Cruciate and Meniscal Injuries

p. 327 in Rattray

CRUCIATE LIGAMENTS

- Purpose is to check motion at the knee
- Most taut when the knee is in extension
- They cross each other forming an X shape
- Cruciate ligaments are within the joint capsule but not in the synovium
- Ligaments are names according to their position on the tibia
    - Anterior Cruciate is from the anterior portion of the tibia to the medial aspect of the lateral femoral condyle, and prevents anterior movement of the tibia during knee extension
    - Posterior Cruciate is from the posterior aspect of the tibia to the lateral aspect of the medial femoral condyle and prevents posterior movement of the tibia during knee extension

Causes of Cruciate Ligament Damage

Anterior Cruciate

- Blow to the lateral knee
- Forced hyperextension with internal rotation of the tibia
- A blow of the posterior tibia

Posterior Cruciate

- Blow to the anterior tibia
- Excessive hyperextension of the knee
- When the tibia is forced posteriorly during an accident (car dash board)

Medical Treatment

- Medical treatment depends on the degree of instability and any associated injuries
- Initial treatment includes rest, anti-inflammatories, splint or brace and remedial exercise
- Surgery for the anterior cruciate is more commonly performed than for the posterior cruciate
- Cruciate re-construction is usually considered with chronic instability of the knee
- Further treatment includes controlled mobilization, where the client is allowed to move about with knee protected by braces or with movement performed on a passive motion machine
- Management of the swelling, inflammation and pain begins immediately after the injury
- Strengthening programs also begin in the early stages of healing
- Functional knee braces can be worn for up to 18 months after the initial injury

MENISCI

- Designed to provide shock absorption and to increase the glide between the tibia and femur
- Only the outer portion of the meniscus that is attached to the joint capsule is vascular, as a result meniscus heal relatively slowly
- Medial meniscus is the most frequently injured

Causes of Meniscal Injury

- A twisting injury while the foot is weight bearing and anchored to the ground

Medical Treatment

- Rest, external support and remedial exercise is the treatment when there is minimal swelling, client is able to weight bear and there is pain only at the end of range of motion
- Surgery is the treatment when the client is unable to continue activity, the knee locks, there is pain with minimal knee flexion, positive McMurray's test and if symptoms don't improve over three weeks

Symptoms for Cruciate and Meniscal Injuries

Acute

- Pain, swelling, and muscle guarding
- Absence of swelling does not mean that the injury is minor, swelling could leak posteriorly out of the damaged capsule
- Bruising or redness may be visible over the knee
- Client will have crutches, tensor bandage or other form of support around the knee

Cruciate

- Acute Grade 1 or 2 client will be able to continue activity
- Grade 3 or total rupture the client will report a popping feeling at the knee and in unable to continue activity, swelling is present within the first few minutes or hours of injury
- Skin over the knee is taut and hard to the touch
- Pain is often sharp, but swelling can cause dull and aching pain

Meniscus

- Client may feel a tearing sensation at time of injury if severe
- The knee might give way or buckle or lock
- Initially there is pain a the side of the knee where the injury occurred
- There is swelling and tenderness along the joint line

Chronic

Cruciate

- Grade 2 or 3 anterior sprain client is unable to run forward, posterior sprain client is unable to squat, walk downstairs or run backward

Meniscus

- There may be a clicking sound at the joint
- Knee could lock in certain position as torn meniscus prevents knee motion
- There may be accompanying quadriceps disuse

Contraindications

- With acute knee injury where effusion is present, massage is contraindicated until a medical assessment has been made
- Do not force extension or flexion with a locked knee
- Immersion hydrotherapy should be avoided for two weeks post surgery
- If capsulitis is suspected following ligament surgery, therapist should avoid aggressive stretching

Assessment

Acute

Active ROM	Passive ROM	Active Resisted Tests	Special Tests

Limited flexion and extension due to swelling	May present with a muscle guarding end feel due to spasm, or springy block end feel due to Meniscal involvement	Muscles crossing the knee joint should be pair free, if pain is present there is muscular involvement as well	Ballotable patella Brush test

*All other testing in contraindicated in this stage

Sub-Acute and Chronic

Active ROM	Passive ROM	Active Resisted Tests	Special Tests
Limited flexion (ant cru) or extension (post cru)	Limited with Meniscal injury where joint locking is present, springy block end feel on passive extension	Quads might be reduced due to disuse	Anterior drawer Posterior drawer Lachman's Varus/Valgus stress McMurray's Apley's compression / distraction Bragard's

Massage of Cruciate Injuries

Acute, Early and Late Sub-Acute

- Rest, ice and elevate the limb
- Support and crutches will be used for the first 3 weeks
- Primary focus of massage is to treat compensating structures, decreasing SNS firing, decreasing hypertonicity and trigger points
- Positioning is prone or supine with leg elevated
- Hydrotherapy is cold on the injury
- Swedish techniques are used on all areas except affected leg
- Lymphatic drainage is applied to the affected leg, proximal to knee
- Gluteals, proximal hamstrings and proximal quads are all treated with Swedish techniques
- Joint mobilizations are applied to the patella
- Distal to the knee muscle squeezing, careful joint play to the ankle and foot are indicated
- Onsite work is avoided during acute and early sub acute stages
- As the condition progresses to late sub acute, Swedish techniques and contrast hydrotherapy are applied on site and distal to the knee
- Trigger points are addressed more aggressively
- Pain free mid range ROM is applied to the knee and ankle and hip

Chronic

- After 4 – 6 weeks focus of massage is on both legs and low back
- Swedish techniques, heat and fascial work is indicated
- Skin rolling and frictions can be used to scar tissue
- Joint play is applied to the knee

Self Care

Acute, Early and Late Sub Acute

- Rest, ice elevate the affected leg
- As swelling diminishes remedial exercise can begin
- Pain free active assisted ROM
- Once pain free ROM has been obtained, start strengthening the muscles that cross the knee focussing on hamstrings and not quadriceps
- Once the cruciate ligament is healed, with Dr.'s approval strengthening the quadriceps can begin
- Quarter squats can be performed
- Active resisted hip abduction will help provide stability to the lateral knee

Chronic

- Active resisted isometrics with rubber tubing for quadriceps and hamstrings (with knee brace)
- Hamstring stretches
- Half squats
- Swimming and stationary bike will maintain ROM in knee
- After 8 weeks proprioception exercises can begin (rocker board)

Massage of Meniscal Injuries

Acute, Early and Late Sub Acute

- Rest, ice elevate affected leg
- Knee brace and crutches will be worn for 1 – 8 weeks
- Depending on the type of surgical repair weight bearing is varied
- Primary focus, positioning and hydrotherapy are the same as with cruciate injuries
- Patellofemoral joint mobilization and gentle passive ROM pain free is indicated
- Late sub acute cross fibre frictions to lesion along joint line are indicated
- Surgical scars are treated with frictions as well

Chronic

- Focus of treatment is the same as in cruciate injuries
- If client remains on crutches shoulder girdle, neck and arms are focused on as well
- Cautious joint play to tibiofemoral joint can be introduced in the third week

Self Care

- Muscle setting exercises to quads, hams, gastrocs, adductors are introduced in first week
- Isotonic exercises are progressed to isotonic exercises for quads and hams along with adductors and gastrocs
- Resistance exercises are introduced aver a three week period, squats, step up / down, stationary bike and then progressing to rocker board and hopping and jumping exercises