

Literature Review Outline

Topic: Ankle rehabilitation

- I. Introduction to topic and general information on ankle injuries
 - A. Prevalence of injury
 - B. Types of ankle injuries
 - C. Clinical importance (missed time playing/practicing, projected time for recovery, re-injury rate, etc.)
- II. Phases of ankle rehabilitation
 - A. Acute phase
 1. General Information
 2. Recommended Treatments
 - a. Ice
 - i. Protocol
 - ii. Claims
 - iii. Clinical Evidence
 - b. Compression
 - i. Protocol
 - ii. Claims
 - iii. Clinical Evidence
 - c. Elevation
 - i. Protocol
 - ii. Claims
 - iii. Clinical Evidence
 - d. Gluteus medius
 - i. Claims
 - ii. Clinical evidence
 - B. Fibroblast phase
 1. General Information
 2. Recommended treatments
 - a. Cryotherapy
 - i. Protocols
 - ii. Claims
 - iii. Clinical Evidence
 - b. Ice bath with ROM
 - i. Protocols
 - ii. Claims
 - iii. Clinical Evidence
 - c. Open –kinetic chain exercise
 - i. Protocols (Alphabet ROM, Toe Curls and marble pickup, Four plane theraband, etc.)
 - ii. Claims
 - iii. Clinical evidence
 - d. Closed kinetic Chain
 - i. Protocols (heel raise, toe raise, lunge steps, etc.)
 - ii. Claims
 - iii. Clinical evidence
 - C. Remodeling phase

1. General information
2. Recommended treatments
 - a. Proprioception
 - i. Protocols and types
 - Stable surfaces (floor, etc.)
 - Unstable surfaces (BAPS, Bosu, Aero, Wobble board, etc.)
 - ii. Claims
 - iii. Clinical Evidence
 - b. Plyometric
 - i. Protocols and types (examples below, but not limited to)
 - Four square hoping
 - Side to side
 - Front to back
 - Triangles
 - Straight ling hop
 - Line zig-zag hop
 - Box jumping
 - ii. Claims
 - iii. Clinical evidence

III. Physiological aspects

- A. Physiology of Ankle Injuries
- B. Modalities
 1. Ice
 2. Compression
 3. Elevation
 4. Cryotherapy
- C. Rehabilitation
 1. ROM
 2. Strengthening
 - a. Contractile machinery of skeletal muscle fiber types
 - i. Sarcomere
 - ii. Thick filament: myosin
 - iii. Thin filament; action
 - iv. Troponin
 - v. Tropomyosin
 - b. Cross-bridge cycle
 - i. Myosin walking along action
 - c. Excitation-contraction coupling
 - d. Motor unit
 - i. Synapse
 - ii. Sarcoplasmic reticulum regulates intracellular-calcium
 - e. Muscle fiber Types
 - i. A-type
 - ii. B-type IIa, IIb
 - f. Motor unit recruitment
 - i. Energy supply systems
 - g. Aspects of strength metabolism
 - i. Energy storage and transfer

- ii. Creatine phosphate system
 - iii. Glycolysis
- 3. Proprioception
 - a. Neurological function
 - i. Motor unit
 - ii. Neural control mechanism
 - iii. Firing on the muscle
 - iv. Spinal reflexes
 - b. Synchronization
- 4. Plyometric
 - a. Mechanical Model
 - b. Neurophysiological Model
 - i. Potentiation
 - ii. Stretch reflex
 - iii. Muscle spindles
 - c. Stretch-Shorting cycle
 - i. Eccentric Phase
 - Rapid muscle lengthening (preload of the agonist)
 - Storage of elastic energy
 - ii. Amortization phase
 - Type Ia afferent nerves synapse
 - Alpha motor neuron
 - Agonist muscle group
 - Antagonist muscle group
 - iii. Contractile phase
 - Use of energy stored capabilities
 - Myotonic reflex
 - Muscle spindles
 - Contractile component
 - Primary sources of muscle force during concentric action
 - Contractile machinery
 - Actin
 - Myosin
 - Cross-bridge cycle

IV. Conclusion drawn from the literature

V. Implications for future research