Invitation to Disagree!! Thoughts on Threshold Training

Ok so a blog post trumpheting the Galanes' disagreeable nature is hardly news. But please read on. One of our goals for this blog and indeed for our training concept is to foster discussion that might in the long run help athletes train smarter and better and as a result ski, bike or run faster. So - we pugnaciously invite you to comment and see if we can all learn a little something.

We have noticed following skiers' and coaches' blogs that there seems to be a broad consensus toward doing lots of Level 3 training (often referred to as threshold training) and limited focus on Level 4 (MaxVO2 training) particularly in the summer months. In response to this observation - we have tried to understand what are the physiological gains that athletes and coaches are hoping to reap from that "threshold" training and how do those gains balance against the heavy workloads those training sessions demand and how do the demands of racing fit those two types of training sessions.

Our non-expert review of available scientific literature seemed to suggest that in a population of highly conditioned athletes high level submaximal work did not improve performance. On the other hand, the literature seemed to demonstrate that maximal training (>90% of max) did improve performance. The evidence is admittedly far from conclusive in either case.

As we discussed in our previous blog post - we like to think of each week's training like a bank account with a fixed balance - say 500 EPOC. We know the physiological loads for a longer threshold session and a MaxVO2 session are similar. The rate at which EPOC accumulates in a MaxVO2 session will be greater but the shorter duration of the workout and longer recovery periods between intervals will result in total EPOC that is very similar to "threshold" training. Each of those workouts will usually total somewhere around 200 EPOC. Even with highly conditioned athletes this is a big workload - perhaps as much as 40% of a week's total EPOC workload.

So, where does that leave us? Assuming EPOC is a valid measure of workload, (1) we know the cost of "threshold" and MaxVO2 training are similarly high; (2) in my mind, the gains from "threshold" training appear less well understood; and (3) the physiological gains from 90%+ training appear to be validated by exercise physiology.

Given those factors we would be cautious with threshold training. It produces workloads very similar to maximal training yet the gains appear to be less well established. Additional, I suspect there is a higher risk of cumulative fatigue with threshold training as it is popularly believed that these workouts are less tiring than maximal training.

That is not to say there is no place for "threshold" training. As race lengths for athletes increase beyond one hour it seems logical that the need for more sustained harder efforts would likewise increase. In younger athletes, however, who typically race much shorter distances, it would seem logical to recommend spending their limited EPOC allowance on maximal training. Getting more bang for the EPOC buck in other words.

That's just one way of looking at this complicated issue. We would love to hear countervailing views. Neither Jim nor I are as stubborn as we may be remembered.

Let's hear from you!