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Title: Exercise training affects alveolar to arterial oxygen partial pressure difference in obese subjects: Preliminary data

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Body: Background: Obesity is often associated with decreased lung volumes and daytime hypoxemia. The decrease in lung volumes and the decrease in physical activity may favour microatelectasis that may account for at least a part of the decreased observed daytime paO2. Objectives: The aim of the study was to investigate the effect of a course of exercise training on the alveolar-to-arterial oxygen partial pressure difference (AaDO2) in obese subjects. Methods: Seventeen obese subjects (BMI>30) with no evident respiratory diseases (FEV1/FVC > 0.7) were divided in 2 groups. Group I (n=8) underwent to a 15 days exercise training program associated to an educational program; group II (n=9) underwent to a 15 days educational program. All patients performed blood gases analysis, spirometry, body pletismography and 6MWT before and after the treatment. Results: Both groups displayed mild baseline hypoxemia (mean PaO2=71±9 mmHg, and 74±10 mmHg for the control and treated group respectively) and an elevated BMI (43±8 and 38±5 respectively). In the treated group, preliminary data, show a decrease in AaDO2 after the exercise training program (15±5 vs. 24±5 mmHg, $p<0.05$). Conclusions: Our data suggest that daytime hypoxemia in obese patients may be partially corrected by a program of exercise training. The mechanism may be related to reopening of microatelectasis.