Abstract

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Title: Effectivity of localized and whole-body active recovery strategies after exhaustive isometric finger flexor performance

Objectives: Determine the effect of localized and whole-body active recovery on repeated exhaustive isometric performance of fingers flexors. Determine the effect of systemic and muscle oxygen kinetics on level of recovery of fingers flexors during two types of active recovery.

Methods: 7 men (age 31,3 ± 8,3) and 6 women (age 30,7 ± 8,1) underwent tests of systemic and muscle oxygen kinetics, then repeated intermitent isometric contractions of fingers flexors until exhaustion in three visits. The randomly chosen type of active recovery (with global enagaging of muscles, with isolated engaging of fingers flexors) was applied among tests until exhaustion. The performance of fingers flexors until exhaustion was measured in the intermitent test (8 s contraction, 2 s relaxation). Systemic oxygen kinetics (VO_{2max}) was measured by using maximal oxygen consumption and ventilatory anaerobic threshold (VT2). Muscle oxygen kinetics was measured by using infrared spectroscopy. The relationship among systemic and muscle oxygen kinetics and decrease of fingers flexors performance until exhaustion was calculated using the Pearson correlation coeficient.

Results: There was no significant difference in decrease of repeated isometric performance of fingers flexors until exhaustion at none type of active recovery. Both systemic and muscle oxygen kinetics are beneficial for recovery of fingers flexors muscles. Systemic oxygen kinetics the most indicates level of recovery of fingers flexors (VO_{2max}: R=0,73, VT2: R=0,675 at localized active recovery; VO_{2max}: R=0,578, VT2: R=0,563 at whole-body active recovery). Muscle oxygen kinetics (T1/2) less indicates recovery of fingers flexors (R=0,391 for localized active recovery, R=0,404 for whole-body active recovery) in comparisom with systemic oxygen kinetics.

Conclusion: No difference was found between effectiveness of localized active recovery and whole-body active recovery on exhaustive isometric performance of fingers flexors. The study shows that the higher systemic oxygen kinetics, the better recovery of fingers flexors muscles during localized and whole-body active recovery between exhaustive isometric performance. Systemic oxygen kinetics better indicates level of active recovery of fingers flexors after isometric performance in comparison with fingers flexors muscle oxygen kinetics.

Key words: Rock climbing, alternate exercise, muscle oxygen kinetics, systemic oxygen kinetics, isometric contraction