

# BCA Training Guide

Breakaway Coaching and Analytics



## Bio

BCA Founder – Jonathan Melville



Before going to university, I always had a passion for sport. My passion lead me to road cycling in my late teens and like a lot of people I caught the cycling bug pretty quickly. Soon, I was training everyday (rain or shine) and the joy for the sport continued to grow. But, sadly two seasons into my cycling journey I obtained a number of injuries and illnesses, which forced me to step down as a rider. This happened to be when university work ramped up and resulted in a new passion. Developing and exploring the dimensions of endurance sports. With my new passion I created BCA and have never looked back.

## Contents

Bio.....	2
Introduction .....	3
<i>Training Plan Details</i> .....	3
<i>Terminology</i> .....	4
<i>Setting Up Training Zones</i> .....	5
<i>Training Zones</i> .....	6
<i>Using a Heart Rate Monitor</i> .....	6
Training Plan.....	7
<i>Accumulation Phase # 1</i> .....	7
<i>Transformation Phase # 2</i> .....	8
<i>Realisation Phase # 3</i> .....	8
<i>Alternatives</i> .....	9
Training Advice .....	10
<i>Adapting the Plan</i> .....	10
<i>Recovery Strategies</i> .....	11
Masters Training .....	11
<i>The Science</i> .....	11
<i>Recommendations</i> .....	12
More.....	12

## Introduction

Thank you for using a BCA training programme. By doing so you are contributing to the BCA vision – to help as many athletes as possible find new levels of performance they did not know they possessed. In addition, there are many rewards to using a BCA plan including 24/7 email support.

Email Support



Data Analysis



Nutrition/Meal Plan



### Email Support:

- You can email with any question you have anytime, BCA is available 24/7 to help you. There are no bad questions so please don't hesitate to ask even if the answer is small. With email support BCA can also help you rearrange the training plan to accommodate your work/family life.

### Data Analysis - £45

- In-depth data analysis is a chance for you to see the progress you are making. If you are in the final 3 weeks of your plan BCA will analyse your data to see how you have progressed, plus if you are ready for your event, and how your data compares from before the programme for £45.

### Nutrition/Meal Plan - £12

- Also included in BCA programmes are nutrition/meal plans. You may find these helpful if you are hoping to lose weight or are not sure which foods are best for which workout. Get in Touch if you would like to purchase.

## Training Plan Details

To cater to as many different abilities as possible there are five tiers. If you feel you have purchased the wrong plan, then you have 21 days to get in touch for the plans to be swapped – free of charge.

Ability Level	Description
Elite	<ul style="list-style-type: none"> <li>- Part/full time advanced athlete.</li> <li>- Very experienced.</li> <li>- Typical week: 6 day on – 1 off</li> </ul>
Advanced	<ul style="list-style-type: none"> <li>- Could be elite but time limited.</li> <li>- Very experienced.</li> <li>- Typical week: 6 day on – 1 off</li> </ul>
Intermediate	<ul style="list-style-type: none"> <li>- Been training on and off for a few years.</li> <li>- Moderate experienced.</li> <li>- Typical week: 5 day on – 2 off</li> </ul>
Beginner	<ul style="list-style-type: none"> <li>- Training between 1-2 years.</li> <li>- Little experienced.</li> <li>- Typical week: 4 day on – 3 off</li> </ul>
Novice	<ul style="list-style-type: none"> <li>- New to the sport.</li> <li>- Very little to no experience.</li> <li>- Typical week: 3-4 day on – 3-4 off</li> </ul>

Furthermore, also included within each ability level are master and senior plans. A master athlete is anyone over 35 years. Whereas as a senior plan is anyone over 50 years. It is very important to not buy a plan that would result in over training. If you are still unsure, get in touch and BCA will hand pick a plan for you.

## Terminology

As sports science and training peaks terminology can be difficult to understand below is a group of tables with the term and definition. You can refer back to this throughout the programme.

### TrainingPeaks – Terms

Term/Acronym	Definition
FTP Function Threshold Power	The amount of power that can be sustained for 1hr. Calculated by 20 min peak power x 0.95.
TSS Training Stress Score	A calculation based of duration and intensity. Example, TSS of 100 for 1 hour = 100% of FTP for 1 hour.
IF Intensity Factor	The intensity of a workout as a percentage of FTP. Example, 0.85 = 85% of FTP.
NP Normalized Power	Take into consideration terrain or intervals completed in a ride. Considered a more accurate measure to average power.
VI Variability Index	Calculated through NP/average power. Indicates how steady a workout was. < 1.05 = steady state.
AD (Pw: Hr) Aerobic Decoupling	How much power or heart rate changes from beginning to end of a workout, Example, < 5% = good.
kJ Kilojoules	A measure of work completed. Example, 200 watts for 1 hour = 720 kJ
EF Efficiency Factor	The ratio of normalized power or pace to heart rate. Example, 243 watts/156 bpm = 1.56 (average)
w/kg Watts / Body Weight	Average watts divided by body weight (kg). Example, 284w / 78kg = 3.64 (average).
VAM Velocity Ascended in m/hr	A measure of how fast you can climb. Velocity ascended in meters / hour.

### Sports Science – Terms

Term/Acronym	Definition
VO <sub>2</sub> Max Volume – Oxygen – Max	The maximum rate the heart, lungs and muscles can use oxygen efficiently.
LT Lactate Threshold	The point at which blood lactate levels begin to rise. However, this is not an exponential rise.
LTP Lactate Turn Point	When blood lactate levels increase exponentially – often close to VO <sub>2</sub> Max
GET Gas Exchange Threshold	Determined by a rise in VCO <sub>2</sub> (carbon dioxide) – similar to LT.
VT Ventilation Threshold	When breathing rate increases disproportionately to oxygen consumption.
MHR Max Heart Rate	The maximum your heart rate can climb often calculated by the following: 220-age (220 – 22 years = 198).

### Nutrition and Strength & Conditioning – Terms

Term/Acronym	Definition
TDEE Total Daily Energy Expenditure	The amount of energy expended through physical activity.
PALs Physical Activity Levels	Determines how much energy a workout would require.
BMR Basel Metabolic Rate	The number of calories burnt in a resting state (also the min amount to live).
SOC Speed of Contraction	The speed at which a movement is completed when lifting.
1RM 1 Rep Max	The maximal amount of weight that can be lifted.
REP Rate of Perceived Exertion	How hard or easy a workout felt (1 = easy, 10 = max effort).

## Setting Up Training Zones

Within the first week of most programmes testing is planned. This creates a baseline fitness to compare yourself with the next time testing is on the schedule. However, when improvements are made, training zones will need to be updated. Once you click on your profile settings follow the below guide on how to do this.

Step 1: Your profile setting will pop-up once clicked. Once this happens click 'Zones' in the left-hand column.

Athlete Account Settings

**Account**

**Profile**

**Personal Information**

First and Last Name

Email Address

Athlete Type  Male

Username

Password

Retype Password

Address

City  State

Zip Code

Country

Phone

Cell Phone

Date of Birth Month  Year

**Profile Picture**

No Photo Available

Upload Photo

Subscriptions & Payments

Cancel Save Save & Close

Step 2: Calculate your FTP by multiplying the average power of the 20 minutes from the FTP test by 0.95. For running the average pace from the 30 minutes is your new threshold pace. For swimming divide the 200 meters swim pace by the 400 meters pace (see more details within the workouts).

Step 3: When 'Zones' is clicked you will be able to fill in the details with your new threshold values. BCA uses the Doctor Andy Coggan Training Zones (for both heart rate and power) so it is highly recommended you do this same (see next section Training Zones).

Athlete Account Settings

**Power**

**Zones**

Heart Rate

**Power**

Speed/Pace

Notifications

**Default Power**

Threshold Value

Threshold  W

**Auto Calculation**

Threshold Power  Choose Method  Calculate

Zone 1: Active Recovery	0	to	168	Remove
Zone 2: Aerobic Endurance	169	to	228	Remove
Zone 3: Tempo	229	to	273	Remove
Zone 4: Threshold	274	to	318	Remove
Zone 5: Vo2 Max	319	to	363	Remove
Zone 6: Anaerobic Capacity	364	to	2000	Remove
Zone 7: Neuromuscular Power	2000	to	2001	Remove

Add Zone

**Add Activity**

Swim  Add

Cancel Save Save & Close

Step 4: If you are a triathlete complete this for all three sports ideally using the zones provided. Don't forget to press 'Save & Close' once you're finished.

## Training Zones

### Bike Zones

#	Zone	% of FTP	% of THR
1	Active Recovery	< 55	< 68
2	Aerobic Endurance	56-75	69-83
3	Tempo	76-90	84-94
4	Threshold	91-105	95-105
5	VO <sub>2</sub> Max Effort	106-120	106 >
6	Anaerobic Capacity	121 >	Max Effort
7	Neuromuscular Power	Max	

THR = Threshold Heart Rate

### Run Zones

#	Zone	% of FTP	% of THR
1	Active Recovery	< 129 (78)	< 85
2	Aerobic Endurance	114-129 (78-88)	86-89
3	Tempo	106-113 (88-94)	90-93
4	Threshold	99-105 (95-101)	94-100
5	VO <sub>2</sub> Max Effort	97-100 (100-103)	101-106
6	Anaerobic Capacity	96-90 (104-111)	107 >
7	Sprint	Max	

THR = Threshold Heart Rate

### Swim Zones

#	Zone	% of FTP	% of THR
1	Active Recovery	<	< 68
2	Aerobic Endurance	T-Pace + 10 secs	69-83
3	Tempo	T-Pace + 5 secs	84-94
4	T-Pace	T-Pace	95-105
5	VO <sub>2</sub> Max Effort	T-Pace - 5 seconds	106 >
6	Anaerobic Capacity	Max	Max Effort

THR = Threshold Heart Rate

## Using a Heart Rate Monitor

If you are using a heart rate monitor, you will notice that for zone 6 training (Anaerobic Capacity) it says max effort. This is because it is very unlikely your heart rate will reach this zone within the time of the interval. Therefore, it would be best for you to complete Anaerobic Endurance workouts (zone 6 intervals) based of Rate of Perceived Exertion (RPE)

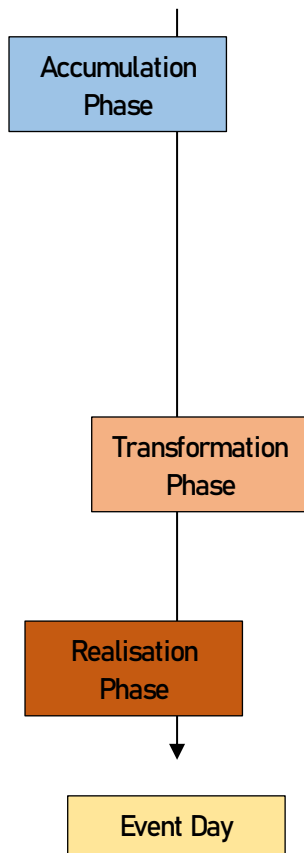
In the case of Anaerobic Capacity workouts your RPE should be 9/10 (10 begin on the absolute limit). You will also see within bike workouts PDFs that provide you with extra information include the RPE for that workout.

It is important to keep in mind your heart rate reacts slowly to the training demands, meaning it may take a few seconds before it declines after an interval for example. So, don't worry if your heart rate is not always in the right zone.

Rate of Perceived Exertion Scale: RPE table uses a revised scale. 0 = rest, 10 = Maximal Effort.

#	Zone	RPE (0-10)	% of THR
1	Active Recovery	3	After a workout like this you may feel better after, than before the workout.
2	Aerobic Endurance	4-5	Your all pace, should be able to maintain a conversation.
3	Tempo	6-7	Breathing should still be under control, but legs may feel slight burning.
4	Threshold	7-8	Similar to above, but heavier breathing and body hurting sooner.
5	VO <sub>2</sub> Max Effort	8-9	You may describe this effort as being at or close to your limit.
6	Anaerobic Capacity	9-10	Breathing will be very heavy and body hurting a lot.
7	Sprint	10	Very hard effort you should be at your absolute limit.

## Training Plan



### Brief:

All BCA training programmes are periodized, meaning the plan is split into different segments each with specific focus. In this instant training is split into three segments – the Accumulation Phase, Transformation Phase and Realisation Phase. Training becomes more event specific across time to prevent peaking to early or over training.

### Features:

In addition to workouts tailored around peaking for the main event, all programmes include strength training. Similarly, strength training follows a periodised plan to prevent over loading with the muscles with weights that are too heavy to early. The timeline to the left provides a visual of a typical training plan

### Goal Setting:

Humans are design to work towards a goal. Therefore, outlining (in as much detail as possible) what you want to achieve through the plan will increase the probability of this happening.

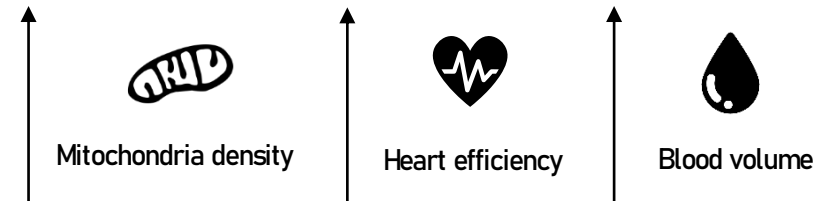
### My Goals:

*Please write here.*

## Accumulation Phase #1

### Brief:

The accumulation phase focuses on building a base endurance. Therefore, a large percentage of training focuses on aerobic workouts (with oxygen). As a result, some of the adaptations that occur during this phase include.



The purpose is to make sure the body is fit enough to complete the event specific training (Transformation Phase). This means improvements may increase at a lower rate but should mean the body is fresh for very high intensity work.

### Features

The TID during phase # 1 follows two methods, pyramidal and polarized training. Pyramidal training follows a split of 80% - 15% - 5% (low intensity – moderate intensity – high intensity). The emphasis on tempo workouts builds an endurance without fatigue spiking. However, as phase # 1 progress more high intensity training is including – polarized training – which follows a split of 80% - 5% - 15% or 80% - 0% - 20%

In addition, often featured in these plans are block training (BT). BT is when training focuses on improving specific aspects to an athlete's attributes within certain micro cycles. Science has shown completing blocks of high intensity training during the accumulation phase improves performance more than not including block training.

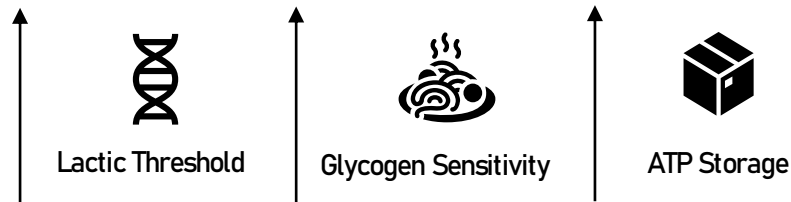
### Recommendations:

Don't be tempted to increase the intensity of workouts/intervals. Have the wisdom to show patience throughout the plan. If you find long low intensity rides boring, ride with groups/friends. Practice holding the wheel and how to stay safe in a group.

## Transformation Phase # 2

### Brief:

The Transformation Phase focuses on event specific workouts. Therefore, this often means training intensity increases to match or supersede event demands. The phase is shorter as event specific training causes a lot more cumulative fatigue (chronic fatigue that builds up over time – both physiologically and psychologically). Moreover, adaptations made are considerably harder to maintain due to fatigue, resulting in a shorter phase. Adaptations that occur during the phase include.



However, event specific training changes for different events. For example, if your event is a Gran Fondo that is expected to take 4-5 hours, consider completing a 5-6 endurance ride during phase # 2. Each training plan has broken down the demands the event to make sure training takes you to the next level.

### Features

Often the TID changes to focus on moderate to high intensity workouts. In some cases, training may even be split 50%-0%-50%. During phase # 2 all high intensity workouts match with a very low intensity training session – the hard workouts are harder and easier workouts are easier.

### Recommendations:

Don't try to lose weight during the Transformation Phase, since energy demands are very high. The quality of the workout must take priority, so fuelling with the right amount nutrients is critical.

## Realisation Phase # 3

### Brief:

The Realisation Phase focuses on tapering for the main event. Tapering determines whether an individual is going to be under-trained, over-trained or just right. For optimum results total training volume should decrease between 41-60%. However, shorter taper periods < 1 week can be more. Adaptions include:



The purpose is to allow the athlete to realise their new fitness through recovery, while maintaining the important adaptations that have been made. Similarly, to the Transformation phase, different events have different tapering lengths. Generally speaking, the shorter an event the shorter the taper. For example, a marathon taper may be 2 weeks while a short time trial may be 4 days.

### Features:

Training accommodates for both a Saturday and Sunday event. The Monday of event week has an attached screen shot providing you with the alternate week plan. The default plan sets the event to Sunday, but the alternate plan is for Saturday.

### Recommendations:

Even if you feel a little under-training due to illness etc. that does not mean you should skip the realisation phase. Instead, shortening by up to 50% (1 week instead of 2) would be far more appropriate.



## *Alternatives*

There are always going to be some bumps along the way to your main event. However, this does not mean training needs to suffer, so what should you do if you're in a difficult situation?

### **Work/Family**

A work/training life balance can be hard, which is why all mid-week workouts are short (excluding the ELITE plans). However, on days when work and family life is causing more fatigue than usual you have three options: Option 1: shortening the planned intervals and rest period. This way you may only need to work out for 20-30 minutes instead of 45-60 minutes. Option 2: Skip the workout (but try not to miss two days in a row – unless it is a recovery week), conversely swap the workout for a recovery ride (30-45 minutes in duration @ 65%). Option 3: Even if you only have 30 minutes available you can still complete a session. Try 30 seconds all out max with 30 seconds rest, repeated 10 times.

### **Illness**

Athletes on average get ill twice as much the average person, so the likelihood of training being impacted by the common cold is high (see Training Advice for how to decrease the chance of illness). However, accommodating training is simple, once you have recovered from an illness start training from however many days you missed. For example, if you were ill for 14 days, re-start training from 14 days ago. Although, the first ride back from illness should always be short and low intensity.

### **Fatigue**

Fatigue is not necessarily a bad thing, but too much is. If your heart rate has been over resting by 7 bpm for 3 days take 1-3 rest days. On the other hand, if you notice your heart rate drops suddenly below your resting heart rate (i.e this should happen slowly over time) then this can also be a sign of fatigue (a rapid drop is not necessarily a good thing). Conversely, starting the recovery week would also be an appropriate alternative. Furthermore, do not neglect subjective measures as it has been shown RPE is closely matched to non-subjective measures. Listen to your body and be honest with yourself.

## **Alternate Week**

Most plans are designed for the event to be on the Sunday of the last week. However, if your event is a Saturday see the screenshot attached within the last week of the calendar. This provides you with the details of the alternate week and all you have to do is drag and drop a couple workouts.

## Training Advice

There are many variables that can affect training (fatigue, work/life schedule etc.), even more so over a longer period of time. However, there are many ways that will help control these variables and adapted training accordingly.

### *Adapting the Plan*

One of the disadvantages to a pre-built plan is its harder to include smaller races in your calendar. However, if (or when) you have small races on the calendar the best time to complete them is during the transformation phase. For example, a short mid-week duathlon in the evening would be a good replacement for an interval session.

Conversely, during the Transformation phase, Saturday will often be a tempo endurance ride (1.5 – 3 hours). Replacing this workout with a race would be good practice. However, as racing can causes more fatigue (both physiological and psychological) the follow days training can be shorted by up to 50% (or if it was a particularly tough race/ event a rest day would be ok).

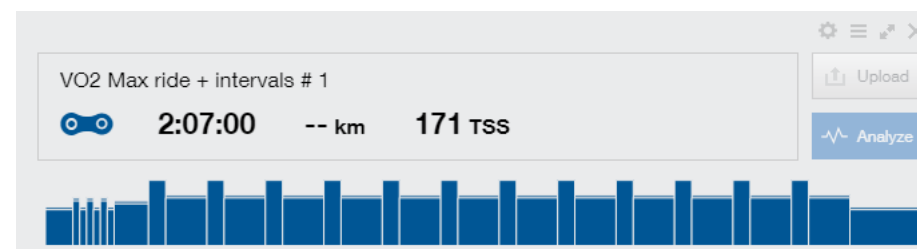
### Reducing Illness

Often the winner of a race is the person who gets ill the least, so naturally it is an important subject. There are a couple of things you can do to avoid illnesses including, increasing Vitamin C intake. Particularly during winter, it may be best to supplement with a Vitamin C tablet to strengthen your immune system. The second option may be an unpopular one but highly effective – avoid alcohol. Alcohol damages dendritic cells which are associated with the immune system. Therefore, avoiding alcohol will prevent declines in your bodies ability to fight of colds.

### Winter/Bad Weather Training

A lot of people will not live in climates suitable for training all year round, and ride indoors during the wet and cold months. There are a couple of session that can make the turbo training a bit more interesting without missing to much of the planned workout in the programme:

### Tempo Endurance Ride w/ VO2 max Efforts



WU – 4 mins @ 60-65% +

WU – 1 mins @ 70-80% + 1 mins @ 60-65%. x 3

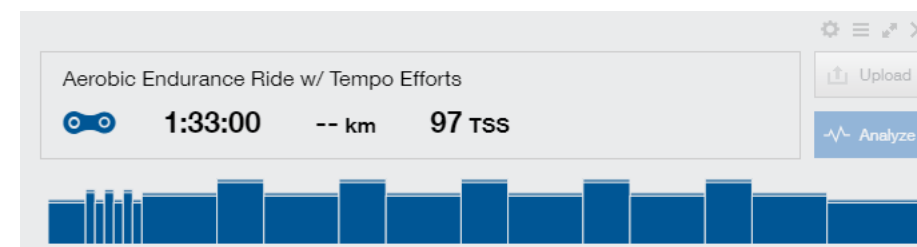
-

MS – 6 mins @ 80-85% + 2:30 mins @ 110%. x 12

-

CD – 10 mins @ 60-65%.

### Aerobic Endurance Ride w/ Tempo Intervals



WU – 4 mins @ 60-65% +

WU – 1 mins @ 70-80% + 1 mins @ 60-65%. x 3

-

MS – 8 mins @ 70-75% + 5 mins @ 90-100%. x 5

-

CD – 10 mins @ 60-65%.

## Recovery Strategies

Rest and recovery are essential elements to a training programme, which is why BCA has laid strategies that can enhance your recovery.

### Sleep

Aim for 10 hours sleep per night – which is considered suitable for athletes. However, if this is not practical then consider naps during the day. Naps are split into two categories, short (15-20 minutes) and long (30-60 minutes). A short nap results in poorer long-term cognitive function (decision making) but better short-term function. Whereas long naps have the opposite effect and is believed to engage the brain in REM sleep. Plus, have shown to have a positive effect on performance.

### Walking

Sitting at a desk or with legs crossed is bad for blood flow and can even cause turbulent blood. However, to combat this utilise active recovery by completing small walks (5 minutes max) every 30-60 minutes.

### Compression

Compression socks have been shown to increase blood flow by causing arteries and blood vessels to constrict. This process is known as vasoconstriction and increases blood flow and velocity. The additional oxygenated blood flow enhances the recovery process.

### High Cadence Low Resistance Training

A high cadence (100 rpm) is considered more efficient compared to other cadence ranges. Therefore, if you are suffering from DOMs (Delayed On-set Muscle soreness) a high cadence low resistance ride would be useful. As workouts like these increase the blood supply to the working muscles. In turn, enhancing recovery without causing much stress on the body.

## Masters Training

There is an increasing amount of master athletes participating in sport. Therefore, understanding how training needs to be adapted is critically important.

### The Science

Master athletes are generally considered people who are over the age of 35 years (as opposed to senior athletes who are older than 50 years) and trains or takes part in athletic competitions. Furthermore, There are three types of master athletes: ones who have been consistently training most of their life (advanced), ones who stopped but have been through structured training in the past (Intermediate), lastly, athletes new to the sport with little to no prior experience (Beginner). Understanding which type of Master athlete, you are will either help tailor your training or decide which BCA training plan to pick.

But what are the age-related declines?

Current evidence supports a 10% decline in  $\dot{V}O_2$  max every ten years. Which is in part due to a reduction in maximal cardiac output (the amount of blood pumped around the body by the heart per minute) caused by a reduction in max heart rate. However, despite a decline in  $\dot{V}O_2$  max, lactate threshold (LT) tends to remain the same in proportion to  $\dot{V}O_2$  max. For example, if you have a  $\dot{V}O_2$  max of 65 mL/kg/min and your LT was at 37.7 mL/kg/min of  $\dot{V}O_2$  max (58%) then in ten years' time your  $\dot{V}O_2$  max would decline to 59 mL/kg/min (10% decline), but your LT would still be around 58% of 59 mL/kg/min.

Additional central factors include decreased stroke volume (amount of blood pumped in one beat of the heart) which is affected by a decline in total blood volume.

Age related decline in skeletal muscle mass (also known as sarcopenia) begins around 35 years and affects type II muscle fibres most (fast twitch). By the age of 80 years 50% of muscle fibres have disappeared from the limb. The size and contractile performance of type I muscle fibres (slow twitch) also decline. So how can training accommodate all of these factors?

## Recommendations

### Lactate Threshold:

Repeating the same intervals over time results in less improvements/adaptations made. It is therefore, advised that LT intervals (high zone 3/4) start with longer interval duration to focus on endurance. As training becomes more race specific shorten the interval length but increase the intensity and decreases the rest period. Example below:

1. 20 minutes @ 085% + 5 minutes @ 65% x 2 - tempo intervals
2. 10 minutes @ 095% + 2 minutes @ 65% x 4 - sub-threshold intervals
3. 08 minutes @ 100% + 2 minutes @ 65% x 5 - threshold intervals
4. 05 minutes @ 105% + 01 minutes @ 65% x 5 - maximal aerobic power intervals

### Rest Days:

Training should have a ratio of 3:1 meaning on average for every three days there is a hard workout. One of those 3 days may include a strength workout or a rest day. Therefore, a rest day at least twice a week and ideally one of which on a Monday. A Monday rest day allows you to go into the week (when training load is higher) feeling rested. Your second rest day may be best on a Monday to recover from the endurance miles.

### Strength Training:


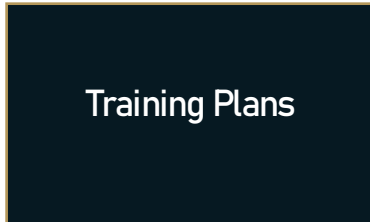
As mentioned, muscle mass begins to decline from the age of 35. As a result, aim to include strength training 2-3 times a week. The first 3-4 weeks of training should focus on muscle hypertrophy (to increase the size of muscle fibres). Hypertrophy means a slower speed of contractions (3 seconds down - 3 seconds up). Before progressing to strength, then power 3-4 weeks before your first event.

## More

Did you enjoy and improve your training plan? You get 10% off the next training plan you buy with BCA. Simply get in touch with the plan you want and you will receive a discount code.

Another benefit to purchasing a BCA training programme is 20% of the first month if you sign up to the coaching service.

Please don't forget to fill the questionnaire at the end of the training plan to help BCA develop. Good Luck in all your future endeavours.

A dark blue rectangular button with a thin gold border, containing the text "Coaching Service" in white.A dark blue rectangular button with a thin gold border, containing the text "Training Plans" in white.