FREE COMMUNICATIONS

A. ORAL PRESENTATIONS

1. BEST ABSTRACT CONTEST (PLENARY SESSION, THURSDAY PM)

Distance and Transportation as Barriers to Cardiac Rehabilitation in Urban and Rural Coronary Artery disease Outpatients

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Background: Cardiac rehabilitation (CR) is a proven means to reduce morbidity and mortality among cardiac outpatients but is grossly under-utilized. Transportation, distance and travel time are frequently cited barriers to participation. The purpose of this study was to compare CR participation rates between urban and rural cardiac outpatients and examine perceived distance and transportation barriers.

Methods: 255 cardiac outpatients (mean age 68 ± 11 years; 76% (194) male) of 97 Ontario cardiologists completed a survey within an on-going prospective study. The second digit of A0A in the postal code designated rural status and was verified with Statistics Canada 2001 Census. Using a 5-point Likert scale outpatients indicated the degree to which transportation and distance were barriers and self-reported travel time to CR and percentage of sessions attended.

Results: 87% (223) of outpatients lived in an urban area, while 13% (32) were rural. Overall, 44% (113) participated in CR, with 46% (102) urban and 34% (11) being rural ($P > 0.05$). Transportation barriers were significantly related to CR participation ($P < 0.01$), whereas distance was not. Data were split by geographic area and transportation was only significantly related to CR participation among urban

outpatients ($P < 0.01$). Urban outpatients reported a mean travel time of 25 ± 18 minutes compared to 68 ± 53 for rural outpatients ($P < 0.0001$). The mean percentage of CR sessions participated in was $84 \pm 28\%$, which did not differ by geographic status.

Conclusions: Contrary to previous research, living in a rural area and perceived distance were not related to CR participation. However data collection is ongoing. Rural outpatients had longer travel times yet perceived no distance or transportation barriers. Transportation barriers for urban outpatients may be related to population density and traffic delays. Efforts to reduce transportation-related barriers in urban areas such as improving public transportation or increasing home-based CR provision may be warranted.

Impact of Beta-Blocker Treatment and the Nutritional Status on Glycemic Response During Exercise in Type 2 Diabetic Patients

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Background/Objective: More than 60% of type 2 diabetic individuals present with hypertension and have higher risk of cardiac complications. In addition to behavioural modifications, such as healthy food choices and regular physical activity, beta-blocker (BB) treatment may be considered in order to reduce morbidity and mortality especially following a cardiovascular event. However, this medication is generally associated with a deleterious impact on glucose metabolism. To assess the impact of a BB treatment on glucose response in type 2 diabetic patients exempt of cardiovascular complications.

Methods: Six sedentary men, treated with diet and/or a hypoglycemic agent performed four exercise sessions at 60% of their VO_2 peak, in the fasted state or 2 hours after a standardized breakfast, with and without BB (Atenolol 100 mg id for five consecutive days). Blood samples were assayed during the resting period, at 15-minutes intervals during the exercise session and the recovery period.

Results: A reduction of blood glucose levels was observed following the exercise session performed in the postabsorptive state (41% and 37% reduction with and without BB treatment respectively; $P < 0.01$). One hour of exercise performed in the fasted state had minimal impact on glucose and insulin levels, with or without BB. BB treatment was not associated with increased baseline blood glucose or insulin levels in the fasted or the postabsorptive situation.

Conclusion: These results suggest that the nutritional status has a more important impact on plasma glucose and insulin modulation than short-term use of BB per se.

Aerobic Capacity of Elderly People after a Short 6-Week Intermittent Exercise Programme

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Background: One of the most debilitating effects of advancing age is the progressive decline in aerobic exercise capacity. To prevent this decrease, exercise prescription has been proved to be effective in compensating for the age-associated decline in maximal oxygen capacity.

Methods: 27 healthy sedentary elderly men (10) and women (17) aged 67 ± 7 yr, were involved in a tailored 6-week intermittent exercise programme, with 30 min cycling per session, 3 times a week. One session alternated 4 min at a workload corresponding to the ventilatory threshold (called “bases”) and 1 min to a charge corresponding to 90% of the maximum toler-

ated power of the subjects (called “peaks”). This was repeated 6 times during one session. To determine these charges, all subjects underwent a 1-minute-step maximal incremental exercise test to find out their maximal tolerated power, peak oxygen consumption (VO_2 peak), maximal heart rate, and maximal lactate. A second maximal incremental exercise test was performed after the programme, to compare the different parameters.

Results: For the whole group, maximal tolerated power increased from 113 ± 8 watts to 13 ± 9 watts ($P < 0.001$), VO_2 peak increased from $19.8 \pm 0.9 \text{ ml} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$ to $22.2 \pm 0.9 \text{ ml} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$ ($P = 0.002$), maximal heart rate (143 ± 4 vs $144 \pm 4 \text{ beats} \cdot \text{min}^{-1}$) and maximal lactate (5.4 ± 0.3 vs $5.7 \pm 0.3 \text{ mmol} \cdot \text{L}^{-1}$) did not change. VO_2 at ventilatory threshold increased from $950 \pm 57 \text{ ml} \cdot \text{min}^{-1}$ to $1095 \pm 69 \text{ ml} \cdot \text{min}^{-1}$ ($P = 0.007$), and the corresponding power increased from 65 ± 5 watts to 82 ± 6 watts ($P < 0.001$).

Conclusions: Even after a short time training programme (6 weeks), we observed a significant improvement in aerobic capacity, and especially in sub-maximal workloads, which represented, for these subjects, their daily-life capacity.

Susceptibility to Muscle Fatigue and Lung Mechanics in Chronic Obstructive Pulmonary Disease

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Background: Contractile fatigue of the quadriceps occurs in a significant proportion of patients with COPD after constant-load cycling exercise. Dynamic hyperinflation, by altering cardiac output during exercise, could contribute to fatigue susceptibility in this population. The purpose of this study was to compare operational lung volumes during constant workrate exercise between COPD patients who do and those who do not develop contractile fatigue of the quadriceps (fatiguers vs non-fatiguers).

Methods: Sixty-two patients with COPD (FEV_1 : $46 \pm 16\%$) completed a constant-load cycling test at