

How To Find Anaerobic Threshold (AT)

Equipment Needed

A good heart rate (HR) monitor that has both one beat per minute (bpm) increments as well as an upper and lower alarm range and the use of a treadmill.

Knowledge Needed

Since the female heart is smaller than the male heart and must pump more often (about 5 bpm) to create the same volume we will use the following formulas to approximate anaerobic threshold.

180 bpm - Age = Estimated AT in most males

185 bpm - Age = Estimated AT in most females

Procedure

Each athlete must wear a heart rate monitor and start out slowly on a treadmill. The athlete then slowly but surely increases the pace so that his/her HR will begin to go higher. When the athlete gets to within 15 bpm of his/her estimated AT start listening to their breathing. Keep increasing the pace gradually and the moment they start breathing harder and/or their breathing changes have them look at the HR monitor as that is their anaerobic threshold. Generally AT occurs within ± 7 bpm of the estimated AT in most athletes.

Once you have their AT subtract 15 bpm from it to find the exact range to train to benefit the aerobic conditioning energy system. This is the HR range where 75% of all distance training needs to be done. Let's say your athlete has a AT of 165 (which is close to where most high school boys will generally be) then their aerobic conditioning needs to be done in a range from 150-165 bpm. Extrapolating this knowledge of the HR @ AT further you can then see that anaerobic conditioning begins to happen at 179 bpm for this athlete. The range for anaerobic conditioning is 179-190. It will take about 8-10 minutes to get to this range once you have started the tempo run or other type of training for the anaerobic conditioning energy system.

Using this knowledge along with the use of a HR monitor you can avoid the pitfalls that lead to most injuries and burnout in a distance runner. When the athlete is training in the zone between aerobic conditioning and anaerobic conditioning he/she is receiving no physiological benefit. This zone is considered to be the junk mileage range. The athlete will begin to recognize where AT occurs and know without looking at their HR monitor if they are in the correct range. It is our hope that you can use this knowledge to improve performance in your runners.

For Your Information

The best most economical HR monitors can be found at www.heartmonitors.com. You can also call Fit Med at (800)959-4089. This is the same company located in California. I recommend the Impulse 12 model for around \$60.

I would also encourage you to attend our weeklong summer cross country camp in Pueblo, Colorado from July 10-16, 2011 if you are interested in more information like I have shown you today. Information about the camp can be found at www.BrocawBlazers.org/camp.