Lecture 11:

Overtraining Syndrome

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Overtraining Syndrome (OTS):

- **Definition.**
- **Criteria of OTS.**
- **Clinical Forms of OTS.**
- **Symptoms and signs.**
- **Management and Nutritional Support.**

Overtraining Syndrome (OTS):

- **OTS is a complex syndrome with physical, psychological, emotional, immunological, and biochemical changes.**

Overtraining is a common cause of plateau.
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- **OTS results from excessive training overload and inadequate recovery.**
- **Also known as burnout, overworked, overstressed, and staleness.**
- **Affecting up to 30% of team athletes and 50% of individual sport athletes and gym-goers.**

Criteria for OTS:

- 1) Amassing of training and non-training stresses.
- 2) Presence of a constellation of physiological and psychological signs and symptoms.
- 3) Impaired athletic performance and decreased training capacity for more than 2 weeks.
- 4) Necessity of recovering and restoring for weeks or months.

- **Overreaching is a short-term decrement in performance in training and competition resulted from excessive training or non-training stresses with or without related signs and symptoms.**

- **A successful recovery can be achieved within 2 weeks.**

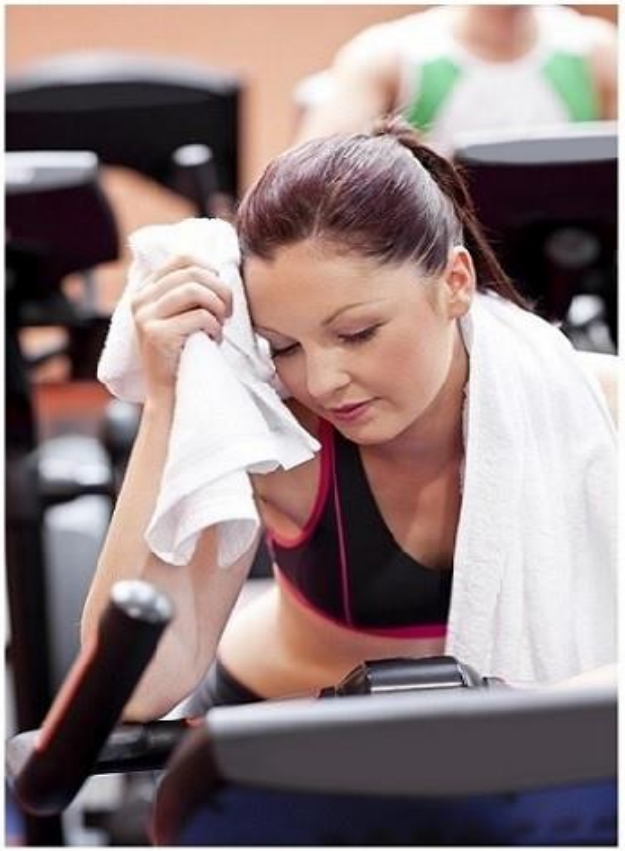
- **Untreated overreaching eventually causes long-term decrease in athletic performance and training capacity, which is called "overtraining syndrome".**

Clinical Forms of OTS:

- **a) Sympathetic overtraining.**
- **b) Parasympathetic overtraining.**

Sympathetic Overtraining:

- Known also as "basedowian form" or "hyperactive thyroid type ".
- This form of OTS is mainly related to anaerobic exercise, such as resistance training.



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Sympathetic overtraining is characterized by:

- **increased sympathetic activity at rest**
- **irritability**
- **restlessness**
- **sleep disturbance**
- **impaired athletic performance**

Parasympathetic Overtraining:

- **Famous as "addisonoid form" or "adrenal exhaustion type" as well.**

- **This form of OTS is usually related to aerobic activities, such as long distance exercise.**

It is characterized by hyperactivity of parasympathetic (vagal) system at rest and during exercise. Signs and symptoms include:

- **chronic fatigue during exercise**
- **mood swings**
- **loss of interest in training or competition**
- **sleep disturbance**
- **weak immune system**
- **changes in appetite**
- **tendency to infections**
- **poor athletic performance**

General Signs and Symptoms of OTS:

- a) Psychological and emotional
- b) Endocrinological
- c) Immunological
- d) Physical
- e) Hematological
- f) Gastrointestinal
- g) Neuromuscular

Psychological and Emotional:

- 1) Depressed moods.
- 2) Loss of interest in training.
- 3) Loss of motivation.
- 4) Emotional instability.
- 5) Poor concentration.
- 6) Loss of competitive drive.
- 7) Sleep disturbance.
- 8) Increased skipping or missing trainings.

Endocrinological:

- 1) Chronic fatigue.
- 2) Amenorrhea.
- 3) Negative nitrogen balance.
- 4) Delayed menstruation.
- 5) Increased cortisol level.
- 6) Increased blood urea nitrogen.
- 7) Low levels of DHEA and testosterone.
- 8) Decreased zinc and selenium levels.
- 9) Hypothalamic dysfunction.

Immunological:

- 1) Increased risk of infections.
- 2) Frequent mild flu – like illnesses.
- 3) Weakened immune system.

Physical:

- 1) Decreased athletic performance.
- 2) Prolonged recovery.
- 3) Altered blood pressure.
- 4) Increased heart and breathing rates.
- 5) Increased resting metabolic rate.

Hematological:

- 1) Low level of iron.
- 2) Low level of hemoglobin.
- 3) Enlarged lymph nodes.
- 4) Decreased white blood cells.

Gastrointestinal:

- 1) Loss of appetite.
- 2) Nausea.
- 3) Stomach upset.

Neuromuscular:

- 1) Loss of coordination.
- 2) Decreased muscle strength.
- 3) Increased muscle soreness.
- 4) Rhabdomyolysis (exercise – induced muscle damage)
- 5) Decreased muscle glycogen.
- 6) Increased risk of sports injuries.

Management of OTS:

- a) Rest.
- b) Stop training for at least 2 weeks.
- c) Avoid prolonged training sessions (over 100 minutes per session).
- d) Avoid training 7 days a week.
- e) Reduce intensity and volume of training.
- f) Use periodization.
- g) Deep tissue massage.

Nutritional Supports of OTS:

- a) Water: drink 2 – 3 liters a day and keep the body fully hydrated.
- b) Have sufficient complex carbohydrate before training .
- c) Adequate protein intake: keep your daily protein intake at 2 grams/kg.

- **d) Have about 40 grams protein within 30 minutes after training and another 40 grams in 2 hours.**

- **e) Glutamine: 5 – 10 grams about 40 – 60 minutes before training and another 5 grams at bedtime. This amino acid helps with recovery and glycogen replenishment.**

- f) **Vitamin C:** 2 – 3 grams a day.
- g) **Vitamin E**: 400 – 800 IU a day.
- h) **Zinc:** 50 – 100 mg a day. This mineral is depleted from the body during stress and intense exercise. It also supports immune function.

- **i) BCAAs (branched-chain amino acids): 3 grams 30 minutes before training, 3 grams during training, and 5 grams within 30 minutes after training.**

- **j) HMB (beta-Hydroxy beta-Methylbutyrate): 3000 – 4000 mg daily in divided doses. The best time to take HMB is approximately 30 minutes before exercise or competition and immediately after exercise within anabolic window. It has a protective effect against OTS.**

- **k) Glutathione: 200 – 500 mg a day. It is a powerful antioxidant that may prevent from OTS.**

- **l) ALA (alpha-lipoic acid): 800 – 1000 mg a day. ALA may prevent from athletic overtraining syndrome by enhancing glutathione level within the muscles.**

- **m) Pycnogenol (French Maritime Pine Bark Extract): 200 – 300 mg a day. It is a potent antioxidant that supports immune system.**

- **n) Octacosanol: 2000 – 5000 mcg a day. It is a fatty alcohol with a protective activity against OTS.**

- o) **Adaptogens:** take **two of them** as per your choice and availability. This is a "MUST" that you add adaptogens to your client's regiment.

- p) **A high – quality Multivitamins-Multiminerals.**

Homework:

- **1) Describe the differences between sympathetic and parasympathetic overtraining syndrome.**

- **2) List the psychological and non-psychological signs and symptoms of overtraining syndrome.**