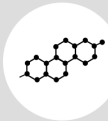
What is OTS?

Overtraining syndrome is an imbalance of a person's training and recovery. OTS may be caused by repetitive systemic inflammation.

Training = Workout + Recovery

Simply, athletes train to increase performance, but too much stress and little recovery lead to OTS.



OTS suppresses the central nervous system, resulting in depressed mood, central fatigue, and hormonal changes.

What brain system is affected? Numerous hypothesis:

Glycogen Hypothesis

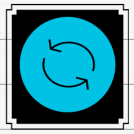
- Low glycogen - limited fuel
- Results in decreased BCAAs
- This alters neurotransmitters involved in fatigue

Central Fatigue Hypothesis

- Increase of 5-HT
- Increased 5-HT positively correlates with fatigue
- Overtrained athletes are more sensitive to 5-HT

Glutamine Hypothesis

- Integral for immune cell function, DNA/RNA synthesis
- Decreased glutamine after exercise
- Leads to overwork of muscles



Oxidative Stress Hypothesis

- Repeated oxidative stress-production of reactive oxygen species
- ROS cause inflammation, muscle fatigue, and soreness

ANS Hypothesis

- OTS can result from an imbalance in the ANS.
- Decreased sympathetic activation and parasympathetic dominance- performance inhibition, fatigue, and depression

Hypothalamic Hypothesis

- OTS can have alterations in cortisol, adrenocorticotropic hormone, testosterone, and other hormone levels (hypothalamic-pituitary-adrenal (HPA))

So What Hypothesis is it?

There is no one true hypothesis for overtraining syndrome. Each play a key component in why overtraining occurs along with repetitive stress followed by inadequate recovery.

Training = Stress + Recovery

In a nutshell, athletes train to increase performance. Their performance increases are achieved through heightened training loads. These increased loads are tolerated only through dispersed periods of rest and recovery, known as training periodization. When these periods are not taken (or not taken enough) and the heightened training continues, a persons susceptibility to OTS increases. This can result in abnormalities of multiple body systems along with mood.

Source

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