

Training with Cadence

A guide to training intensity

In the past training intensity levels have been defined by heart rate or perceived exertion or blood lactate levels. These methods have their pros and cons. Lactate measurement is invasive and expensive. Perceived exertion is very subjective and varies between athletes. Heart rate can be unreliable and respond to factors unrelated to training such as stress or anxiety, illness or drugs such as asthma inhalers, caffeine and alcohol. The development of the Vaaka kayak cadence sensor has made instantaneous kayak cadence feedback available to all serious kayak athletes. Kayak cadence is proving to be a reliable way to use training intensity levels to structure and monitor your kayak training program.

At right is a brief guide to Intensity level training and how kayak cadence can be used to add a new and powerful objective measurement to help improve your performance.

Background

The human body uses different energy systems as the intensity of exercise increases. The aim of training is to produce a physiological or anatomical adaption in the body that will result in enhanced performance. For example; to improve aerobic capacity (the ability of the heart and lungs to supply oxygen to the working muscles), the greatest benefit occurs at the lower intensities, levels 2 and 3. Work around the anaerobic threshold at level 4 and 5 often called threshold and VO2 max work, will also generate improvement in aerobic capacity by increasing lactate clearance and raising the anaerobic threshold. The table shows the training intensity levels and the corresponding heart rates, work to rest ratios and kayak cadence range. Kayak cadence range is remarkably consistent across athletes when determining training intensity levels.

| Intensity level | Name | % max HR | Kayak Cadence range (double strokes per minute) | Work : Rest ratio |
|-----------------|-----------|-----------|---|-------------------|
| 1 | Recovery | 60% - 70% | 28 - 32 | 1 : 0 |
| 2 | Endurance | 70% - 80% | 32 - 36 | 1 : 0 |
| 3 | Tempo | 80% - 85% | 36 - 38 | 1 : 0.25 |
| 4 | Threshold | 85% - 95% | 38 - 44 | 1 : 0.5 |
| 5 | VO2 max | 95% + | 44 - 50 | 1 : 1 |
| 6 | Anaerobic | N/A | 50 - 75 | 1:2 – 1:20 |



Training guidelines

Training programs are usually designed with periods of different types of training. This is called 'periodization'. Physiological adaption tends to plateau after about 4-6 weeks so there is little gain by continuing to do the same thing. When adaption plateaus in one area the emphasis of training is changed to allow beneficial adaption to occur in a new area. It is important to know what adaption you are trying to achieve and train accordingly. Periodisation is also used to plan training to produce a peak of performance for a major event. For sprint paddlers the off season emphasis is on strength and endurance changing to VO2 max and speed work as racing approaches.

The table at right shows example sessions using training intensity level and kayak cadence.

| | | |
|----------------|-----------------------------|--|
| Level 2 | Aerobic conditioning | 2 hour paddle maintaining kayak cadence at >35 double strokes per minute. Focus on increasing speed without increasing cadence. |
| Level 4 | Lactate threshold | 10 x 1km at approx. 40 double strokes per minute with 2 mins recovery. Focus on every 1km effort at the same cadence and the same speed. As lactate adaption occurs you should see your 1km speed improve. |
| Level 5 | VO2 max | 8 x 500m at 45 - 50 double strokes per minute with 2 mins recovery. Focus on the same cadence and the same speed for all 500m efforts. Should see improved speed with practice. |
| Level 6 | Race pace work | 16 x 200m at 55 double strokes per minute with 1 minute recovery. Or 8 x 50m at cadence 60 - 70 with 2 mins recovery. Focus is on maximum speed. Peak speed should increase with practice. |

SPECIFICATIONS

Weight 55g
Tough nylon outer casing
Water Resistance IPX8 tested submersed to 3 meters for 24 hrs
Flexible TPE paddle attachment
Operating temperature -10C to +40C
Embedded ANT+ 2.4 GHz wireless connectivity
Auto wake/sleep mode
Battery 1.5v AAA alkaline
Long battery life over 300 hrs of paddling time
Compatible with GPS sports products using ANT+ cadence protocol
LED cadence indicator

ULTRA LONG
BATTERY LIFE
300+
PADDLING HOURS

IPX8
WATERPROOF

ANT+



The guide above is not comprehensive. Ask your coach to incorporate kayak cadence into your individualized training program.