

How to *Paddle* **FASTER**

TIPS FOR OPTIMAL TRAINING



BRENDAN O'NEILL

Table of Contents

1 Stroke rate and distance per stroke.....	3
2 Strengths and weaknesses.....	4
3 Smart training - recovery	6
4 Developing paces	8
5 Aerobic adaption.....	9
6 Threshold intensity, ventilatory threshold 2 (VT2).....	11
7 VO2max training.....	13
8 Anaerobic and alactic training	15
9 Distance per stroke.....	16
10 Measuring progress.....	18



Illustration 1: New Zealand womens K4 training for the Rio Olympics

5 Aerobic adaption

Initially as exercise begins, ventilation (breathing), velocity (speed of the boat) and lactate (blood level) rise slowly until ventilatory threshold 1 (VT1) is reached. For training purposes any exercise below VT1 is fully aerobic. If activity becomes more intense lactate begins to build up in the blood until the point where lactate levels begin to rise very steeply, this point is called VT2 and any activity above VT2 is considered anaerobic.

The human body will utilise the aerobic energy system in preference to the anaerobic energy system because it's more efficient, producing 38 molecules of ATP from one molecule of glucose compared to only 2 molecules of ATP from the anaerobic equivalent. Muscles use ATP as their fuel. The aerobic energy system remains on at all times but as activity increases and it is no longer able to keep up with demand for ATP it is supplemented by the anaerobic system. Even so, when we talk of about anaerobic levels of activity there is still a significant portion of aerobic input.

Any improvement in aerobic fitness will not only benefit less intense activity levels but improve VT1 and VT2 as well and produce improvement in VO₂max. It is the energy system most responsive to training and the energy system where the biggest gains can be made. Some authors will include threshold and VO₂max training in aerobic training because of the considerable overlap and aerobic input at these training intensities but for clarity and because the adaptations at threshold and VO₂max are different I will deal with them separately in later articles.

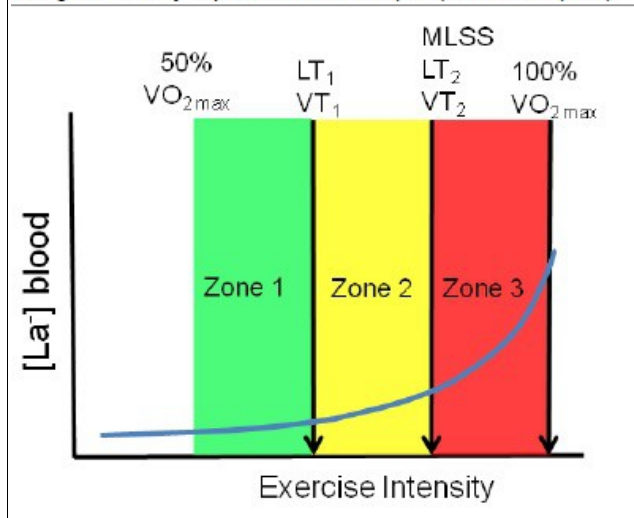
Even at low intensity level training, below VT1, there are three major adaptations that occur. Capillary blood flow within muscles increases, muscle mitochondria needed for oxygen utilisation multiply and cardiac stroke volume increases resulting in improved blood circulation.

The most common mistake athletes make is to train too hard too often. Insufficient recovery time causes fatigue and results in poor quality training at the higher intensities.

Activity below VT1 can be sustained with only minimal recovery so training sessions can be long and frequent. Above VT1 neuroendocrine changes take time to reset. Not only do the muscles and other soft tissues need time to repair but nerve and hormonal pathways take time to reset. Without sufficient recovery time fatigue will gradually build and this is thought to be the cause of overtraining syndrome.

VT1 sessions can still be hard but because of their length rather than intensity. A comfortable training session lasting 2-3 hours will identify your VT1 stroke rate. VT1 training sessions usually last at least 1 hour but can be longer. The important thing is to stay below VT1. No recovery time is specified for VT1 session, you can train at this level more than once a day and use shorter VT1 sessions as recovery sessions from more intense training.

Figure 1. Three intensity zones defined by physiological determination of the first and second ventilatory turnpoints using ventilatory equivalents for O₂ (VT₁) and CO₂ (VT₂).



There is a trend to restrict training between VT1 and VT2 because it offers only minor benefit over purely VT1 training but produces more fatigue and requires longer recovery. It may be better to avoid tempo training (between VT1 and VT2) and focus instead on aerobic at VT1 or below and restrict the more intense training to VT2 and above.

Lastly remember the 80% rule. In order to reduce fatigue and generate better adaptations at high intensity training, 80% of training should be at or below VT1.



[Expect the next chapter by email in 1 week!]

vaaká *sensors*

Performance technology for paddle sports



Visit

www.VaakaCadence.com