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Title: Effects of swimming on lung inflammation and oxidative stress in diesel exposed mice

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Body: Background: Studies have reported that exposure to diesel exhausted particles (DEP) induces lung inflammation and increases oxidative stress, both able to be changed by physical exercise. However, the effects of high intensity exercise on lungs exposed to DEP when exercise stops are not clear. Objective: To evaluate the effects of swimming on lung inflammation and oxidative stress in mice concomitantly exposed to DEP and after exercise cessation. Methods: Male Swiss mice were divided into four groups: Control (n=6), Swimming (Sw) (30 min/day) (n=7), DEP (3 mg/mL, 10 µL/mouse) (n=7) and DEP+Sw (n=7). Mice were submitted to two weeks of swimming sessions and when second week started, DEP instillation occurred simultaneously to exercise for one week. After this period, animals received just DEP instillation for one week more. Twenty four hours after last DEP exposure, anesthetized mice were euthanized and we performed measures of total inflammatory cells from bronchoalveolar fluid (BALF), IL-1 β , TNF- α , IL-10, IL-1ra by enzyme-linked immunosorbent assay (ELISA), total glutathione (GSH), non proteic thiols (NPSH) and anti-oxidants enzymes (Catalase and Glutathione Peroxidase). Results: Swimming sessions increased GSH, NPSH, and Catalase (p<0.05), as well as decreased total number of cells from BALF, IL-1 β and TNF- α levels in mice exposed to DEP (p<0.05). IL-10 and IL-1ra levels showed an increase in DEP+Sw group when compared with Control group (p<0.05). Conclusion: Our results showed that exercise attenuated lung inflammation and improved oxidative stress status, suggesting that beneficial effects from swimming can be observed on lung injury induced by DEP, simultaneously and after exercise cessation.