B. POSTER PRESENTATIONS

Comparison of Respiratory and Circulatory Responses to 1-Leg, 2-Leg Knee Extension Exercise and Cycling in Patients with COPD

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Background: The mass-specific work rates at which peripheral circulatory blood flow (BF) may become compromised in COPD due to a "respiratory steal" phenomenon was examined using one leg (1-leg KE), two-leg knee extension (2-leg KE) and cycling.

Methods: Eleven COPD patients (age: 66 yr $\pm$ 8; FEV₁ = 45% predicted $\pm$ 14) did three steady states of cycling, 1-leg KE and 2-leg KE at 20, 40 and 65% of peak power (SS20%; SS40%; SS65%). Ventilation, VO₂, arterial blood gas and dye dilution cardiac output were measured at rest and during exercise. Inspiratory capacity (IC) was used to monitor operating lung volume responses and determine dynamic hyperinflation.

Results: Preliminary data show higher VO₂ (L•min⁻¹) during cycling than 1-leg KE and 2-leg KE (SS65% 1.0 $\pm$ 0.2 vs 0.5 $\pm$ 0.1 vs 0.6 $\pm$ 0.1). Despite the smaller muscle mass involvement of 1-leg KE, breathing frequency during SS65% was not different from that of cycling at SS65% (27 $\pm$ 5 vs 28 $\pm$ 5). During 1-leg KE, a plateau in tidal volume (0.8L $\pm$ 0.1) was achieved at SS20% while during cycling, tidal volume increased up to 1.4L $\pm$ 0.3 at SS65%. Similar falls in pH from baseline and similar PCO₂ measures were seen with cycling (baseline: pH 7.43 $\pm$ 0.02; PaCO₂ mmHg 39 $\pm$ 2 to SS65%: 7.38 $\pm$ 0.03; 40 $\pm$ 3) and 1-leg KE (baseline: pH 7.41 $\pm$ 0.03; PaCO₂ mmHg 39 $\pm$ 2 to SS65%: 7.39 $\pm$ 0.02; 40 $\pm$ 3) although SaO₂ was maintained with 1-leg KE, but not with cycling or 2-leg KE (95 to 93% at SS65%). IC (in % total lung capacity) was similarly reduced from baseline in 1-leg

KE (30 $\pm$ 2 to 23 $\pm$ 3) and during cycling (30 $\pm$ 2 to 24 $\pm$ 3).

Conclusion: These data suggest that ventilatory and gas exchange responses depend on the relative symptom-limited exercise intensity and not exercise modality.

Evaluation by Dipirydamole MRI of the Effects of Cardiac Rehabilitation after Myocardial Infarction.

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Background: The effects of exercise training (ET) on myocardial perfusion after myocardial infarction have been well studied with scintigraphy whereas cardiac MRI seems a better technique which was not used yet in the literature in this indication.

Methods: 11 patients after a first myocardial infarction were left again in 2 groups: a 20 session-ET program (T, n=6) and a control group (C, n=5). All patients underwent a dipirydamole MRI and a cardiopulmonary test at entry and after 3 months.

Results At 3 months, improvements in work capacity ($P<0,05$), peak VO₂ ($P<0,05$) were observed in T but not in C. Ejection fraction and left ventricular (LV) volumes were unchanged in T and C. Myocardial perfusion assessed by MRI was comparable at rest and after dipirydamole in each group. The recuperation of the segmentary kinetics was inversely proportional to the delayed enhancement given by MRI and was better for T than for C ($P<0,02$).

Conclusions: This is a preliminary study. Cardiac MRI makes it possible to apprehend perfusion in a reliable and reproducible way. ET has no detrimental effects on LV volumes and function; rather, it improves recovery of infarcted segments.