

**Wenzel Coaching Threshold Test Instructions:** Below you will find instructions for two different kinds of ventilatory (anaerobic) threshold test. One is more high-tech. It is based on the test originally developed by Dr Conconi and used by Francesco Moser before his hour record rides. The other is more feel oriented and requires a high degree of sensitivity to your own body. For either test you must be well rested and not have been sick in the previous few weeks to get a meaningful result. Choose the one you prefer.

**NOTICE: THESE TESTS INVOLVE MAXIMAL EXERCISE. BY CHOOSING TO DO THESE TESTS WITH OR WITHOUT A PHYSICIAN'S SUPERVISION YOU ARE ACCEPTING FULL RESPONSIBILITY FOR ANY POSSIBLE CONSEQUENCES INCLUDING BUT NOT LIMITED TO DEBILITATING INJURY OR DEATH. WE RECOMMEND THAT YOU DO THESE TESTS WITH THE PERMISSION AND SUPERVISION OF A PHYSICIAN. IF YOU ARE OVERWEIGHT, OVER FORTY YEARS OLD, OR HAVE PERSONAL OR FAMILY HISTORY OF HEART DISEASE, CARDIOVASCULAR DISEASE OR FAINTING, DO NOT DO THESE TESTS WITHOUT FIRST CONSULTING WITH YOUR PHYSICIAN.**

### **HIGH TECH THRESHOLD TEST:**

To do this test you will need a trainer or rollers with resistance, a heart rate monitor, a bicycle with cyclometer (on the rear wheel if you plan to use a trainer), and very light cycling clothing. If you don't have a recording heart rate monitor, you will also need an assistant with a note pad and a watch to write down your numbers and keep track of time, or a tape recorder into which you can yell your numbers. If you are a strong rider you will get a more accurate result if you have a fan to cool you as you ride.

1. Calculate your starting heart rate. Take 65% of the maximum heart-rate you've seen in the last year and add 35% of the lowest heart-rate you've ever measured while lying down. If you don't know your resting heart rate, use a starting heart rate of 75% of your maximum heart rate. If you don't know your maximum heart rate, use 125 bpm to be safe.

2. Warm up thoroughly: For at least twenty minutes spin along easily on your trainer with your heart rate below your Starting Heart Rate. Gradually bring your heart rate up to the Starting Heart Rate. When you feel warm and loose, accelerate by four miles per hour for two minutes, then rest by spinning slowly for three minutes and then do two more minutes at the higher pace. Return to the lower pace for five more minutes. Now you are warmed up. Pee, drink or stretch if you need to before starting the main part of the test.

3. Determine the appropriate gear. By trial and error find the speed that puts your heart rate at your Starting Heart Rate. Be sure to ride that speed for at least a minute so you can see if your heart rate is still rising or falling. When your heart rate is stable near the Starting Heart Rate, find the gear that makes your cadence about 62 to 68 rpm at that speed (The Starting Speed). This is the gear in which you will do the rest of the test. You must not shift gears or change hand positions during the test. If you can't get to your starting heart rate with a cadence this low you will have to increase resistance on your trainer. Otherwise you will be completely spun out before the end of the test.

4. Continue at the Starting Speed for two more minutes. Have your assistant write down the starting speed and higher speeds up to 15 miles per hour above the starting speed in 0.5 mile per hour increments vertically down the side of a page of the note pad. (e.g.

16.0

16.5

17.0

17.5...).

5. After two minutes riding in the right gear at the Starting Speed, accelerate by half a mph each 30 seconds. At the end of each 30 second period, just before you speed up, have your assistant write down your current heart rate next to the speed you've been going in that period. Don't worry if it seems to be changing at that moment. Just record whatever the monitor says at the 30th second.

6. Record how you feel. Particularly be aware if your breathing is accelerating at all, or a lot. Also note if and when your legs begin to burn even slightly.

7. Eventually you won't be able to reach or maintain the new speed. Try for at least 15 seconds. If you can't hold the new speed, spin easily for five – ten minutes to clear the lactate from your legs.

8. Now it is time to process the data. You can do this yourself or contact Scott to do it for you. (E-mail is best to [ScottSaifer@wenzelcoaching.com](mailto:ScottSaifer@wenzelcoaching.com) or phone (925)-933-7306). You will need to tell him the starting speed and the heart rate at each period, as well as when your legs started to burn or your breathing accelerated. If you choose to do it yourself, make a graph with heart rate on the vertical axis and the cube of speed on the horizontal. The graph should approximate two straight lines with the left points contributing to a steeper slope than the right points. These two lines cross at your anaerobic threshold heart-rate and speed. Congratulations, you've found your AT!

### **THRESHOLD TEST BY FEEL:**

To do this test you will need a long flat road or a trainer or rollers with resistance, a heart rate monitor, and a bicycle with cyclometer (on the rear wheel if you plan to use a trainer). Wear very light cycling clothing if you do the test on a trainer or rollers. If you are a strong rider you will get a more accurate result if you have a fan or wind to cool you as you ride.

1. Pick a starting heart rate. If you have a good estimate of your threshold, start 15 beats below it. If you have no idea of your threshold but you know your maximum heart rate, use 70% of the maximum. If you don't know your threshold or maximum, use a heart rate which you know you can sustain on a ride of several hours without fatigue. If you have no idea, start from 120 beats per minute (BPM).

2. Warm-up by riding easily below your starting heart rate for at least thirty minutes. Warm up longer if you need to. Finish off the warm up with three race pace efforts (not sprints but time-trial pace) of about a minute each separated by three minutes of easy pedaling.

3. Throughout the test change gears as often as necessary to maintain a cadence of 90-110rpm.

4. Cruise along gradually bringing your heart rate up to the starting heart rate. Maintain the heart rate in a five beat range for five minutes. If you have increased breathing or lactate burn in your legs at the starting heart rate, decrease the starting heart rate by 15 beats and start step four again after a five minute rest.

5. Accelerate enough to increase your heart rate by about five BPM and maintain the new pace for five minutes. By the end of the five minutes you may feel some warmth or burning in your legs and your breathing may be accelerated. If you have no lactate feel in your legs and your breathing is still normal, repeat step five. (Accelerate a bit and hold it for five more minutes). When you have a little heat or heavier breathing, move to step six. Do not wait for very hot legs or very heavy breathing, just a little heat or a little acceleration of breathing indicates that you are over threshold.

6. When you feel a little heat or a little increase in breathing, you are above your lactate threshold. If you back off by five beats for a few minutes you should go below again and the legs should cool and the breathing return to normal. When this happens, you will know that you are again below threshold. You have now bracketed your threshold in a five beat range.

7. To confirm and refine your threshold measurement, go a little harder and a little easier several times back and forth within the bracket range determined in step 6. You should be able to switch the breathing and leg burning on and off in a range of two or three BPM. Try to find the highest heart rate you can maintain for three minutes or more without leg burning or heavy breathing. This is your anaerobic threshold. Congratulations. If you are on a trainer or rollers, note the speed, resistance setting and gear so you can compare this test to later tests and track your progress.

8. Contact your coach and let him or her know what you've determined.