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Six sessions of sprint interval training increases muscle oxidative potential and cycle endurance capacity in humans.

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Parra et al. (*Acta Physiol. Scand* 169: 157-165, 2000) showed that 2 wk of daily sprint interval training (SIT) increased citrate synthase (CS) maximal activity but did not change "anaerobic" work capacity, possibly because of chronic fatigue induced by daily training. The effect of fewer SIT sessions on muscle oxidative potential is unknown, and aside from changes in peak oxygen uptake ($Vo(2\ peak)$), no study has examined the effect of SIT on "aerobic" exercise capacity. We tested the hypothesis that six sessions of SIT, performed over 2 wk with 1-2 days rest between sessions to promote recovery, would increase CS maximal activity and endurance capacity during cycling at approximately 80% $Vo(2\ peak)$. Eight recreationally active subjects [age = 22 +/- 1 yr; $Vo(2\ peak) = 45 +/- 3\ ml.kg(-1).min(-1)$ (mean +/- SE)] were studied before and 3 days after SIT. Each training session consisted of four to seven "all-out" 30-s Wingate tests with 4 min of recovery. After SIT, CS maximal activity increased by 38% (5.5 +/- 1.0 vs. 4.0 +/- 0.7 mmol.kg protein(-1).h(-1)) and resting muscle glycogen content increased by 26% (614 +/- 39 vs. 489 +/- 57 mmol/kg dry wt) (both $P < 0.05$). Most strikingly, cycle endurance capacity increased by 100% after SIT (51 +/- 11 vs. 26 +/- 5 min; $P < 0.05$), despite no change in $Vo(2\ peak)$. The coefficient of variation for the cycle test was 12.0%, and a control group (n = 8) showed no change in performance when tested approximately 2 wk apart without SIT. We conclude that short sprint interval training (approximately 15 min of intense exercise over 2 wk) increased muscle oxidative potential and doubled endurance capacity during intense aerobic cycling in recreationally active individuals.

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