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1.0 Policy Statement

1.1 It is the policy of Cappagh National Orthopaedic Hospital to provide a patient focused physiotherapy service delivered by chartered physiotherapists and support staff working in a well-equipped environment.

1.2 It is the policy of Cappagh National Orthopaedic Hospital to provide health professionals and the public with the necessary advice and guidance on physiotherapy rehabilitation.

2.0 Purpose

2.1 The purpose of this guideline is to advise health professionals and patients on the physiotherapy rehabilitation of a person undergoing Anterior Cruciate Ligament reconstruction surgery.

3.0 Scope

3.1 This guideline applies to all staff involved in the care of a person undergoing Anterior Cruciate Ligament reconstruction surgery, community staff involved in the pre and post-operative care of the patient, the patient and their family.

4.0 Health & Safety

4.1 There are health and safety risks involved in patient care, namely risk of physical injury to patient and staff, risk of infection.

4.2 Physiotherapists have the necessary qualifications and clinical experience to carry out this guideline and to supervise unqualified support staff.

4.3 They must be eligible for membership of their professional body, the Irish Society of Chartered Physiotherapists (ISCP).

4.4 They undertake mandatory manual handling, basic life support training, fire safety, infection prevention and control and risk management.

4.5 They complete a minimum of 100 hours continuing professional development every three years as required by the ISCP.

5.0 Responsibilities

5.1 It is the responsibility of physiotherapists to implement this guideline.
6.0 Definitions and Abbreviations

ACL  Anterior cruciate ligament
ACL Reconstruction  Surgical repair of a torn ACL within the knee joint
ROM  Range of movement
SLR  Straight leg raise

7.0 Guideline
7.1 Pre-Operative
7.1.1 Patients should be evaluated prior to surgery, including:
    7.1.1.1 Assessment of joint range of motion, muscle strength, mobility and general function.
    7.1.1.2 Respiratory assessment and treatment if necessary.
    7.1.1.3 Explanation of post-operative physiotherapy management.
    7.1.1.4 Teaching independent bed mobility, log rolling and transfers.
    7.1.1.5 Exercise programme.

7.2 Post-Operative
Please note these are guidelines only. Rate of progression will vary between individuals and will require continuous monitoring of signs and symptoms.

PATIENTS ARE NOT BRACED UNLESS SPECIFICALLY REQUESTED

7.2.1 Day 1-2 Post-Op (and from 0 to 2 weeks)

7.2.1.1 Immediate post-operative phase
  • Weight bearing as tolerated with crutches.
  • Ice and elevation for swelling.
  • Rest with ankle on roll to encourage full passive knee extension.

7.2.1.2 Exercises
  • Ankle pumps.
  • Static quads and gluts.
  • Inner range quads.
  • Straight leg raise without lag.
  • Passive knee extension 0°.
  • Flexion actively / passively 90°.
• Prone lying extension - hanging affected leg over edge of bed for knee extension.
• Side lying hip abduction and adduction.
• Prone lying hip extension.
• Prone lying auto-assisted knee flexion/extension.

7.2.1.3 **Criteria for discharge as in-patient by physiotherapist**
- Pain and swelling under control
- ROM 0-90°
- Good quad control statically and ability to SLR without lag
- Mobility independent with crutches

7.2.2 **2-4 weeks**
7.2.2.1 Full active and passive extension at 2 weeks.
7.2.2.2 Continue exercises as above, monitor swelling closely.
7.2.2.3 Progress to full weight bearing without crutches if no limp at 1-2 weeks.
7.2.2.4 Patient may drive at approximately 2 weeks.
7.2.2.5 May benefit from muscle stimulation (e.g. Kneehab) for quads inhibition.
7.2.2.6 May commence upper body and good leg strengthening program.
7.2.2.7 Core stability programme as appropriate.
7.2.2.8 Add the following to program
- Patellar mobilisation
- Hamstring curls
- Proprioceptive exercises:
  - Wobble board
  - Single leg standing
- Flexibility programme e.g. hamstrings, calf muscles
- Stationary bicycle:
  - Seat high
  - Zero resistance to begin and cycle both directions
7.2.2.9 Closed chain programme (<60° knee flexion initially)
- Knee extension with theraband resistance
- Wall slides <60°
- Minisquats <60°
- Mini lunges <60°
- Calf raises

7.2.3 4-6 weeks
7.2.3.1 Continue as above.
7.2.3.2 Light weights 0.5-1kg at 3 to 4 weeks for progressive resistive exercises (increase reps initially rather than increasing weight).
7.2.3.3 Pool walking at 4 weeks.
7.2.3.4 Nordic trak/crosstrainer, rowing within pain free ROM.
7.2.3.5 Add the following to program
  - Prone quadriceps stretch
  - Slow step ups of 20-30cm
  - Increase proprioception programme: wobble board, ball throwing, eyes closed, all single leg
  - Single leg squat <60° initially.

7.2.4 6-12 weeks
7.2.4.1 Swimming (exclude breaststroke for 3 months).
7.2.4.2 Aim for full flexion by 10/52.
7.2.3.3 May use road bike.
7.2.3.4 Stepper.
7.2.3.5 Power walking.
7.2.3.6 May commence open chain strengthening in gym (quads, hams bench) low resistance initially.
7.2.3.7 Add the following to program
  - Step downs/ Dips (standing on step- step down, affected side on step).
• Increase closed chain exercises to >60° knee flexion gradually.

• Commence jogging at 10 weeks depending on clinical signs (no effusion, full R.O.M. e.g. can sit on heels): jog straight ahead initially then running.

7.2.5 12 Weeks Onwards (Light activity phase)

7.2.5.1 Continue full strengthening program.

7.2.5.2 Progress running programme.

7.2.5.3 Progress running programme

  • Plyometrics:
    • Stair jogging; hopping drills (double leg progress to one leg) - all directions, box jumps; skipping rope.
    • Progress to jumping down from step double and single leg, then up.

  • Agility drills:
    • Figure of eight, large circles both directions
    • Progress to shuttles, zigzags (90° turns initially), carioca crossovers (sideways running one leg crosses the other), directional running (large square facing same direction running forward, sideways and backward).

  • Sport specific training and drills (1/4 to 1/2 speed)

7.2.6 16 Weeks Onwards (Return to activity phase)

7.2.6.1 Continue open and closed chain strengthening, running programme.

7.2.6.2 Progress running programme

  • Plyometrics:
    • Increase height, add turning on landing, combine with agility / sports specific drills

  • Agility drills:
    • Progress zigzags (45° turns), tighter shuttles and turns, combine with agility/ sports specific drills

7.2.6.3 Accelerate sport specific training and drills with a view to return to full activity from 4-6 months post operatively.
7.2.6.4 Discuss with Consultant re return to full sporting activity.

7.2.6.5 ± Isokinetic assessment

7.3 Diagnostic criteria for return to sport

7.3.1 Full ROM

7.3.2 Quadriceps strength ≥85% of contralateral side.

7.3.3 Hamstring strength 100% of contralateral side.

7.3.4 Hamstring: Quadriceps (H:Q) ratio 70%.

7.3.5 Functional testing ≥85% of contralateral side (e.g. single leg hop for distance, single leg triple hop for distance, 6m timed single leg hop).

8.0 Related Documents

8.0.1 Individual Physio tools exercise sheets

IM-CNOH-21 Back Care Advice Booklet - Patient Information Booklet

9.0 Appendices

9.0.1 ACL Reconstruction Patients copy

9.0.2 ACL Reconstruction Rehabilitation Goals

10.0 References


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10.17 CKRS

10.18 Lysholm
10.19 IKDC

APPENDIX 9.1 ACL Reconstruction Patient’s Copy

Cappagh National Orthopaedic Hospital
Physiotherapy Dept. 01-8140349 / 01-8140411

Introduction
Welcome to Cappagh National Orthopaedic Hospital.
This booklet will give you information and advice on your anterior cruciate ligament reconstruction. It will tell you about your operation, your treatment as an inpatient and give a general guide to how best manage your rehabilitation after discharge from hospital.

Anatomy of the knee

The diagram opposite (Fig 1.) gives you details of the structures that make up the knee joint. The anterior cruciate ligament or ACL is a strong ligament inside the knee joint that limits the forward motion of your shin bone on your thigh bone in your knee. When it is torn the knee can give symptoms such as giving way, stiffness and swelling.

Fig 1. Knee Anatomy
What is an ACL reconstruction?

This is an operation in which the surgeon replaces the torn ACL, most commonly with an autograft (tissue from the patient’s own body). Autografts are taken from the patient’s patellar tendon (the tendon from your kneecap to your shin bone, Fig. 2) or hamstring tendon (at the back of your thigh).

The Procedure

The surgery is done under general anaesthetic. Post operatively you will have a small incision down the front of your knee below your kneecap (or on the inside of the knee if it is a hamstring graft), and 2 to 3 small puncture wounds around the knee. You may have a small tube draining excess fluid, which will be taken out usually the next morning. You may also have an injection high up the thigh following surgery. This is a nerve block, which will ensure that your pain is well under control in the first few hours after surgery. Do not worry if you feel numbness down your thigh after this, it is a normal occurrence after the nerve block.

The Post-operative phase

You should not get up after you wake up – you will be helped out of bed the morning after surgery and instructed on walking and management of the knee. Your physiotherapist will see you to instruct you on the use of crutches and supervise your home exercise programme.

Nursing staff and doctors will closely monitor your pain level and provide prescribed pain relief that will make your post-operative recovery as comfortable and pain free as possible.
Most patients who undergo an ACL reconstruction go home the day after surgery, although there are occasions where your stay in hospital may be longer.

**Discharge from hospital**
You will go home from Cappagh using 2 crutches. From here on you will start to follow your ACL reconstruction rehabilitation guidelines on the following pages, bearing in mind 2 important points:

1. These instructions are only a guide; you may have to adjust depending on your progress.
2. It is recommended that the rehabilitative process be monitored by a Chartered Physiotherapist.

**Rehabilitation**
- Your rehabilitation should be guided by a chartered physiotherapist right through to return to sport.
- These are guidelines only - progression should be made with respect to signs and symptoms and in conjunction with your physiotherapist.
- Wound oozing/discharge or general malaise/temperature in first few weeks-contact your consultant/team.
- Severe pain or constant swelling especially in initial stages- contact your physiotherapist/consultant.

**Frequently Asked Questions**

**Driving:** Usually 2 to 3 weeks, when comfortable making emergency stop

**Work:** If office based usually 1 to 2 weeks
If car based at least 6 weeks
Trades people/ Heavy manual work at least 8 weeks

**Swelling:** This will happen during rehab. Swelling may happen after activity so be careful with changes in training methods/intensity- GRADUAL!!

**Pain around kneecap:** Common especially along tendon if you have had a patellar tendon graft. Again be careful with it if you get pain- care with long drives, too much stairs/ladders, and impact activities.

**Clicking or cracking in joint:** This is normal as swelling reduces and will tend to resolve after 3 to 4 months

**Stiffness:** Your knee may get stiff on occasion even after return to full sporting activity. Stiffness symptoms suggest loss of movement- monitor/ maintain full range of movement especially your straightening in the initial stages and your bending (flexion) in the later stages of your rehabilitation.

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Anterior Cruciate Ligament
Reconstruction

Golf: Short game at 3 months leave driver at home! Normal game by 6 months

Return to Sport: Only after approval by your consultant
Racquet Sports: Training 4 to 6 months.
Full participation at 6 months
Aerobics: 3 to 6 months depending on nature
Contact sports: Non-contact team training 3 to 4 months.
Contact sport at 6 to 7 months
## APPENDIX 9.2  ACL Reconstruction Rehabilitation Goals  
(To be used in conjunction with physiotools exercises)

### Stage 1: 0 to 2 Weeks

<table>
<thead>
<tr>
<th>Goal</th>
<th>Intervention</th>
</tr>
</thead>
</table>
| Minimise pain and swelling  | **Cryotherapy: Ice**  
  
  **Number 1 as per sheet**  
  
  Ice 20 minutes at least twice a day  
  Full Exercise Programme as per sheet. Repeat twice a day  
  Elevation: Keep leg elevated when resting  
  Avoid long car journeys or excessively long walks with the crutches  
  Medication: As prescribed |
| Early mobilisation          | Progress gradually to one crutch on the opposite side – NO LIMPING!  
  Discard crutches by 2 weeks |
| Range of movement (ROM)     | **Numbers 2 to 7 as per sheet**  
  Aim for right angle bend and **FULL straightening** (extension) before discharge from hospital - maintain this FULL straightening from now on at rest  
  Also when walking ensure you tighten your thigh muscle to keep the knee straight while you take weight on that side, bending as normal when your weight is on the other leg. |
| Early strengthening         | **Numbers 8 to 10 as per sheet** |
Personal Exercise Program

1. CRYOTHERAPY

Ice. Rolled towel under the heel while the ice is on.
Tissue or towel between ice and skin.
20 minutes, twice a day

2. RANGE OF MOVEMENT

Sit on a chair with your feet on the floor. Sitting, sliding across floor.
Bend your knee as much as possible.
Repeat ___ times.

3. RANGE OF MOVEMENT

Lying or sitting, bend your other knee.
Bend your ankle and push your knee down firmly against the bed. Hold 5 secs. - relax.
Repeat ___ times.

4. RANGE OF MOVEMENT

SITTING. Bend one leg and put your foot on the bed and put a rolled up blanket or towel under the other knee.
Pulling your foot and toes up, and tighten your thigh muscle to straighten the knee by lifting your heel off the bed (keep knee on the cushion). Hold approx. 5 secs. and slowly relax.
Repeat ___ times.
5. RANGE OF MOVEMENT

Sitting with one leg straight and the other leg bent. (You can vary the exercises by having your foot pointing either upwards, inwards or outwards).

Exercise your straight leg by pulling the toes up, straightening the knee and lifting the leg 20 cm off the bed. Hold approx 5 secs. - slowly relax.

Repeat ___ times.

6. RANGE OF MOVEMENT

Lying face down on a table/bench with your feet over the edge.

Let the weight of your feet straighten your knees.

Hold 60 secs. Repeat 2 times.

7. RANGE OF MOVEMENT

Lying face down with your hips straight and knees together.

Bend your knee as far as possible keeping hip straight and ankle flexed. No need to hold, release the leg down straight slowly and controlled. You may get some pain if you have had a hamstring graft for your cruciate.

Repeat ___ times.

8. EARLY STRENGTHENING

Lying face down.

Lift your leg towards the ceiling keeping your knee straight with strong quadriceps (thigh) contraction.

Repeat ___ times.

9. EARLY STRENGTHENING

Sidelying. Keep the leg on the bed bent and the upper leg straight.

Lift the upper leg straight up with ankle flexed and the heel leading the movement with strong quadriceps contraction. Take care not to roll the pelvis backward as you lift.

Repeat ___ times.
10. EARLY STRENGTHENING

Lying on your side with top leg bent in front of lower leg and the foot on the floor. Roll top hip slightly forwards, use top arm to support you in front.

Lift lower leg 10-15 cm from the floor keeping toes pointed forwards. Keep your knee straight through the movement with strong quadriceps contraction. Return to starting position.

Repeat ___ times.

First take a step up with your healthy leg.
Then take a step up with your affected leg.
Then bring your crutches up onto the step.
Always go one step at a time.

First put your crutches one step down.
Then take a step down with your affected leg.
Then take a step down with your healthy leg onto the same step as your affected leg.
Always go one step at a time.
## Stage 2: 2 to 4 Weeks

<table>
<thead>
<tr>
<th>Goal</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolve pain and swelling</td>
<td>Ice, elevation, rest</td>
</tr>
<tr>
<td></td>
<td>Initial exercises <em>(Stage 1, No. 2 to 7)</em> as appropriate</td>
</tr>
<tr>
<td>Increase knee flexion (bend)</td>
<td>Stretching with towel - as per sheet <em>No. 1</em></td>
</tr>
<tr>
<td>Commence closed chain strengthening</td>
<td><em>No. 2 to 4</em> wall slides, mini lunges, mini squats as per sheet</td>
</tr>
<tr>
<td>(foot in contact with a surface)</td>
<td>No deep knee bending - less than 60°</td>
</tr>
<tr>
<td>Balance and proprioception</td>
<td><em>No. 5</em> as per sheet</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Calf stretches <em>No. 6 and 7</em> as per sheet</td>
</tr>
<tr>
<td>Cardiovascular fitness</td>
<td>Commence exercise bike under supervision of physiotherapist <em>No. 8</em> as per sheet</td>
</tr>
<tr>
<td></td>
<td>Increase walking distance</td>
</tr>
<tr>
<td></td>
<td>May commence upper body programme in gym</td>
</tr>
</tbody>
</table>
Personal Exercise Program

1. **KNEE FLEXION**
   Lying face down with a band around your ankle.

   Tighten your stomach muscles to keep your lower back straight. Bend your knee and pull the band with both hands until you feel tightness on the front of your thigh. Hold approx. 20 secs. – relax.

   Build to 60 second holds. Do this stretch at least 3 times, at least twice a day.

2. **CLOSED CHAIN STRENGTHENING - Wall slides**
   Stand leaning with your back against a wall and your feet about 20 cm from the wall. Slowly slide down the wall until your hips and knees are at approximately 60 degrees (2/3 of a right angle). Return to starting position, pushing equally through both legs as you straighten. For all closed chain exercises try to ensure that your knee cap is following a line between your first and second toes (should be explained by your therapist).

   Progress by holding for 5 to 10 seconds. Repeat ___ times.

3. **CLOSED CHAIN STRENGTHENING - Mini lunges**
   Stand straight. Take a step forwards and take the weight onto the front leg.

   Keeping your upper body straight lower yourself down taking the weight on your front leg. Do not go beyond 60 degrees on your cruciate side. Straighten up again slowly controlling your movement as you go. Repeat both sides, try to keep some weight on the back leg when your cruciate side is your back leg.

   Repeat ___ times.

4. **CLOSED CHAIN STRENGTHENING - Mini squats**
   Stand straight with feet apart and pointing forwards.

   Slowly bend your knees controlling your movement as you go, not beyond 60 degrees. Keep your back straight and ‘stick your bum out’ to work your back muscles and protect your spine – do this for all types of standing squatting activities (lunges etc). Return slowly to starting position. Pause for 5 second intervals through the movement to progress.

   Repeat ___ times.
5. BALANCE AND PROPRIOCEPTION

Stand on one leg. Hold for 10 seconds initially, building to 30 seconds.

To progress do the same with eyes closed; or reach out forward, left and right to challenge your balance.

Repeat ___ times.

6. FLEXIBILITY - Calf stretch (1)

Stand in a walking position with the leg to be stretched straight behind you and the other leg bent in front of you. Take support from a wall or chair.

Lean your body forwards and down until you feel the stretching in the calf of the straight leg.

Hold approx. 30 secs. - relax. Build to 60 second holds.
Repeat 2 times each leg.

7. FLEXIBILITY - Calf stretch (2)

Stand in a walking position with the leg to be stretched behind you. Hold on to a support.

Bend the leg to be stretched and let the weight of your body stretch your calf without lifting the heel off the floor.

Hold approx. 30 secs. - relax. Build to 60 second holds.
Repeat 2 times each leg.

8. CARDIOVASCULAR FITNESS

Cycling

High seat, no resistance initially
**Stage 3: 4 to 6 Weeks**

<table>
<thead>
<tr>
<th>Goal</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolve pain and swelling</td>
<td>Ice, elevation, rest</td>
</tr>
<tr>
<td></td>
<td>Initial exercises (Stage 1, No. 2 to 7) as appropriate</td>
</tr>
<tr>
<td>Increase knee flexion</td>
<td>Commence “sitting on heels” under supervision of physiotherapist</td>
</tr>
<tr>
<td></td>
<td>Exercise <em>no. 1</em> as per sheet</td>
</tr>
<tr>
<td>Strengthening</td>
<td>Commence light weights 0.5-1kg with Exercises (Stage 1, No. 2 to 10)</td>
</tr>
<tr>
<td>Closed chain strengthening</td>
<td>Continue with Exercises as per Stage 2 Nos. 2 to 4. Progress to – Lunge walking and add single leg mini squats, step ups (No. 2 to 4 as per sheet Stage 3) No deep knee bending - less than 60° before 6 weeks</td>
</tr>
<tr>
<td>Balance / Proprioception</td>
<td>Progress as per sheet <em>No. 5</em></td>
</tr>
<tr>
<td>Flexibility</td>
<td>Add hamstring stretch <em>No. 6</em> as per sheet</td>
</tr>
<tr>
<td>Cardiovascular fitness</td>
<td>Rowing machine and Nordic trak/crosstrainer <em>No. 7</em> as per sheet</td>
</tr>
<tr>
<td></td>
<td>No deep knee bending - less than 60° before 6 weeks</td>
</tr>
</tbody>
</table>
Personal Exercise Program

1. KNEE FLEXION

Sitting back onto your heels, hold for 60 seconds. Hands taking some weight initially.

Repeat 3 times. Do this at least twice a day.

To progress take your full body weight without the support of your hands by 6 weeks post op.

2. CLOSED CHAIN STRENGTHENING - Lunge walking

Lunge walking forward, backward, eyes closed; controlling your movement and foot placement carefully.

Repeat ___ times.

3. STRENGTHENING - Single leg squat

Slow controlled squat balancing on cruciate side only.

Eyes closed, weight in hands to progress.

Repeat ___ times.

4. STRENGTHENING - Step ups

Stand on edge of a step.

Cruciate side on step, step up and down slowly and controlled watching your kneecap as you go. When stepping backwards keep your toes up and reach back with your heel keeping your weight on your forward leg.

Also stepping up and down standside on; cruciate side on step.
5. BALANCE AND PROPRIOCEPTION

Standing on one leg.

Eyes closed; standing on one or 2 pillows; weights in hands to progress.

Reaching out of base of support

Throwing ball against wall

6. FLEXIBILITY - Hamstring stretch

Lying on your back. Lift your leg into your chest. Place your hands behind the knee or preferable down at the calf / foot.

Gently pull your leg towards your chest. Feel the stretch behind your thigh.

Hold approx. 30 secs. - relax. Build to 60 second holds. Repeat 2 times each leg.

7. CARDIOVASCULAR FITNESS

Rowing machine. Can also start Nordic track / ercstrainer.

Do not go into a deep knee bend initially.
Stage 4: 6 to 12 Weeks

<table>
<thead>
<tr>
<th>Goal</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolve pain, swelling</td>
<td>Ice, elevation, rest</td>
</tr>
<tr>
<td></td>
<td>Initial exercises (Stage 1, No. 2 to 7) as appropriate</td>
</tr>
<tr>
<td>Increase knee flexion</td>
<td>Sitting on your heels No. 1 as per sheet</td>
</tr>
<tr>
<td></td>
<td><em>Aim for FULL flexion at 10 weeks (sitting on your heels will be uncomfortable initially- keep at it!)</em></td>
</tr>
<tr>
<td>Closed chain strengthening</td>
<td>Progress No. 2 to 5 as per sheet</td>
</tr>
<tr>
<td></td>
<td>Gradually deeper bends keeping your movement slow and controlled</td>
</tr>
<tr>
<td>Strengthening</td>
<td>Commence quadriceps bench, hamstrings bench in gym low weights, high</td>
</tr>
<tr>
<td></td>
<td>repetitions initially</td>
</tr>
<tr>
<td>Balance/ Proprioception</td>
<td>No. 6 as per sheet</td>
</tr>
<tr>
<td></td>
<td>Continue to progress single leg standing exercises - <em>these exercises are simple but very important in your rehab</em>. Do at least 15 minutes twice a week</td>
</tr>
<tr>
<td>Cardiovascular fitness</td>
<td>Swimming at 6 weeks (no breaststroke for 3 months)</td>
</tr>
<tr>
<td></td>
<td>Running after 10 weeks <em>but only when allowed by your physiotherapist</em></td>
</tr>
</tbody>
</table>
Personal Exercise Program

1. KNEE FLEXION

Sitting back onto your heels, hold for 60 seconds. Hands taking some weight initially.

Repeat 3 times. Do this at least twice a day.

To progress take your full body weight without the support of your hands by 6 weeks post op.

2. CLOSED CHAIN STRENGTHENING - Lunge walking

Lunge walking forward, backward, eyes closed; controlling your movement and foot placement carefully.

Repeat ___ times.

3. STRENGTHENING - Single leg squats

Slow controlled squat balancing on cruciate side only.

Eyes closed, weight in hands to progress.

Repeat ___ times.

4. STRENGTHENING - Step ups

Stand on edge of a step.

Cruciate side on step, step up and down slowly and controlled watching your kneecap as you go. When stepping backwards keep your toes up and reach back with your heel keeping your weight on your forward leg.

Also stepping up and down sideways on; cruciate side on step.

acl, 4-6 weeks

Provided by: Niall O' Mahony 01-8140349
Date: 07/09/2012
5. STRENGTHENING - Wall slides - progress

Slide down the wall until your hips and knees are at right angles ("chair position"). Make a fist of your 2 hands and put between your knees. Squeeze your knees against your fists while pushing hard through your heels; while maintaining chair position.

Build to 20 to 30 second holds.

5. BALANCE AND PROPRIOCEPTION - Single leg standing - progress

Progress all your previous exercises to holding in a very slight bend

Also cushion(s) or balance pad/ball under your feet
Stage 5: 3 to 6 Months

<table>
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<tr>
<th>Goal</th>
<th>Intervention</th>
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<tr>
<td>Maintain full ROM</td>
<td>Continue flexion daily. Maintain extension</td>
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<tr>
<td>Strengthening</td>
<td>Progress resistance</td>
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<td></td>
<td>Quadriceps and hamstrings benches: Aim for quadriceps resistance/weight to be greater than your hamstrings at 6 months</td>
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<tr>
<td>Closed chain strengthening</td>
<td>Continue</td>
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<tr>
<td>Balance / Proprioception</td>
<td>Continue</td>
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<tr>
<td>Flexibility</td>
<td>Maintain/improve as advised for injury prevention during rehabilitation and on initial return to sport</td>
</tr>
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</table>
| Commence Plyometric training (jumping exercises) | **Hopping:** Forward, backwards, sideways  
**Jumping:** Forward, backward, sideways.  
Box jumps. Jump from step progress to jump up onto step  
Progress jumping, hopping activities from double to single leg  
**Skipping** |
| Commence Agility training | **Sideways running**  
**Carioca running:** sideways running one leg crosses the other  
**Zig Zags:** Gradually increase sharpness and speed of direction change |
| Cardiovascular fitness    | Continue                                                                    |
| Sports specific drills    | As appropriate to your sport                                               |
Personal Exercise Program

Hip Adductors - Abduction

Start by sitting on the machine. Flex your feet and push your legs apart as much as possible. Your toes should always point up.

Aim for 15 repetitions x3.
Aim for balance between abductors and adductors to be 3:2 (if you do 15 kg on abductors, do 10 kg on adductors).

Hip Adductors - Adduction

Start by sitting on the adductor machine. Flex your feet and push your legs together. Your toes should always point up.

Aim for 15 repetitions x3.
Aim for balance between abductors and adductors to be 3:2 (if you do 15 kg on abductors, do 10 kg on adductors).

Quadriceps - Knee Extension

Start by sitting on the machine, your knees bent 90°. Extend your legs against the resistance until you reach full extension (horizontal level).
Caution if you have any knee problems.
Aim for 15 repetitions x3.
Aim for balance between quadriceps and hamstrings to be 3:2 (if you do 15 kg on quadriceps, do 10 kg on hamstrings).
Also you need to do single leg operated leg only on this machine - compare the 2 legs every 2-3 weeks (see how it feels to do 10 repetitions with the heaviest weight possible). You need the operated leg to be at least 95% of non operated side before return to sport.

Hamstrings - Seated Leg Curl

Start by sitting upright in the leg curl machine. Press your heels against the resistance and flex the knee to a 90° position.
Aim for 15 repetitions x3.
Aim for balance between quadriceps and hamstrings to be 3:2 (if you do 15 kg on quadriceps, do 10 kg on hamstrings).
Also you need to do single leg operated leg only on this machine - compare the 2 legs every 2-3 weeks (see how it feels to do 10 repetitions with the heaviest weight possible). You need the operated leg to be at least 95% of non operated side before return to sport.
Anterior Cruciate Ligament Reconstruction

Quadriceps and glute - Leg Press

Start by sitting in the machine, your legs bent, your feet pointing slightly out, and your feet as far apart as your hips. Push back the foot-plate with both feet. In the final position your knees should be slightly bent. Your entire feet should be kept on the foot-plate. Your knees stay over your toes. Aim for 15 repetitions x3.

Also you need to do single leg operated leg only on this machine - compare the 2 legs every 2-3 weeks (see how it feels to do 10 repetitions with the heaviest weight possible). You need the operated leg to be at least 95% of non operated side before return to sport.

FLEXIBILITY

Do 10-15 minutes of stretching every time you go to the gym.

Also once a week try to do 30 minutes of stretching either at home or in the gym.

Standing exercises

Vary your programme between fixed weights (machines) and free weights (standing exercises with weights in the hands - lunges, squats, single leg squats, step exercises).

Also try to do some balance work standing on a cushion etc. - 15 minutes 3 times a week challenging your balance as much as possible.