

## **Metabolic and muscular factors limiting aerobic exercise in obese subjects.**

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Purpose: The aim of the present study was to understand the role of central (cardiovascular  $O_2$  delivery) and peripheral factors (muscle level) in limiting the maximal aerobic performance in obese (OB) subjects.

Methods: Fifteen OB (mean age  $\pm$  SD  $25 \pm 7$  years; BMI  $43 \pm 7$  kg/m<sup>2</sup>) and 13 lean sedentary subjects (CTRL, age  $27 \pm 7$  years; BMI  $22 \pm 3$  kg/m<sup>2</sup>) participated in this study. Oxygen uptake ( $\dot{V}O_2$ ), heart rate (HR) and cardiac output (CO) were measured during cycle ergometer (CE) and knee extension (KE) incremental tests. Maximal voluntary contractions (MVCs) of knee extensor muscles were performed before and immediately after the two tests.

Results:  $\dot{V}O_{2peak}$ , HR peak and CO peak were significantly higher in CE than KE (+ 126%, + 33% and + 46%, respectively,  $p < 0.001$ ), both in OB and CTRL subjects, without differences between the two subgroups. Maximal work rate was lower in OB than CTRL ( $191 \pm 38$  vs  $226 \pm 39$  W,  $p < 0.05$ ) in CE, while it was similar between the two subgroups in KE. Although CE and KE determined a reduction of MVC in both subgroups, MVC resulted less decreased after CE than KE exercises (- 14 vs - 32%,  $p < 0.001$ ) in OB, while MVC decrements were similar after the two exercises in CTRL (- 26% vs - 30%,  $p > 0.05$ , for CE and KE, respectively).

Conclusions: The lower muscle fatigue observed in OB after CE compared to KE test suggests that central factors could be the most important limiting factor during cycling in OB.

Se desidera avere la fotocopia di questo lavoro, per esclusivo uso personale, può fare richiesta per mail a: [info@cresceresani.it](mailto:info@cresceresani.it) indicando il titolo, gli autori, la rivista e il proprio recapito lavorativo (nome, cognome, indirizzo, CAP, città).