Lactate Threshold Intervals

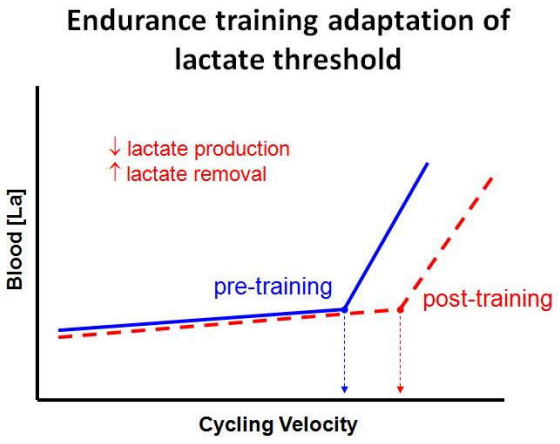
Lactate threshold intervals, or tempo riding, are an important aspect of cycling fitness, which can be trained a couple of months before the season begins and throughout the season.

By performing lactate threshold intervals cyclists, with minimal degradative effects on their current training, improve the ability of their bodies to provide lactic acid clearance.

Improving lactic acid clearance, allows for longer sustained riding, with less muscular fatigue at sub-anaerobic threshold levels, and even anaerobic threshold levels. This skill is extremely important in time trials and longer races, in which a lot of tempo riding may occur.

Adaptations from Lactate Threshold Training

The graph below shows the effects of lactate threshold training:



Adapted from Kolkhorst, ENS304 Slides 2006.

Prior to training, blood lactate levels start to accumulate much more rapidly at lower cycling velocities. Post-training, blood lactate levels remain lower at higher cycling velocities.

Post-training, cyclists clear lactic acid much more rapidly, thereby lowering perceived exertion. In turn, the removed lactic acid is “shuttled” through metabolic pathways and converted into pyruvate for use as further energy.

Training Your Lactate Threshold

Performing intervals at anaerobic threshold can improve lactate threshold, but it is not the most efficient or most productive way to improve this aspect of cycling fitness. Anaerobic threshold is defined as the threshold at which your body switches almost entirely from aerobic systems to anaerobic systems. For the trained cyclist the anaerobic threshold is about 90-93% of your maximum heart rate, or the average wattage you can produce in a 40-kilometer time trial effort.

The proper way to perform lactate threshold intervals is at 80-82%of your max heart rate over 20-minute periods, with short 5-minute breaks in-between. If using power, lactate threshold intervals should be performed at 70-80% of your 1-hour sustained power, or 40K time trial average power. These are general guidelines, but a good place to start for most cyclists barring an actual physiological test in a lab to determine heart rate and power zones.

By riding at these heart rates or power targets, and for these intervals if time, you will start to produce more lactate acid than your body can clear, but not so much that your body is overwhelmed by the process. You may feel as those these intervals are easy and extremely sustainable once you get in the rhythm, and they should feel this way.

In time, your lactate threshold may increase to just fewer than 85% of maximum heart rate or close to 85% of your 1-hour sustained power, but you will find that continuing to work at the original guidelines, and just increases the amount of intervals is more beneficial—more beneficial, because you will be able to do greater work. Many cyclists find doing 1 or 2 intervals of 20-minutes each with 5 minutes break between challenging at first, but you will be able to do more over time.

You can also include bouts of lactate threshold intervals within larger rides—for example, the first hour could be endurance, followed by a few sets of ILTs, followed by a couple lactate threshold intervals, followed by more endurance.

In time, you will find that your anaerobic threshold may actually increase slightly due to your lactate threshold work. More likely, lactate threshold intervals will allow you to work for longer periods, without fatigue, at or near your anaerobic threshold. The result: ability to produce more power for longer periods of time.

Conclusion

Lactate threshold intervals are designed to maximize the amount of work you can perform in training your body to clear, and utilize for energy, lactic acid. A good time to perform lactate threshold intervals is in the couple of months before the season begins, and then periodically throughout the season.