8. SWACSM Abstract

Impact of High Intensity Interval Training Versus Moderate Intensity Continuous Training on Critical Power

JESSICA COLLINS, OLIVIA LEACH, ABIGAIL DORFF, JESSICA LINDE, JASON KOFOED, MEGAN SHERMAN, MEAGAN PROFFIT, JARON QUIRANTE, KIESE MPONGO, JAYSON R. GIFFORD

Cardiovascular Lab, Exercise Sciences, Brigham Young University, Provo, UTAH

Category: Masters

Advisor / Mentor: Gifford, Jayson (jaysongifford@byu.edu)

ABSTRACT

Critical Power (P_{CRIT}) is the greatest power that a person can sustain for prolonged periods of time while maintaining steady-state, submaximal aerobic conditions. Work-prime (W') is the amount of work that can be tolerated when exercising in non-steady-state conditions above P_{CRIT}. **PURPOSE**: Compare the effect of equal amounts of moderate intensity continuous training (MICT) and high intensity interval training (HIIT) on P_{CRIT} and W'. **METHODS**: Twenty-two (10 female) untrained, young adults completed 8 weeks of cycling training (40 minutes, 3x per week) administered as either MICT (44% max power achieved during a graded exercise test; P_{GXT}) or HIIT (4 bouts at 80% P_{GXT} for 4 minutes with recovery intervals between). P_{CRIT}, W' and other physiological variables were determined before and after training. **RESULTS**: P_{CRIT} significantly increased in both groups, but to a greater extent in the HIIT group (MICT: 15.7 ± 3.1% vs. HIIT: 27.5 ± 4.3%; *P*=0.04). W' was not consistently impacted by training (*P*=0.76). The training-induced change in P_{CRIT} was not significantly related to the training-induced change in $\dot{V}O_{2MAX}$. The training-induced increase in P_{CRIT} was related to how intense the training was relative to P_{CRIT}, with those performing the same workout at a greater % P_{CRIT} exhibiting greater training-induced increases in P_{CRIT} (R^2=0.49, *P*<0.01). **CONCLUSION**: HIIT elicits approximately twice the increase in P_{CRIT} than an equal amount of MICT in untrained young adults. Training-induced increases in P_{CRIT} are not dependent upon changes in $\dot{V}O_{2MAX}$. Exercise may be more effectively prescribed and described relative to P_{CRIT}, rather than $\dot{V}O_{2MAX}$ or P_{GXT}.