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Knee, Shoulder, Elbow Surgery

ORTHOSPORTS™

ACL REHABILITATION PROGRAM

(With thanks to the Eastern Suburbs Sports Medicine Centre)

The time frames in this program are a guide only. Progression through the programme should be individualised. This will be influenced by the patient's age, level of exercise, associated injuries and ability to understand the exercises.

First 2 weeks

Goals

1. Reduce post operative pain and swelling.

2. Promote muscle control.

3. Full weight bearing.

4. **Regain full extension.**

5. Wean off crutches and normalise gait.

The patient will have waterproof duoderm dressings in place and wear tubigrip from ankle to groin. When the postoperative swelling reduces the tubigrip can be shortened to cover the knee only. This aids proprioception and provides symptomatic improvement for the patient.

Treatment

1. Pain and swelling reduction:
Ice, intermittent pressure pump, soft tissue massage, exercise.

2. Patella mobilisation.

3. Active range of motion of the knee and calf.

Gentle hamstring stretching
Co-contractions - non weight bearing progressing to standing
This helps range of movement, muscle control and full weight bearing. Aim for full extension within two weeks. Full flexion will take longer and will generally steadily improve without the effort of focal heavy stretching.

4. Gait retraining encouraging extension at heel strike.

5. Full weight bearing is encouraged but should be on crutches until good quadriceps control is gained.

Hamstring pain and ‘strains’ are common in the first six weeks so care needs to be taken with the intensity of hamstring activation on co-contraction exercises. Do not over emphasize hamstring contraction because this can lead to hamstring strain at this stage. Light hamstring loading continues into the next stage with progression of general rehabilitation. Resisted hamstring loading should be avoided until approximately week six.

Stage Two - Quadriceps Control

About week 2 to week 6

Goals

1. Full active range of movement

2. Normal gait with reasonable weight bearing tolerance

3. Minimal pain and effusion

4. Develop muscular control for a controlled pain free single leg lunge

5. Avoid hamstring strain

6. Develop early proprioceptive awareness

Treatment Guidelines

1. Use active, passive and hands on techniques to promote full range of movement.

2. Progress closed chain exercise (quarter squats and single leg lunge) as pain allows. The emphasis is on pain free loading, VMO and gluteal activation.

3. Introduce gym based exercise equipment including stationary cycle and leg press if pain free.

4. Once the wound has healed water based exercise can begin. This can include wading, bicycle action in the water, simple range of motion and gentle swimming (no breaststroke, board kicking or tumble turning).

5. Begin proprioception exercises including single standing leg balance on the ground and on the mini-tramp. This can be progressed by introducing body movement whilst standing on one leg.

6. Develop a calf routine including bilateral progressing to single calf raise and stretching.

7. Refrain from isolated loading of the hamstrings (due to ease of tear). Hamstrings will be progressively loaded through closed chain and also gym based activity.

Stage Three - Hamstring/Quadriceps Strengthening

Weeks 6-12

Goals

1. To begin specific hamstring loading.

2. Increase total leg strength.

3. Promote good quadriceps control in lunge and hopping activity in preparation for running.

Treatment Guidelines

1. Focal hamstring loading begins and is progressed steadily throughout the next stages of rehabilitation.

a. Active prone knee flexion which can be quickly progressed to include a light weight and then gradually progressed by increasing the weight.

b. Bilateral bridging off a chair. This can be progressed by moving onto a single leg bridge and then single leg bridge with weight held across the abdomen.

c. Single straight leg dead lift initially active and then can be made more difficult by adding dumb bell weights.

A key point with hamstring loading is that it is never pushed into pain. Volumes and intensities are very carefully progressed. Any minor setback of subtle strain or tightness post exercise should be managed with a downgrading of hamstring based exercises, icing and gentle stretches.

2. Gym based activity including leg press, light squats and stationery bike can be progressively increased in intensity as pain and control allow. It is important to detect and avoid effusion post exercise. Any effusion that is exacerbated with exercise should signal a reduction of training intensity. Always ice well after exercise and in some patients NSAIDS can be helpful.

3. Hopping can be introduced once single leg lunge control is similar to the other side. Hopping difficulty can be increased by adding variations such as forwards/backwards, side to side, off a step and in a quadrant.

4. Running may begin towards the latter part of this stage. Certain criteria must be met prior to the onset of running:

a. No anterior knee pain.

b. A pain free lunge and hop that is comparable in control to the other side.
c. No effusion.

Jogging should begin with a walk/jog. Ideally, this is done on a treadmill to monitor landing action and also to carefully monitor effusion post exercise. Reduce training intensity if there is any increase in effusion after jogging. Walk/jogging should be attempted 2-3 times/week for 1-2 weeks before progressing to jogging alone.

5. Proprioceptive exercises are made more difficult with more aggressive manoeuvres in standing leg balance and also by progressing hopping based activity.

6. Expand calf routine to include eccentric loading.

Stage Four - Sports Specific

Time Frame - 3-6 months

Goals

1. Increase total leg strength.

2. Develop running endurance speed, change of direction.

3. Advanced proprioception.

4. Preparing for a return to sport and recreational lifestyle.

Treatment Guidelines

1. These activities should build in intensity and volume over several months. Controlled sport specific activities should be included in the progression of running and gym loads through this time frame but sidestepping/cutting is not permitted. Post exercise swelling that is not easily managed with ice should result in a reduction of running loads.

2. Advanced proprioception to include controlled hopping, turning and balance correction.

3. Continue to increase intensity with training loads of gym based exercises.

4. Monitor potential problems associated with increasing loads.

5. No open chain resisted leg extension unless authorised by me.

Stage Five - Return To Sport

Time Frame - 6 months plus

Goals

1. A safe return to sport and normal recreational lifestyle.

Treatment Guidelines

1. Full training for 1 month prior to active return to competitive sport.

2. Preparation for body contact sports. Begin with low intensity one on one contests and progress by increasing intensity and complexity in preparation for drills that one might be expected to do at training.

3. To develop running endurance as to be able to handle a normal training session.

4. Full range, no effusion, good quadriceps control for lunge, hopping and hop and turn type activity. Circumference measures of thigh and calf to within 1cm of the other side.
5. Running and passing before any contact work.
6. Pad/sham tackling before returning to training
7. Warm up properly before any training or game and stretch afterwards
8. Gradually increase the amount of game time. Stop playing before fatigue sets in to ensure appropriate muscle protection of the joint.

Potential Problems

1. Functional instability. Poor quadriceps control and too early removal of crutch usage may result in the patient feeling that their knee gives way or feels unstable. This is not related to a structural instability but rather a lack of quadriceps control due to pain and swelling associated with the surgery.

2. Hamstring strain and pain. As hamstring tendons are harvested for the surgery, hamstring soreness is typical in the acute post op period. Over zealous rehabilitation and daily activity can lead to hamstring strain which can delay progression and require modification of rehabilitation.

3. Poor range of motion. Regaining full extension and muscle control in end range of extension is a priority early in rehabilitation. This is essential in the restoration of a normal gait. Exercise, calf and hamstring stretching, gentle extension stretches, soft tissue techniques and patella mobilisation will promote full extension. Flexion will usually progress with rehabilitation and only require to be pushed in later stages if full flexion has not been restored.

4. Recurring effusion
Persistent or recurring joint swelling may be a problem through the mid-late stages of rehabilitation. Typically, it may happen in those patients who have had meniscal and/or chondral pathology or those who spend long periods in standing. It is also common with significant progressions in running and training intensity. Anti-inflammatory medication and ice following rehab can also be useful strategies to manage a persistent effusion. A cautious approach to rehab and running progression is also essential.

5. Anterior knee pain. This can be a problem at any stage through rehabilitation. Poor VMO, too rapid progression of closed chain exercise, over zealous daily activity, abnormal gait (flexed knee at heel strike), too early return or too sudden progression of running loads may overload the patellofemoral joint and/or patella tendon and cause irritation.

6. Poor landing mechanism. Patients with reduced quadriceps control on lunging and hopping activity (reduced knee flexion on landing) are not ready to resume running and doing so usually results in altered running action causing joint soreness and potentially patella tendonitis or patellofemoral pain.

7. Graft failure. Graft failure can occur. The risk of graft failure should not prevent a person from returning to their pre-injury level of sport or activity once full function of their knee is restored.

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