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Anterior Cruciate Ligament Reconstruction (ACLR) Rehab Protocol

Rehabilitation following ACLR is a critical part of a full recovery. This protocol is intended to provide the physiotherapist with rehabilitative guidelines and functional goals. The physiotherapist must exercise their own professional judgment to determine how to integrate this protocol into an appropriate treatment plan. There may be slight variations in this protocol if there are limitations imposed from associated injuries (eg. Meniscal tears that were repaired or other ligament injuries).

After ACLR it is important to restore and maintain full range of motion (ROM) in the knee. Quadriceps re-training has been found to improve ROM in the early stages. Attaining full knee extension as soon as possible is not deleterious to the graft or to joint stability and may prevent patellofemoral pain and compensatory gait pathologies. Altered gait kinematics from quadriceps dysfunction is typical during the initial recovery phase post ACLR. Typical adaptations include reduced cadence, stride length, altered swing and stance phase knee ROM, and decreased knee extensor power. Early weight bearing and achieving full extension as quickly as possible is advocated post ACLR to restore gait kinematics in a timely fashion. (Note that weightbearing may be limited due to concurrent meniscal or ligament surgery)

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0-2 WEEKS

GOALS

- Patient education re: weight-bearing status; changes to rehab guidelines with any concurrent pathologies (i.e. MCL injury, meniscal repair etc.)
- Decrease pain and swelling (**the use of Iceman/Cryo-cuff is highly recommended)
- Increase range of motion & restore **full extension**
- Maintain flexibility of hamstrings, calves
- Quadriceps activation
- Patella glide/mobilisation exercises

EXERCISE SUGGESTIONS

ROM & Flexibility

** It is important to restore and maintain range of motion early, especially full extension.*

- Heel slides
- Sitting passive leg extension with roll under heel OR prone leg hangs off end of bed
- Seated calf stretch with towel - knee bent (soleus), knee straight (gastrocnemius)
- Seated hamstring stretch (back straight)

Gait

If patient has an antalgic gait pattern with use of 1 crutch, keep patient on 2 crutches until they can exhibit normal gait with 1 crutch.

- Weight shifting: side-to-side and forward/backward
- Progress from 2 crutches to 1, always maintaining normal walking pattern

Muscle Strength & Endurance

Quadriceps/Hamstrings:

- Quadriceps and hamstring co-contraction
- Quadriceps isometrics in standing/sitting/lying +/– muscle stimulation
- Sit to stand – progress by gradually decreasing height of seat
- Static lunge forward/side

Hip/Gluteals:

- Side lying abduction/adduction
- Gluteal squeezes supine or standing
- Prone hip extension
- Standing hip flexion/extension, abduction/adduction

Calves:

- Ankle pumping +/– with leg elevation
- Standing calf raises with/without support

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3-6 WEEKS

GOALS

- Achieve near or full ROM in knee flexion and extension
- Continue flexibility exercises of other joints
- Continue strengthening exercises with control: hip, hamstrings, quadriceps, calves
- Strengthen non injured leg (documented strength losses in unaffected limb)
- Progress proprioception
- Normal WB gait
- Maintain cardiovascular fitness

EXERCISE SUGGESTIONS

ROM & Flexibility

- Continue as needed with slider board
- Bike pendulums with circles forward/backward
- Prone assisted knee flexion (belt, opposite leg)
- Progress to standing stretches for gastrocnemius (knee straight) and soleus (knee bent), ensure back foot is straight
- Progress to a standing hamstring stretch (keep back straight)
- Assisted quadriceps stretch in prone or in standing
- Patella mobilizations if needed to achieve terminal ROM

Muscle Strength & Endurance

Quadriceps:

- Increase range of motion and resistance as tolerated
- Sit-to-stand with muscle stimulation
- Leg press machine: low weight 2 legs (½ – ¾ range)

Hamstrings/Gluteals:

- Prone assisted hamstrings (with belt, opposite leg)
- Hip strengthening
- Supine on floor legs on Swiss ball: isometric hamstrings/gluteals

Gait

**Full knee extension is needed for normal gait.*

- "Cup walking": forced exaggeration of knee and hip flexion during the swing phase of gait rather than a rigid knee with a compensatory hip hike (may use plastic cups/mini pylons/foam rollers to walk over to accentuate hip/knee flexion)
- Progress from a single crutch to full weight bearing. Ensure NO antalgic gait pattern

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6-12 WEEKS

GOALS

- Full and pain free knee range of motion
- Functional quadriceps strength
- Initiate isokinetic quadriceps strengthening in a **specific & limited** range
  **only if*: ROM is full, no swelling, adequate muscle control, and no meniscal or patellofemoral pathology
- Continue strengthening lower extremity muscle groups, specifically through full range hamstrings/quadriceps (without pain at donor site)
- Advance proprioception exercises
- Increase cardiovascular fitness

3 to 4 months

GOALS

- Continue flexibility exercises
- Quadriceps strength progression
- Address documented hamstring strength deficits
- Continue lower chain concentric/eccentric strengthening of quadriceps & hamstrings
- Proprioceptive progression
- Sport specific cardiovascular fitness

4 to 6 months

GOALS

- Continue with flexibility exercises for the lower chain
- Continue strengthening of the lower chain
- Sport specific quadriceps & hamstrings strengthening
- Sport specific proprioception training
- Sport specific cardiovascular fitness

**Note: Progression to running may only occur once a symmetric and proficient pattern has been attained to prevent abnormal tissue/joint loading in the lower extremity. Running should NOT be initiated if swelling, loss of motion or patello-femoral pain is present.*

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6 to 8 months

GOALS

- Sport specific quadriceps, hamstrings and lower chain strengthening progressing to plyometrics
- Proprioception training
- Sport specific cardiovascular fitness

After 8 months

GOALS

- Adequate cardiovascular fitness, strength, power, agility neuromuscular control, symmetry and stability
- Continue with upper body strengthening
- Back to sport practice for upper skills (as able)
- Return to sport skills on own at practice with minimal risk of re-injury

Dr Balendra will advise you regarding time to return to sport, which is usually 9 to 12 months after surgery