ABSTRACT

The Effects of Endurance Training and Short-term High Intensity Sprint Training on Performance and Endurance Related Variables in Well-trained Endurance Cyclists

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Background: Recent research has suggested supramaximal training can be an effective means of improving endurance performance; however ultra high intensity training (UHIT) has not been examined as a replacement of training volume in a well-trained endurance population. Overuse-related injuries, recurring illness, feelings of staleness, and overtraining that are often associated with high volume training may be avoided with low volume, UHIT training. Purpose: The purpose of this study was to compare the effects of two weeks of low volume UHIT with two weeks of traditional HV endurance training on lactate threshold (LT), VO2max, steady state efficiency, substrate utilization rates, and 25K time trial performance in well-trained endurance athletes. Method: Twenty (VO2max ≥ 55 ml/kg/min or 4.5 L/min and minimum training volume of 150 km/week) male cyclists were match-paired into two groups. Four two-day testing sessions were performed at 0, 2, 4, and 6 wks. Day one of testing measured VO2max and lactate threshold. Day two involved a 10-min steady state ride followed by a 25K time trial. All participants were tested, then continued two weeks of their endurance training. Following a retest, the controls (CON) continued with their endurance training while the other half (INT) replaced their endurance training with UHIT, consisting of a 10-min warm-up followed by 8-10 x 30 sec sprints at a workload of 0.075 kg/kg body weight and 4.5 min recovery. Participants completed 6 training sessions over two weeks with two optional low intensity endurance days. Following the second phase all participants re-tested then either continued with (CON) or returned to (INT) their individual endurance-training regimen. A final testing session was conducted two wks later. Results: There were no significant differences between the two groups in VO2max or LT (% of VO2max). In addition, cycling efficiency, steady state VO2 and heart rate, and 25K time trial performance were not different. Discussion: A short-term reduction in training volume replaced by relatively short sessions of supramaximal training can affectively maintain endurance cycling performance for well-trained cyclists. This type of training may be useful as a means of decreasing the occurrence of negative consequences of long-term, high volume training.