EXCESS POST-EXERCISE OXYGEN CONSUMPTION FOLLOWING RESISTANCE EXERCISE

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It is known that metabolic rate is elevated for some time following anaerobic exercise. However, few studies have examined excess post-exercise oxygen consumption (EPOC) following resistance exercise. This study is designed to (1) assess the magnitude and duration of EPOC following resistance exercise typical of recreational exercisers; (2) informally compare EPOC following resistance exercise with EPOC following aerobic exercise; (3) investigate the degree of glycogen depletion induced by the exercise bout.

Seven active male volunteers had respiratory gas-exchange parameters, rectal temperature and heart rate measured for four-hour periods following quiet sitting for 60 minutes (Resting condition); 60 minutes of resistance exercise using 75% of one repetition maximum (1RM) (Heavy condition); and 60 minutes of resistance exercise using 60% 1RM (Light condition).

EPOCs following resistance exercise ranged from 0.7 to 27 litres of oxygen, showing large inter-individual differences. These values are moderate, but larger than values reported isocaloric aerobic exercise. In 10 of the 14 trials, metabolic rate had returned to baseline levels within 60 minutes of the completion of exercise. The Heavy condition elicited significantly ($P<0.05$) greater EPOCs than the Light condition. The return of metabolic rate to baseline was moderately and significantly ($P<0.005$) correlated with the rectal temperature, heart rate and respiratory quotient to baseline.

We conclude that EPOC following resistance exercise may be related to the amount of glycogen depletion induced by that exercise, but is unlikely to contribute significantly to modification of body composition.

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