Chapter 16: Using Therapeutic Exercise in Rehabilitation

Athletic Trainer's Approach to Rehabilitation

- Begins immediately after injury
- Initial first aid has a substantial impact on the injury
- One of ATC's primary responsibilities is to design, implement and supervise rehab plans
- Easy part is designing the program based on short and long term goals

Short Term Goals

- Control pain and inflammation
- Maintain or improve ROM
- Restore and increase strength
- Re-establish neuromuscular control
- Maintain levels of cardiorespiratory fitness

Long term Goals

- Return athlete to practice and competition quickly and safely

- Difficult part is knowing when and how to progress relative to the injury
- Progress should be based on specific criteria
- Return to play must be based on functional outcomes

Facts about rehab

- Must be aggressive
  - Must return to competition quickly and safely
- Based on framework of healing process
  - Understand time and sequence of healing and physiological principals
- Provide optimal healing environment
- No cookbook approach to rehab

Major Components of a Rehabilitation Program

- Well-designed rehab program should routinely address several key components before the athlete can return to pre-injury competitive levels

Minimizing Initial Swelling

- Swelling is caused by many factors and must be controlled immediately after injury
- Minimizing swelling significantly speeds the healing process
- PRICES!!!

Controlling Pain

- Some degree of pain will be experienced
- Pain will be dependent on the severity of the injury, athlete's response, perception of pain and the circumstances
- PRICES, analgesics and medication can be used to modify pain
- Pain can interfere w/ rehab and therefore must be addressed throughout the rehab process

Restoring Range of Motion

- Injury to a joint will always be associated w/ some loss of motion
- Due to contracture (tightness) of connective tissue or resistance to stretch of musculotendinous unit
- Physiological versus Accessory Movements

Physiological versus Accessory Movements

- Physiological movement results from active voluntary muscle contraction - moving an extremity through a ROM
- Accessory motion refers to the manner in which one articulating surface moves relative to another

Restoring Muscular Strength, Endurance and Power

- Must work through a full pain free range of motion when working on strength
  - Isometric contractions- no movement in a joint
  - Isotonic contractions (concentric and eccentric)- shortening and lengthening of a joint
  - Isokinetic contractions—constant speed with resistance

Re-establishing Neuromuscular Control and Proprioception

- Neuromuscular control is mind's attempt to teach the body conscious control of a specific movement
- Re-establishing neuromuscular control requires repetition of same movement, step by step until it becomes automatic (progression from simple to difficult task)
- Proprioception is joint position sense (determine position of joint in space)
- Kinesthesia is the ability to detect movement

Regaining Balance

- Entails positioning center of gravity (CoG) w/in the base of support
- If CoG extends beyond this base, the limits of stability have been exceeded and a corrective step or stumble will be necessary to prevent
- Even when "motionless" body is constantly undergoing constant postural sway w/ reflexive muscle contractions which correct and maintain dynamic equilibrium in an upright posture

Maintaining Cardiorespiratory Fitness

- When injury occurs athlete is forced to miss training time which results in decreased cardiorespiratory endurance unless training occurs to help maintain it
- Alternative activities must be substituted that allow athlete to maintain fitness

Incorporating Functional Progressions

- Involves a series of gradually progressive activities designed to prepare the individual for return to a specific sport/activity
- Should be incorporated into treatment as early as possible

Developing a Rehabilitative Plan

- Must be carefully designed
- Must have complete understanding of the injury:
  - how it was sustained
  - major anatomical structures involved
  - the grade of trauma
  - stage or phase of healing