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Title: Effects of exercise on lung inflammation in ovalbumin-sensitized and single challenged mice

Mr. Leonardo César Melo 16143 Ávila leonardo_cma@hotmail.com , Ms. Bárbara 16142 Fortkamp babifortkamp@yahoo.com.br , Ms. Thayse Regina 16144 Bruggemann thayse_brug@hotmail.com , Ms. Morgana Duarte 16145 da Silva morganaduartesilva@gmail.com , Dr. Adenir 16146 Perini adenirperini@gmail.com , Prof. Dr Adair Roberto Soares 16156 Santos adairrs.santos@gmail.com and Prof. Dr Deborah de Camargo 16198 Hizume dehizume@gmail.com . [1] Department of Physical Therapy, State University of Santa Catarina, Florianopolis, SC, Brazil, 88080-350 ; [2] Department of Physiological Science, Center of Biological Science, Federal University of Santa Catarina, Florianopolis, SC, Brazil, 88040-970 and [3] Department of Medicine, School of Medicine, University of Sao Paulo, SP, Brazil, 01246-903 .

Body: Background: Studies suggest that physical exercise reduces lung function decline and risk of exacerbations in asthmatic patients. However, the inflammatory lung response involved in exercise during sensitization remains unclear. Aims: To evaluate the effects of aerobic exercise in an experimental model of sensitization and single ovalbumin (OVA) challenge. Methods: Male Swiss mice were divided into 4 groups: mice non-sensitized, non-exposed to OVA or exercise (Control, n=7); animals submitted to moderate treadmill exercise (Exercise, n=6); animals sensitized (OVA 10 µg) and single exposed to aerosolized OVA 1% (30 min) (OVA, n= 6) and animals sensitized, submitted to exercise and single exposed to OVA (OVA+Ex, n=6). 24 hours after a single OVA/saline exposure, anesthetized mice were euthanized and we performed measures of inflammatory cells from bronchoalveolar fluid (BALF), IL-4, IL-5, IL-10, IL-1ra from lung tissue by enzyme-linked immunosorbent assay and qualitative measures of IgG1 and IgE OVA-specific by Passive Cutaneous Anaphylaxis. Results: Exercise decreased total number of cells, as well as eosinophils, neutrophils, lymphocytes and macrophages from BALF in OVA+Ex group ($p<0.05$). The median of titles of IgE and IgG1 OVA-specific in OVA+Ex group was significant lower than OVA group, and IL-4 and IL-5 were also decreased in OVA+Ex when compared with OVA group ($p<0.05$). Levels of IL-10 and IL-1ra did not reach significant difference. Conclusion: Our results showed that aerobic physical exercise attenuated the acute lung inflammatory response induced by a single OVA-challenge in sensitized mice, suggesting immunomodulatory properties of exercise on sensitization process in asthma.