FOCUS AREAS

• WHAT IS FATIGUE
• FATIGUE MANAGEMENT
• WHAT IS RECOVERY
• RECOVERY STRATEGIES
• PLANNING RECOVERY-BASED TRAINING
WHAT IS FATIGUE

- An inability to train at a level that was recently once possible / sensation of tiredness
- Exercise-induced decline of performance
DEFINITIONS:

- **Under-Recovery**: Training load & intensity increases over a long period of time without adequate recovery!

- **Over-Training**: Imbalance between Training & Recovery (constant lack of Recovery).
  - *Long term Under-Recovery*

- **Over-Use**: Continuous training in fatigued state. Athlete either gets injured or falls prey to Chronic Fatigue illness.
  - *Long term Over-Training*
Positive Fatigue/Recovery

Changes in training load (periodization) and in adaptation and performance capacities that lead to top performance or overtraining. Recovery includes tapered training and factors that speed recovery. Physical and mental stressors include intensity and volume of exercise and other internal and external factors.
Positive Fatigue/Recovery

- Athlete adapts to sufficient recovery and performance is not altered (short–term fatigue)
- Performance and Training will be compromised during periods of fatigue.

- Thus, **PLAYER MANAGEMENT** is an integral part of training / coaching.

- NB! To monitor and effectively manage fatigue to **OPTIMIZE PERFORMANCE**.
NEGATIVE FATIGUE

Changes in training load (periodization) and in adaptation and performance capacities that lead to top performance or overtraining. Recovery includes tapered training and factors that speed recovery. Physical and mental stressors include intensity and volume of exercise and other internal and external factors.
NEGATIVE FATIGUE

- Athlete’s under-recover and are not able to perform optimally (pro-longed fatigue)

- Can lead to Chronic Fatigue; Over-Training syndrome; Over-use injuries and so much more.
OVERTRAINING SYNDROME

"CHALLENGE IS TO PROVIDE A RATIONAL TRAINING PROGRESSION THAT ELICITS THE DESIRED TRAINING EFFECT."

TRAINING THRESHOLD

EXCESSIVE MUSCLE SORENESS

TREATMENT
• REDUCED TRAINING INTENSITY AND VOLUME
• REST AND INCREASED SLEEP
• PROPER FUELING
• ENCOURAGEMENT

STRESS FRACTURES
HEAT INJURIES
RHABDOMYOLYSIS
PERMANENT DISABILITY
DEATH

TREATMENT
• MEDICAL EVALUATION AND TREATMENT

FAILURES TO ADAPT

OVERREACHING

TREATMENT
• REST WITH ONLY LIMITED CROSS-TRAINING
• INCREASE SLEEP
• PROPER FUELING
• ENCOURAGEMENT

OVERTRAINING

TREATMENT
• REST WITH ONLY LIMITED CROSS-TRAINING
• INCREASE SLEEP
• PROPER FUELING
• ENCOURAGEMENT

OVERUSE
CAUSES / TYPES OF FATIGUE

1. METABOLIC FATIGUE:
   - insufficient ENERGY(nutrients), appetite
   - lactic acid build-up
   - High-intensity workouts + performances = depletion of ATP-CP stores
     (short-term fuel supply)
   - Hydrogen ion accumulation interferes = increased acidosis inhibits = muscular contraction.
   - creates discomfort, affecting psychological fatigue and tolerance.
   - fuel in the form of free fatty acids and glucose will eventually become depleted as well.
2. NEURAL FACTORS:

- fatigued brain, accumulated muscle fatigue, insufficient sleep,

Neuromuscular Fatigue

- Central Nervous system = slower, weaker muscle contractions (speed)

NeuroEndocrine Fatigue

- Prolonged stress = affects **Hormone** levels = Autonomic Nervous System = leads to over-training symptoms (thyroid hyperactivity, “fight or flight” = increased HR, disturbed sleep, weight-loss/appetite, increased incidence of injury, emotional instability, increased resting blood pressure, decreased performance etc…)

- Affect **ParaSympathetic** pathways = adrenal glands = over-training symptoms (hard to detect) = ie. Progressive anemia, low blood pressure, mood disturbances
CAUSES/TYPES OF FATIGUE

3. ENVIRONMENTAL FACTORS:
   - travel fatigue, weather, jet-lag, leisure activities
   - Socializing / Entertaining !!

4. PSYCHOLOGICAL FACTORS:
   - Emotional & Social stressors, Academics,
     - Family, Love Life, Pressures & Expectations

KNOWN AS TRAINING INDUCED-FATIGUE / PHYSIOLOGICAL FATIGUE = IF YOU SUSPECT ANY OF THE ABOVE IN AN ATHLETE, REFER TO SPORT PHYSICIAN
CAUSES / TYPES OF FATIGUE

PATHOLOGICAL FATIGUE

5. MEDICAL CONDITIONS

- Viral infections (flu etc)
- Gastrointestinal infections (gastro/tummy)
- Concussions / allergic reactions / etc.

- Over-Training / Chronic Fatigue Syndrome etc.
What does this lead to:

- Besides for all the Over-Training Symptoms…
- Reduction or *Plateau* in Performance !!
- Deterioration of Biomechanics and Technique
- Increased Risk or Incidence of INJURY (injury-prone)
- Physically, Emotionally, Psychologically & Physiologically TIRRED / FATIGUED !!
WHAT IS RECOVERY?

- **Activities** that reduce induced FATIGUE,
  - Enabling athlete to Restore status of Performance Readiness
  - Physiological & Psychological
  - Increasing “stressors” = Increase in Recovery demands

- **Prevention tool:** Decrease the risk of Over-Training/ Under-Recovering / “Burn-Out”
HOW?? VARIOUS MODALITIES

- REST!
- SLEEP!

- Nutrition (post-game nutrition & fluids)
- Ice & Contrast baths / Hydro-Recovery
- ACTIVE RECOVERY !!!! (speeds up lactate removal)
  - Stretching / light aerobic exercises
  - Active Rest / Relaxation techniques
- Massages / Compression garments
- HIMS .... MONITORING TOOLS
HIMS – Monitoring Assessment Tool

- All components are covered:
  - Physical, Physiological, Psychological, Training load etc

1. Assessment of Training Load (training journal)
   - Type / Duration of session (weekly training load)

2. Monitor variables such as: Heart-rate, Lactate, Oxygen consumption etc. (expensive / specialist needed)

The Preferred way to go:

3. Subjective Training Load by athlete (RPE of sessions)

- score 1-10 by athlete is given for session
  - (how the athlete feels after the session/ personal)
**HIMS – Monitoring Assessment Tool**

- **RPE** – Rate of Perceived Exertion
- **SIR** – Subjective Intensity Rating
  - **Coach** rates how “hard” he thought the session was.
  - This is compared to the players **RPE rating** of the session

- **Daily log:** Weight, RPE’s, SIR’s, Training minutes
- **Weekly physiological testing:**
  - **HIMS TEST**
  - Psych. Questionnaire
  - Game Minutes, Distances covered during games, Injury status etc.
  - Coach Feedback – Rest player
# RPE SCORE SHEET

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<thead>
<tr>
<th>Score</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>very VERY SLIGHTLY FATIGUED</td>
</tr>
<tr>
<td>2</td>
<td>VERY SLIGHT</td>
</tr>
<tr>
<td>3</td>
<td>SLIGHT</td>
</tr>
<tr>
<td>4</td>
<td>MILD</td>
</tr>
<tr>
<td>5</td>
<td>MODERATE</td>
</tr>
<tr>
<td>6</td>
<td>MODERATE - SEVERE</td>
</tr>
<tr>
<td>7</td>
<td>SEVERE</td>
</tr>
<tr>
<td>8</td>
<td>VERY SEVERE</td>
</tr>
<tr>
<td>9</td>
<td>VERY VERY SEVERE</td>
</tr>
<tr>
<td>10</td>
<td>TOTALLY EXHAUSTED</td>
</tr>
<tr>
<td>Name</td>
<td>Weight (am)</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>Player 1</td>
<td>60kg</td>
</tr>
<tr>
<td>Player 2</td>
<td>70</td>
</tr>
<tr>
<td>Player 3</td>
<td>55</td>
</tr>
<tr>
<td>Player 4</td>
<td>67</td>
</tr>
<tr>
<td>Player 5</td>
<td>76</td>
</tr>
<tr>
<td>Player 6</td>
<td>56</td>
</tr>
<tr>
<td>Player 7</td>
<td>62</td>
</tr>
</tbody>
</table>
IDENTIFY FATIGUE

- Increased Heart Rate
- Decreased Appetite
- Reduced Recovery after exercise
- Disturbed Sleep
- Increased Blood pressure
- Increased incidence of Infections
- Decreased Maximal Power output / Performance
- Weight-Loss
- Increased Irritability
- Increased Emotional Instability
- Loss of DESIRE to train
- Increase incidence of Injury
Player identified – What Now?

- Intervention
- Identify why player is fatigued
- Plan of action to help recovery process

- Reduce game time
- Reduce training load
- Increase recovery time (day off)
- Increase nutritional intake = boost player
- Increase sleep / recovery tools
PLANNING RECOVERY BASED TRAINING

~ACTIVE RECOVERY~

- Low Training load
- Aerobic Exercise: low-moderate intensity, short duration (cycling)
- Deep stretching session (passive) is essential followed by an active stretch
- Psychological initiative
Learning outcomes:

- Think about what you can reinforce
- Creating good practice within your squad
  - Coaches: simply Talking to athlete / engage on all aspects: sleep / academics / life / diet / relationships
- Using resources available

PREPARE  PERFORM  RECOVER

REPAIR  REPLACE  REFUEL
TAKE HOME TOOLS

- Training Loads / individual needs
  - Balance = Quality over Quantity of training
- Fatigue status of individual players
- Adequate recovery interventions post-match
- Player education to self-recover properly!
  - Nutrition & Hydration (urine colour chart)
- Sleep
- Behavioural interventions
- Positive Environment