



UPDATE

WHITE PAPER 2018





—

NO SHORTCUTS

NOT GOT TIME TO READ IT ALL? HERE'S THE POSITIVE “TAKE AWAYS” ...

- Training <80%HRmax must be a key basic habit. #1 BKM
- Diary used to plan: work blocks/tapers/adaptation(?)/race-recovery
- Start with PLAN A but adapt to your reality & be time efficient
- Diet/Supplements timing/loading/testing impacts performance
- Bikepower/[Drag measuring tech](#) are seriously effective tools
- “Bodywork”, DIY foam rolling etc remains a weekly priority
- Fasted sessions/low-carb/race-feeding have to be periodised
- [Blood profiling](#) and HRV are the essentials to Peak Performance





Phil Graves



Shadrack Biwott



Lauren Dolan



Crystal Spearman



The Brownlees



3 in Kona

Forth Edge Profiling



WHITE PAPER 2018

Starting point...

- ▶ Popper's criterion of demarcation (that which separates pseudoscience from science) is the tenant of falsification. As such, scientists need to understand that the most effective way to prove a theory or specific knowledge is to demonstrate the inability to falsify it.

WHITE PAPER 2018

Starting point...

- ▶ Popper's criterion of demarcation (that which separates pseudoscience from science) is the tenant of falsification. As such, scientists need to understand that the most effective way to prove a theory or specific knowledge is to demonstrate the inability to falsify it.

B. K. M.

- **TRAINING**

To achieve goals **consistency** in training 3 sports is paramount
Top AG/Elites train 8-18h/wk - 20-35h/wk (400-1200h/year)
Mixing around 75-90% Z1 / 5-15% Z2 / 10% Z3/Strength.

No elite endurance athlete trains 5-6h a week all as HIT efforts.

- **NUTRITION**

Personalised nutrition programmes are the new “STACK.
e.g. low glycogen sessions; “whole” protein meals; race-feeding;
augmentation with relevant vitamins/minerals/ergogenics

Fads and Pseudoscience is running amok, and is unproven.

- **TECHNOLOGY**

“**Kit Doping**” (Aston 2013) is fine when within the rules.

Leverage to the maximum to maximise your genetic/experience.

e.g. long arm tri suits, drag reduction bikes/clothing, compression etc

You cannot just try harder or overcome physics. “Kit” Augments



Training

1st Rule of Smarter Training

Base level must be 75-90% of time

Base level is 55-80% HRmax or in “low lactate” ZONE ONE predominates in all phases of the year:

Analysis of effective JBST clients show: 80-90% per annum in Zone I

Worlds Most Successful Female XC Skier: 92.3% in Zone I

Elite Marathoners (Nov-Feb/Mar-Apr/May-Aug): 83.3/84.7/79.9% Zone I

NEW EVIDENCE

Solli et al (2017) Training Characteristics of Worlds Most Successful Female XC Skier

VO₂max 67ml.kg.min⁻¹

6 gold medals at the Olympic Games

18 gold medals at the World Championship

110 World Cup victories

5 yrs @ 937h/yr (approx **20% was at altitude**). [783h Z1 = 83.6% Vol]

543 sessions/yr = 849h endurance** // 75h strength // 14h speed training

** =91% endurance of which **92.3% in Zone I** (Z2=2.9%, Z3=4.8%)

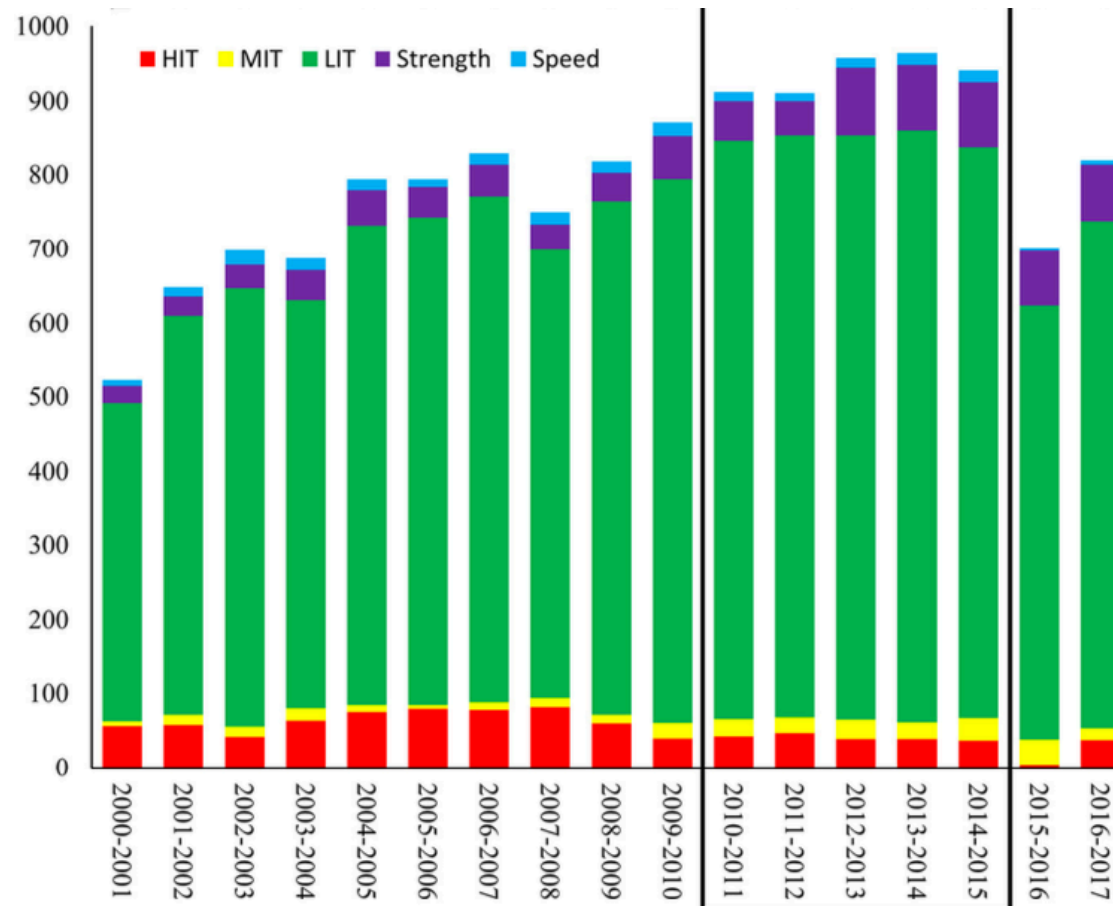
Z1 sessions consisted of:

21% warm up

14% <90mins

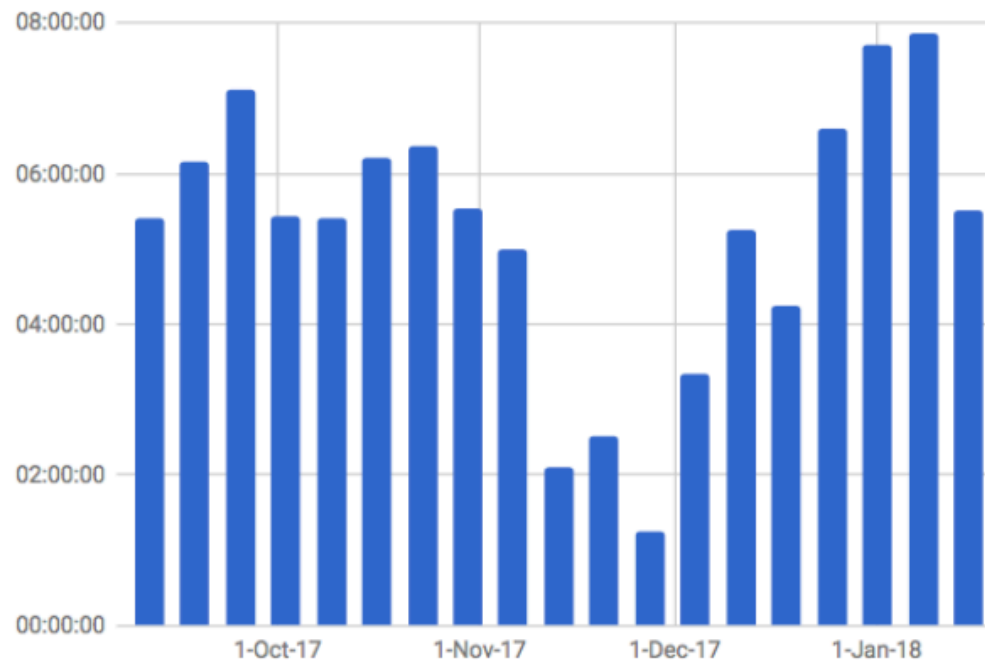
65%>90mins (Psst... so elite athletes do a lot of Long Slow Distance)

Just look at the green bit!



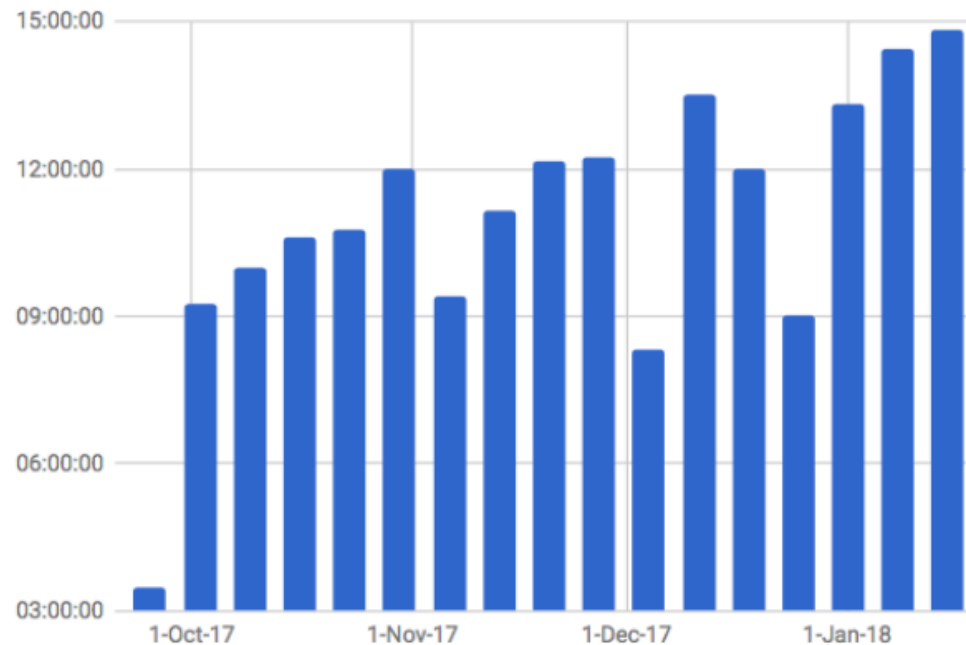
REAL LIFE

I've been using Coach Joe's Z1 focused system for five months and I'm in the best shape I have been in January for many, many years in measurable terms such as training hours achieved, heart rate, body composition, lack of general health and injury problems. Other "time crunched" or "high intensity" style coaching programmes used in previous years have always resulted in me breaking down at some stage. The Z1 approach has given me a real foundation. I was initially concerned about "junk miles" using the methodology, but I couldn't have been more wrong. It works.

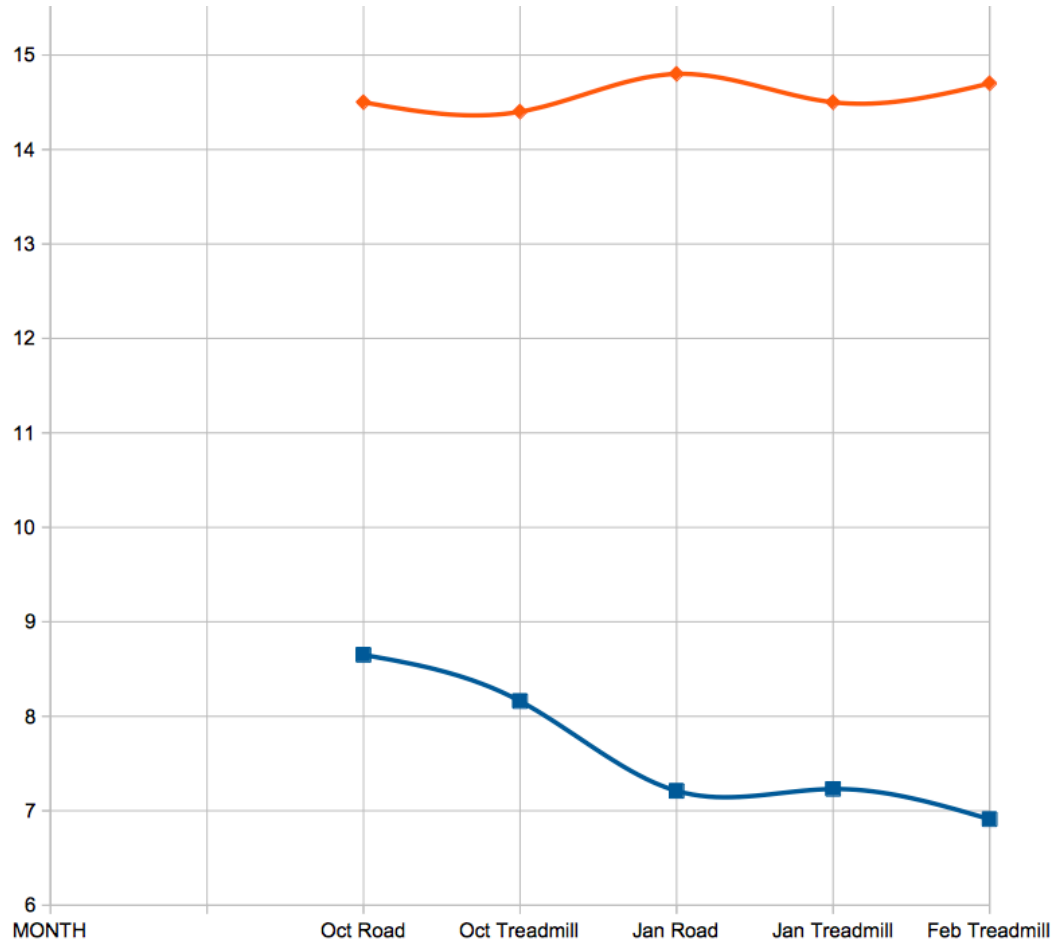


REAL LIFE

Having recently started with joe I was skeptical at the outset of the benefits of zone 1 training but I have carried out all of my training in this lower zone for three months and the gains have been huge!! An example recently has been a reduction in run pace from over 8 minute miling to sub 7 minute miling for periods during a recent test!! I'm now doing more training as I can recover better and everything surrounding the sport is so much better!!



REAL LIFE



HEART RATE
BPM/10

RUN PACE
MINUTES/MILE

HOW TO DO IT BEST?

- **DATA**

Download simple HR data and split into Z1/2/3.

e.g. Mac (ismarttrain.com), Garmin supported devices/mobile App and Desktop version (Garmin Z1, 2, 3 = true Zone 1)

Good athletes have this data because its NOT an option.

- **SIMPLE 80/20 RULE**

Find the proportions and stick to: pure Z1 sessions, at least 80% aerobic training in Z1 and controlled aerobic benchmarks (e.g. Aerobic Mile)

Planning sessions, knowing your weekly trend & benchmarking

- **TWEAK. LEARN**

The best plans adapt they are not written in stone. “A starting guess”

Poor discipline, route choice, lack of freshness is a learning opportunity

You need a disciplined approach not more discipline or motivation

2nd Rule of Smarter Training

Quality must be planned

- **Plan High Intensity Training (HIT)**

Such as the proven 2/wk: 6 x 4' @ 88-90%HR (+RI of 2 - 4')

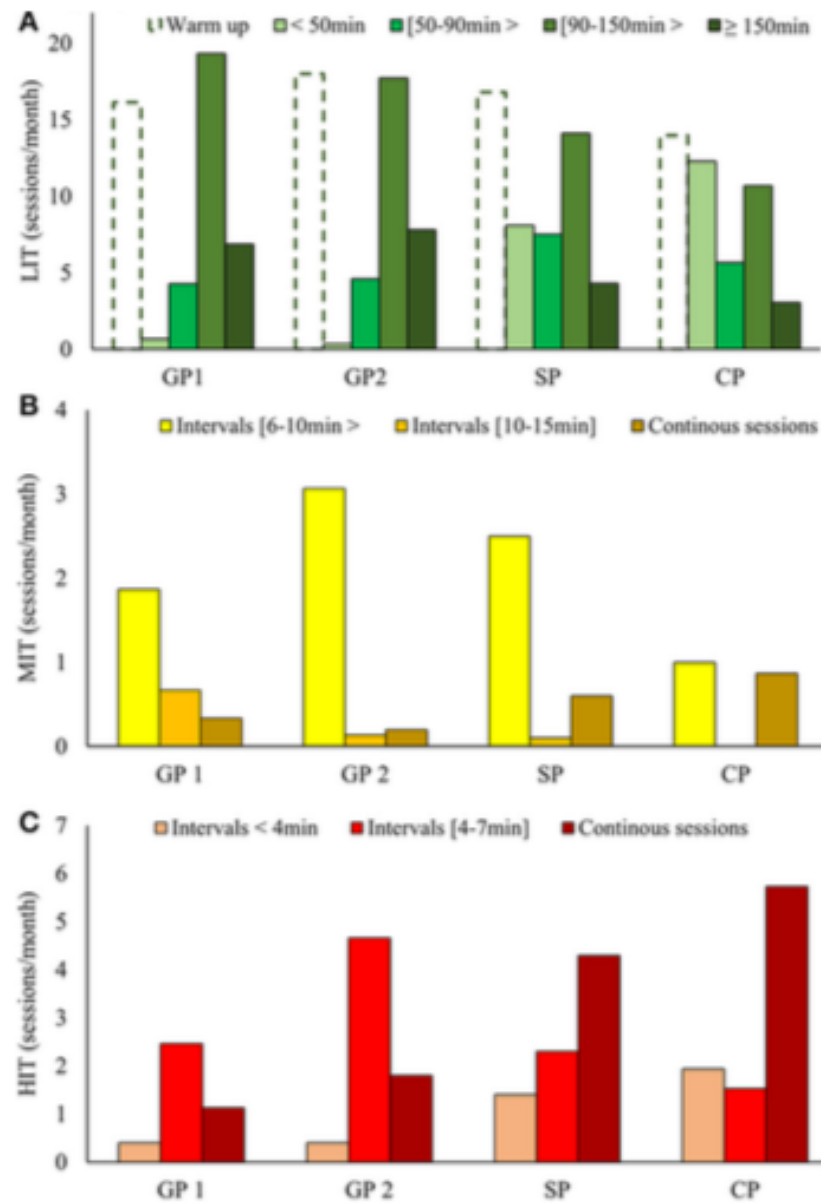
This is very potent over a 4 to 6/8 week period.

- **Only once Low Intensity Training (LIT) is correctly topped-off**
Z2 “lapses of concentration” come out of your 20% HIT allowance
You may be “HIT” too many days/week already (**2-3 is optimum**)

- **Only add HIT if required e.g. close to a “HIT-limited” A goal**
Once training at the top of Z1 is fast it's time to add more quality to be race ready. Until then enjoy the 300-1000 hour rule of training.

NEW EVIDENCE

Solli et al (2017) Training Characteristics of *Worlds Most Successful Female XC Skier*



THE BIG MISTAKES

- **Going too hard to soon**

All interval studies, Elite training plans and their diaries include time to get the muscles warmed-up (XC skier 21% was noted “warm up”).
“Too-hard, too-soon” activates “stress” response even in Z1.

- **Calling anything Zone 2 “base” training or steady**

80%HRmax is the Zone 1 limit. Above is stressful “no-mans land”
Choose terrain, weather and groups that match your ability.

- **Not doing sessions to a BKM plan**

The plan before should be mirrored by the data after. “Felt good went faster” “Good at end so did efforts” etc

This is **bad discipline**. This will make you **less effective**.

3rd Rule of Smarter Training

Strength Training is essential

- **Make time to keep strength/conditioning:**
Resistance training (machine, free weights, body weight) and Pilates/Plyometrics(?) NOT random circuit training
- **Make things harder from late WINTER into PRECOMP:**
e.g. swim: two costumes, proper drag shorts(not t-shirts!), paddles, and less drafting.
e.g. bike: add weight, low cadence hills (4-6'@60rpm @60-75%PPO), ride on higher CRR tires.
e.g. run: 8-15" hill reps, heavier shoes, pool DWR, pushing a Buggy, WeightBelt(? jury still out)
- **Prehab, rehab, beat ageing/bone-mineral-density drops:**
It makes an athlete more “complete” and is no longer considered damaging to performance.

THE BIG MISTAKES

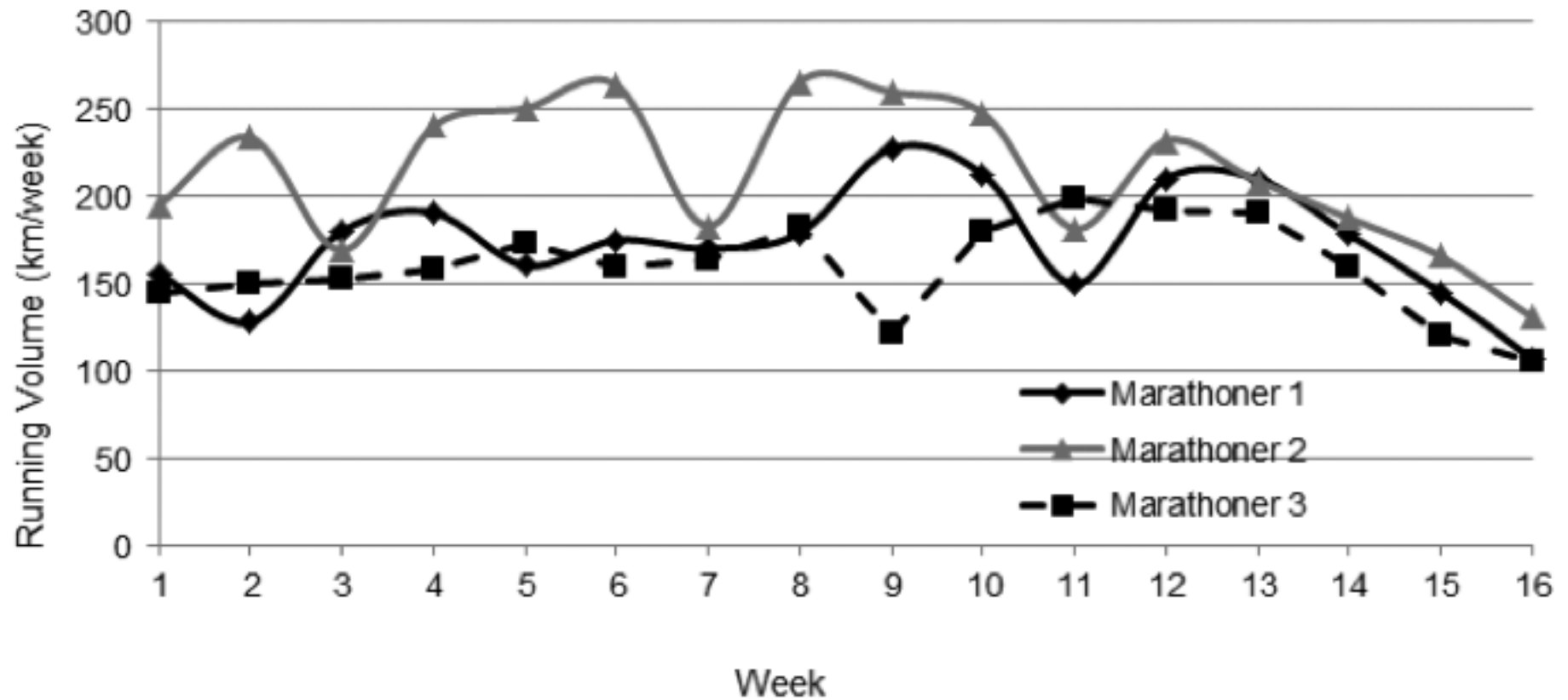
- **Going too heavy to soon**
All joints, ligaments etc need weeks to adapt to the stress.
6-8 weeks low to moderate preparation training.
Building to 8-10 RM resistances in 20-45 minute sessions x2/wk
- **Being sporadic, especially in the pre-season/season**
Start with intention to devote time or just don't start
Choose a day with less aerobic training
- **Not doing sessions to a routine**
Random “classes” or no set muscle-pattern plan
Pre-printed plan, clipboard and subtle progression/adaptation.

4th Rule of Smarter Training

Plan 3:1 Blocks of Train:Adapt

NEW EVIDENCE

Stellingwerff (2012) Elite marathoners training volume ebb-and-flow.
Note: 74% training was ZI; they also planned feeding-during-training key sessions



- **Use technology (paper & pen) or computer to plan:**
e.g. Adapt weeks = lighter days, low ZI technique, transition training. Also non-training days, alternative sports in off-season

- **Use realistic volume (220 Reader Survey: average=8h/wk)**

Don't get hooked on a number it will vary: **10, 8, 12, 6**

The training consistency “builds” your fitness over time.
It's all about planning, being-flexible and “**ABSORBING**”

- **Don't go Over-The-Top after your season**

Less is gained Oct to Dec so aim for 60%-75% of volume you intend to peak “in-season”. Productive build from Feb to April.

Nutrition



5th Rule of Smarter Nutrition

Nutrients fuel results

- **Use carbs in training - its the predominant fuel choice**
Some fasted sessions (<2h) help lean-burn ability but do compromise quality and the session must be controlled ZI
- **Quality Protein timing helps “adaptation”**
e.g. around hard resistance training or at night (25-40g). Plus shakes add an extra “easy” quality protein dose to the diet
- **Tracking Profile of nutrient status is essential (~£400/yr)**
e.g. [tri-monthly profiling](#) for Hbn, Vitamin D, B12, Folate, Testosterone and others to ensure blood, immune system and health optimisation (around 20% of metrics are out of range - so 1 in 5 things could be better)

NEW EVIDENCE

Mcdonagh et al (2017) Mouthwash effects on Nitrate Loading

Conclusion



In summary, this study has shown that regular mouth-rinsing with a chlorhexidine-containing mouthwash and also a non-chlorhexidine-containing mouthwash, attenuated the rise in plasma $[\text{NO}_2^-]$ following chronic supplementation with NO_3^- -rich beetroot juice. BR did not significantly reduce BP during seated and supine rest or during treadmill walking. However, prior rinsing with a chlorhexidine-containing mouthwash led to a greater increase in BP during low-intensity exercise compared to the control condition. Our study adds to the growing body of literature [17,24,38] indicating that antibacterial mouthwashes have the potential to counteract the beneficial effects on cardiovascular health afforded by the consumption of NO_3^- in the diet.

PSEUDO-SCIENCE ARGUMENTS



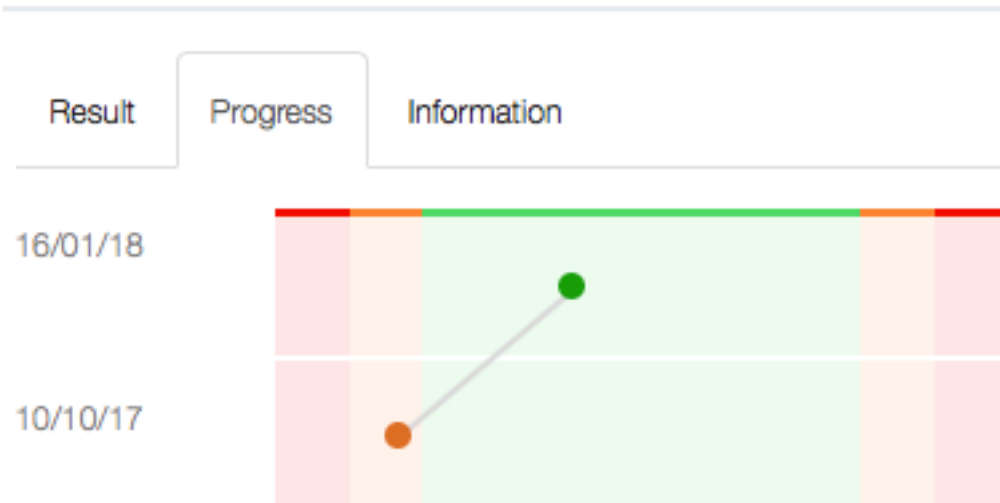
Eat Plants 4 months ago

Sausages and burgers kill red blood cells, clog arteries and are high in trans and saturated fat, that your body will easily store. Anti-doping.

REPLY 25  

Ironman male athlete [low-haemoglobin: tested, “flagged”, actioned and re-tested.](#)

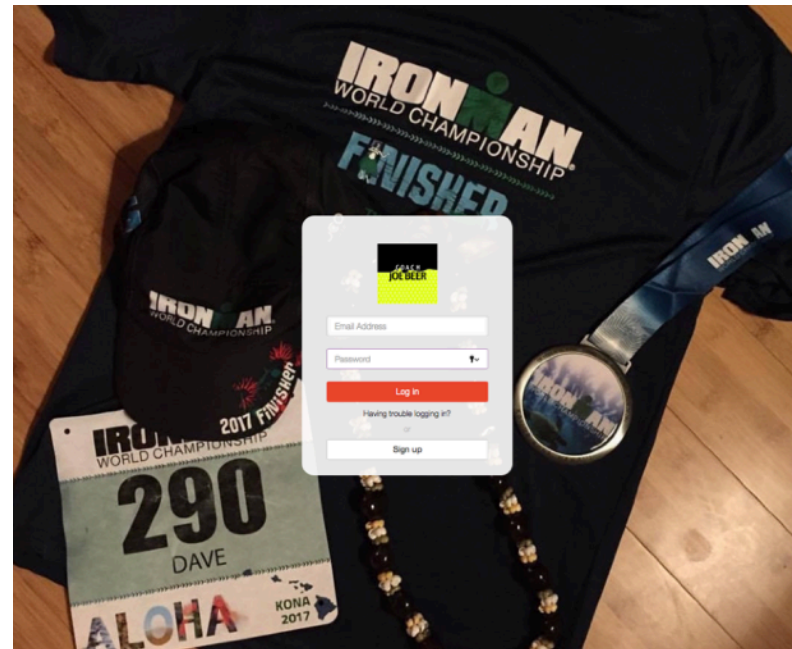
Haemoglobin



RESULT: up | 1.62%

NEW SERVICE

jbst.biomarkertracking.com



Get your blood profiling and training over-seen to ensure that your training and diet optimise your results, consistently

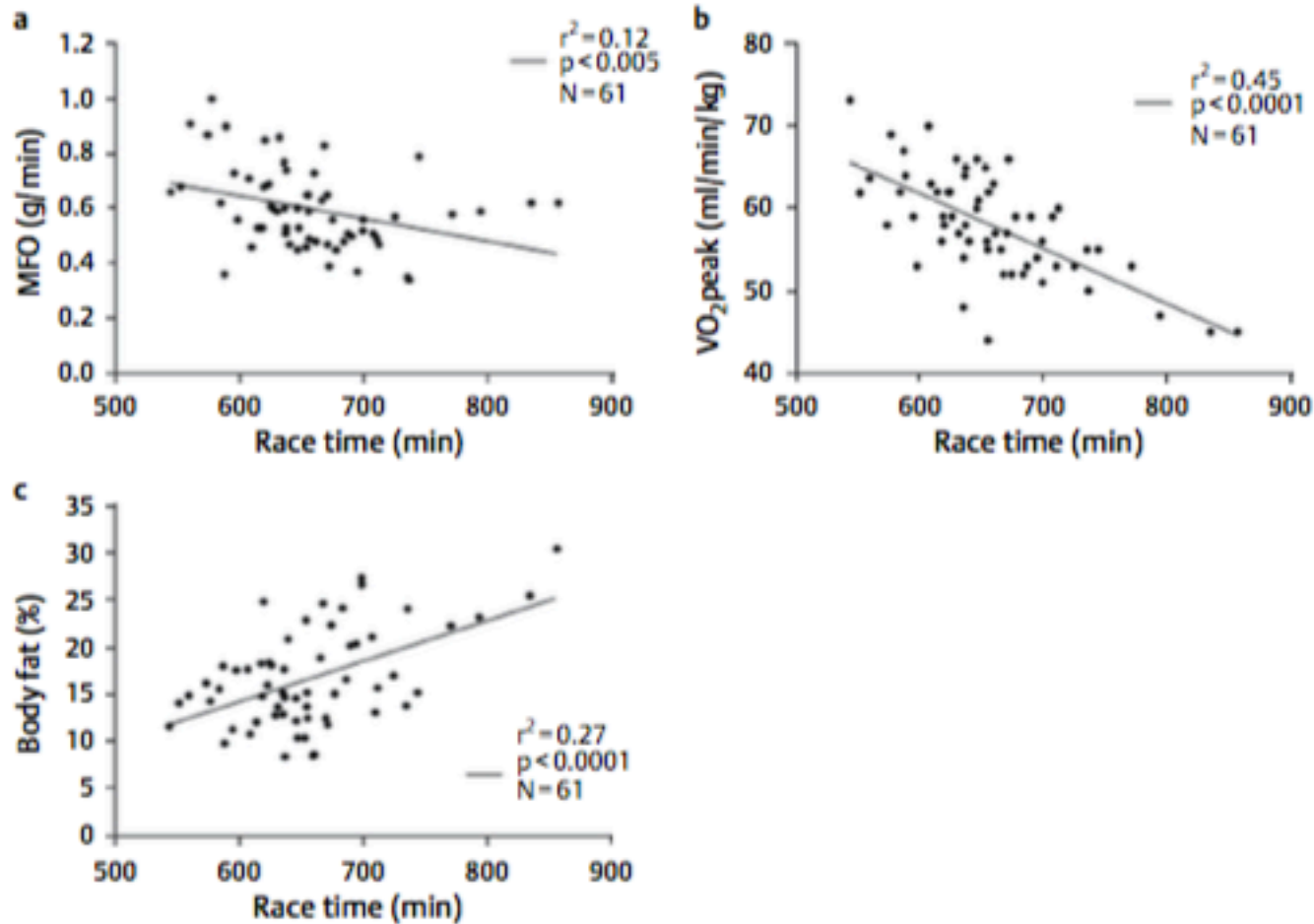
COUNTER ARGUMENTS

The “craze” for Very Low Carbohydrate Feeding

An attempt to make athletes super fat efficient, lean and faster.
Carb drinks, gels etc are a scam by big companies. Blah Blah Blah.

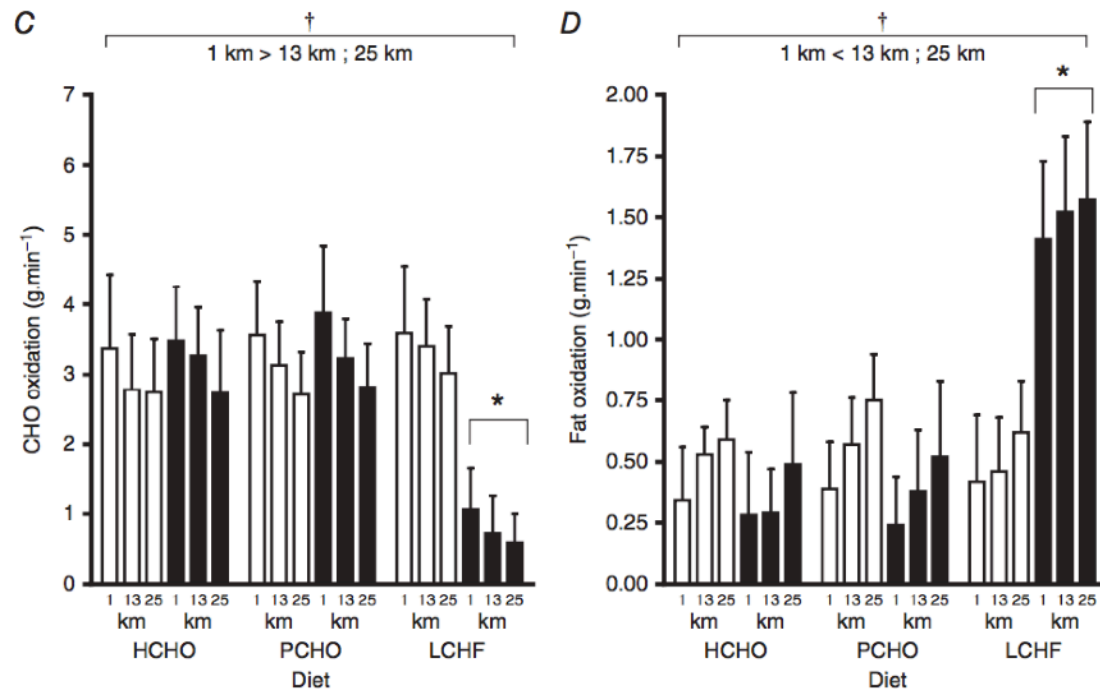
NEW EVIDENCE

Triathlon Ironman performance and fat burning capacity.



NEW EVIDENCE

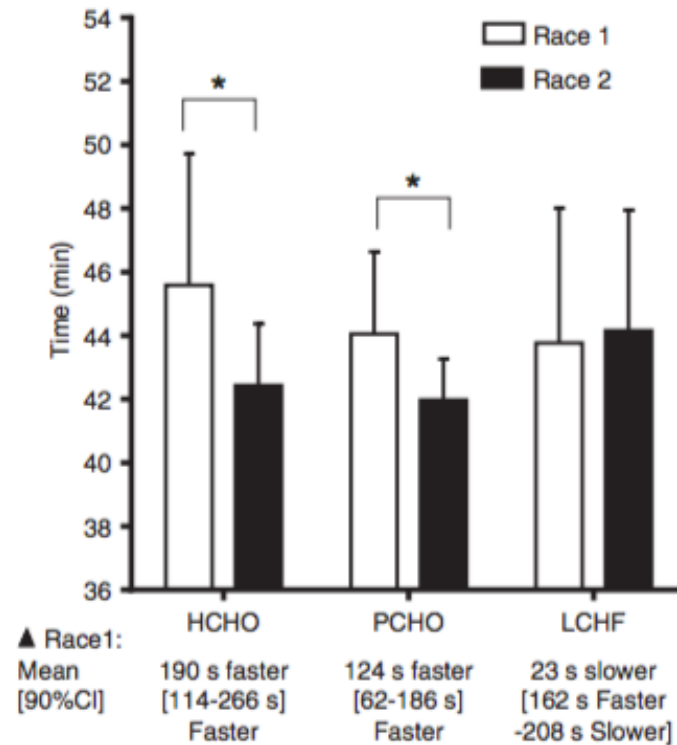
Burke et al (2017) Low carbohydrate, high fat diet impairs exercise economy and negates the performance benefit from intensified training in elite race walkers (10k PB 40-41 minutes)



They got good at fat burning...

NEW EVIDENCE

Burke et al (2017)



...but ended up being slower!

THE BIG MISTAKES

- **Missing the basics of diet & sports nutrition**

Nothing is THE super food or pill. Carbs fuel, water hydrates, treats are treats, protein should be spread out, good fats are “essential”

- **Random use of a supplement or super-nutrient**

Positive results are from an **effective dose for a specific time**
e.g. [colostrum](#): 10g twice a day x 2 weeks = rebuilding gut damage

- **Assuming you “are” fit and you “have a great CLEAN diet”**

If you don't know your “nutrient status” how can you tell what you need? Get [ForthEdge blood profile](#) to find your weak nutrient areas.
e.g.

1990 Student (23): Hbn 13.3

2015 Post Training Camp (47): Hbn 15.7

2018 Winter (50): Hbn: 15.3 and 15.5

6th Rule of the Smart Athlete:

Nuture not Nuke your body

- **Good Sleep is central to development (but don't stress it)**
It's all about ability, consistency and "ABSORBING"
Elites 10-12h/day and Amateurs 50-hour minimum rule.
Setting bodies daily pattern with use of light is very effective!
e.g. [HumanCharger](#) 2 x 12minutes per day
- **Make daily wholefood nutrition a natural habit:**
e.g. slow release carbs, real-food proteins, quality fats
Don't try to be perfect just remember YAWYEAD
(You Are What You Eat And Drink)
- **Body Work/flexibility must focus on your imbalances**
e.g. poor shoulder mobility, leg tightness or cramping
To find the **right expert** is the challenge or making the jump into
Pilates, Yoga, Bowen, foam rolling etc.

Use HRV to monitor adaptability

- **This is HR Variability between individual heart beats at rest**
e.g at 60 bpm the variability can still be 500-1500ms
A typical figure is 50 = tired/over-reached-stressed and
80-100 when fresh, adapted or tapering.
e.g. ithlete App on iOs/Android + compatible device/HR Bluetooth strap
- **It sums up the total impact of training, work, life etc**
Research on Elites and Amateurs shows it is an effective tool.
It catches motivated people on a downward spiral or shows them that rest or
tapering is having the desired effect.
- **From CEO to Sportive rider it has helped**
e.g. illness “tail” able to be assessed by session effort and the HRV
e.g. peak event taper goes well as HRV goes up and peak Performance occurs
e.g. business high-alert causes drop of 40 units, reverted with ZI slow build

Technology



7th Rule of Smarter Technology

Kit can make you faster

- **Buoyancy, flexibility, drag reduction wetsuits**

It has to fit, be practised in year-round and be removed fast!

Test suits for speed? GPS track you navigation ability?

Faster processing will allow force analysis under water, soon.

- **The bike has evolved beyond belief**

Aero tubing, integrated hydration, electronic shifting, power measurement, lower effort tires, [full-aero clothing/testing](#).

- **Running requires good rebound and low mass**

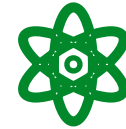
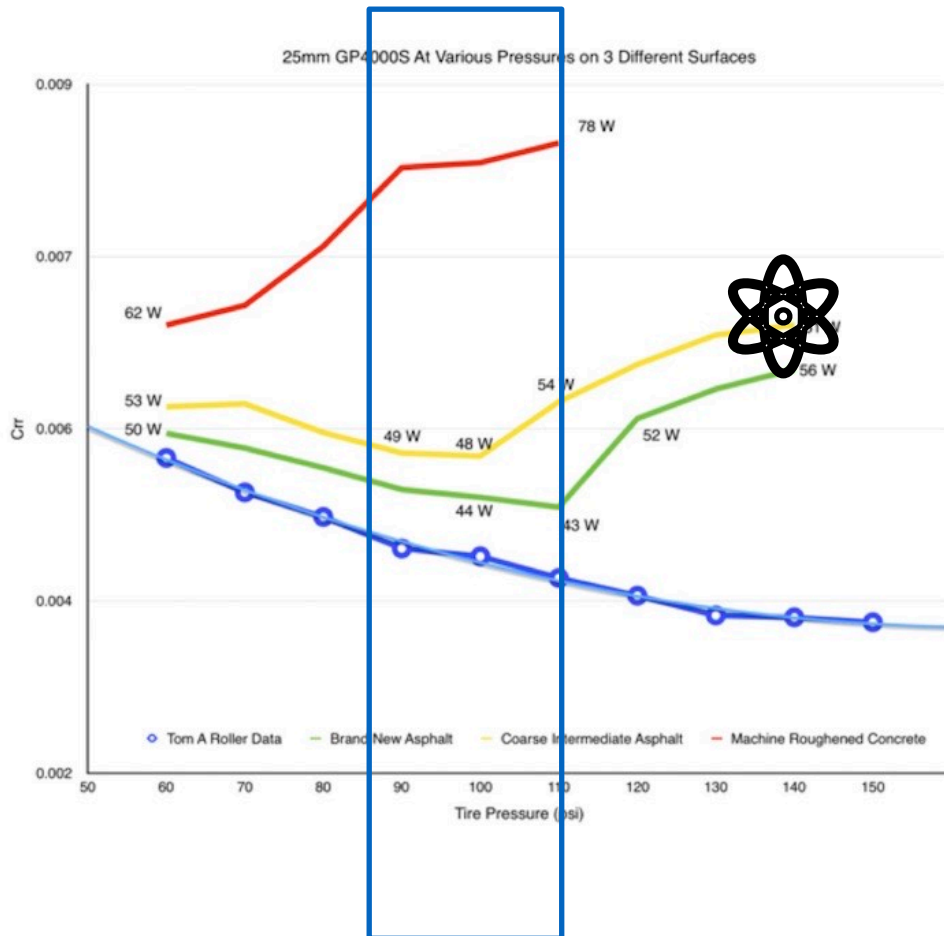
Biomechanical analysis? Possible “High-Tech Recovery Boots”?

Tracking of body composition in critical race build?

DeepWater Running?

NEW EXPERIENCES...

psi verses tpi



Sweet spot from approx 75psi (rough) to 95 psi (smoothest)

NEW ADVICE...

psi verses kg verses mm

Schwalbe's recommended tyre pressure

TYRE WIDTH	BODY WEIGHT		
	60kg / 132lb	85kg / 187lb	110kg / 242lb
23c	7 bar / 100psi	8 bar / 115psi	9 bar / 130psi
25c	6.0 bar / 87psi	7.0 bar / 100psi	8.0 bar / 115psi
28c	5.5 bar / 80psi	6.5 bar / 94psi	7.5 bar / 108psi
32c	4.5 bar / 65psi	5.5 bar / 80psi	6.5 bar / 94psi
37c	4.0 bar / 50psi	5.0 bar / 72psi	6.0 bar / 87psi

Tyre pressure recommendations provide a starting point – adjust them with terrain and weather conditions

SAME ADVICE: use your watts wisely

	% PPO	LIMITATIONS	e.g. 250w female e.g. 350w male
PEAK POWER	100	ultimate muscle fatigue	250 350
10-MILE TIME TRIAL	80	acidosis pain tolerance pace judgement	200 280
IRONMAN	55	glycogen saving saving up a “marathon” temperature build-up	137 192
SPRINT	65	close to acidosis high muscle-tension immediate run-speed?	162 227

SAME ADVICE: aero, aero, aero
long sleeves, trips, aero tri belt, aero calfs guards...



8th Rule

The future is bright

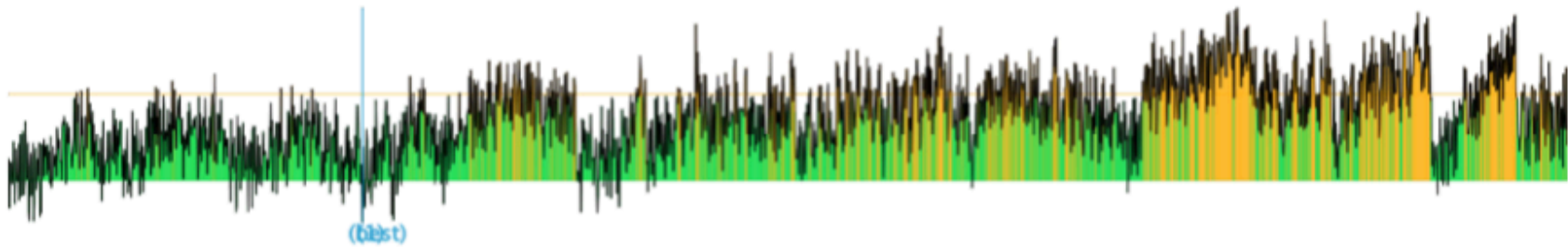
FUTURE METHODS...

SWIM: Using at-home [VasaTrainer Swim Bench](#) to work on muscular endurance training



FUTURE METHODS...

BIKE: Using aerodynamic analysis at-home to work on training and improving aero position...



Training Statistics



Reference Pose
311 W - 0.3554 m²



Duration 4min 07s

Zone 1 72% 2min 57s

Zone 2 28% 1min 10s

Zone 3 0% 0min 00s

FUTURE TRENDS...

We are in the 4th Industrial Age (Schwab 2017) with machines, platforms, connectivity...

- **Be aware that data, sensors and analysis are growing**
It has to enhance the session goal not just create data
- **The use of 4th Gen should be for time efficiency**
Booking sessions, planning week, checking weather/race info.
Not wasting time and affecting sleep due to evening screen use
- **Tech must be used to simplify not constrain or confuse**
e.g.” I can’t go riding because my power meters not working”
or “I have the session on Strava and Garmin but it was not as per the Zone I plan”

Summary

THE
GREATEST
TEST
IS
NOT
TO
LIVE
THE
BEST
LIFE
BUT
TO
LIVE
IT
AS
IT
IS

NO SHOP

THE BIGGEST MISTAKES


- Following the nopain-nogain #smashitup ethos
- Ignoring equipment/nutrition as a way to “enhance”
- Missing rehab/strength & conditioning or the Zone 1 habit
- Too/high or low vitamin status due to random dosing
- Ignoring optimal personal power pacing and all that is “Aero”
- Failing to periodise carbs before/during/after training
- Ignoring simple recovery tools (e.g. rest days, foam rollers, compression tights/socks, massage, naps, warm baths etc)
- Failing to correctly leverage 4thGEN for “refinement”

BKM TAKEAWAYS

- Training <80%HRmax must be a key basic habit. #1 BKM
- Diary used to plan: work blocks/tapers/adaptation(?)/race-recovery
- Adapt to your reality not Plan A, others plan or “ideal”
- Diet/Supplements timing/loading/testing impacts performance
- Bike power/Drag measuring tech are serious but effective tools
- “Bodywork”, DIY foam rolling etc remains weekly priority
- Fasted sessions/low-carb/race-feeding have to be periodised
- Blood profiling and HRV are the essentials to Peak Performance





www.CoachJoeBeer.com



Coach - Bike Fitter - Aero Optimiser
Author - Speaker - Brand Ambassador
Expertise from over 30 years experience

[Home](#) [Shop](#) [Coaching](#) [Camps](#) [Services](#) [Presentations](#) [Advice](#) [Quotes](#) [Contact](#)






**BEAT THE WINTER...
AND ANY GREY DAY!**

[Buy Now](#)

Results in normal, high or low range




**HOW'S YOUR BLOOD?
GET PROFILED**

[Buy Now](#)

MAX TEST

BIKE MAX TEST TEMPLATE (PDF)

[Download Now](#)




**VIRTUAL WIND TUNNEL
2-HOURS. DROP DRAG.**

[Buy Now](#)


[Buy Now](#)

AND ANY GREY DAY!
BEAT THE WINTER...




[Buy Now](#)

GET PROFILED
HOW'S YOUR BLOOD?




[Download Now](#)

BIKE MAX TEST TEMPLATE (PDF)



[Buy Now](#)

2-HOURS. DROP DRAG.
VIRTUAL WIND TUNNEL



HUNCHES THAT WORKED (BEFORE THE INTERNET)

- Training below 80% HRmax and using carbohydrate products
- Getting aero-optimised & very clothing, kit and pacing “savvy”
- Quality wheels and tires for racing - hack-bike(s) for training
- Colostrum use on a regular basis in- and off-season
- Pacing using bike power measurement to run better off the bike
- L-Carnitine and Glycerol (now legal again) supplementation
- Using blood data to tweak diet, supplements, training, lifestyle
- Using off-round chainrings (e.g. Biopace(?), Osymmetric, Rotor Q, QXL, Absolute Black,)
- Being consistent as a result of enjoying the here-and-now

**There is only one magic... and
that is hard work, sustained by
clear vision, iron will and the
strictest discipline”**

Indira Gandhi

