

European Respiratory Society Annual Congress 2013

Abstract Number: 3218

Publication Number: 3339

Abstract Group: 9.2. Physiotherapists

Keyword 1: Asthma - management **Keyword 2:** Exercise **Keyword 3:** Rehabilitation

Title: Aerobic training decreases bronchial hyperresponsiveness, serum chemokines and symptoms in asthmatic patients: Randomized controlled trial

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Body: Background: Bronchial hyperresponsiveness (BHR) is a hallmark in asthma and related with airway inflammation and asthma symptoms. Although aerobic training (AT) has been shown to reduce airway inflammation in asthmatics, its effect on BHR and systemic inflammation remains unknown. Objective: To evaluate the effect of AT on BHR, serum chemokine, and asthma symptoms in patients with moderate or severe asthma. Methods: Third-six patients (42±10years; FEV₁=76.8±21.4% predicted) clinically well-controlled were randomly assigned to either control (CG, n=18) or trained group (TG, n=18). Patients in the CG (educational program+breathing exercises) and TG (similar to CG+AT) were followed 2x/week for 3-month period with no change in corticosteroid consumption. All patients underwent broncoprovocation test, serum chemokines analysis (MCP-1, IP-10, and MIG), and filled in a daily symptoms diary. Results: At baseline the groups were similar in all outcomes. After 3 months, only TG increased PC₂₀ (0.7±1.8 vs. 1.9±4.0 mg/mL, p<0.01), reduced MCP-1 (25.4±16.2 vs. 20.4±12.2pg/mL, p<0.01) and enhanced days without asthma symptoms (12±10 vs. 16±12days, p=0.02) compared with baseline data. Conclusions: Our results show for the first time that aerobic training reduces BHR, serum chemokines and symptoms in asthmatic patients. Supported by FAPESP.