

”How precision data can transform your performance

- what is the right data?
- how can it transform?

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PERFORMANCE
FITNESS
HEALTH
@CoachJoeBeer

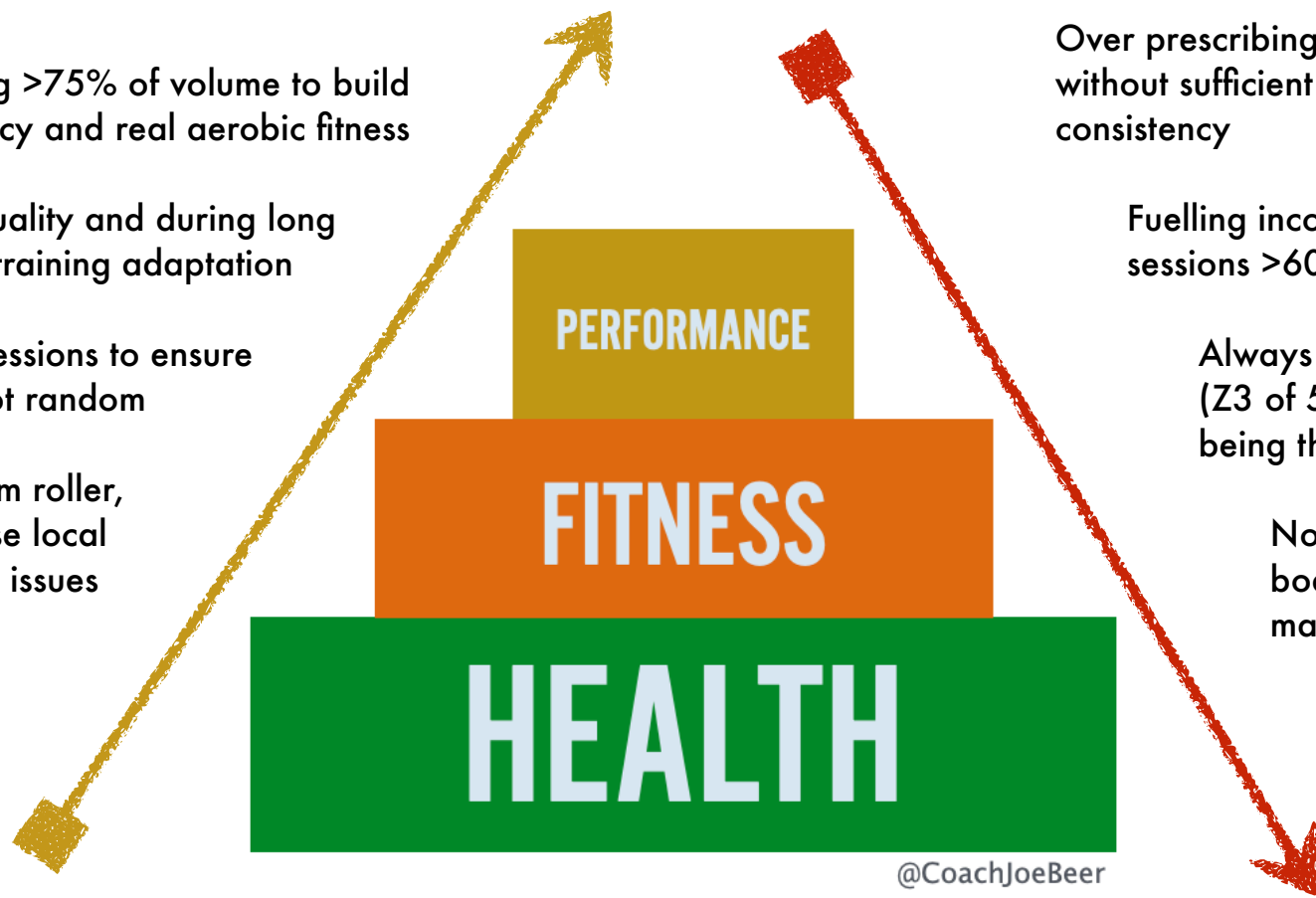
Good habits or bad?

Base training >75% of volume to build consistency and real aerobic fitness

Fuelling carbs pre-quality and during long sessions to improve training adaptation

Planning Z2 (Z3?) sessions to ensure they are required not random

Self body work (foam roller, stretch, S&C) plus use local body workers for all issues



Over prescribing quality sessions without sufficient base work/ consistency

Fuelling incorrectly for quality or sessions >60mins

Always going into the Z2 (Z3 of 5) area despite Z1 being the focus (Z1/2 of 5)

Not getting required body work done and making injuries long term

Blood

1. aka Heart Rate
2. Blood Analysis

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Longer your event the less this is relevant

Zone 3 — Very, very hard

SOMETIMES KNOWN AS:
Very high intensity, race pace, etc.

SUBJECTIVE FEEL:
You won't want to stay in this zone for long!

TYPICAL BLOOD LACTATE:
More than 4mmol per litre (mM/L)



Prioritise "weights" over "intervals" or Zone 2

Zone 2 — Moderately hard

SOMETIMES KNOWN AS:
Threshold training, intensive endurance, etc.

SUBJECTIVE FEEL:
You know you;ve had a workout!

TYPICAL BLOOD LACTATE:
Between 2 and 4mmol per litre (mM/L)



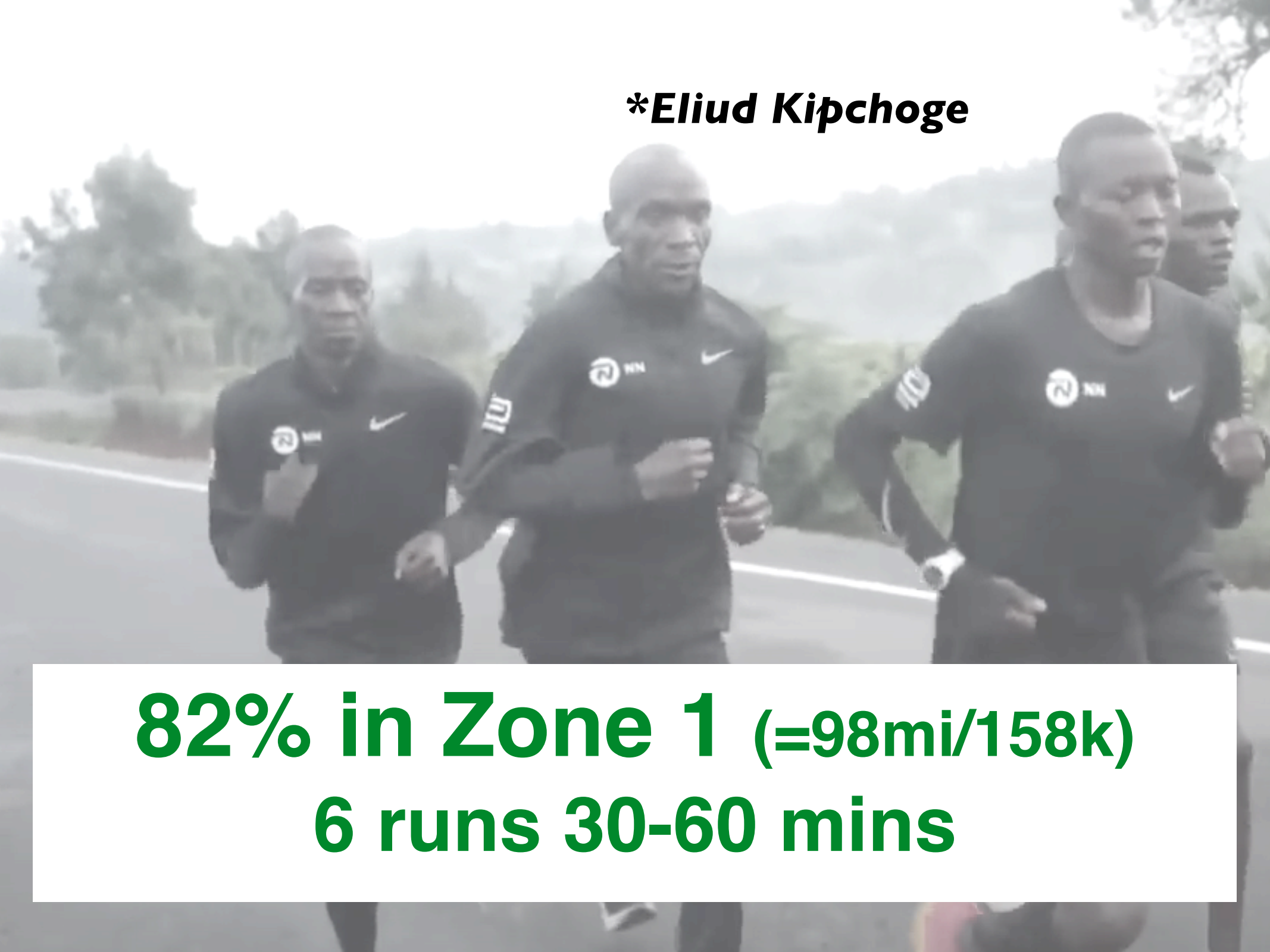
Zone 1 — Easy

SOMETIMES KNOWN AS:
Aerobic, Easy, Recovery, Long slow distance, etc.

SUBJECTIVE FEEL:
You feel like you can keep going and going

TYPICAL BLOOD LACTATE:
Less than 2mmol per litre (mM/L)

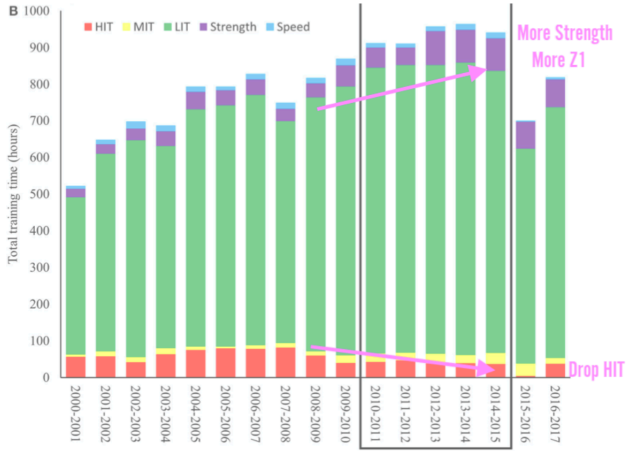




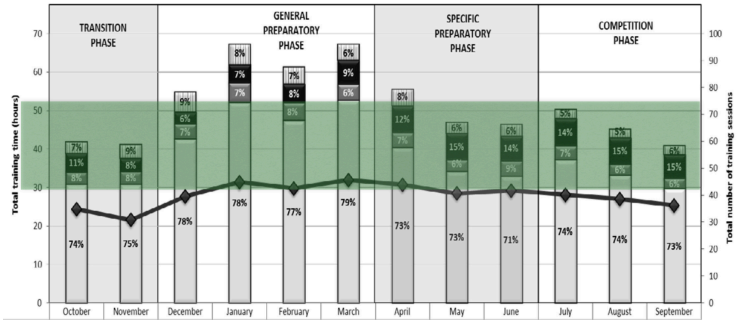
*Eliud Kipchoge

82% in Zone 1 (=98mi/158k)

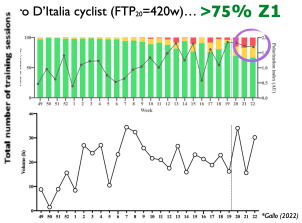
6 runs 30-60 mins



>75% Z1

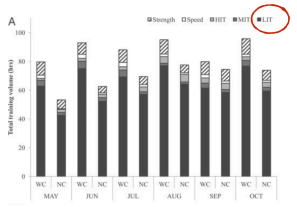


*Tønnessen (2015)



'o D'Italia cyclist (FTP$_{20}$=420w)… >75% Z1

How 12 female Norwegian XC Skiers train…



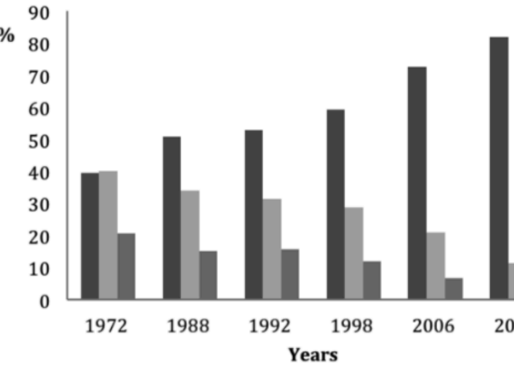
90% Z1

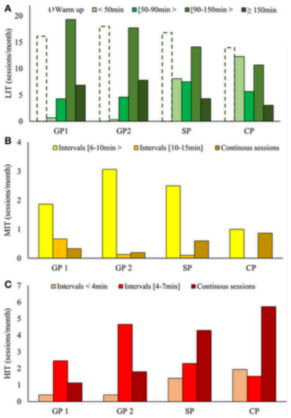
*Sandbakk (2016)

92% in Zone 1

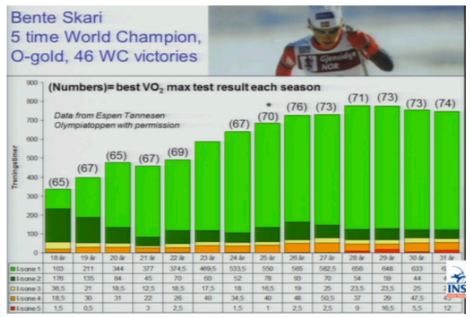
eased from ~430 h (20 years old) to ~800 h (35 ye

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

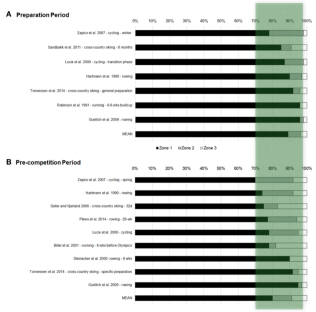




Seiler (2014 webinar)) Biathlete Training… Z1 predominates

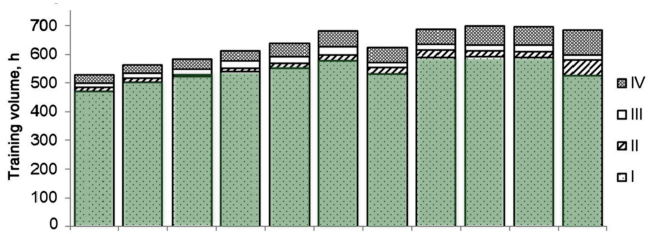


ling, XC Ski, Rowing, Running…



=70-94% volume in Z1

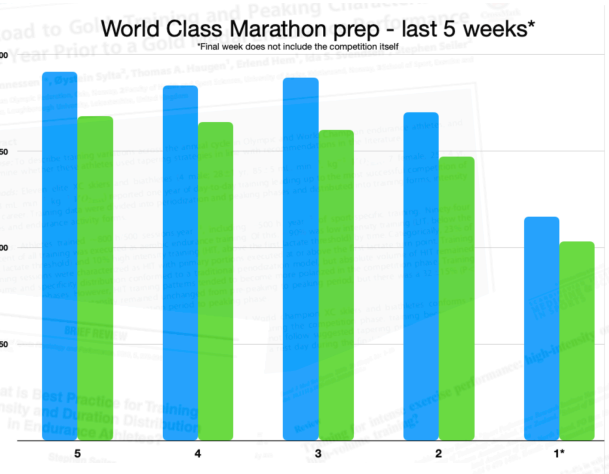
*



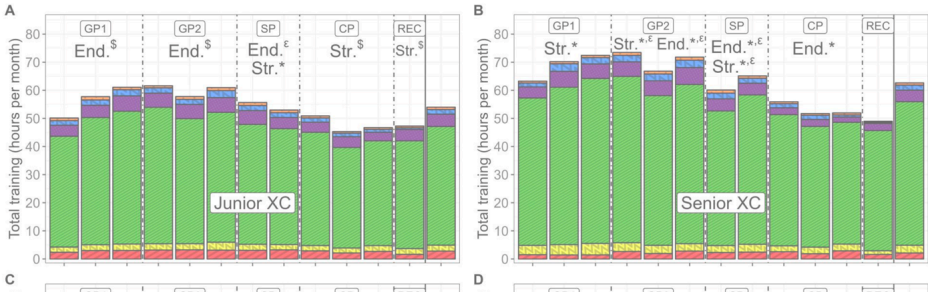
86.3% in Zone 1

"between 12,000 to 15,000 cartridges" (shots taken) per year

*Schmitt (2023)

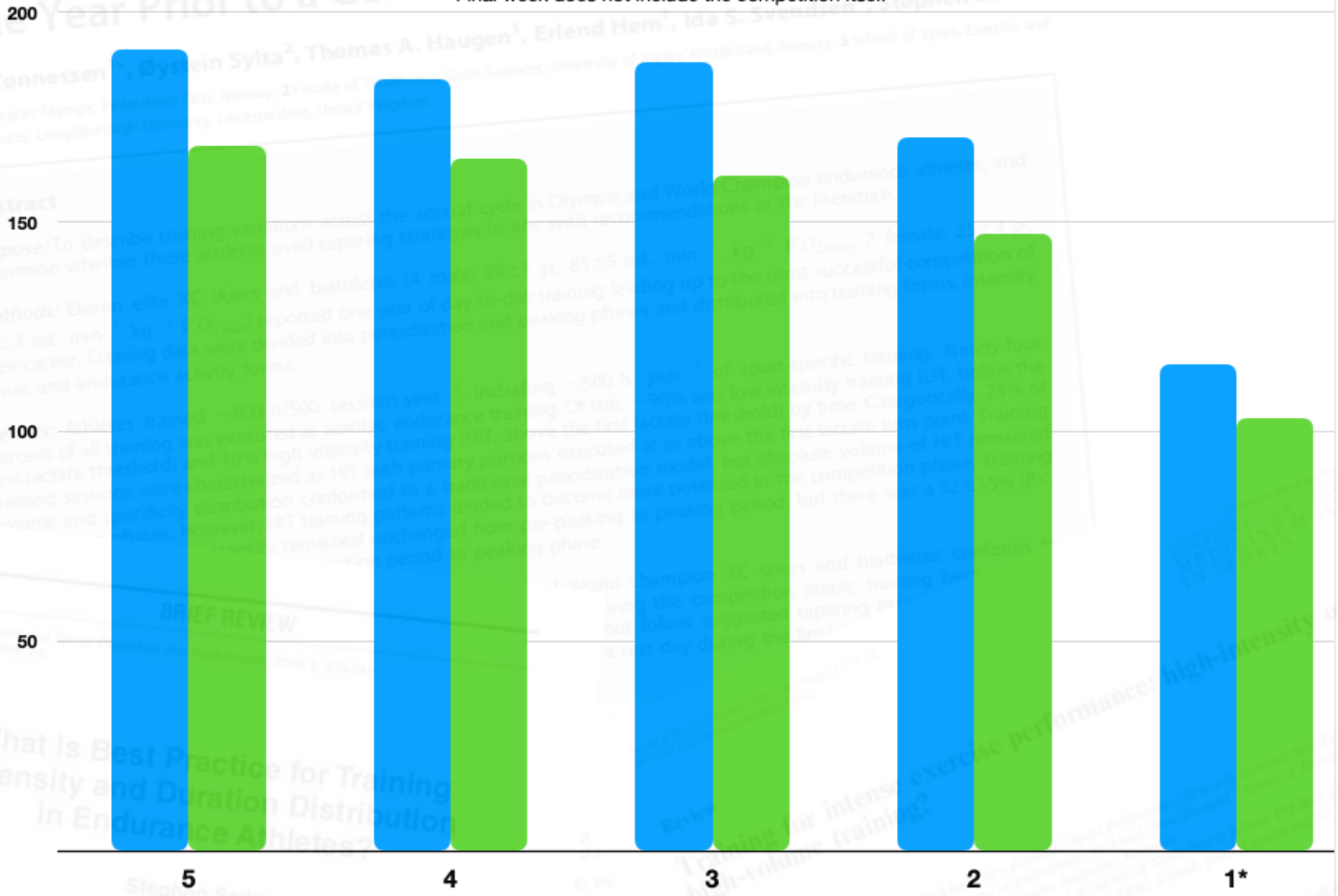


Female endurance athletes…



World Class Marathon prep - last 5 weeks*

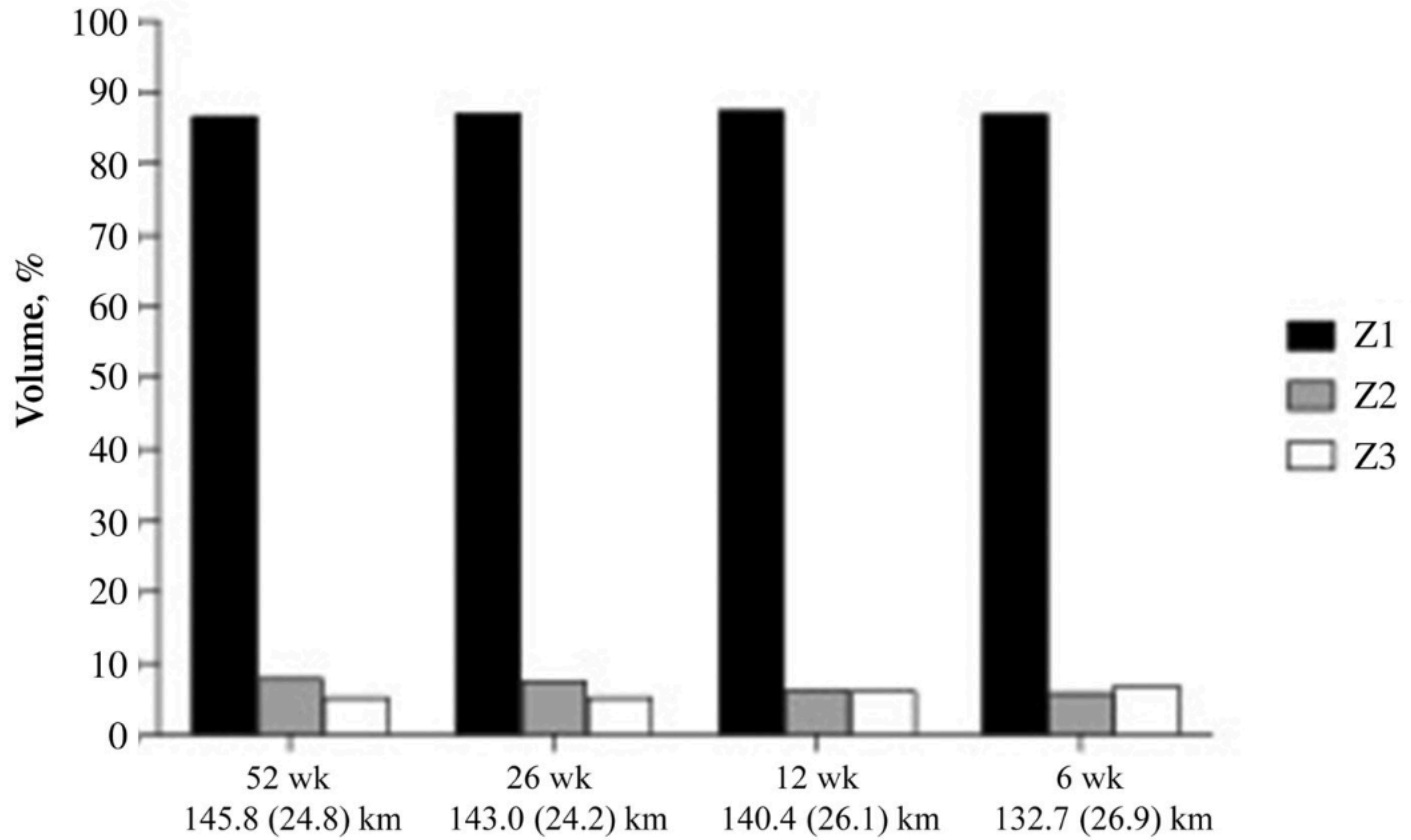
*Final week does not include the competition itself



=87% Z1

*Haugen (2022)

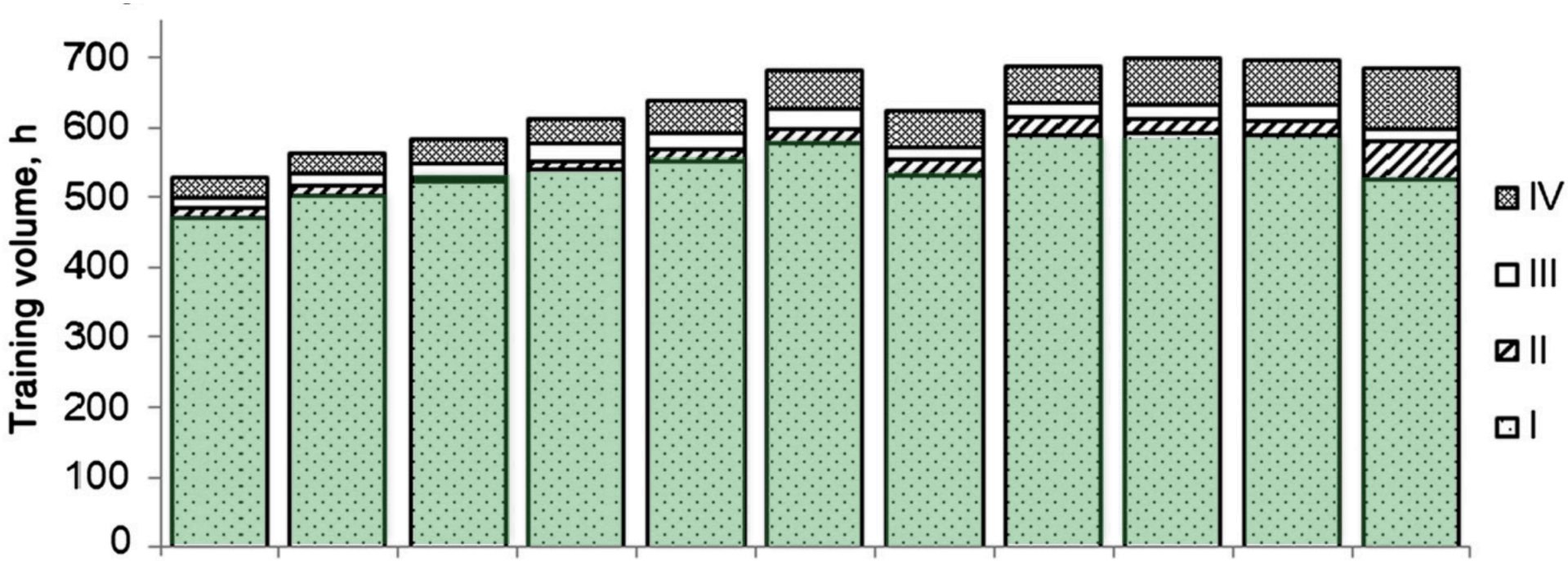
Zone One for 1500, 5000, 10,000m male record holder



>80% Z1

**Kenneally et al (2021)*

Is Zone One base training also effective for "men"? Here's Worlds best male biathlete (ski+shoot)



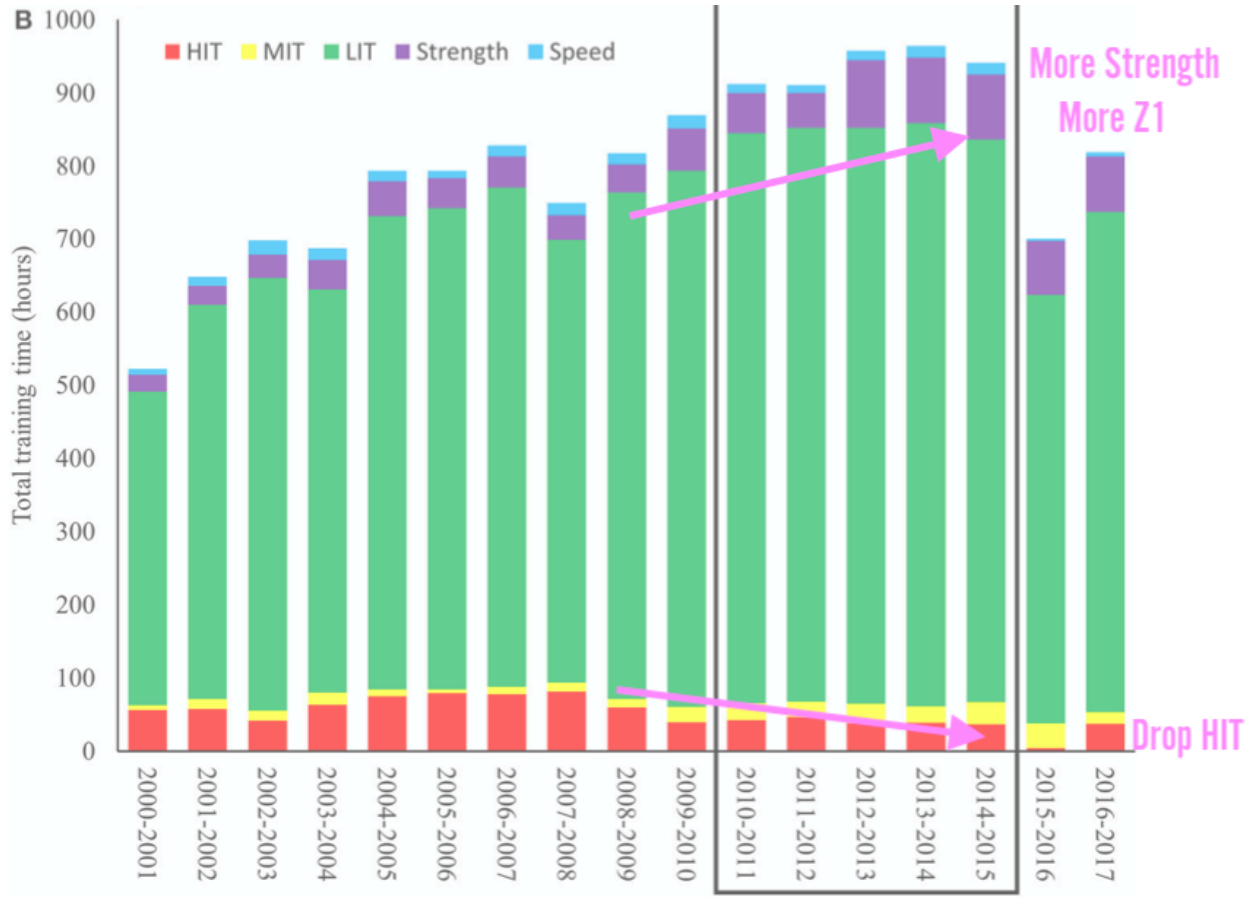
86.3% in Zone 1

"between 12,000 to 15,000 cartridges" (shots taken) per year

*Schmitt (2023)

Is Zone One base training useful?

Here's best Female XC Skier. Ever!



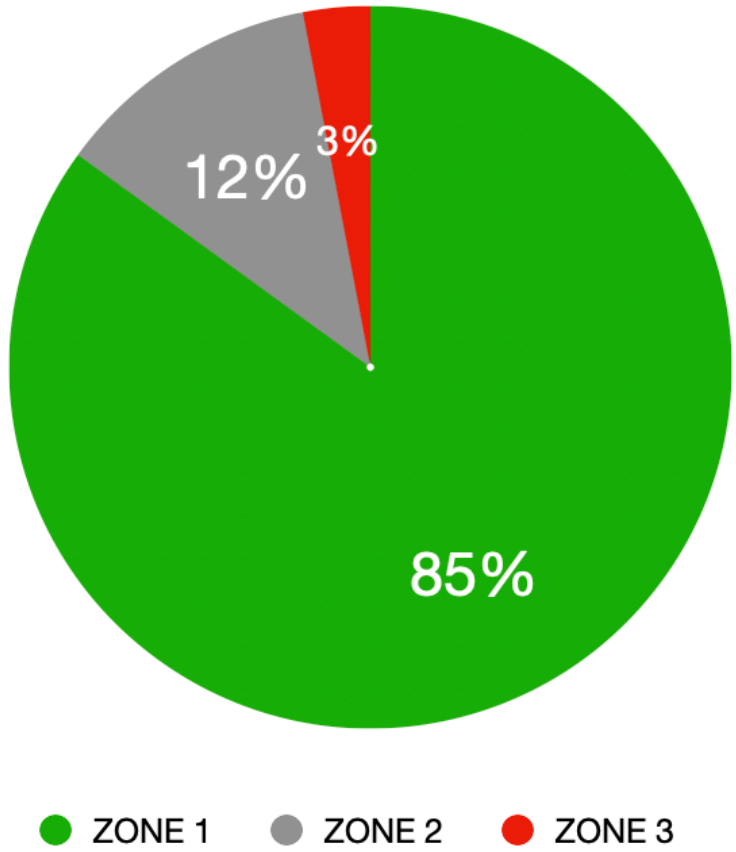
*Solli (2017)

92% in Zone 1

"LIT volume increased from ~430 h (20 years old) to ~800 h (35 years old). pp5."

Q. Is Zone One training useful?

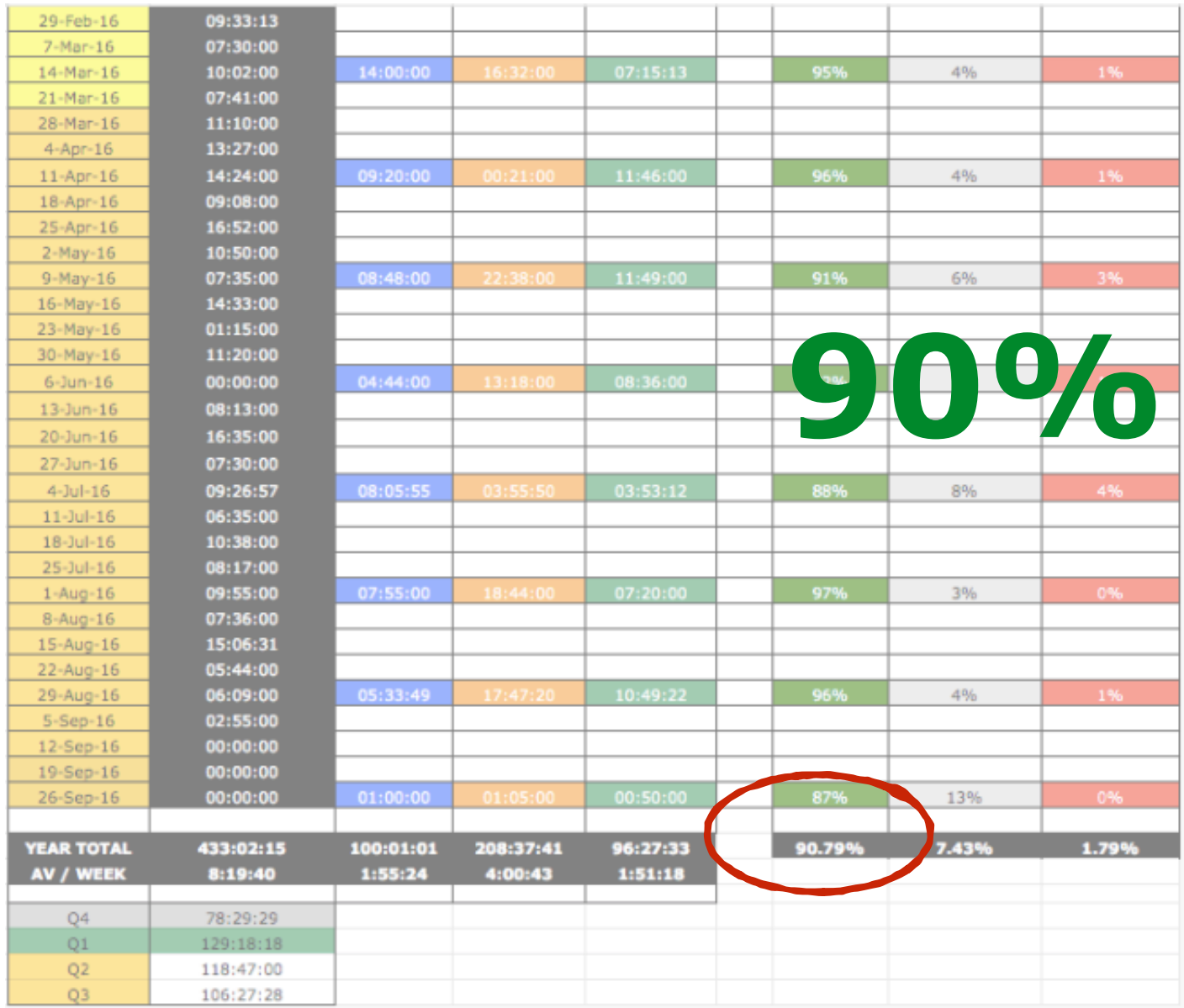
A. Here's Kristian Blummenfelt's 3yr data (4138hrs)



*Dasa et al (2024)

"The majority of training was LIT, reflecting consensus on the importance of large quantities for elite endurance athletes"

28x Ironman A/G (2003-2024)

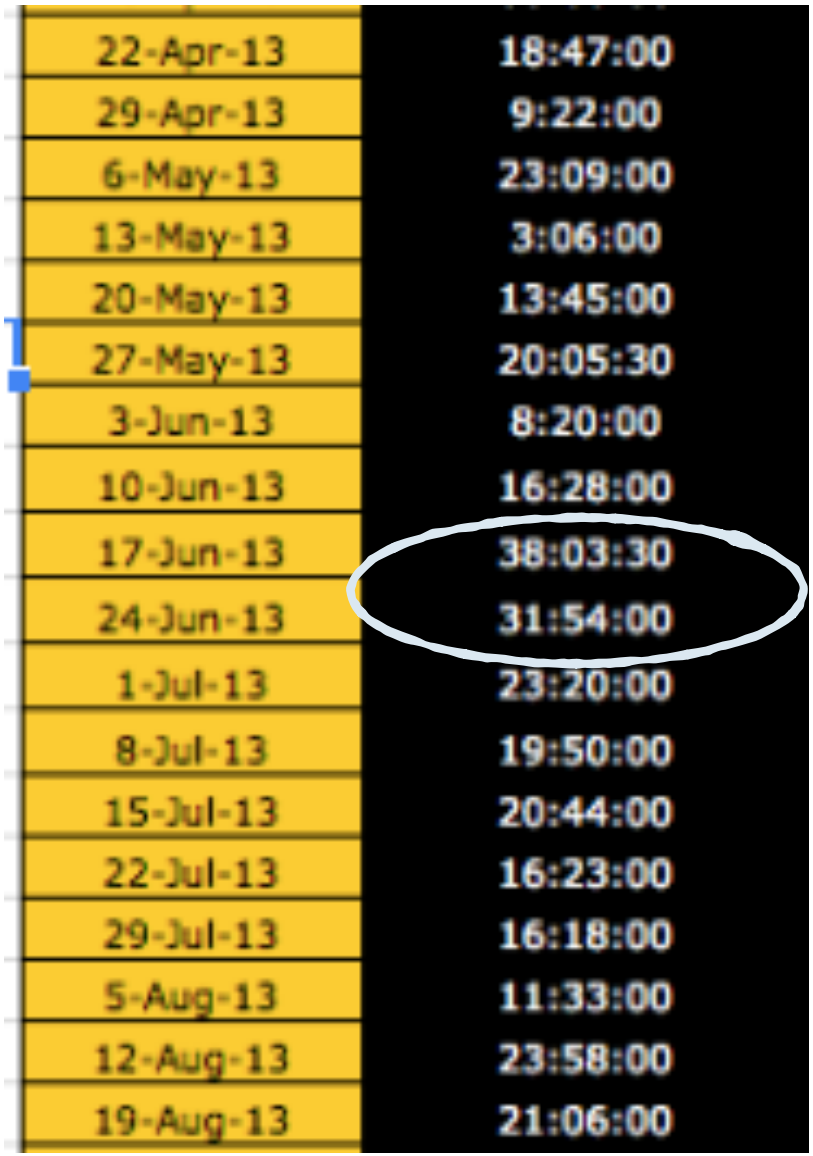


29-Feb-16	09:33:13							
7-Mar-16	07:30:00							
14-Mar-16	10:02:00	14:00:00	16:32:00	07:15:13		95%	4%	1%
21-Mar-16	07:41:00							
28-Mar-16	11:10:00							
4-Apr-16	13:27:00							
11-Apr-16	14:24:00	09:20:00	00:21:00	11:46:00		96%	4%	1%
18-Apr-16	09:08:00							
25-Apr-16	16:52:00							
2-May-16	10:50:00							
9-May-16	07:35:00	08:48:00	22:38:00	11:49:00		91%	6%	3%
16-May-16	14:33:00							
23-May-16	01:15:00							
30-May-16	11:20:00							
6-Jun-16	00:00:00	04:44:00	13:18:00	08:36:00		[illegible]		
13-Jun-16	08:13:00							
20-Jun-16	16:35:00							
27-Jun-16	07:30:00							
4-Jul-16	09:26:57	08:05:55	03:55:50	03:53:12		88%	8%	4%
11-Jul-16	06:35:00							
18-Jul-16	10:38:00							
25-Jul-16	08:17:00							
1-Aug-16	09:55:00	07:55:00	18:44:00	07:20:00		97%	3%	0%
8-Aug-16	07:36:00							
15-Aug-16	15:06:31							
22-Aug-16	05:44:00							
29-Aug-16	06:09:00	05:33:49	17:47:20	10:49:22		96%	4%	1%
5-Sep-16	02:55:00							
12-Sep-16	00:00:00							
19-Sep-16	00:00:00							
26-Sep-16	00:00:00	01:00:00	01:05:00	00:50:00		87%	13%	0%
YEAR TOTAL	**433:02:15**	**100:01:01**	**208:37:41**	**96:27:33**		**90.79%**	**7.43%**	**1.79%**
AV / WEEK	**8:19:40**	**1:55:24**	**4:00:43**	**1:51:18**				
Q4	78:29:29							
Q1	129:18:18							
Q2	118:47:00							
Q3	106:27:28							

90% Z1

*Beer (2016)

Training Load (Z1) is best…



22-Apr-13	18:47:00
29-Apr-13	9:22:00
6-May-13	23:09:00
13-May-13	3:06:00
20-May-13	13:45:00
27-May-13	20:05:30
3-Jun-13	8:20:00
10-Jun-13	16:28:00
17-Jun-13	38:03:30
24-Jun-13	31:54:00
1-Jul-13	23:20:00
8-Jul-13	19:50:00
15-Jul-13	20:44:00
22-Jul-13	16:23:00
29-Jul-13	16:18:00
5-Aug-13	11:33:00
12-Aug-13	23:58:00
19-Aug-13	21:06:00

Scott Neyedli's training 2013

Note: T-11 & T-12 weeks are >30h weeks

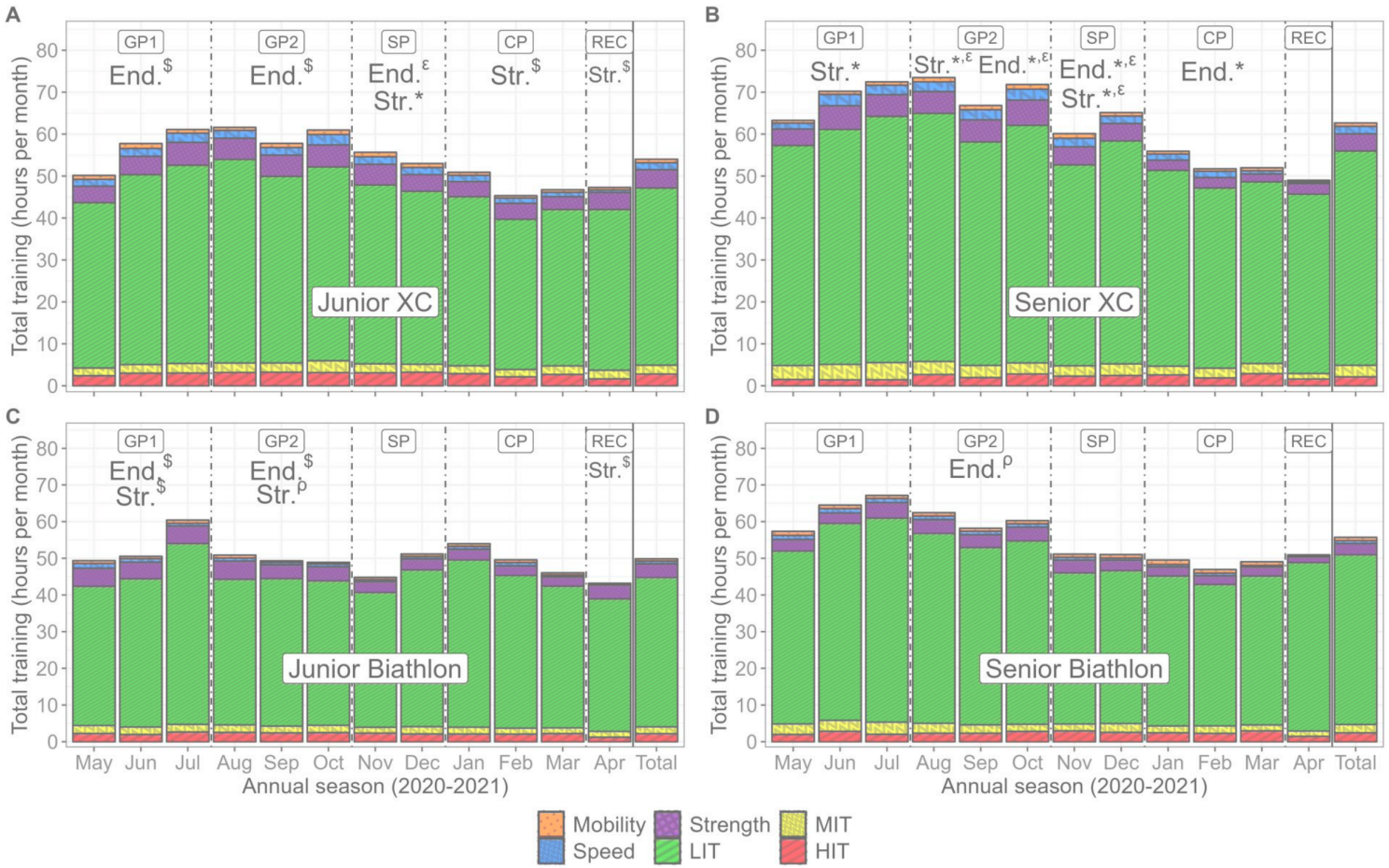
Weeks range 8h to 38h

Excludes last 2-week taper

Ironman Wales win 8th Sept

© *Beer (2013)*

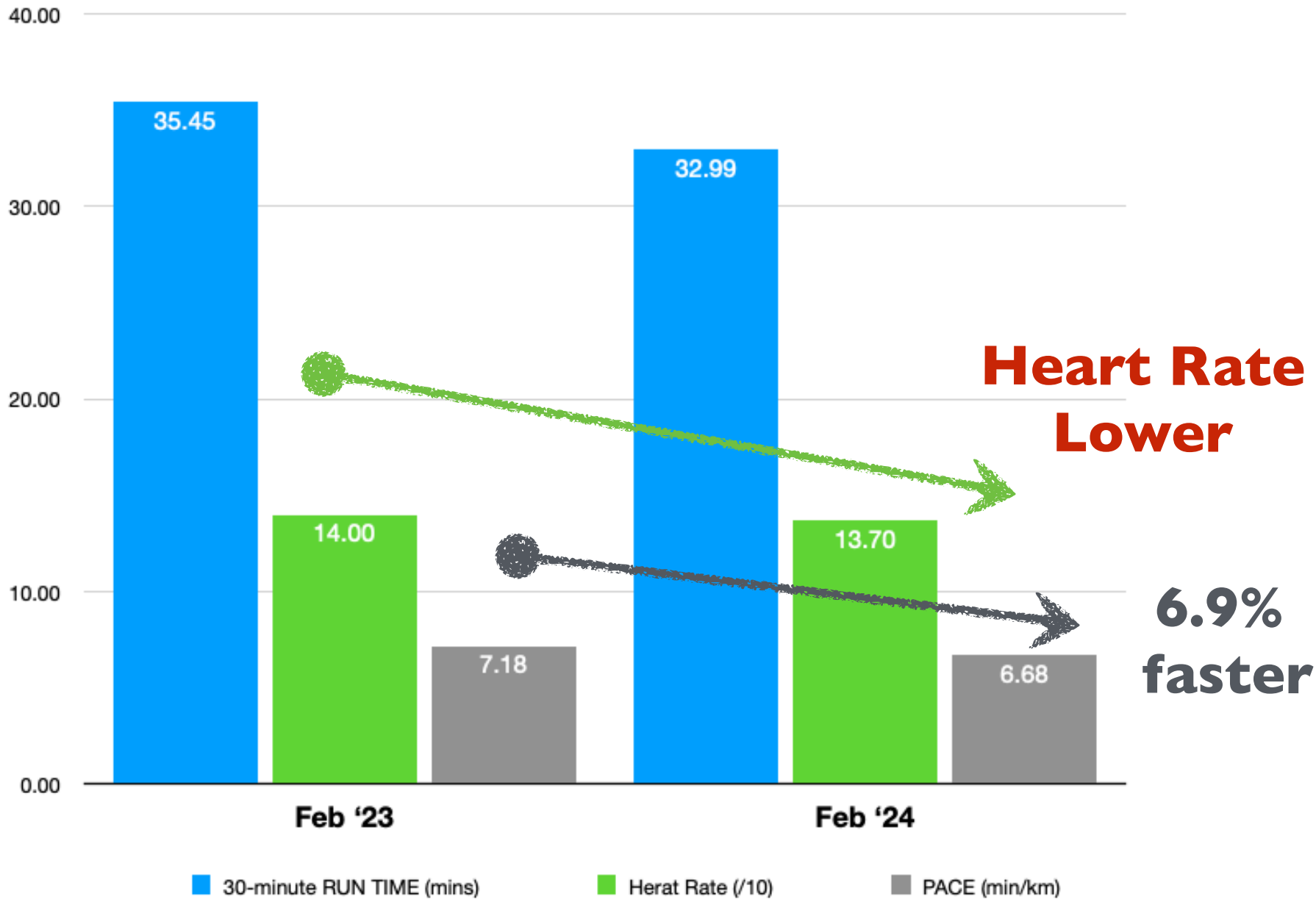
Female endurance athletes…



90% in Zone 1

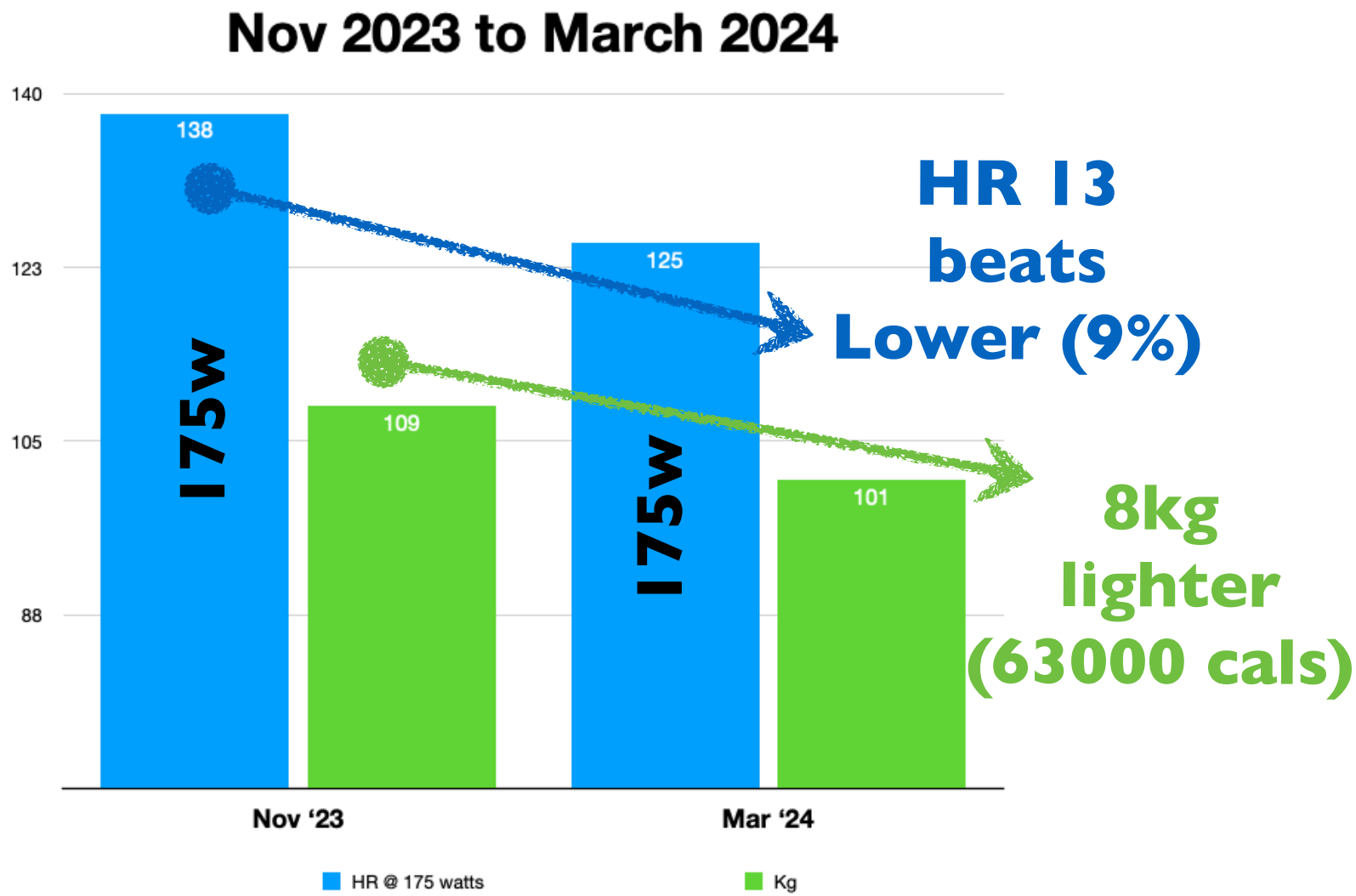
90% of training was endurance training and 90% of that was LIT (=10h/wk)" *Osborne (2023)

Does BASE training work with 4-8h training?



*Beer (2024)

Correct Zone One TRAINING: 120 days…



*Beer (2024)

RUNNERS

1. Work out your best pace for a ~2h race effort
e.g. 8:00min/mile

2. Multiply this by 1.25 =fastest Z1 training pace
e.g. 8x1.25=10 min/mile

3. Multiply pace in #1 by 1.6 to get slowest Z1
e.g. 8x1.6=12.8 min/mile

CYCLISTS

1. Take your best 1h power
(or take 20-min FTP x 0.9)
e.g. 20min av 232w x 0.9 = 208

2. Take 0.55 of this value
=lowest Z1 training power
e.g. 208 x 0.55 =114w

3. Multiply power in #1 by 0.83
=highest aerobic Z1 power
e.g. 208 x 0.83 =174w



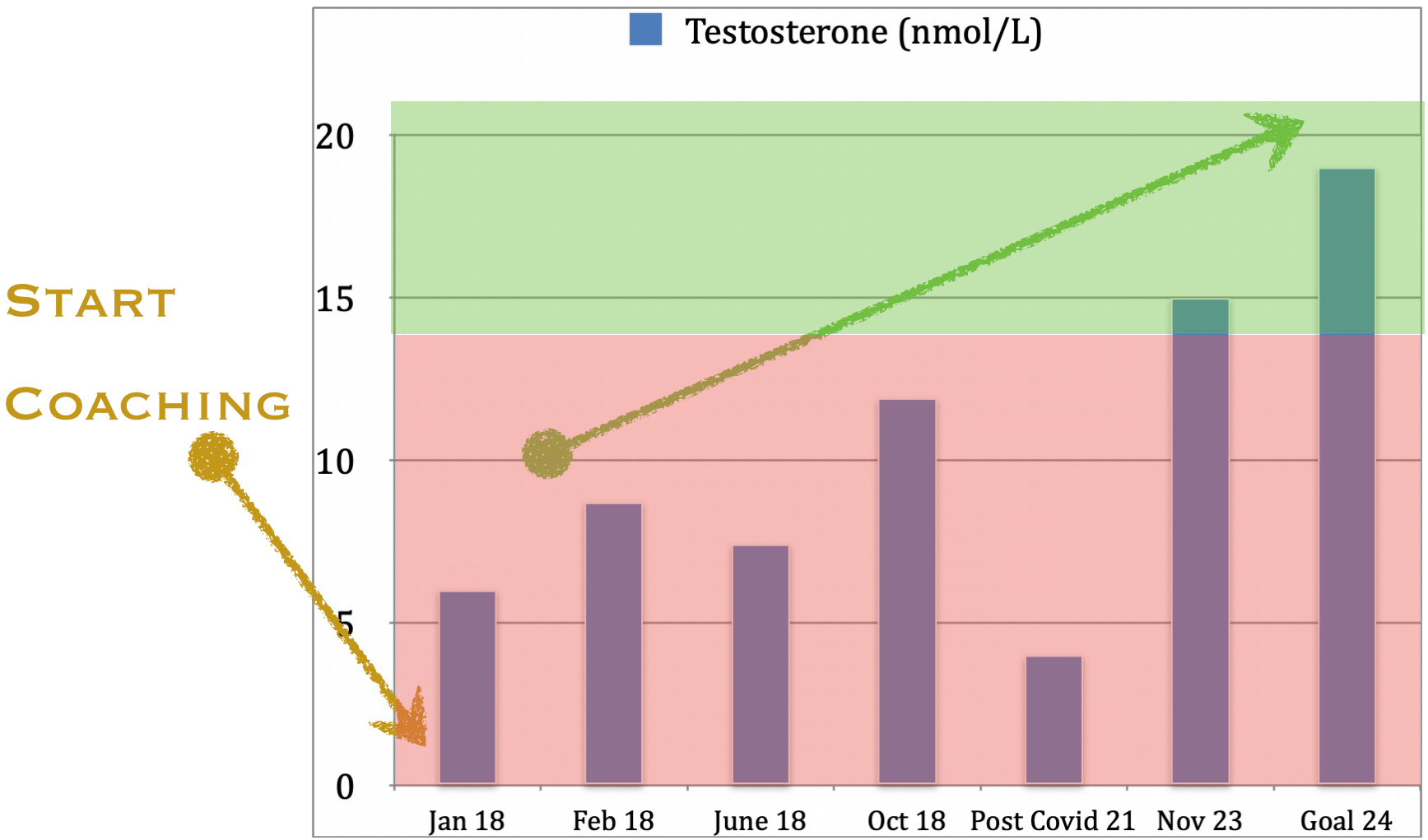
You do not need a £800 Garmin
to train properly in Zone 1
(save it for blood tests)



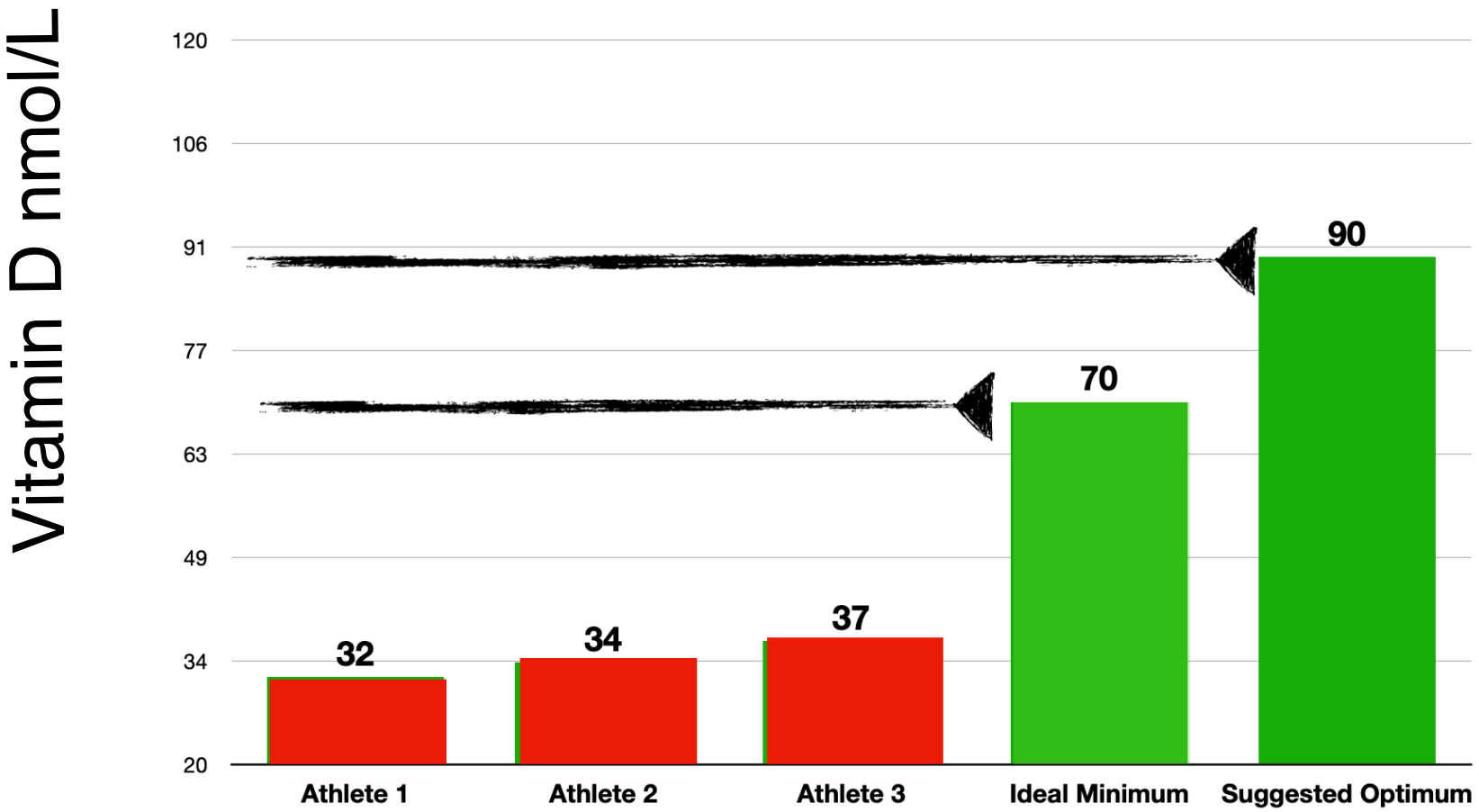
"BLOODS"

- data you cannot assume

@forth_edge Blood Profiling. Luxury or essential?



@forth_edge Blood Profiling. Luxury or essential?





You do not know your vitamin D, testosterone or Hbn based on “feel”

Sweat

1. Fluid & Sodium losses
2. Heat Analysis
3. A bonus...

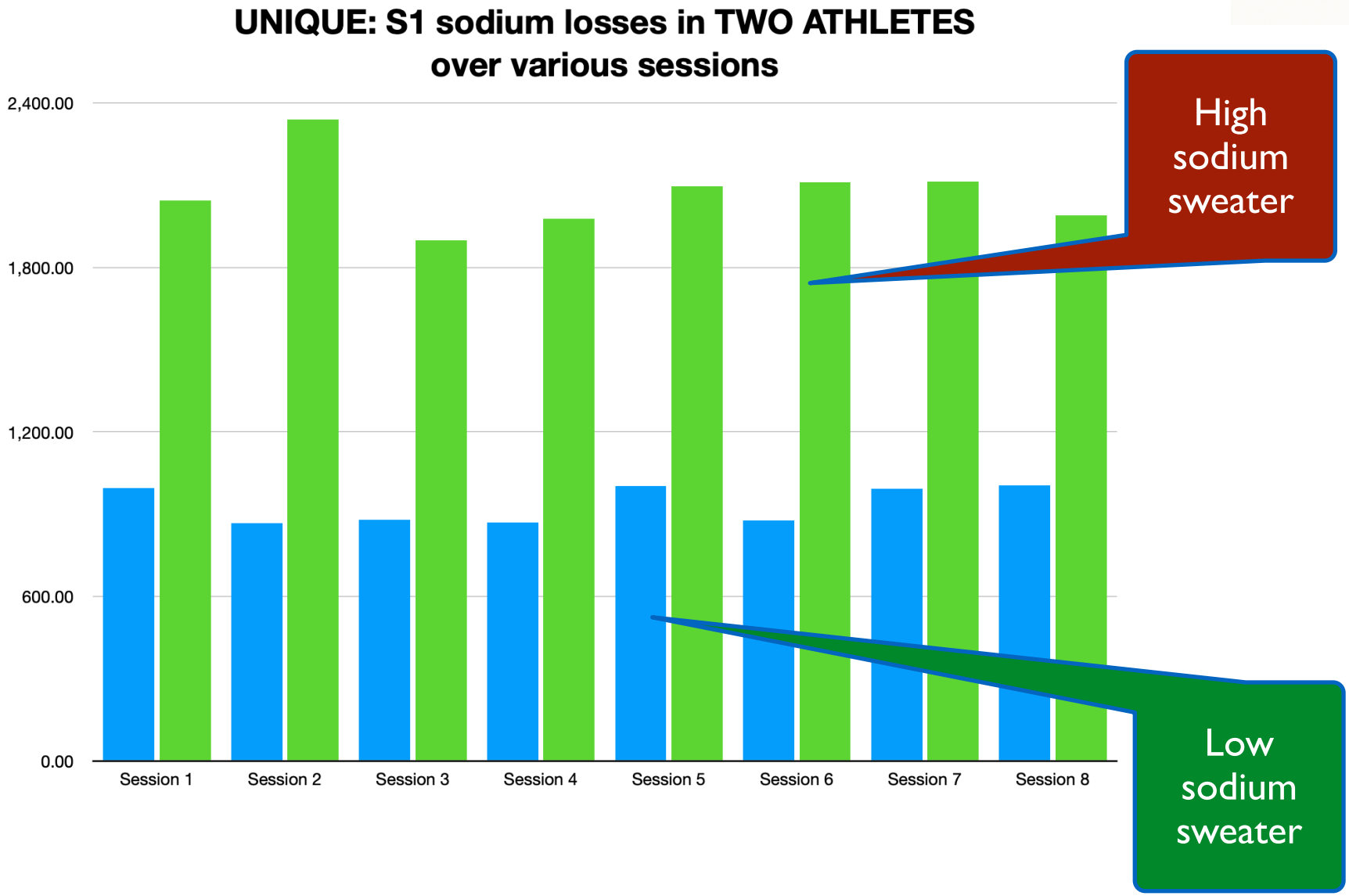
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"SWEAT"

- you data that is very personal
you cannot just "copy"


UNIQUE: S1 sodium losses in TWO ATHLETES over various sessions
2,400.00
1,800.00
1,200.00
600.00
0.00
Session 1
Session 2
Session 3
Session 4
Session 5
Session 6
Session 7
Session 8
High sodium sweater
Low sodium sweater



SALT is not a four-letter word
It could solve many issues if sweat losses are measured and diet/training is supplemented”

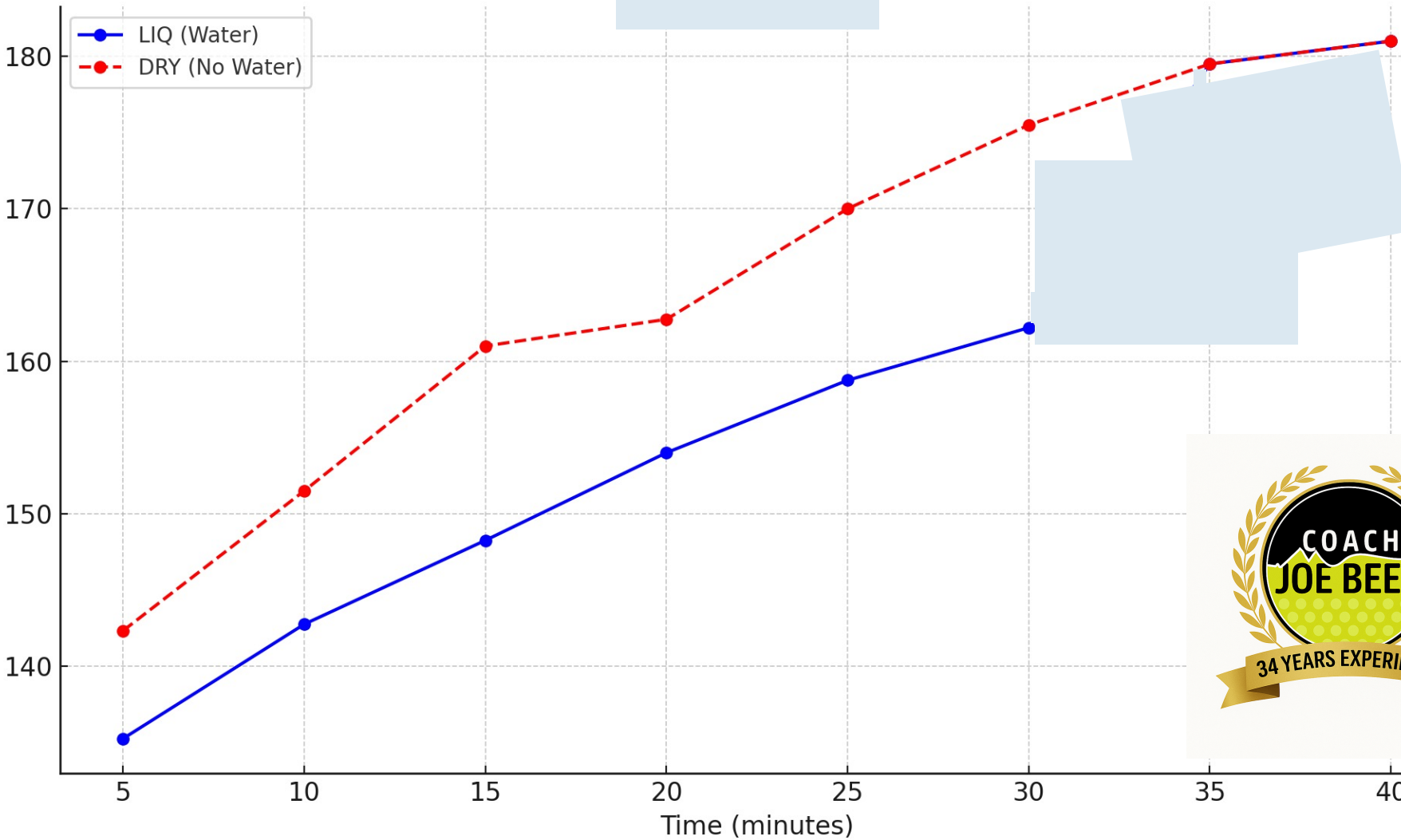


HEAT

TRAINING

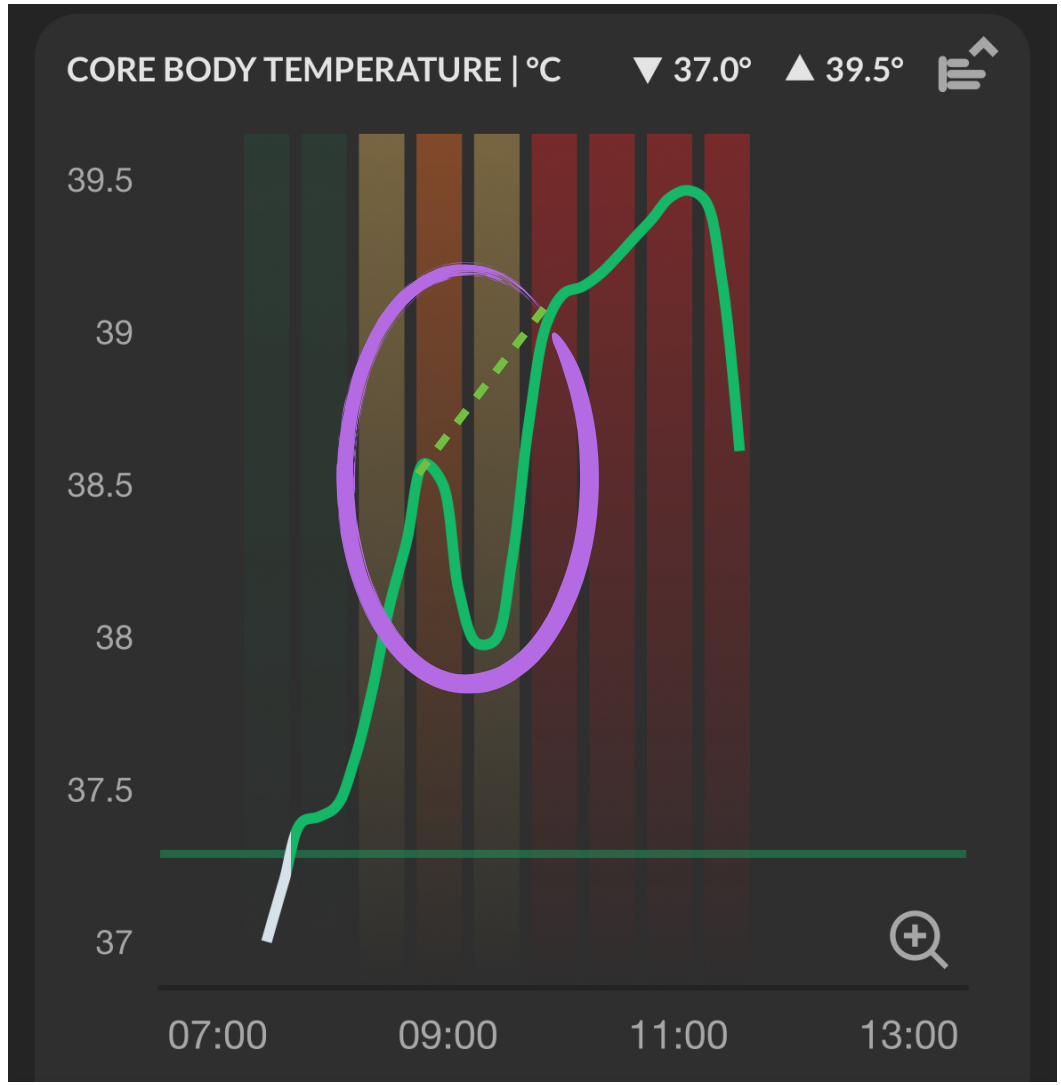
- the new Z1 super session

Heart Rate during hot training with/without water



*Beer et al (1990) from unpublished lab notes

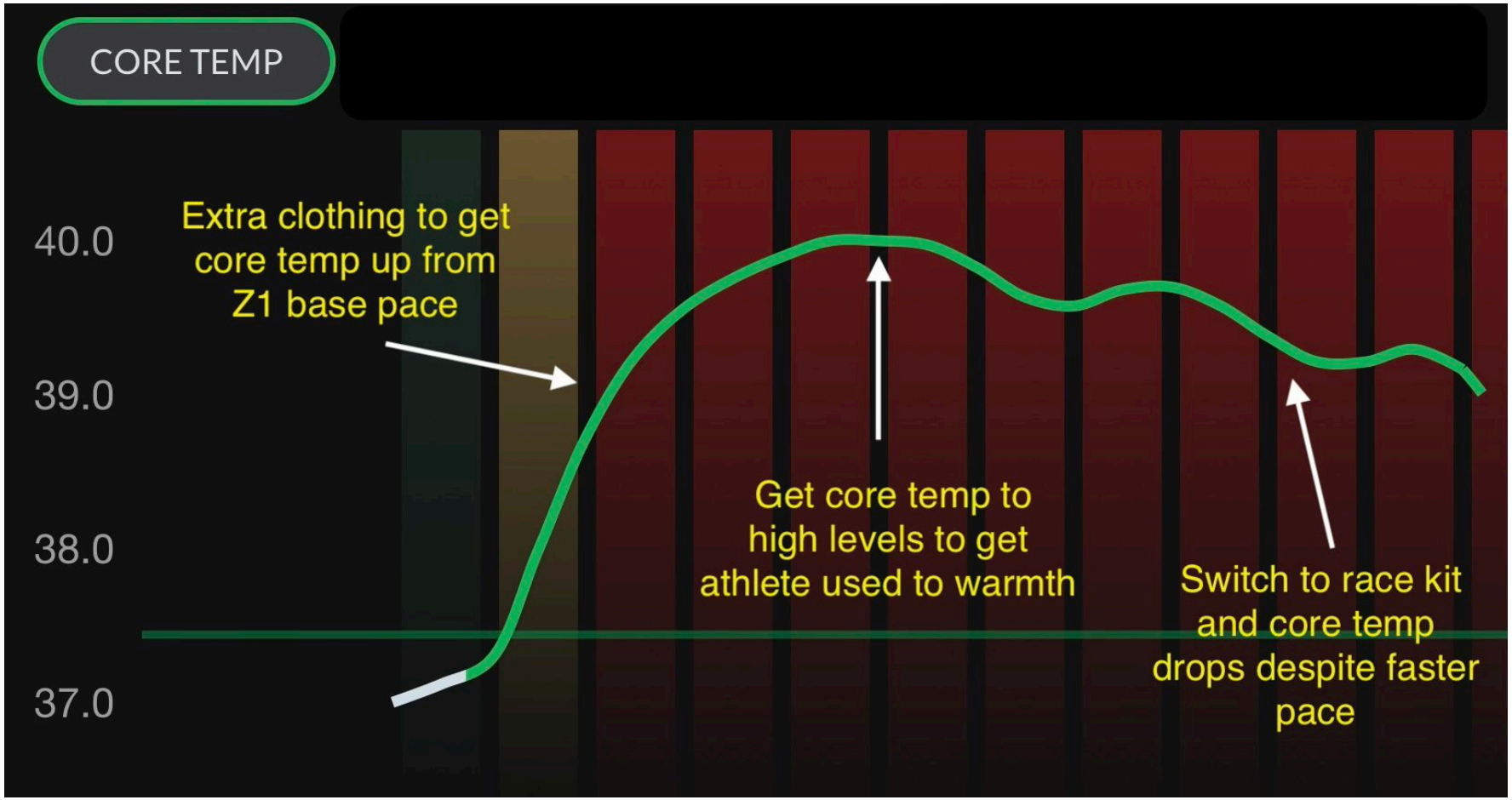
Core body temperature on winter run…



10-min stop drops core temp & "losses" 20mins

**Beer (2024)*

Core body temperature on heat training MP run…



10 mi steady Z1; [change];10 mi with 2 x 3mi @ MP (9:20-10:00 vs 8:45-9:00)

**Beer (2024)*



Never get cold - in fact:
aim to be warm.

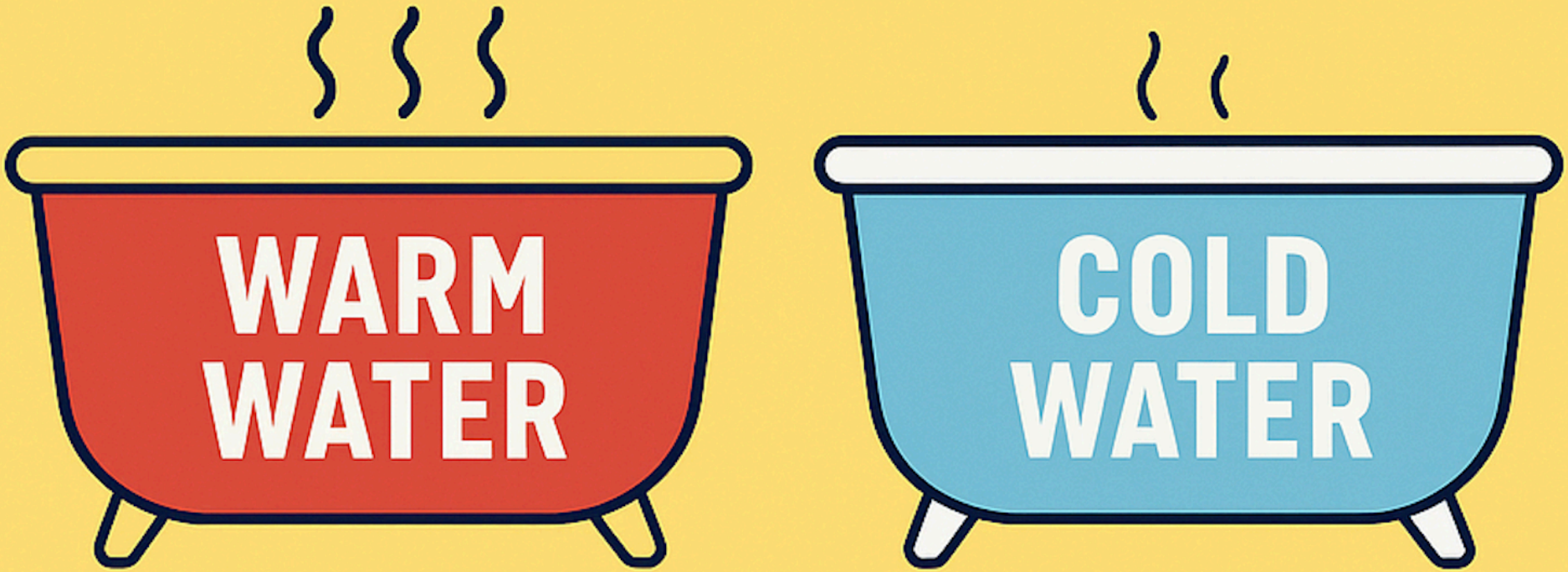
ONLY use hard heat training
4-6 weeks pre-competition



SWEAT beats CHILLY

- why rehab/recovery is not what you think

HOW WARM WATER BEATS COLD WATER FOR RECOVERY





Muscle regeneration is improved following warm water but unchanged by cold water immersion



Perceived soreness is lower after warm water than cold water immersion



Levels of muscle damage markers are lower following warm water than cold water immersion



Inflammatory response is beneficially altered by warm but not cold water immersion



"Heat beats ice for injuries and recovery"

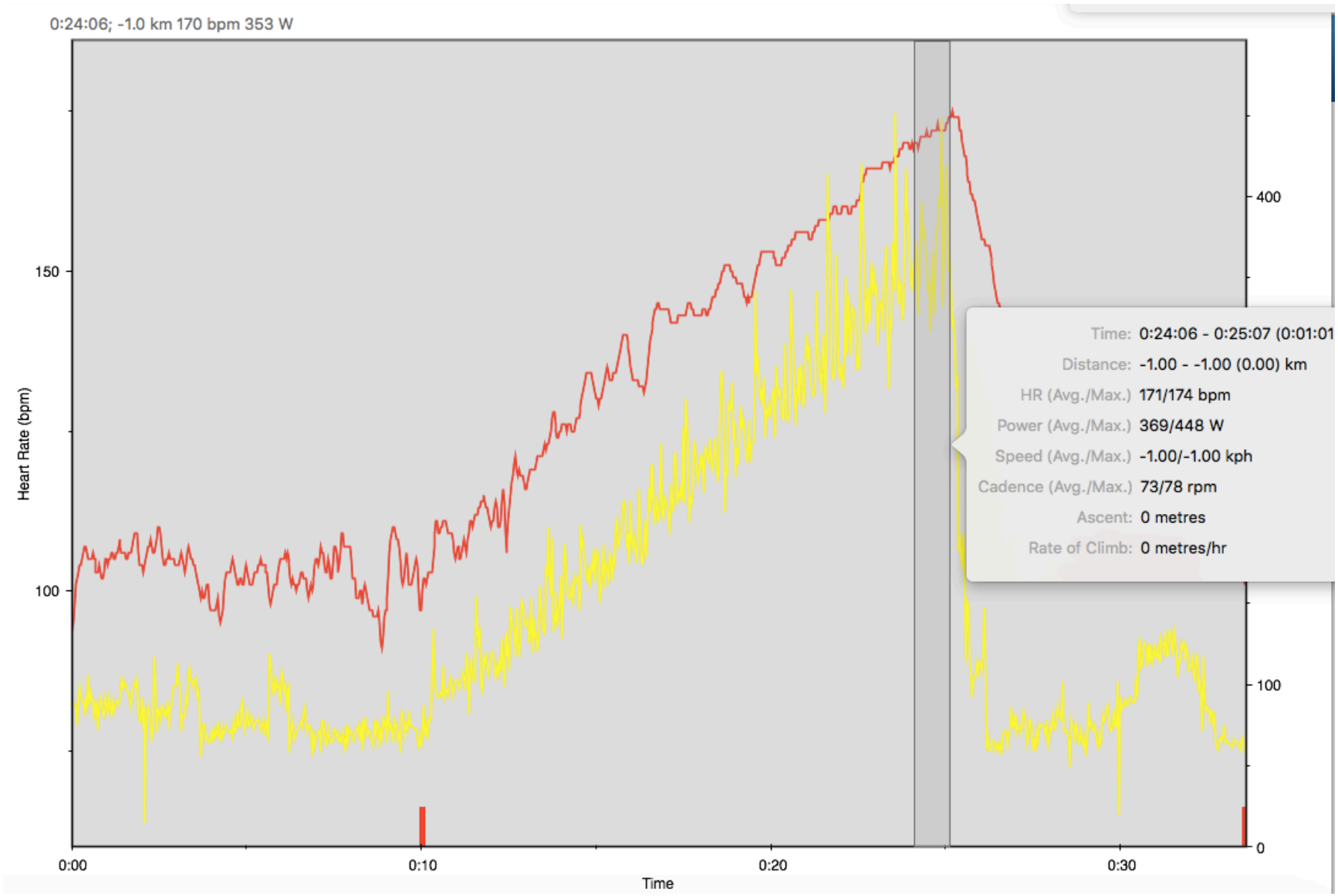
Power

1. ~~FTP~~ MAXTEST
2. Analysis

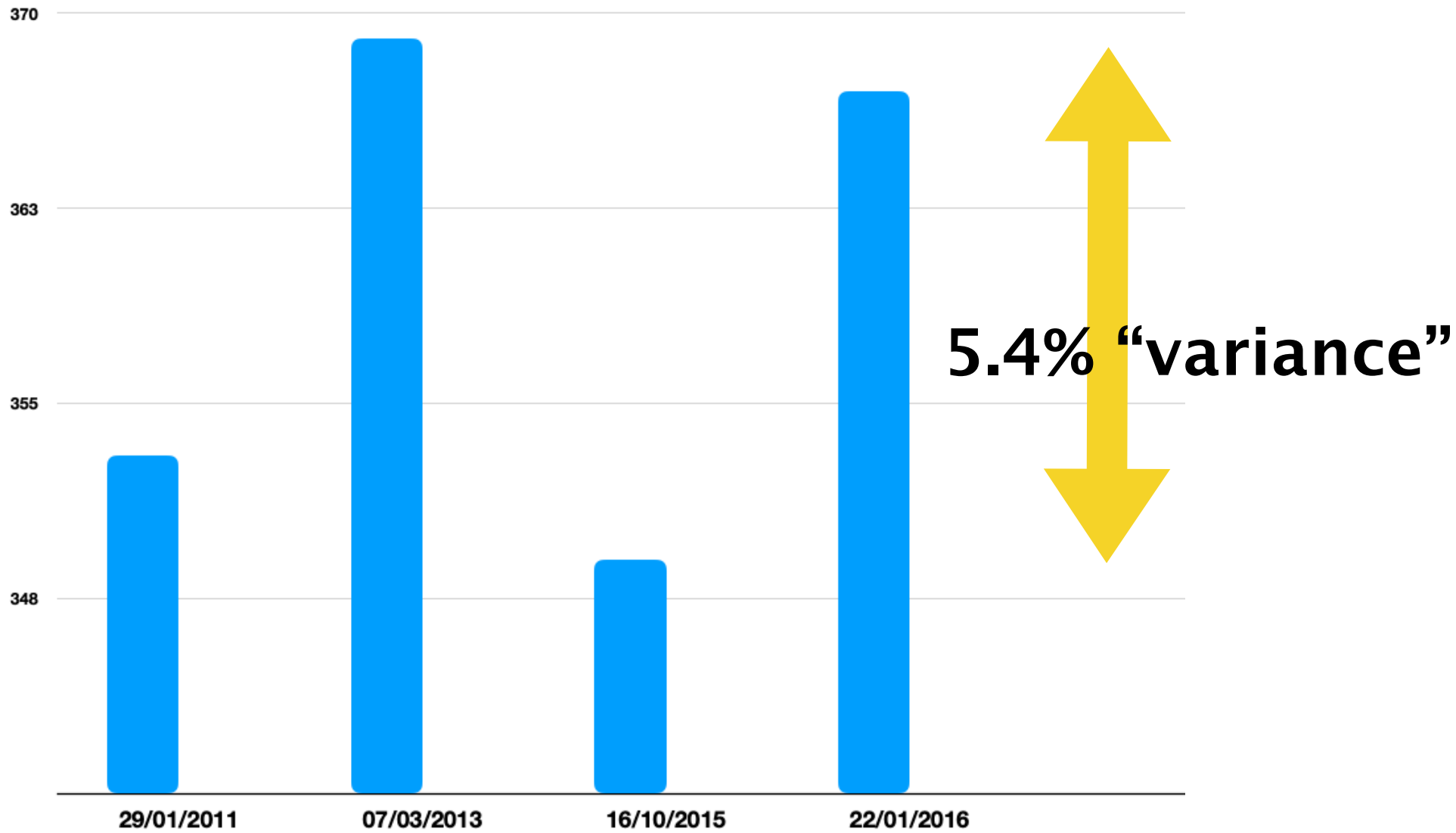
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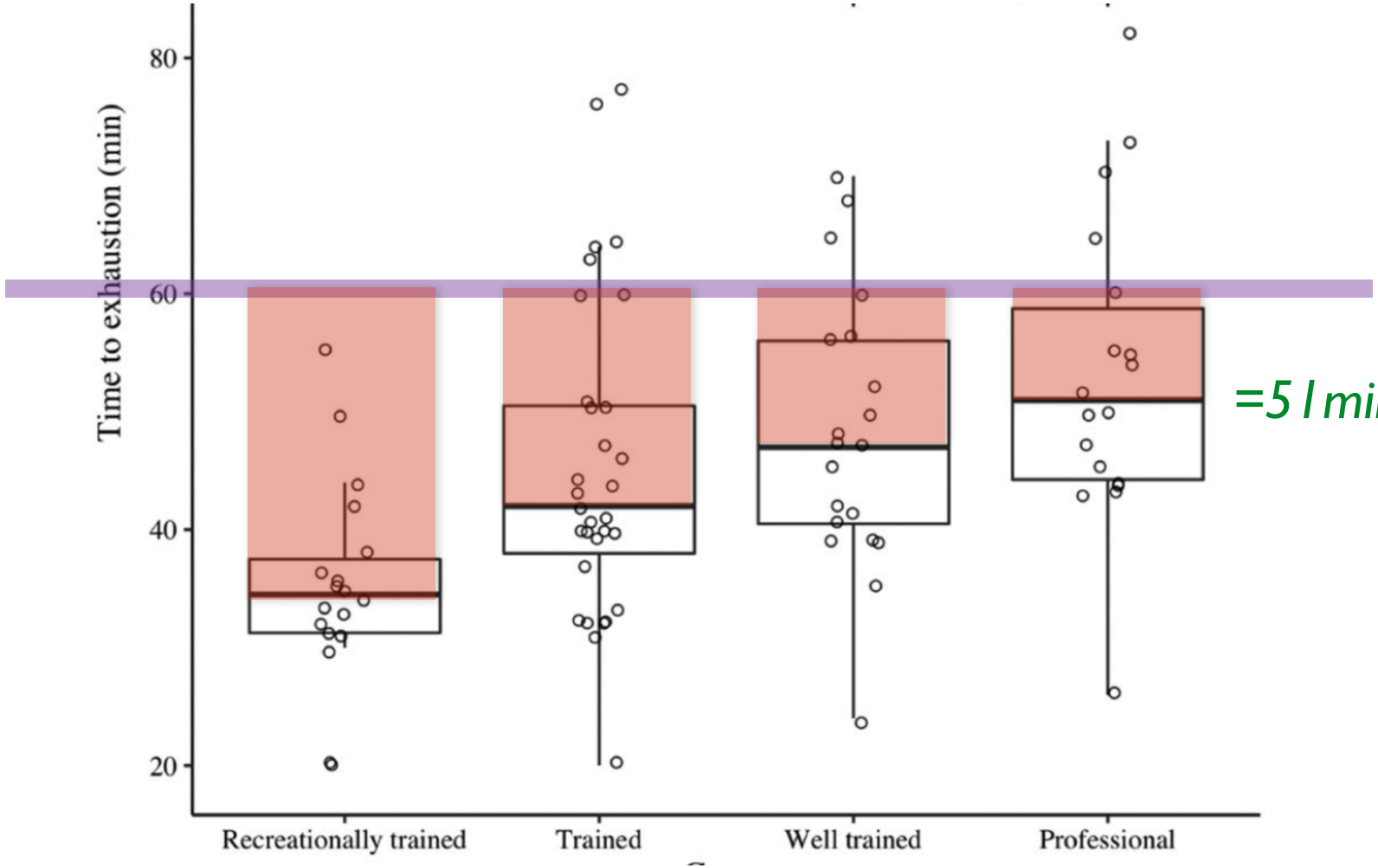
Bad news: your max is limited



Triathlete repeats MAX TEST



Drop FTP as your target/metric



=51mins

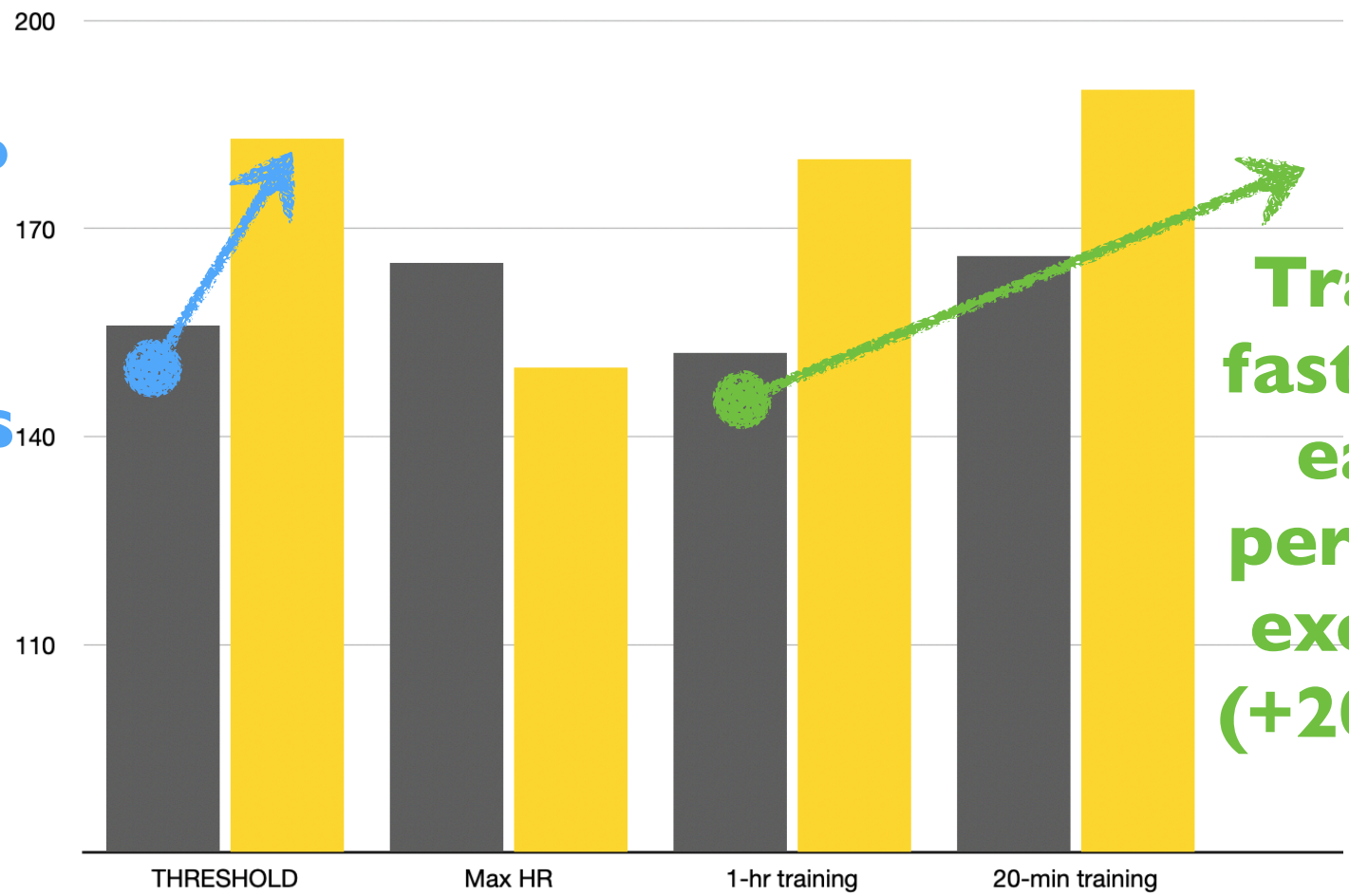
235w *266w* *279w* *308w*

…most last only 35-47mins 

**Sitko (2022)*

Six months on BASIC coaching…

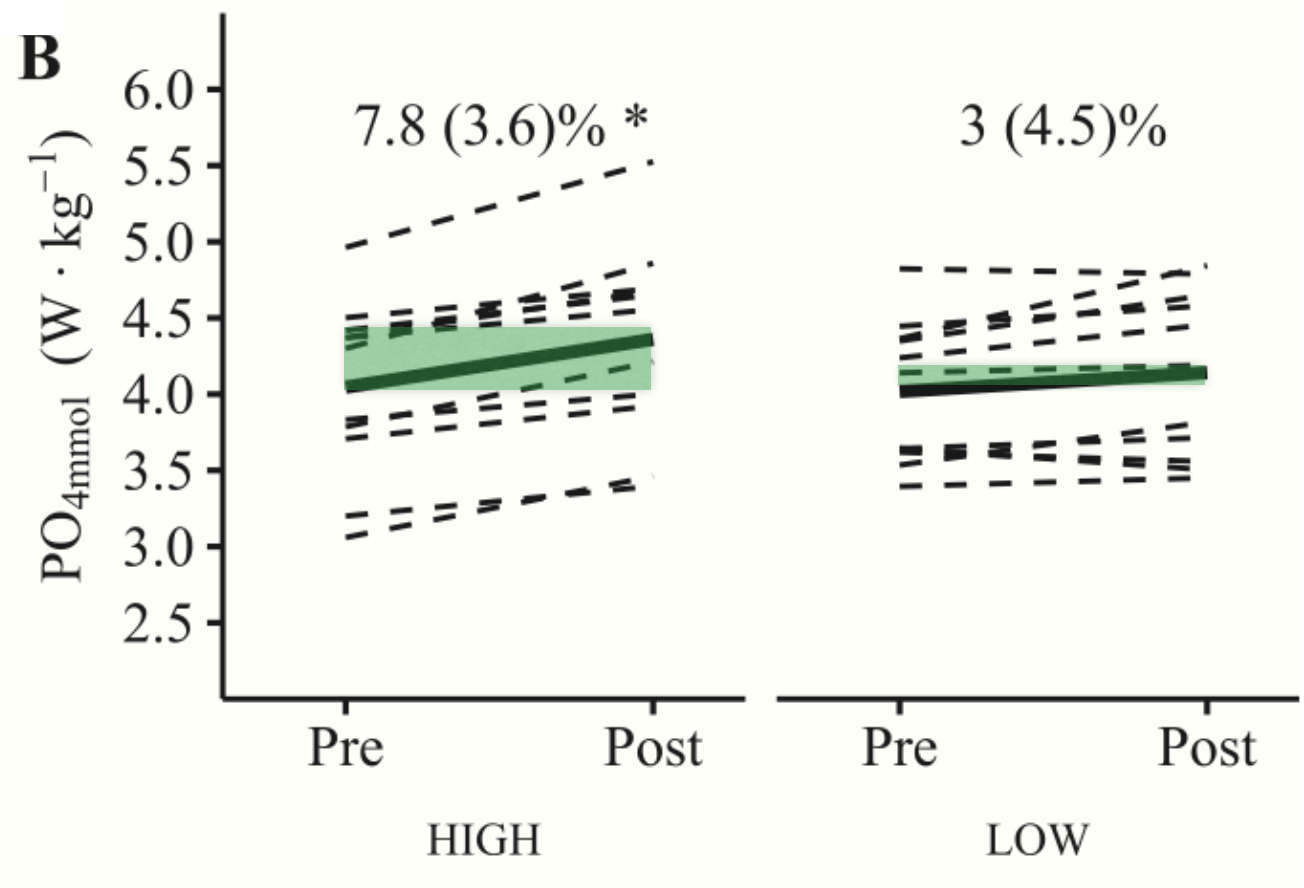
+17% FTP with correct base focus



Training faster but easier perceived exertion (+20-28w)

Training Peaks data from John Sexton with no FTP testing, cherry picking or HIT.

Boosting FTP/TH requires effort and its a very small gain



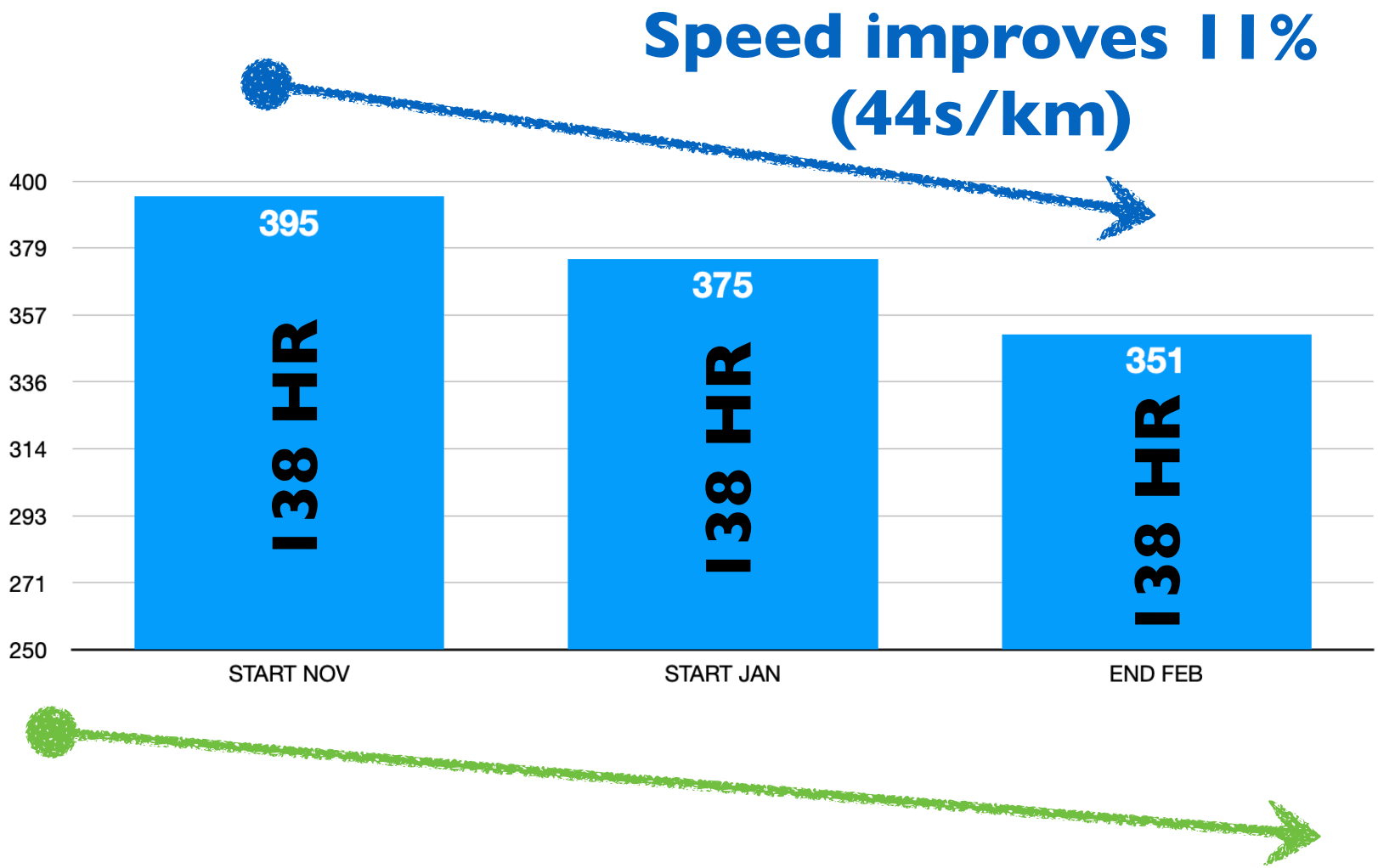
Genes=5.8w/kg HIT effort=0.5 w/kg @ Threshold

**Odden (2024)*



Drop FTP_{20} and use RAMP MAX TEST (no need for VO2 measurement)

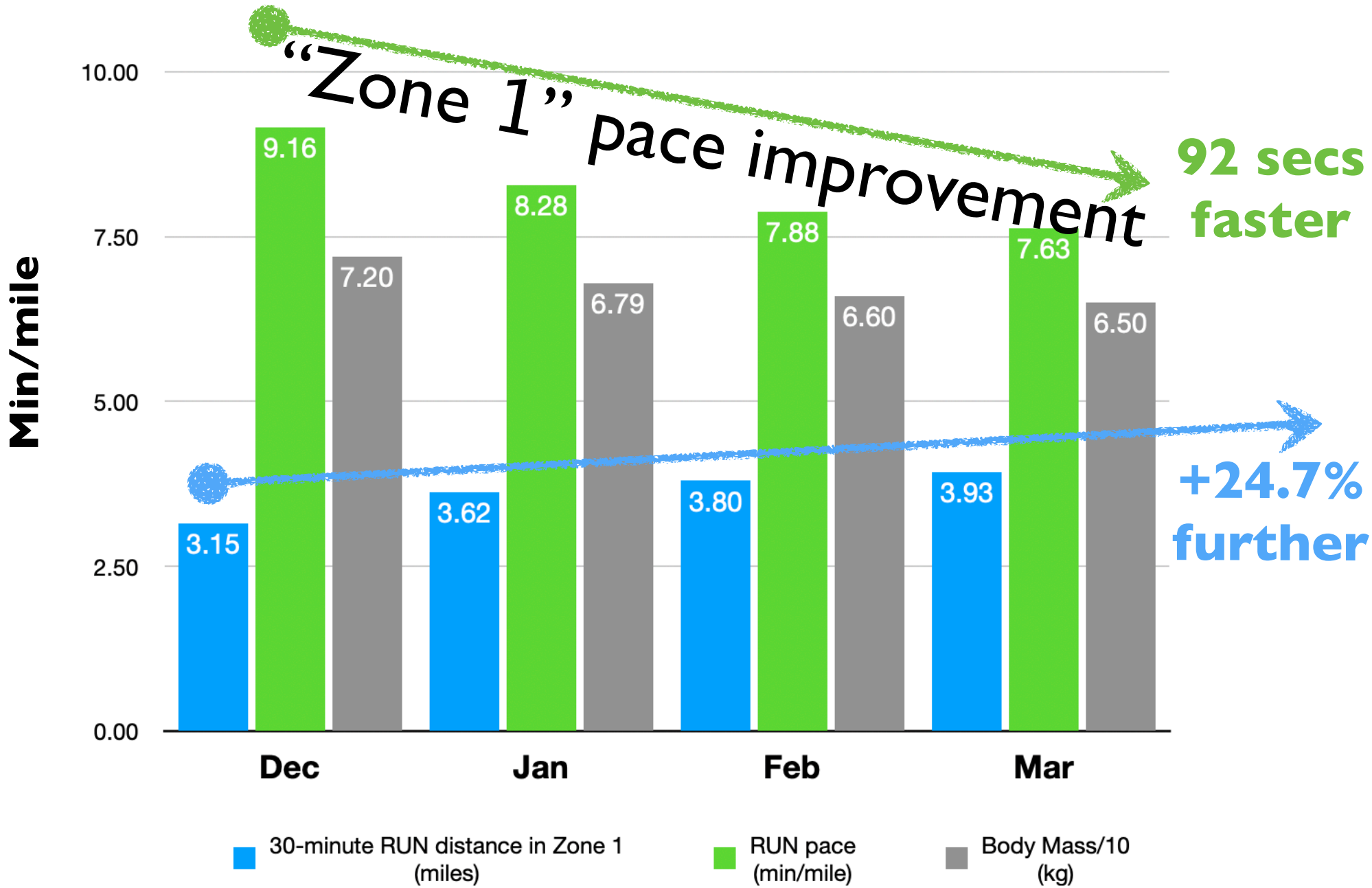
Build base & check your benchmark



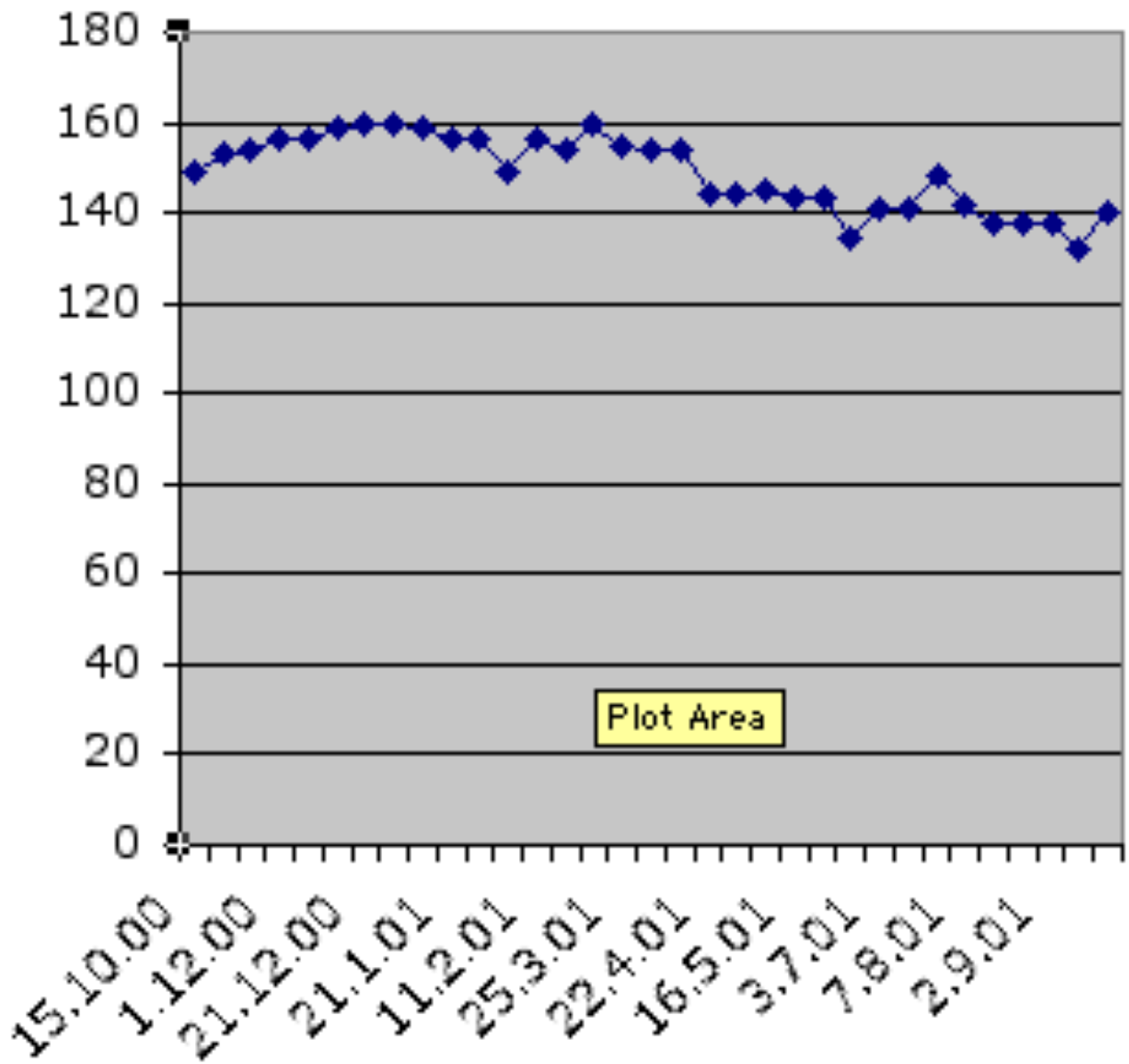
>5kg lighter since coaching started

**Beer (2025)*

Build base & check your benchmark



250 Watts Yearly Cycle





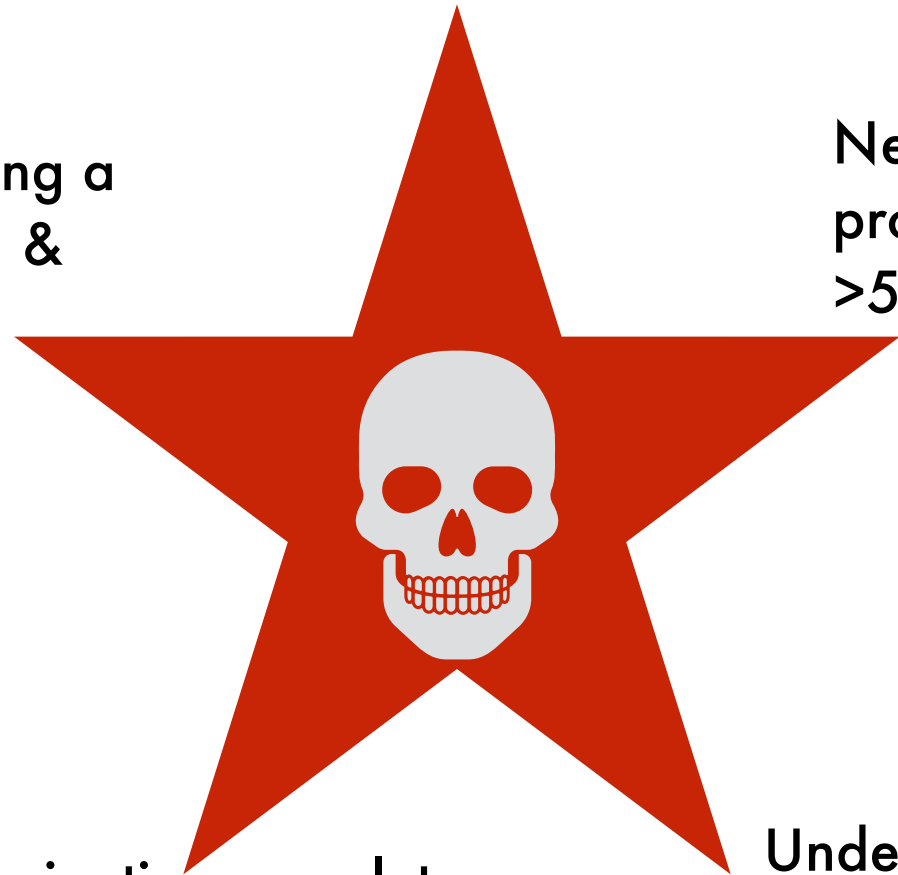
Do steady base and watch
HR drop (Jan->June)

(expect HR @ set workload to rise
Oct-> Dec after “season”)

Bad Habits

Sticking to a pace of training
Even if it pushes you into Z2

No peak goals, too long a season (base period?) & mediocre “completes”



Never using carbohydrate products when training >50mins or Z2/3 work

Deficiencies due to eliminating complete food groups. Not smart supplementing. No “bloods”.

Under-dressing so that you need to move fast to stay warm.

Some of the best habits

1. Most training sessions are for skill or “relaxed endurance’ #LifeIsTooShort to smash yourself to get nowhere
2. You can do some hard work (weights, intervals, time trails, build races and A-Races) but they ALL must be planned
3. Keep away from chasing the social media average speed “monster” or seeking others “high-fives”. Or Garmin saying “TEMPO”, again.
4. Training has to be consistent but work within your everyday life. Training is not your life. (Zone 1 = great stress reduction)
5. Enjoyment must always be on the menu. Do not assume a group or club knows how to train and considers your training goals.
6. Keep refining what you do “Best Known Method” not trying “harder” or buying ever more complicated gadgets (less data not more)

The very Best Known Methods (BKMs)

- Holding (Oct-Jan) [skill/strength/suppleness]
  Progression (Jan->Sept) [stamina/strength/specifics]
- Testing of efficiency (power vs HR) and knowing sweat, sodium, (carb) and heat optimums
- Multiple well-spaced & varied meals, with varying carbohydrate delivery amounts
- Regular "Body Work" helping natural flexibility and injury rehab - Including Blood testing
- Consistency of training-racing-lifestyle balance with regular "Refinement" e.g. sleep/recovery

How to find YOUR zones

1. TAKING RECENT RACES (£free)
Assuming flatter courses. Take simple m/mile.
This finds your Zone 1 "aerobic" range.

2. RPE/NOSE BREATHING TEST and/or 180-YOUR AGE (£free)
Train "easy" - find your nose/mouth transition "at top Z1" or use simple maths.
This finds your top of Zone 1, but 180-age will be lower.

3. BIKE/TREADMILL MAX TEST (£0 solo/helper to £50+ PROFESSIONAL)
e.g. INDOOR BIKE with power: Warm Up RAMP 75-100 watts, increase 20 watts/min.
Max HR x 0.8 = Top of Z1

4. RUN VO2max-Lactate Threshold(s) Test (£100-£250)
e.g. Test session with 5 to 12 page report. Probably focuses on Threshold, Sweet -spot or Interval gains. May ignore diet impact on results or vital "bloods" follow up to diagnose granular metabolism weaknesses.

5. BASED ON GROUP ETHOS?
e.g. Training with a group/person you can "keep up with" may be right or wrong. This ignores actual "knowledge" of group and could likely becomes a "competitive" environment rather than training. Are they respectful ot looking to race you?



Q&A?
Message via @coachjoeber






















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