



## “The wheels are off”

It is inevitable that any that have been involved in distance running will have felt that moment when in my terminology “ the wheels fall off” and your athlete wonders how they can possibly carry on. What has happened here is the body has reached and exceeded the “Lactate Turnpoint”.

One of the ways the body produces energy whilst running is through a process called glycolysis and during this process lactic acid is produced. At lower running speeds the body can easily process this substance and re-cycle it to produce even more energy – in this case Lactate is very much your friend as it is fuelling your body and allowing you to run further.

Lactate becomes foe when you up your intensity by running faster (so too fast for your level of fitness) for periods of time and more and more lactic acid is produced. Eventually, and often quite quickly if the athlete is at a low state of fitness, Lactic Acid is produced so quickly that the body can no longer process it – at the point noted above in the first paragraph - this is the Lactate Turnpoint or Lactate Threshold and when your athlete goes beyond this they will begin to fail unless they slow down sufficiently to allow the body to process the excess Lactic Acid. Obviously the “Turnpoint” will vary from runner to runner and the fitter and more efficient that your athlete is the higher the threshold.

Traditionally, it has been believed that lack of oxygen availability will lead to the conversion of pyruvic acid into lactic acid and accompanying increases in muscle and blood lactate. Latest studies and theories have now disputed this and it is now thought that there are other changes which take place at Lactate Turnpoint which contribute to fatigue – these are not the focal point of this article so these will be discussed at a later date in more detail.

However having now discovered that the build-up of lactic acid is not the only and direct cause of onset of fatigue should we as coaches still look to train to increase our athletes to raise their Lactate Threshold and in turn Turnpoint ? The answer until proven otherwise is very much in the affirmative, if these other chemical reactions also take place at Turnpoint then it makes sense to continue with a programme of training that raises the Lactate Threshold and that means running faster!

So looking at it simplistically what training should your athletes be doing to increase their Lactate Threshold? A Tempo or threshold run is defined as the fastest pace you can run without generating more lactic acid than your body can utilise and recycle back into energy. Therefore a tempo or threshold run is basically to have your athletes running at just below or at their threshold pace. Increase the threshold – increase the Turnpoint!

Some example training sessions for training the Lactate Threshold and of course in turn the Turnpoint are below – note though that these should be as part of a properly planned long term programme and not completed in isolation, all sessions should follow a thorough dynamic warm up and followed by a thorough cool down and static stretching.

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### **Miles and Miles**

The most basic lactate threshold interval run is mile repetitions. 4-6 x 1 mile at 10K race pace. 1 - 2 minutes recovery depending upon level of fitness. Decrease recovery as fitness improves.

### **Half miles and miles**

8- 12 x half mile/ 800m at 5K race pace. 1 - 2 minutes recovery depending upon level of fitness. Decrease recovery as fitness improves.

### **Thousands and Thousands**

This is a pretty hard session so build into it if your athletes are inexperienced or have not done much of this type of work. 6- 10 x 1000m at 10K race pace. 1-2 minute jog recovery depending upon level of fitness

### **In the Blender**

This is a “blended” change of pace session where distances are blended to mix energy systems. Again not for the faint of heart

400m at 5K race pace, no recovery but slow to 10K pace for 1200m. 2 minutes recovery.

Up to 6 or more “blended”sets.

### **Blender with a kick**

A further fairly hard “blended session with the added bonus of introducing a finishing kick.

200m at just under sprint pace. Slow down to 10K pace for 2000m before speeding back up to sprint the last 200m. 2-3 minutes between each blended set. Up to 6 sets

### **Pyramid**

There are many variations of this and the session can be adjusted to suit abilities. 400 meters at about 15 seconds per mile faster than 5K pace. Slow down to 5K pace for 800m and then run 1600m at 10K pace. Start back up in speed with 800m at 5K pace and finish with 400m at the same pace as the first 400m. 3-5 minutes recovery up to 6 sets.

**Please note that throughout the article and suggested sessions that the terms used are ones that many coaches are familiar with, nomenclature varies between different coaches – there is rarely any right or wrong!**