

OVERTRAINING & UNDERPERFORMANCE

Combining Sport Science & Sports Medicine

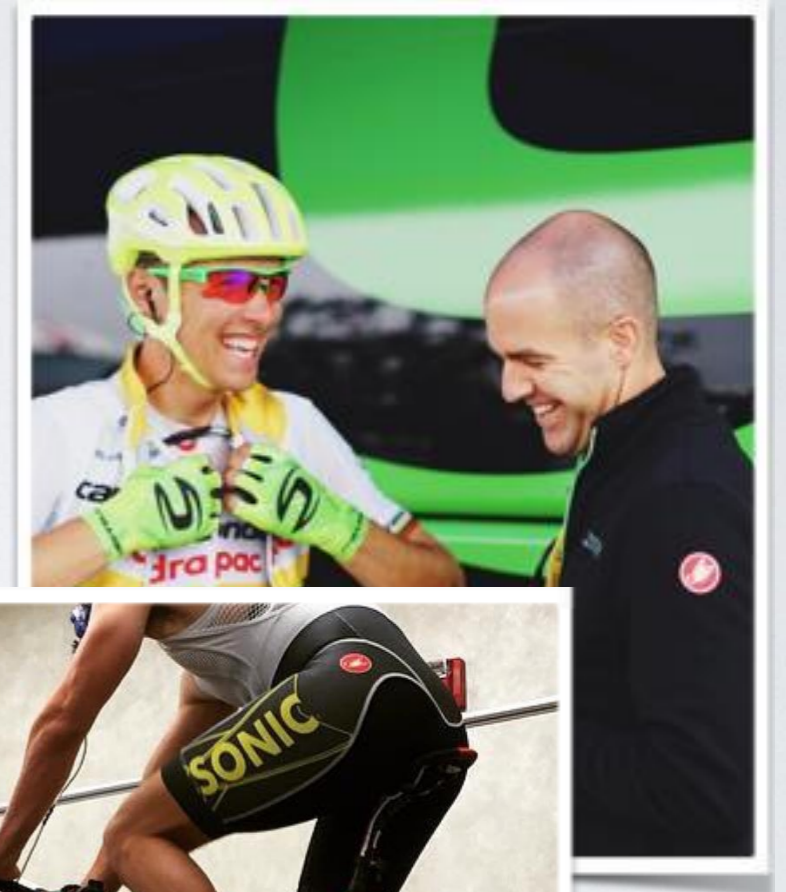
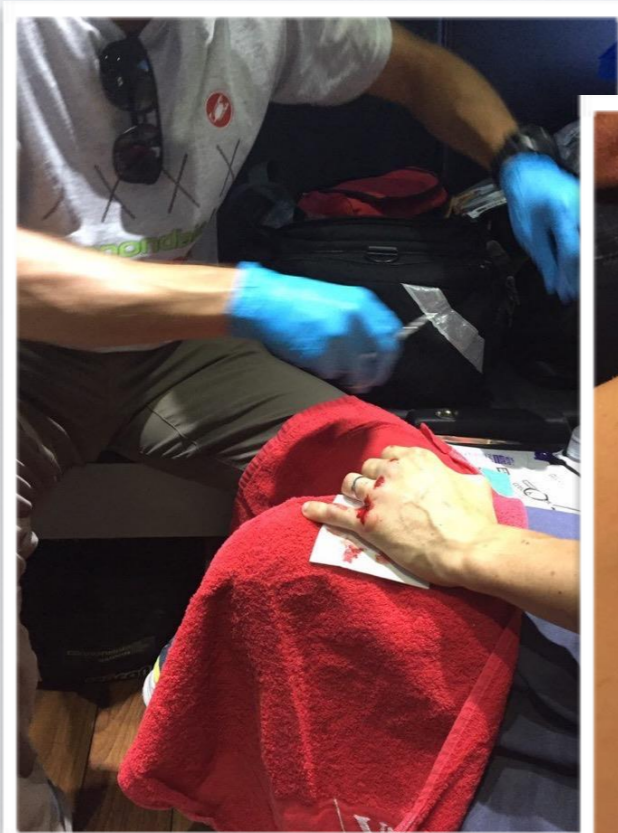
Kevin Sprouse, DO



NOTHING TO DISCLOSE

MY PRACTICE

- Podium Sports Medicine
- Cannondale - Drapac



MEDICINE & SCIENCE

In Sports Medicine (and cycling in particular) athletes expect their doctor to be a resource for training-related concerns.

Training Protocols

Altitude Training

Training Stress

Blood Value
Parameters

Nutrition

Recovery Strategies



MEDICINE & SCIENCE

- Unfortunately, US medical education does a poor job of training doctors in these topics.
- The good news is that you know the physiology!
- One of the best intersections of medicine and science in sport is Overtraining Syndrome.



CASE

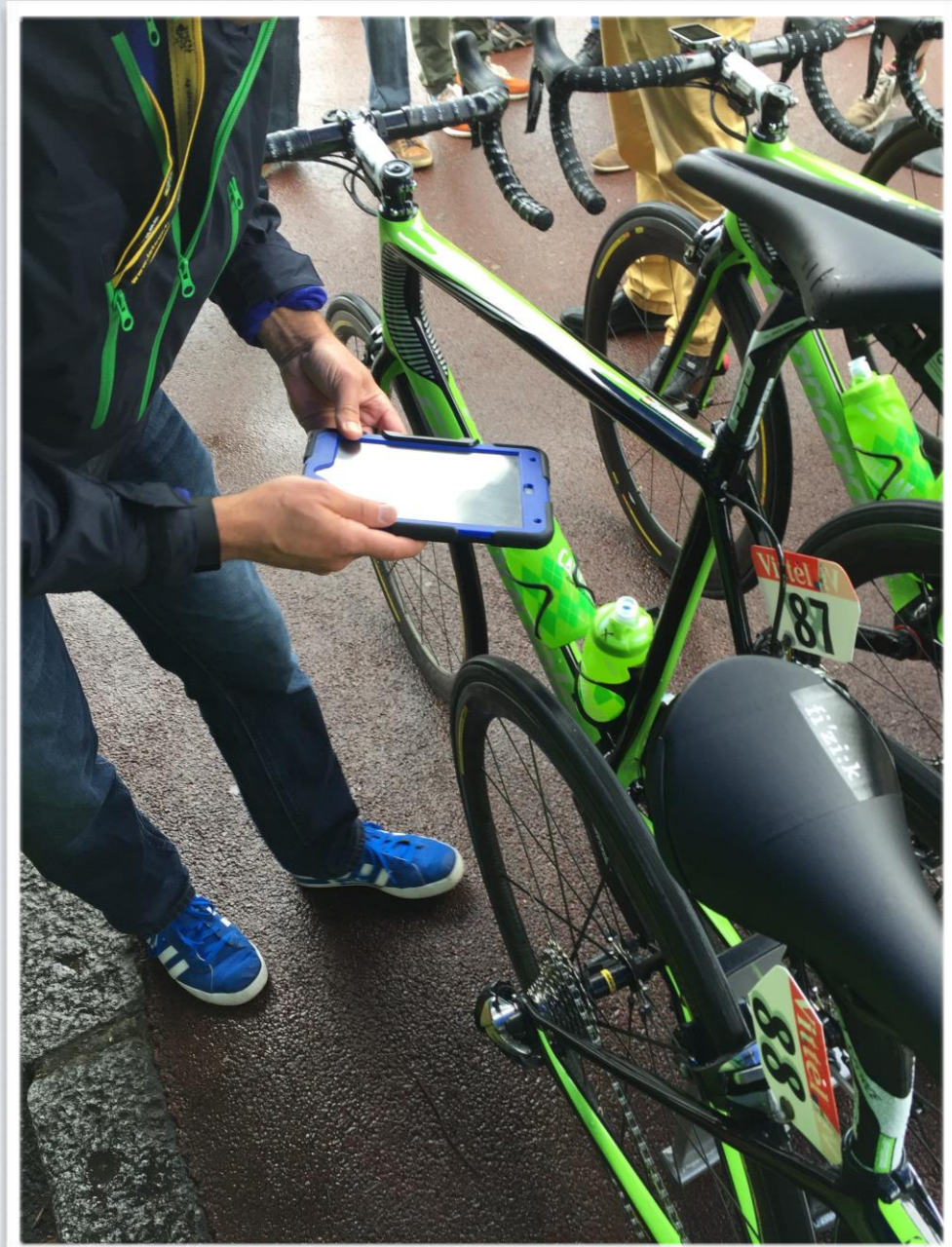
- 25yo elite cyclist
- c/o declining performance
- has increased training to compensate, as he has a goal race approaching.
- Now feels fatigued, isn't sleeping well, and feels like he's coming down with a cold
- DDX? Workup?



DIFFERENTIAL DX

- Lengthy!
- Viral infection (EBV, CMV, HIV, etc)
- Anemia
- Nutritional (iron def., anorexia)
- Medication Reaction (antidepressant)
- Psychologic (depression, anxiety)
- And of course...Overtraining Syndrome





WORKUP

- Vital Signs?
- Blood Work?
- Training Log? Coach interview?



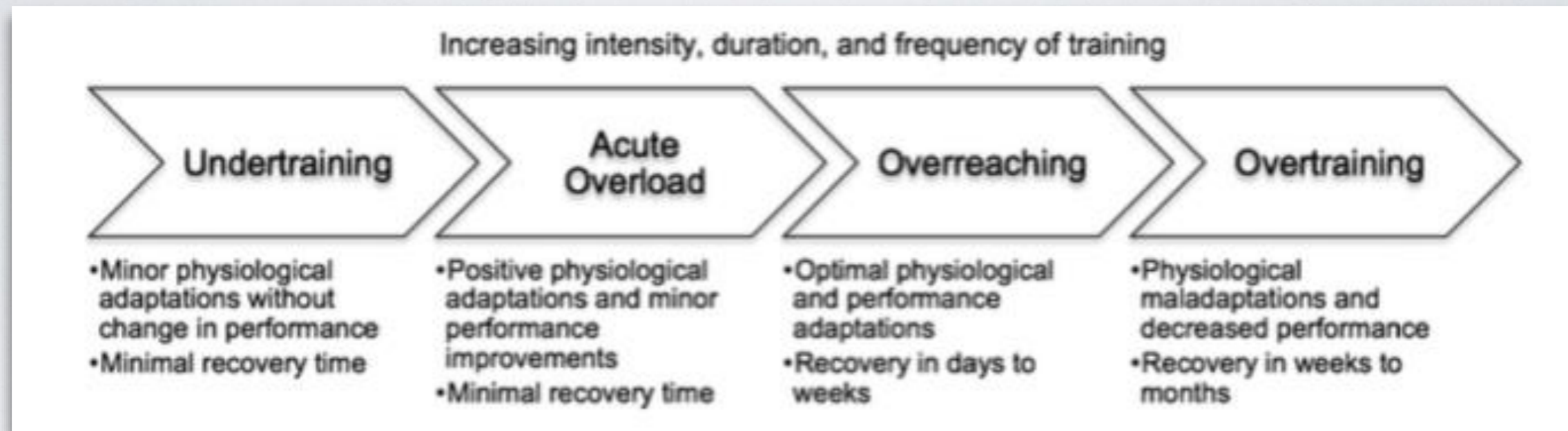
WHAT IS OTS?

“An accumulation of stress, due to *training* and additional *life stress*, that results in long-term performance decrement that may or may not be accompanied by psychological and physiological symptoms.” - Carfagno and Hendrix, CSMR

Jan/Feb 2014



OTS SPECTRUM

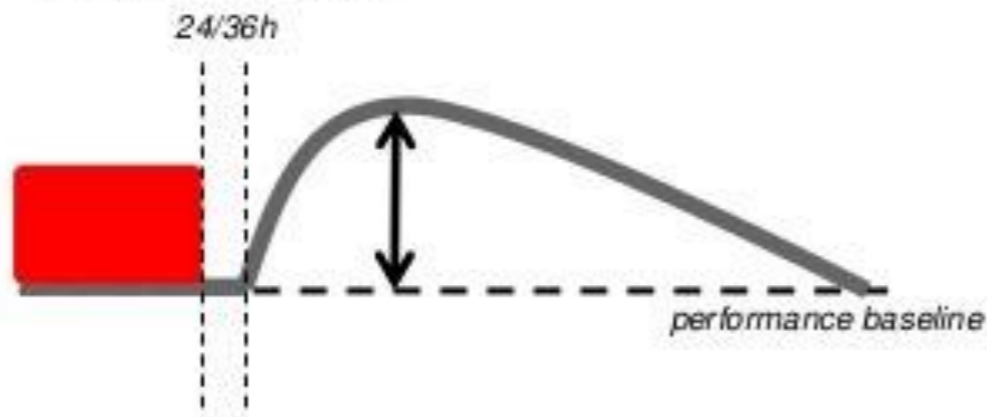


Current Sports Medicine Reports
Jan/Feb 2014

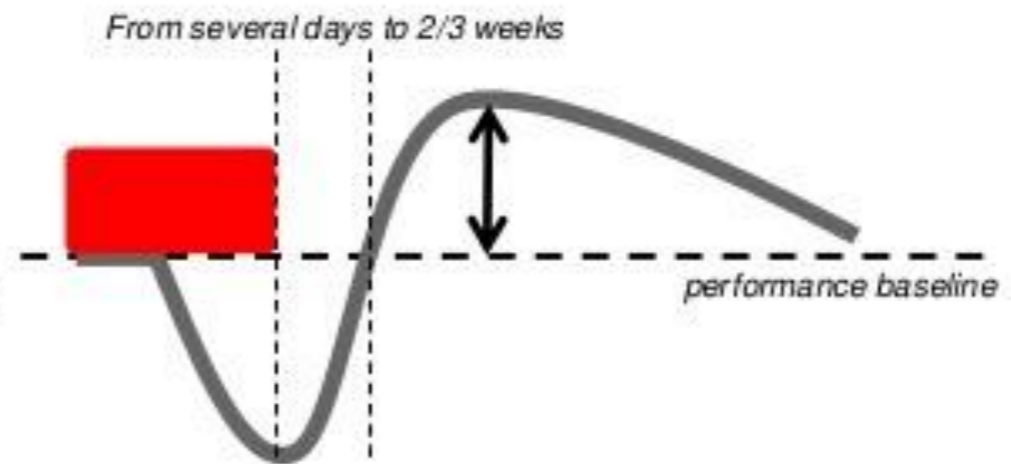


The different stages of training-induced fatigue

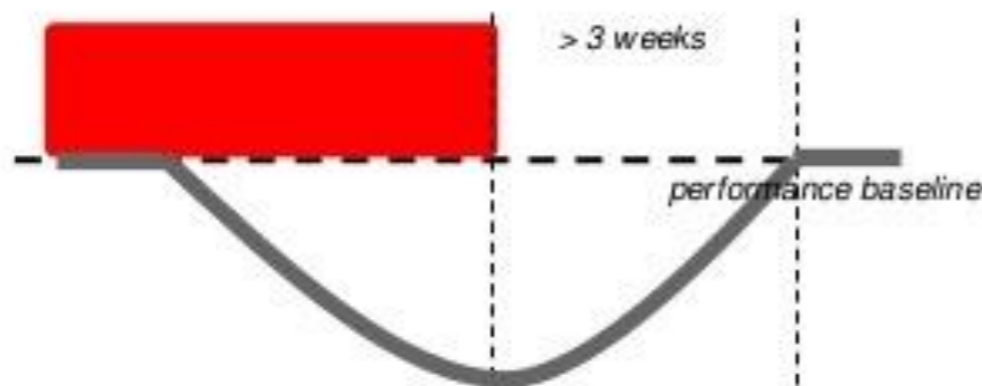
Acute fatigue



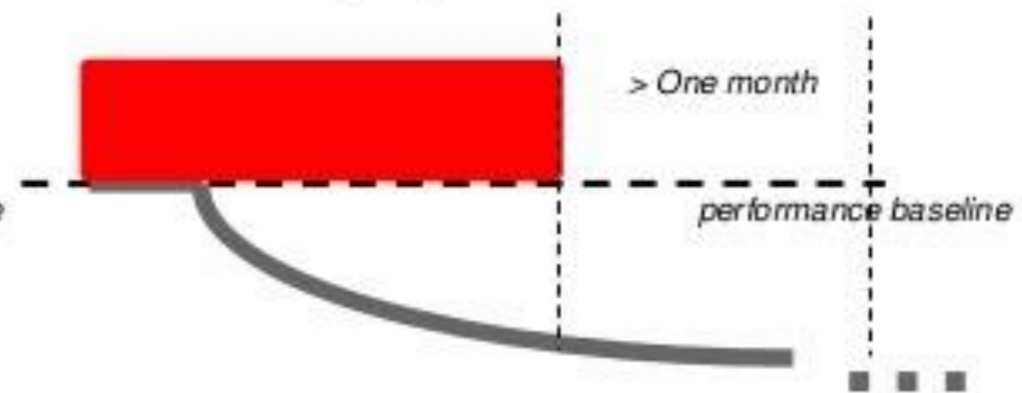
Functional overreaching

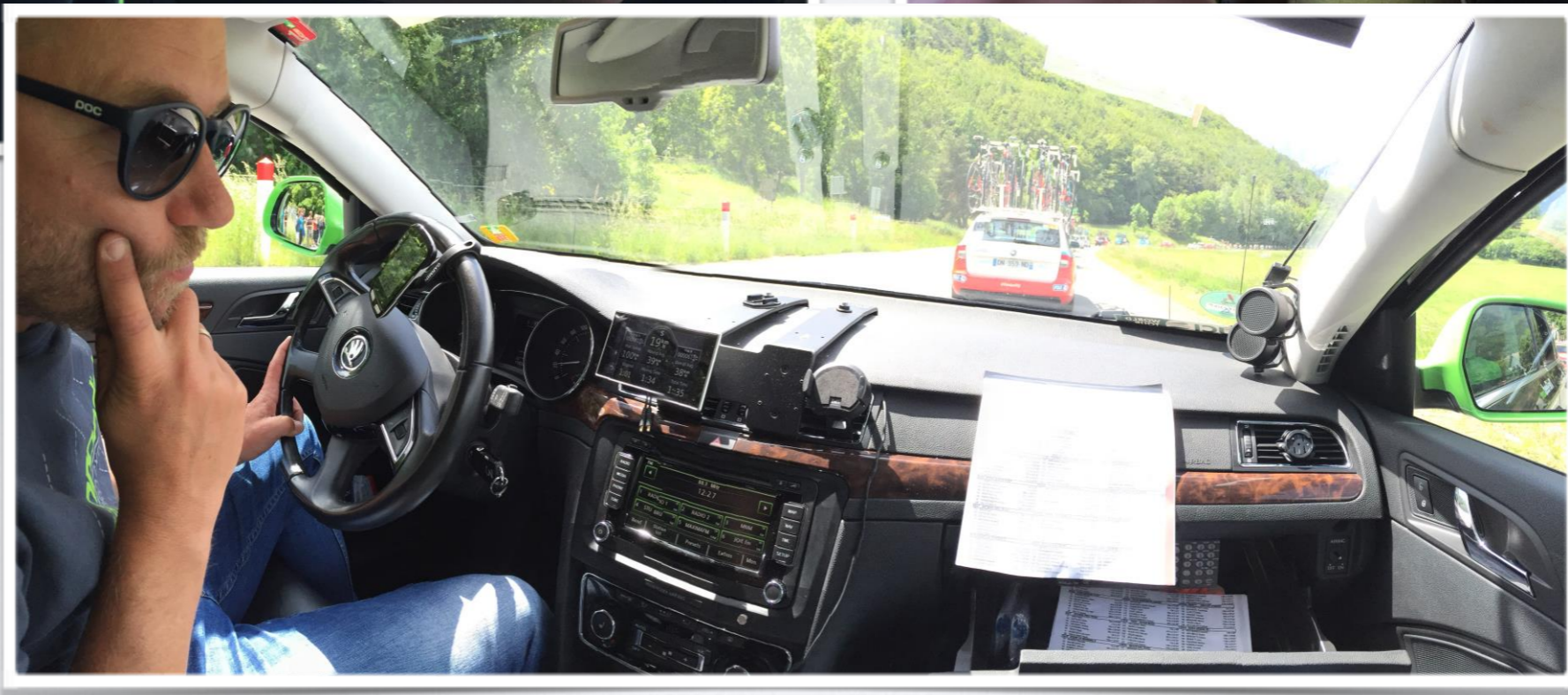


Non functional overreaching



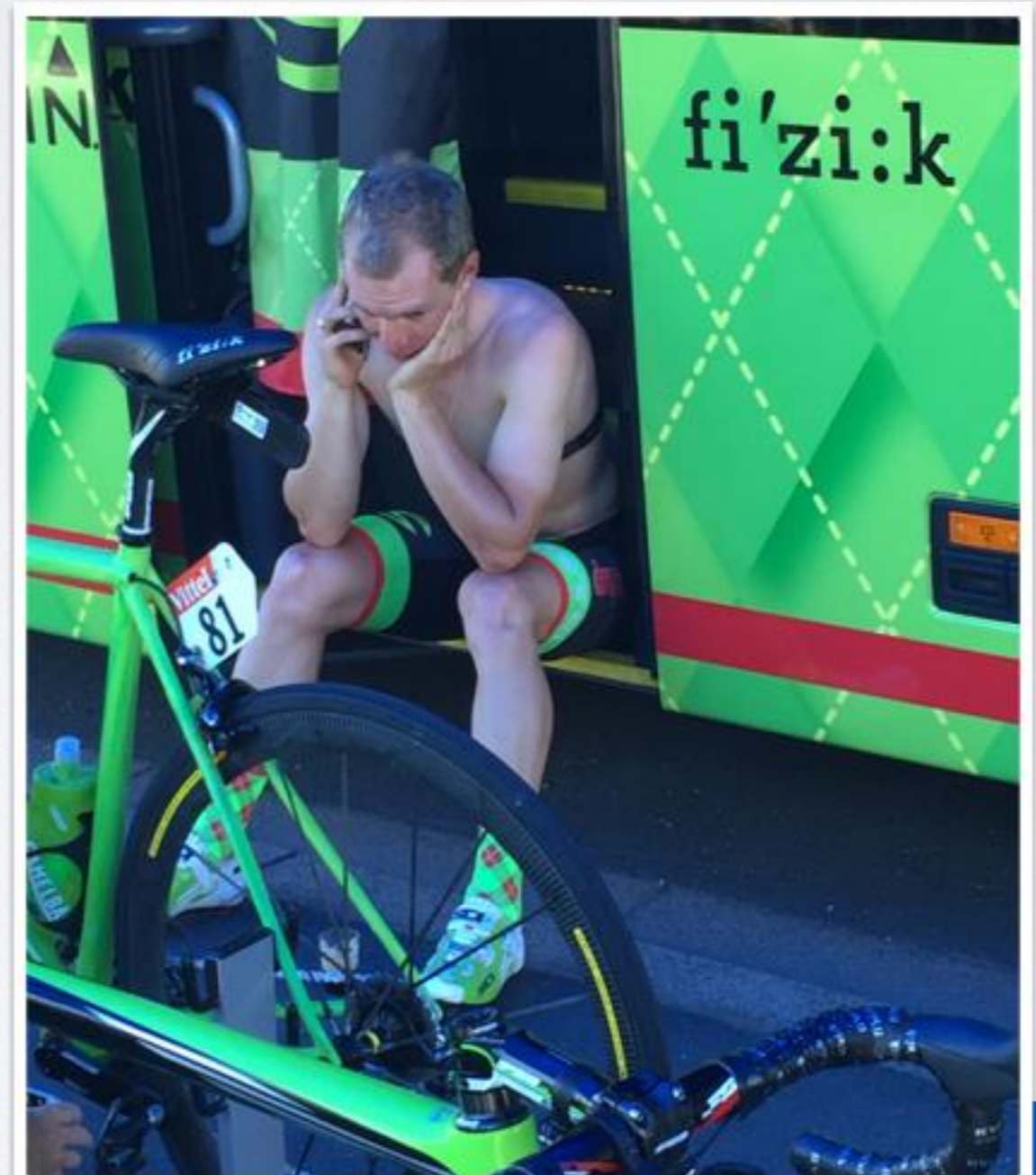
Overtraining syndrome





FUNCTIONAL OVERREACHING (FO)

- Purposeful overload
- Short-term fatigue
- Stimulates adaptation
- Quick recovery



NONFUNCTIONAL OVERREACHING (NFO)

- Unplanned or unintended overload
- Greater symptomatology
- Longer recovery (weeks)



OVERTRAINING

- Chronic overload
- Declining performance
- Maladaptations
- Recovery in *months*



DIAGNOSIS

- Thorough history and review of training files
- Thorough physical exam (VS, HRV?)
- Testing to r/o other cause of symptoms
- Then...



BLOOD WORK

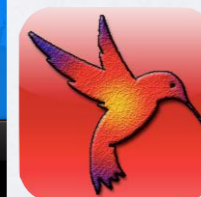
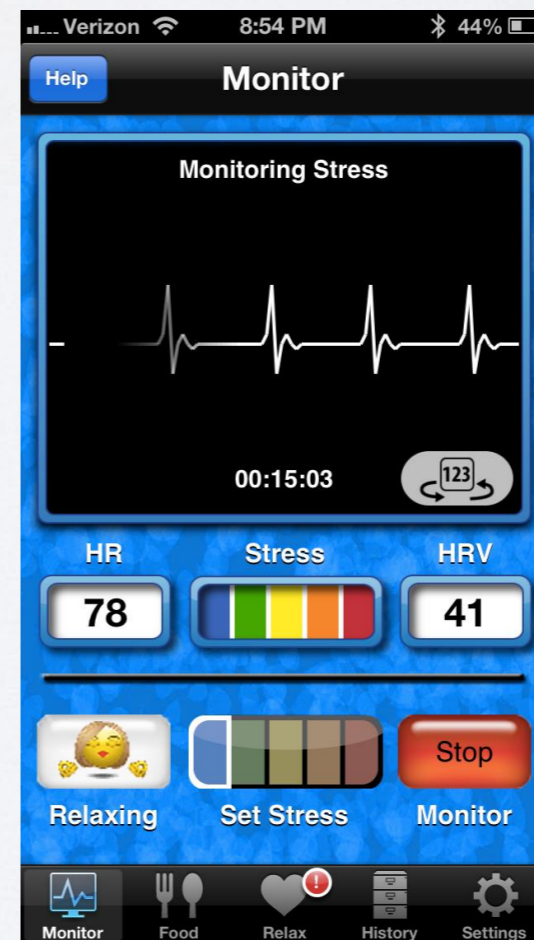
- *After ruling out other pathology*
- CBC
- CMP
- TSH (+/- fT3/fT4)
- CRP
- Ferritin, Vit D, RBC Mg, B12, Folate
- Cortisol, Insulin
- Sex hormones
- Salivary testing? (monitoring, dx)



NEWER METRICS

- HRV
- Sleep Monitoring
- Body Temp Overnight

OURA





POMS

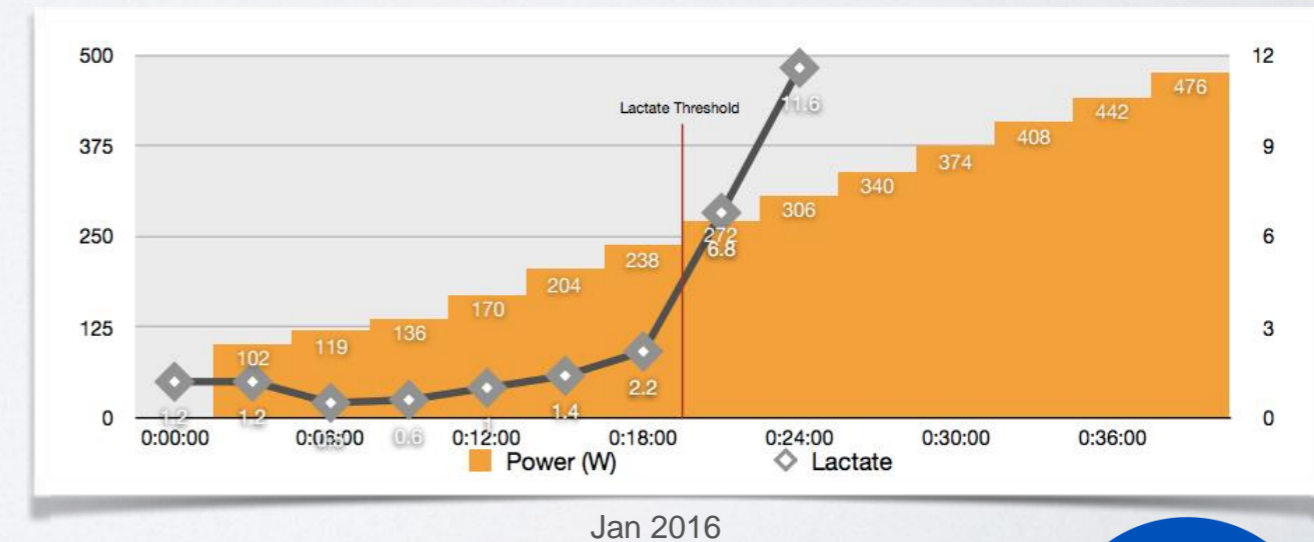
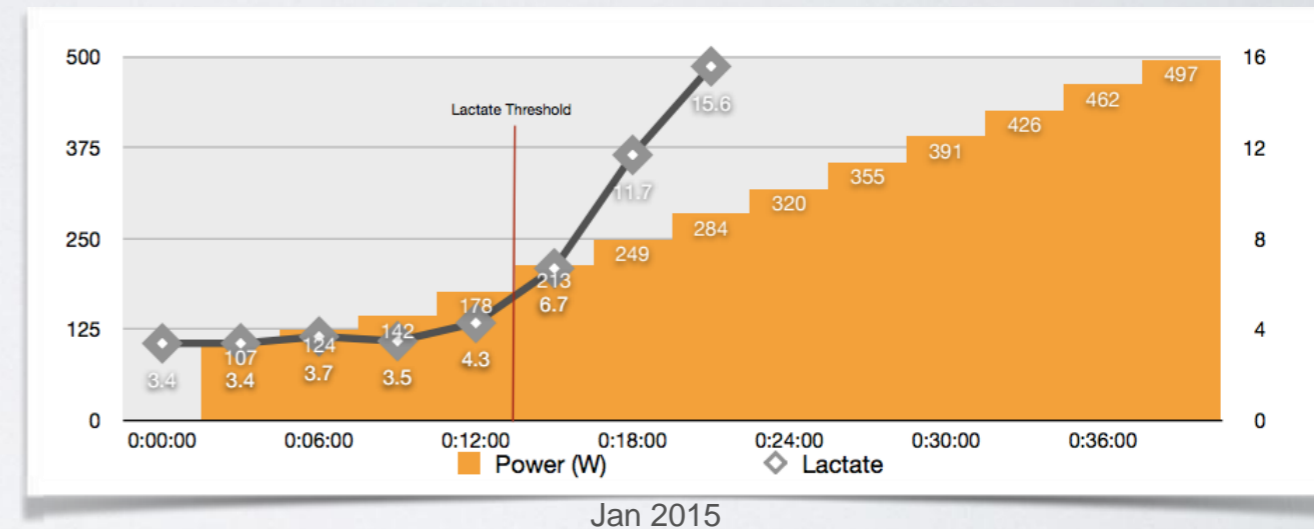
- Profile of Mood States
- Tension
- Depression
- Anger
- Vigor
- Fatigue
- Confusion

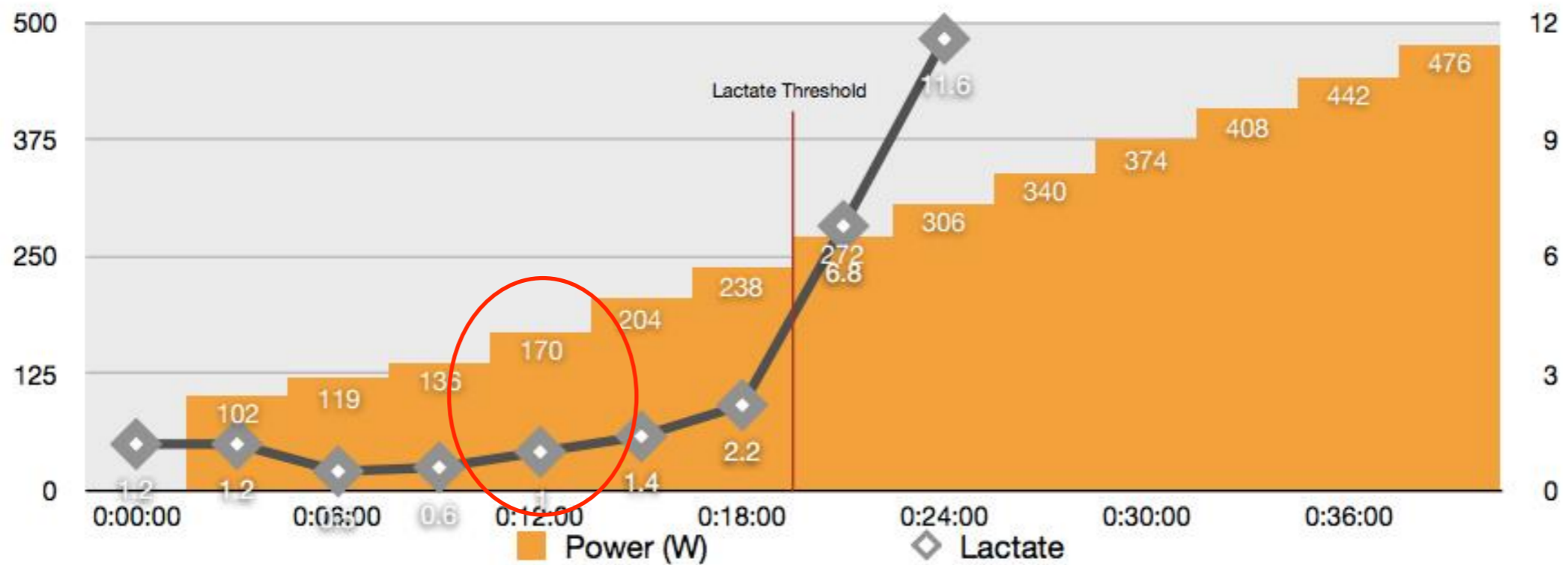
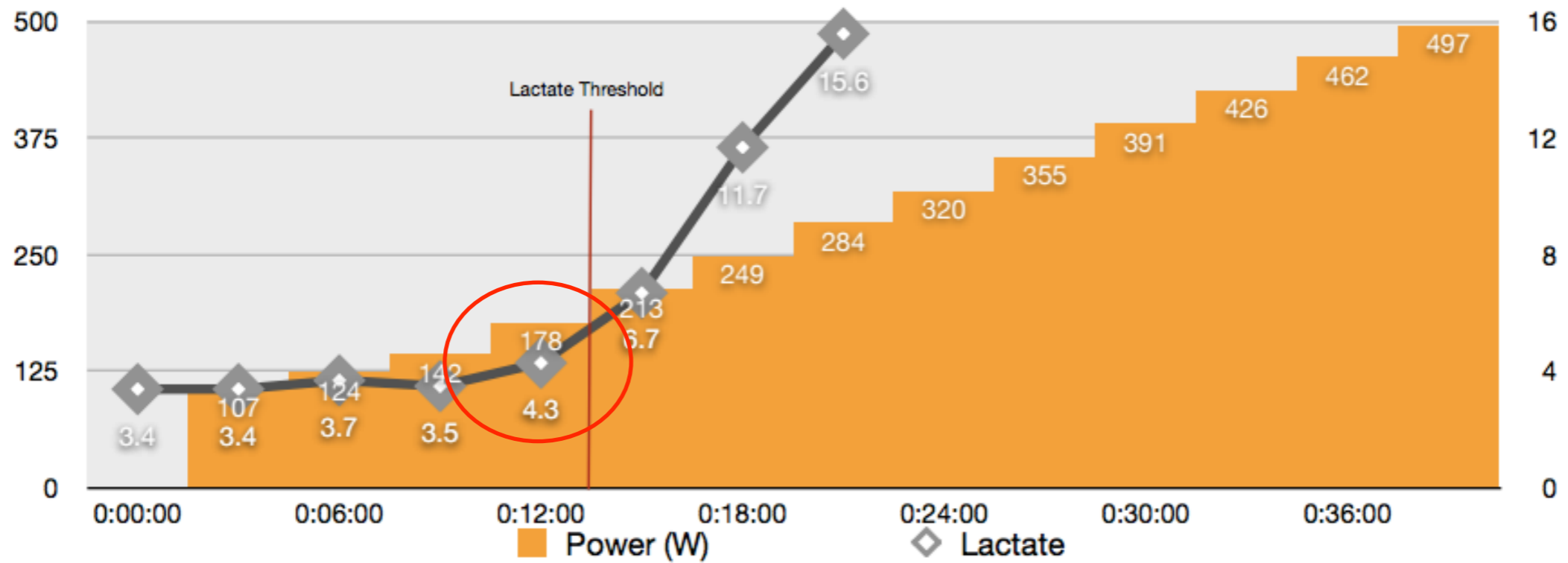
Over the last 2 weeks, how often have you been bothered by any of the following problems?		Not at all	Several days	More than half the days	Nearly every day
1.	Little interest or pleasure in doing things	0	1	2	3
2.	Feeling down, depressed, or hopeless	0	1	2	3
3.	Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4.	Feeling tired or having little energy	0	1	2	3
5.	Poor appetite or overeating	0	1	2	3
6.	Feeling bad about yourself-or that you are a failure or have let yourself or your family down	0	1	2	3
7.	Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3



LACTATE PROFILE

- Athletes with OTS may exhibit dysfunctional lactate metabolism
- Mitochondrial dysfunction?
- Test is better if you have a baseline, but not necessary





TREATMENT PROTOCOL

- Rest



TREATMENT PROTOCOL

- ...maybe more than that
- Nutritional intervention
- Training modification (upon return)
- Psychological counseling



NUTRITIONAL

- Address deficiencies
 - Caloric
 - Nutrient
- Mitochondrial health
 - CoQ10
 - NAC
- BCAAs
- Increased CHO → Glycogen



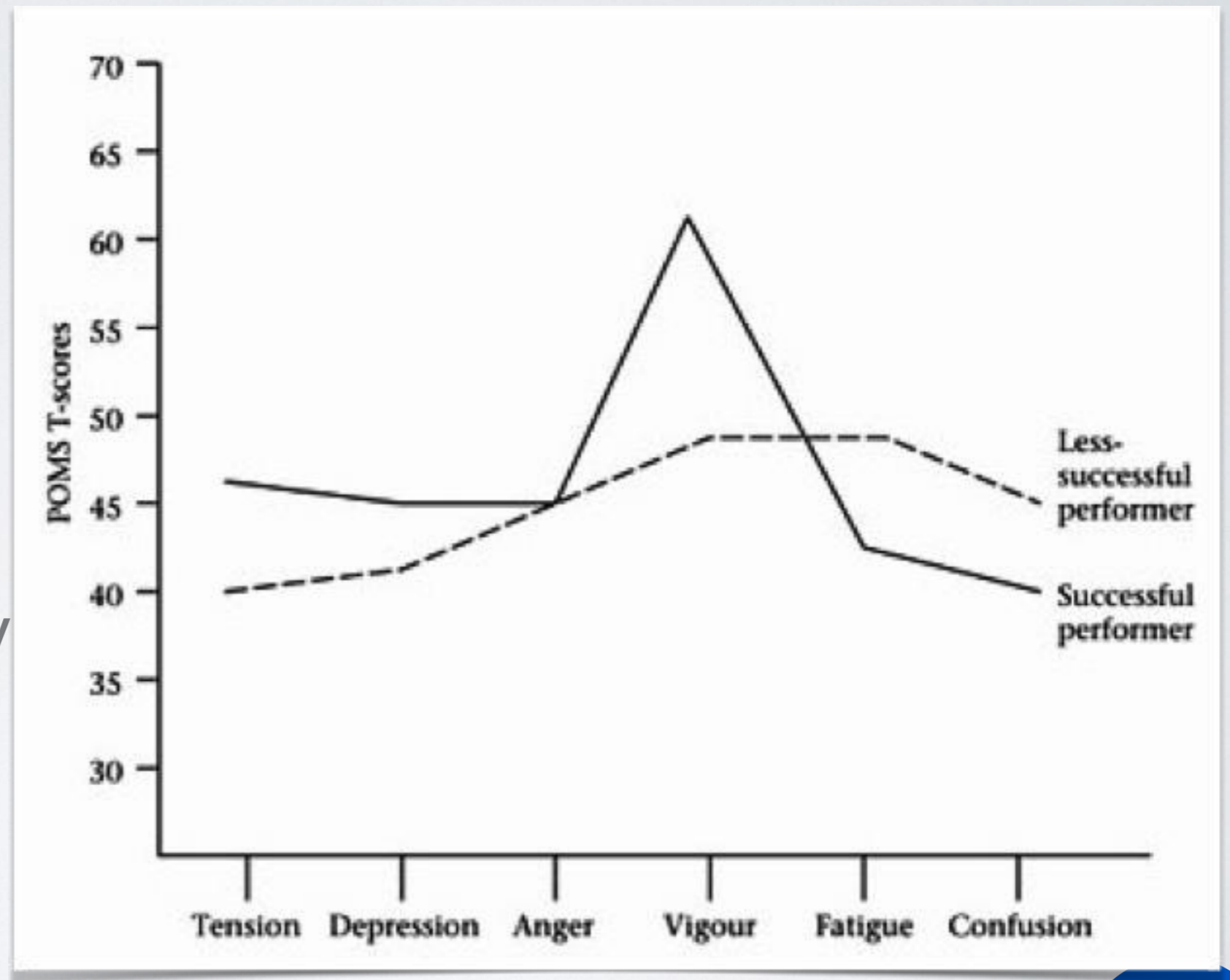
TRAINING MODIFICATION

- Work with patient's coach
- Decreased volume
- Increase intensity?
 - Sympathetic v. Parasympathetic
- Added resistance training
- Add variety to training



PSYCH

- POMS
- Sport Psychology



RECOVERY

- Takes time
- Depends on position in OTS spectrum
- Recovery may never fully occur!



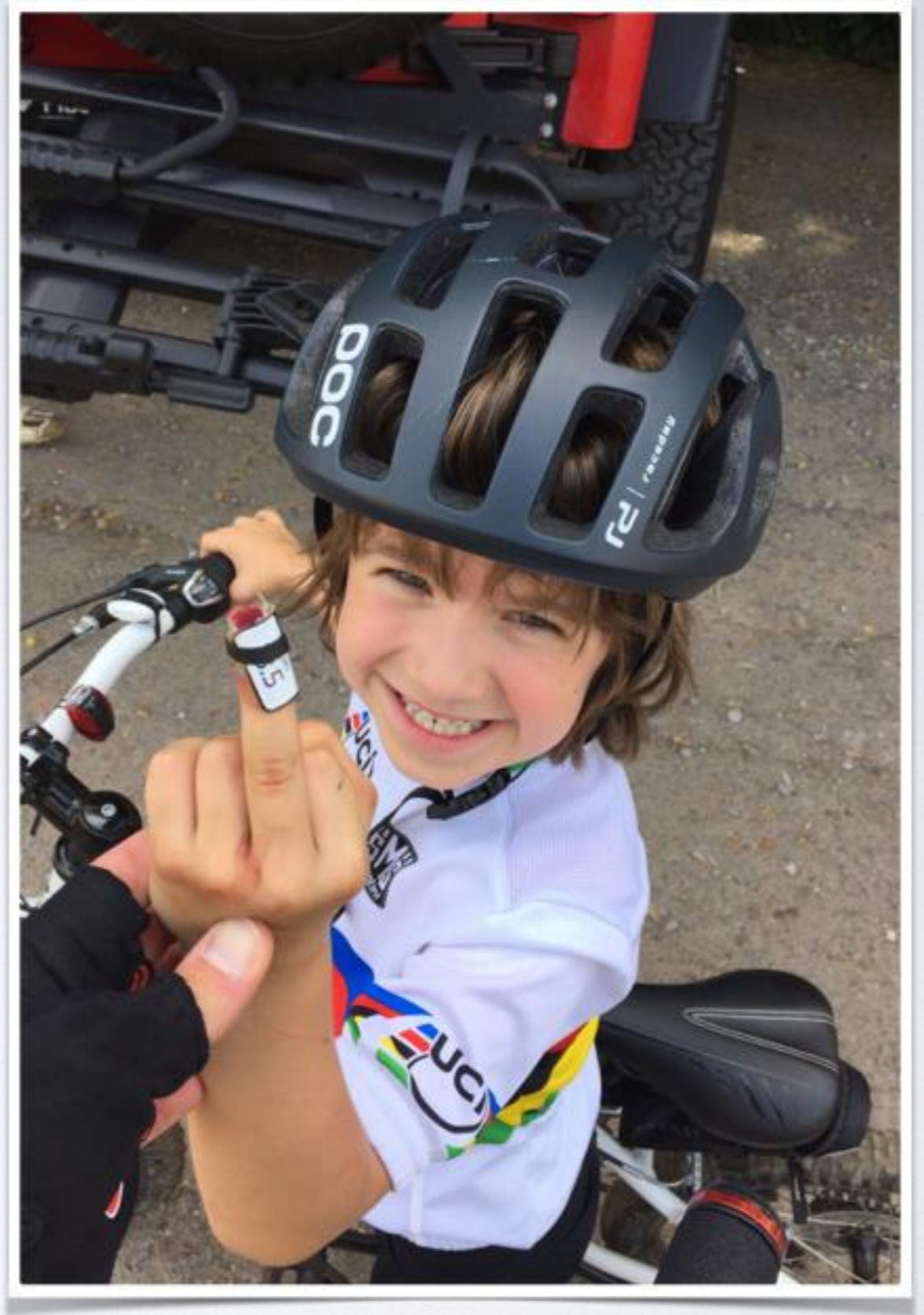
OTS: MEDICINE & SCIENCE

- Multifaceted approach to diagnosis and treatment
- Sports Medicine
- Sports Science
- Sports Psych
- Understand the interplay between health and performance.
- Refer to specialists if needed.



THANK YOU

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PODIUM
SPORTS MEDICINE