The Assessment of the 6-minute Pegboard and Ring Test on the Respiratory and Cardiac Response and the Motor Function of the Upper-limb in Patients with COPD

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Purpose: The purpose of this study was to evaluate the effect of the 6-minute Pegboard and Ring Test (6PBRT) on the respiratory and cardiac response and the motor function of the upper-limb in patients with chronic obstructive pulmonary disease (COPD).

Methods: We evaluated the respiratory gas, the heart rate and the blood pressure during 6PBRT and Upper-Limb Ergometer eXercise Test (ULEXT) in 10 COPD patients (mean age 76.7 yr), 12 healthy young adults (22.0 yr) and 12 healthy elderly adults (77.3 yr).

Results: The values of $\dot{V}O_2$/kg increased slight rapidly up to 120–150 second, then became constant. The value of 6PBRTpeak/ULEXTpeak was 71.8 ± 37.1 (mean ± SD) %. The mean ± SD scores of 6PBRT were 279 ± 93 in COPD, 346 ± 47 in elderly adults and 416 ± 47 in young adults respectively (p < 0.05).

Conclusion: 6PBRT is the constant-load exercise test for the upper-limb and the high-intensity exercise test in COPD patients. The motor function of upper-limb was reduced significantly in COPD patients compared with age-matched elderly adults.