SPRAINS pg.305

Definition : an overstretch injury to a ligament

3 classifications of a sprain.

Grade 1 – Mild First degree	Grade 2 – Moderate Second degree	Grade 3 – Severe Third degree
Is a minor stretch and tear to the ligament	Tearing of the ligament fibers occurs	Either a complete rupture of the ligament itself or an avulsion fracture as the boney attachment of the ligament is torn off

Name 3 causes or contributing factors of a sprain
1. previous injury
2. congenital ligament laxity
3. altered biomechanics

Please list 3 specific questions you would ask relating to this injury
1. What were you doing at the time of the injury?
2. Did you seek medical attention after it happened?
3. Is there any functional disability?

List some of the ligaments that are commonly sprained.
Ankle
- anterior talofibular ligament (most commonly sprained ligament)
- calcaneofibular ligament
- calcaneocuboid ligament

Knee
- medial and lateral collateral ligaments
- anterior and posterior Cruciate ligaments

Wrist
- palmar radiocarpal
- dorsal radiocarpal
- ulnar and radial collateral

Shoulder
- acromioclavicular ligament (shoulder separation)
- humeroulnar ligament

What might your client present with? (physical observation)

- antalgic gait if the strain is in the lower limb
- affected muscle is supported by taping, bandages or splints
- antalgic posture
- edema at site of injury
- bruising or redness could be present at injury site

List Signs and Symptoms for each classification of a sprain

Mild Sprain	Moderate Sprain	Severe Sprain
*Pain is mild and local to injury site *Minimal local edema, heat and bruising *Joint is table *Can continue activity *Tenderness local to the site	*Snapping noise and the joint gives way *Pain is moderate at rest and with activity *Moderate local edema, heat and bruising *Joint instability is slight *Difficulty continuing activity	*Snapping noise *Pain is intense *Local edema, heat and bruising *Hematoma may be present *Joint is unstable can not continue activity

What testing would you perform in the following stages of this injury?

Acute

- AF ROM
    - proximal, affected and distal joints is performed
    - range of affected joint is limited due to pain
    - degree of limitation increases with the severity of the sprain
- Special Tests
    - Ballotable Patella and Minor Effusion tests can be performed at the knee
- Other testing is contraindicated in the acute stage

Sub-Acute

- AF ROM
    - Proximal, affected and distal joints is performed
    - Limitation is due to pain but should be more than in acute stage
- PR ROM
    - Performed slowly on the cardinal planes of motion on the affected joint
    - Range of injury is performed last
    - There is reduced ROM
    - Muscle spasm end feel or empty end feel is present
- AR Isometric Testing
    - Muscle crossing the affected joint are strong and painless with a strictly ligamentous injury
    - If muscles or tendons are involved there is pain at the lesion site
- Special Tests
    - Anterior and Posterior Drawer of the knee and ankle
    - Varus and Valgus Stress Test
    - McMurray's
    - Bragard's

    - Apley's Compression
    - Lachman's
    - Ligamentous stress test of the ankle
    - Gaenslen's
    - SI joint gapping and squish
    - Acromioclavicular sheer test

Chronic

- AF ROM
    - Of the affected joint may be limited by any remaining pain at end ranges
- PR ROM
    - Performed on the cardinal planes of motion
    - Pain and hyper mobile end feel is present in fully stressing the joint
- AR Testing
    - Muscles crossing the affected joint is done checking for decreased muscle strength with disuse atrophy
- Special Tests
    - Ligamentous stress tests for the injured ligaments

Goals of Treatment and How to Treat Them

ACUTE

- Reduce inflammation
    - Injured site is treated with R.I.C.E.
    - Positioning depends on the area affected
    - Hydrotherapy is cold
- Reduce pain and decrease SNS firing
    - Accustom client to therapist touch
    - Begin on the torso with a relaxational focus to being
    - Client is encouraged to do diaphragmatic breathing
- Treat any compensating structures
    - Unaffected areas are treated first using effleurage and slow petrissage
- Reduce edema
    - Lymphatic drainage techniques to injured limb
    - Nodal pumping to proximal lymph nodes
    - Unidirectional effleurage, stationary circles and stroking are used proximal to injury site
- Maintain local circulation
    - Proximal limb is treated to reduce pain and hypertonicity
    - Effleurage and repetitive petrissage are used
- Reduce but do not remove protective spasm
    - Care is taken to not completely reduce the protective muscle spasm by over treating the tissue
- Maintain ROM
    - Mid range passive ROM is used on proximal joints
- Treat other conditions
    - Treat any other injuries that are present

SUB-ACUTE

- Reduce inflammation
  - Limb is elevated
  - Hydrotherapy is contract cool/warm
- Reduce pain and decrease SNS firing
  - Diaphragmatic breathing is encouraged
  - Rhythmic techniques to the trunk and unaffected area are recommended if client is comfortable with that type of work
- Reduce edema and prevent adhesion formation
  - Proximal lymphatic drainage for the injured limb
  - Proximal nodal pumping, unidirectional effleurage and stationary circles
- Maintain local circulation
  - Proximal limb is treated to reduce hypertonicity and increase drainage and venous return
  - Effleurage and repetitive petrissage
- Reduce spasm
  - Protective spasm is no longer important
  - GTO and agonist contract are used to decrease the spasm
- Reduce trigger points
  - Decrease trigger points that refer to the affected area with muscle stripping
  - Onsite work is indicated but limited to vibrations, gentle stroking and fingertip kneading with in clients pain tolerance
- Maintain range of motion
  - Mid range passive relaxed ROM is used on the proximal and distal joints
  - Distal techniques include stroking and muscle squeezing only

CHRONIC

- Decrease SNS firing and treat compensating structures
  - Hydrotherapy is deep moist heat
  - Rhythmic techniques to torso and unaffected area are indicated
- Reduce any chronic edema
  - Fascial glide is used to assess the restrictions
  - Fascial technique is used to treat restrictions using cross hand or ulnar border spreading
  - Proximal lymphatic drainage is require once restrictions have been released
- Reduce hypertonicity and trigger points
  - Proximal limb is treated to reduce any remaining hypertonicity and TPs
  - Repetitive petrissage and effleurage is indicated along with muscle stripping and ischemic compressions
- Reduce adhesions
  - Cross fiber frictions to any remaining adhesions, muscle stripping and fascial techniques are beneficial
- Restore ROM

    - Passive relaxed ROM on proximal, distal and affected joints
- Increase local circulation
    - Distal limb is treated with effleurage and petrissage to increase venous flow

List 3 suggestion for Home Care

1. Client Education – hydrotherapy and self massage and remedial exercise
2. Maintain ROM
3. Maintain and Increase Strength