and to establish standard VO₂ values for daily activities for COPD patients.

Design: This was an exploratory and correlative study. **Setting:** The study took place at the Research Center of Sports Medicine at Taipei Medical University, in Taipei, Taiwan.

Subjects: The study included 27 COPD patients and 18 healthy subjects whose ages, weights, and heights were matched.

Outcome Measures: VO_{2peak} and the VO₂ for performing daily activities including sitting, standing, walking, walking with a 2-kg load, and walking upstairs for 2 stories.

Intervention: All data were collected by means of questionnaires and treadmill exercise tests. VO₂ was measured using an AEROSPORT KB1-C metabolic measurement system.

Results: There was no significant difference in VO₂ found between the 2 groups when they were performing daily activities, but the VO_{2peak} was significantly lower in the COPD group (13.90 ± 2.93 mL kg⁻¹ min⁻¹) compared with the healthy control group (16.15 ± 1.86 mL kg⁻¹ min⁻¹) ($P = .01$). The dyspnea level of the COPD group when they were performing daily activities and exercise tests was more severe than that of the healthy control group. The mean VO₂ values for

daily activities in COPD patients were as follows: sitting 3.41 (± 0.82), standing 3.67 (± 0.90), walking 10.06 (± 2.19), walking with a 2-kg load 10.28, and walking upstairs 8.16 (± 1.36) mL kg⁻¹ min⁻¹. Conclusion: The results of this study reveal that there were no differences in VO₂ values for performing daily activities between COPD patients and healthy individuals. However, an increase in dyspnea level occurred during daily activities, and it was found to be more severe for COPD patients than for healthy individuals. A key factor was probably that COPD patients had an obviously lower VO_{2peak} and higher relative exercise intensity for daily activities than did healthy individuals.