Endurance Athlete Training Overview … DB#22

Becoming your own coach

Periodization, **Base**, Interval/Speed/HIIT* & **Rest**

*Details on Interval/Speed/HIIT to follow in future Deeper Blog

Endurance Athlete Training Overview
Becoming your own coach: Periodization, Base, Speed/HIIT & Rest

Background:

As in any subject we might get interested in, we research & at times devour all the data we can find so we might understand a starting point and areas to experimentation. My path of running to martial arts to motorsports to cycling has led me to an overview that might be a good starting point for you. My experience with endurance training spans 20+ years with a curiosity centering around increasing performance through competition within myself.

After 50+ books read …

Becoming your own Coach - Why?

1) Understand how your body reacts to 'damage' or stimulus.
2) Experiment with inputs & outputs of your training to find what works for you.
3) Breaking limitations that your past and your mind has to offer to see progress.

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Disclosure:

- I am not a doctor nor do I play one on the internet or anywhere else.
- These are my lessons and learning, use it and share it if you like.
- I do not receive any compensation for any these products, yet I have purchased them with my own earnings.
- Thank you!

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Background:

This is not hard.

Let's skip the hype and get to the key points.

Let's keep this simple.

Outline:

1) Periodization - Build & Rest
2) Base Building - Also Fat Burning for steady strength without sickness
3) Speed - Tempo & HIIT training for speed
4) Yearly Rest - at least two weeks off to heal
5) Other Factors - Tracking progress and feelings along the way

That's it.

I will work to create a one-page summary at the end of these Deeper Blogs on being an Athlete, a checklist you can reference & carry.

TIPS - Your training journal might contain:

1) Date & Type of Training (BASE/SPEED/RECOVERY)
2) Basic stats – Avg Heart rate, Distance, course taken, fluid & nutrition taken during & after. Did you meet your effort goal? What data did you take? Garmin; Fitbit; Power meter; etc. or if 'it' was not working or no data.
3) Feeling – "Started felt awful, yet felt great 1 hour in, tired at 3 hours."

Note: I no longer keep a separate training journal, the summary is in my daily planner.

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Periodization:

Key: 2 to 4 weeks BUILD followed by 1 week of REST

Concept:

You will have BUILD weeks and REST weeks.

Typically, this is three weeks of intense progressive training followed by one week of rest.

As you get older this will change because of the amount of recovery required.

In my 50's I currently use two weeks of build with slightly less than a week of rest.

This will be progressive & steady strain on your body & mind. Build week 1 < Build week 2 and Rest

The 'Rest time' will be less time &/or intensity that Build week 1 or about ½ of Build week 2.

A sub element of this would be tapering prior to an important event in your training year.

Why do this? Overtraining. A few words of caution:

If the training becomes to much, you will break down in many ways.

You might even begin to no longer care about your fitness level or even anything at all,

if you dig too deep for too long.

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Here is a simple method to calculate the total 'Simple Damage' you have done in each training session. It is nothing compared to the more complicated POWER METER calculations, but it is effective for training planning and it is something you could calculate in your head. To better understand range of this 'Simple Damage' number I typically have numbers of 1000+, yet get to 2000+ as training for a key event approaches.

'Simple DAMAGE' = For entire workout (ZONE) X (TIME in MINUTES) + Time for Interval if any (ZONE) X (TIME of individual INTERVAL) X (Total Number of INTERVALS)

EXAMPLE: I worked out for 2 hours in Zone 2 and did an interval of 5 minutes in length and repeated it 6 times in Zone 4. What is the total 'Simple Damage'?
(zone 2) X (60 min X 2) + (zone 4) X (5 min) X (6 repeats) =
2 X 120 + 4 X 5 X 6
240 + 120 = 360 'simple damage' points

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There are both Heart Rate and Power meter zones for cyclists. Heart Rate works most of the time for any steady training, such as BASE training. Power meter or Watts excels for shorter & harder efforts, such as intervals. You might look at Heart Rate as the effort or input & Power as the output of that effort. Yes, your heart rate to power ratio will vary for your condition and the environmental conditions.

As you get into better shape your heart rate will be lower for a given power, as it is hotter outside your heart rate will be higher for a given heart rate. I will not get into your Power zones here, yet. Just look up 'FTP and determining power meter zones or see one the books by Hunter Allen & Stephen S. Cheung, PhD.

Zone 1 Very Light or Recovery

Zone 2 Health Zone or Aerobic BASE long endurance & max 'fat-burn'

Zone 3 Aerobic or Intensive Aerobic shorter endurance

Zone 4 - 7 Improved Performance or Lactate threshold to Anaerobic

Most people are working out in ZONE 3 for most of their workouts, I believe this is incorrect. Why? It is too hard & yet not hard enough on the body, but it is 'easier'.

This is simplified to get you started – You want to do your workouts in two Heart Rate zones:

Zone 2 for BASE Endurance

&

Zone 4+ for INTERVAL Performance

That's it.

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How to calculate estimate Zone 2

Simple:
180 – Age + 5 to 10 beats per minute depending on health & training.
See Mark Allen 6-time Ironman Kona winner and prior to that his coach Phil Maffetone

https://www.phoenix.gov/fire/directory/health-center/health-and-fitness-newsletters/exercise-workouts/trainingallen

Example: active endurance 45-year-old male at 150 lbs. 180 – 45 + 5 = 140 beats per minute

I will let you choose
I use and recommend
the 1st simple
method.

Large population curve fit:
0.70 X (210 – 0.5 X AGE – 0.05 X Weight + 4 if male + 0 if female)
see Sally Edwards https://www.howtobefit.com/determine-maximum-heart-rate.htm

Same example: active endurance 45-year-old male at 150 lbs.

(0.70 for zone 2) X (210 – (0.5 X 45) - (0.05 X 150) + 4) = (0.7) X (184) = 129 beats per minute
The method of 220 – Age predicts Z2 to be even lower Z2 for example above = 123 bpm;
therefore not enough strain on the body to force it to adapt.

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Periodization – during *BASE* training overview

BUILD WEEK 1

BUILD WEEK 2

REST WEEK

BASE BUILDING

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
Week1	OFF	120 min	OFF	180 min	OFF	240 min	OFF	
		120		180		240		9.0
		Zone: 2		Zone: 2		Zone: 2		
		2		2		2		
		Damage		Damage		Damage		
		240		360		480		1080

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total	
Week2	OFF	120 min	OFF	210 min	OFF	270 min	OFF		
		120		210		270		10.0	
		Zone: 2		Zone: 2		Zone: 2		11%	% increase
		2		2		2			
		Damage		Damage		Damage			
		240		420		540		1200	
								11%	% increase

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total	
Rest week	OFF	OFF	OFF	120 min	OFF	240 min	OFF		
		0		120		240		6.0	
		Zone:		Zone: 2		Zone: 2		-40%	% decrease
		0		2		2			
		Damage		Damage		Damage			
		0		240		480		720	
								-40%	% decrease

(Blow-up of each next →)

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Periodization – during *BASE* training

EXAMPLE - Two week Build and one week Rest

BUILD WEEK 1

Key: 'BUILD' & then 'REST', yet 'REST does not equal STOP'

BASE BUILDING

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
Week1	OFF	120 min	OFF	180 min	OFF	240 min	OFF	
		120		180		240		9.0
		Zone: 2		Zone: 2		Zone: 2		
		2		2		2		
		Damage		Damage		Damage		
		240		360		480		1080

Damage = 'Simple Damage' points from p6

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Periodization – during *BASE* training

EXAMPLE - Two week Build and one week Rest

BUILD WEEK 2

Key: Do it hard 'BUILD' & then 'REST'
'REST does not equal STOP'

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total	
Week2	OFF	120 min	OFF	210 min	OFF	270 min	OFF		
		120		210		270		10.0	
		Zone: 2		Zone: 2		Zone: 2		11%	% increase
		2		2		2			
		Damage		Damage		Damage			
		240		420		540		1200	
								11%	% increase

Damage = 'Simple Damage' points from p6

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Periodization – during *BASE* training

EXAMPLE - Two week Build and one week Rest

Key: Do it hard 'BUILD' & then 'REST'
'REST does not equal STOP'

REST WEEK

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total	
Rest week	OFF	OFF	OFF	120 min	OFF	240 min	OFF		
		0		120		240		6.0	
		Zone:		Zone: 2		Zone: 2		-40%	% decrease
		0		2		2			
		Damage		Damage		Damage			
		0		240		480		720	
								-40%	% decrease

Damage = 'Simple Damage' points from p6

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Periodization:

TAPERING

The simple look is to take your efforts DOWN in both INTENSITY and VOLUME for about 2 weeks prior to a Key event, an A-event on your calendar that you would like to perform your best at.

By How much?

You will want to experiment with this.

I have tried everything from nothing to overload prior to an event. My best has resulted from tapering to about 80% of max 'simple damage' reached for the 1st week and about 50% of max 'simple damage' in the second. You want to be rested enough so you begin to feel like a 'caged animal'. I have also benefited from 'blowing out your legs' the day prior this is a short 30-minute workout with a 15-minute warm-up followed by three (3) all out efforts for 30 seconds spaced by 5 minutes of rest, thank you Nathan! This prevents 'stale legs' the day of the event.

Metadata says "optimal tapering results seems to be achieved with a 41 to 60 percent reduction in overall volume. P95 from *Cutting-Edge Cycling – Advanced training for advanced cyclists* by Hunter Allen & Stephen S. Cheung, PhD. Specific reference 'Bosquet, L. et al 2007. Effec of tapering on performance: A meta-analysis. Medicine and Science in Sports & Exercise 39:1358-1365.

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Base Building:

Key: Base building increases your performance engine

Concept:

You will build a platform in which to place all of your training upon.

You will train at a steady rate that will maximize your fat burning capability.

Within this 'zone' you will be able to perform longer that you might think possible.

Why? Increase 'fat burning performance engine' size, loosing fat and prevention of sickness

If the training becomes too much, you will break down in many ways. You might even begin to no longer care about your fitness level or even anything at all if you dig too deep for too long.

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Base Building:

Key: Start @ about 1.5 hours & progress to 4+ hours, add speed when your heart rate holds for a steady effort of 2 hours. There is minimal heart rate drift, say no more than 5 to 10 beats '30 minute average' from start to finish.

EXAMPLE:

Each winter while others are couch sitting, I am sitting on a trainer at the gym building base.

For me this starts with 3 X 30 minutes of steady riding & ends at 7 X 30 minute.

Steady riding = holding heart rate at 180 - Age + 5 bpm. (see prior on establishing zone 2 heart rate)

Timing: Each '30 minute' takes approximately 36 minutes due to pauses, bathroom breaks, etc.

So, 3 X 30 minute will take 3 X 36 minutes or ~ 1.8 hours, I will plan 2 hours & 7 X 30 will be ~4.2 hours, so plan 4.5 hours

Sweat: Inside on a bike without a fan (at a gym) you will likely drench two sets of clothing, so plan at least a change of shirt ½ way thru.

Standing: Plan to stand consistently to get blood flowing to your pelvic region. I stand every 1.5 miles for at least 0.1 miles.

When to add Speed?

When you see no or minimal 'heart rate drift' for at least two hours of steady riding.

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Base Building:

Key: You have near infinite fat stores to burn; you have limited glucose stores.
At heart rate zone 2 or 180 – Age + 5 you will maximize fat burn & preserve precious glucose stores.

Type of Calories burned at different heart rate or exertion levels

You have approximately 1 ½ to 2 hours of glucose or sugar to burn in your muscles & liver.

After this your body will slow down, it might even start to burn itself or consume muscle or protein.

Obviously, you can exercise much longer, hence the words - endurance, marathon, ultra-athlete.

How?

Increasing your ability to burn fat.

This peaks at approximately a heart rate zone 2.

This allows you to prolong your efforts maximizing fat burn, while preserving your precious glucose stores.

You will also likely supplement with additional 'sugars' during your training & events.

(see future Deeper blog post for details & supporting math)

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Yearly REST:

Very few speak of this, but I find it a must.

Key: Take it down - stop the repetitive part of your endurance routine for 2 to 4 weeks. ***For me after cycling across NC in October and training all year, I am ready to get off the bike for a while.***

Concept:

Take at least two weeks possibly 4 weeks off your primary training method. For me, it is about 3 to 4 weeks off the bicycle right after riding across the state of North Carolina at the start of October.

Why?

Mentally you need something different to look forward to.

You will come back mentally stronger to add to the gains you have made over the last year.

Physically your body needs to heal of re-occurring injuries.

Even with weights, stretching & yoga your body needs to just heal from these repetitive endurance activities.

For example, if you average 90 rpm for 10 hours / week for 50 weeks / year is 2,700,000 times of spinning that crank.

I know your bike fit or running stride is perfect so there is no chance of an in balance, even so 2.7 million repetitions is a lot!

Give yourself a well needed break, it too me years to understand this!

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Overview Speed, Interval or HIIT training in a future Deeper Blog Post