

## TOTAL ENERGY EXPENDITURE IN STRENGTH CIRCUIT TRAINING AT SIX DIFFERENT INTENSITIES

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### INTRODUCTION

In the literature, there is another study that evaluates physiological response to circuit weight (CWT) training (1), but lactate (La) contribution was not measured. The objective of this study was to assess the total (aerobic + anaerobic) energy expenditure (EE) in a CWT at several intensities. Secondary, we aimed to evaluate differences between genders.

### MATERIAL AND METHODS

12 men and 17 healthy and physically active women participated as volunteers in the study performing a CWT at six different intensities: 30, 40, 60, 70 and 80% of 15 repetition maximum (RM). The circuit included eight exercises performed as follow: 15 repetitions each with ten seconds between exercises, a cadence of 1:2 (concentric-eccentric contraction) and three laps to the circuit. All the subjects completed three laps to the circuit. Oxygen uptake (VO<sub>2</sub>) was measured with a portable metabolic system and lactate concentration with an YSI 1500 Sport in order to quantify the EE due to La (2, 3). To adjust the intensity a 15RM test was performed before the study as well as a maximal test to evaluate the fitness level of the participants.

### RESULTS

Results show a significant main effect of sex and intensity in both, the VO<sub>2</sub> and La, both in absolute and relative values to muscle mass. However, a significant effect of lap is only present in La EE. There were no effect of intensity and lap, neither in men nor in women, in the VO<sub>2</sub> and the VO<sub>2</sub> relative to muscle mass. In addition, there was a significant interaction of Sex\*Intensity\*Lap, and men showed higher values of VO<sub>2</sub> and La even when this variables were expressed as relative to muscle mass. All significant differences were set at p<0.05.

### CONCLUSION

Together, this results show that the aerobic and anaerobic EE increase with intensity during CWT but increasing the number of laps has only effect on anaerobic contribution. Moreover, men and women have different response to circuit training even when data are expressed relative to muscle mass.