ECCENTRIC TRAINING

Reference : Hody et al. Frontiers 2019

Designed by @YLMSportScience

FEATURES OF ECCENTRIC CONTRACTION

- **High muscle forces**
- **Distinct molecular responses**
  - Higher satellite cell activity
  - Greater anabolism signaling
- **Low metabolic demand**
  - Low fatigue
  - Low perceived exercise
  - Low cardiorespiratory demand
- **Unique neural strategies**
  - Reduced central nervous activity
  - Fewer motor unit recruitment
  - Lower motor unit discharge
  - Greater cortical excitability

BENEFITS

- **Muscle function**
  - Rapid gains in muscle strength /mass
  - Improvement of athletic performance (speed, jumping, change of direction)
  - Greater cross-educational effect
  - Shift of the muscle's length-tension relationship towards longer muscle lengths

- **Greater neural adaptations**

- **Health related parameters**
  - Gains in lean mass
  - Fat mass reduction
  - Increased resting energy expenditure
  - Increased lipid oxidation
  - Improvement of blood lipid profile
  - Increased insulin sensivity

RISKS

- **Exercice-induced muscle damage**
  - Ultrastructural damage
  - Impaired sarcolemma permeability
  - Damage of extracellular matrix

- **Delayed-onset muscle soreness**
  - Mechanical hyperalgesia
  - Pain, tenderness, swelling, stiffness

- **Impaired muscle function**
  - Loss in force generating capacity
  - Decreased range of motion
  - Impaired proprioceptive function
  - Modified locomotion of biomechanics (gait, running, sport action)
  - Decreased athletic performance

- **Increased risk of muscle, tendon & joint stuctures injuries**