Abstract
Background: Chronic heart failure (CHF) leads to exercise intolerance. However, non-invasive ventilation is able to improve functional capacity of patients with CHF. Objectives: The aim of this study was to evaluate the effectiveness of continuous positive airway pressure (CPAP) on physical exercise tolerance and heart rate variability (HRV) in patients with CHF. Method: Seven men with CHF (62±8 years) and left ventricle ejection fraction of 41±8% were submitted to an incremental symptom-limited exercise test (IT) on the cicloergometer. On separate days, patients were randomized to perform four constant work rate exercise tests to maximal tolerance with and without CPAP (5 cmH2O) in the following conditions: i) at 50% of peak work rate of IT; and ii) at 75% of peak work rate of IT. At rest and during these conditions, instantaneous heart rate (HR) was recorded using a cardiofrequencimeter and HRV was analyzed in time domain (SDNN and RMSSD indexes). For statistical procedures, Wilcoxon test or Kruskall-Wallis test with Dunn’s post-hoc were used accordingly. In addition, categorical variables were analysed through Fischer’s test (p<0.05). Results: There were significant improvements in exercise tolerance at 75% of peak work rate of IT with CPAP (405±52 vs. 438±58 s). RMSSD indexes were lower during exercise tests compared to CPAP at rest and with 50% of peak work rate of IT. Conclusion: These data suggest that CPAP appears to be a useful strategy to improve functional capacity in patients with CHF. However, the positive impact of CPAP did not generate significant changes in the HRV during physical exercises.

Keywords
Keywords, non-invasive ventilation, heart rate variability, chronic heart failure, exercise tolerance, continuous positive airway pressure, physical therapy.