

## POST-OPERATIVE ACL RECONSTRUCTION PROTOCOL

- Ensure patient achieves milestone prior to progression.
- No return to contact sports prior to 6 months post-op.
- Return to gentle non-contact, non-competitive sports at physiotherapist's discretion but must be over 5 months post-op.
- Any problems during rehabilitation please contact your physiotherapist or your Consultant Secretary.

### PHASE 1: Post ACL reconstructive surgery. Day 1 to day 10.

| Goal  | Treatment   | Milestone to Progress  |
|---|---|--|
| Minimise swelling and pain  | <ul style="list-style-type: none"> <li>• Use of ice</li> <li>• Ensure adequate pain relief</li> <li>• Elevate leg</li> <li>• Use of crutches</li> </ul>                               | <ul style="list-style-type: none"> <li>• Minimal or no effusion</li> <li>• Full or nearing full extension</li> <li>• 90° knee flexion</li> <li>• SLR with no lag (10 reps)</li> <li>• Normal, symmetrical gait pattern with or without crutches</li> </ul> |
| Regain full range of extension/hyperextension (compare to non-operative knee) | <ul style="list-style-type: none"> <li>• Extension exercises: static quads, heel props, prone hanging</li> <li>• Passive stretching</li> </ul>  |  |
| Increase knee flexion as pain allows  | <ul style="list-style-type: none"> <li>• Active flexion exercises</li> <li>• Passive flexion over edge of bed</li> <li>• Patella mobilisations</li> </ul>                             |  |
| Improve quads control and hamstring strength                                  | <ul style="list-style-type: none"> <li>• Static quads, SLRs. <b>Ensure patient can SLR with no lag</b></li> <li>• Co-contraction quads and hams</li> <li>• Hamstring curls</li> </ul> |  |
| Ensure flexibility  | <ul style="list-style-type: none"> <li>• Hamstring and calf stretches</li> </ul>  |  |
| Restoration of normal gait pattern  | <ul style="list-style-type: none"> <li>• Gait re-ed with elbow crutches, WB as pain allows</li> <li>• Weight transferring</li> </ul>  |  |

## PHASE 2: Upon achievement of phase 1 goals. Approximately day 10 to 6 weeks.

| Goal  | Treatment  | Milestone to Progress   |
|---|--|---|
| Minimise swelling and pain (ensure no swelling before progression) Prevent anterior knee pain | <ul style="list-style-type: none"> <li>Continue as above, as necessary</li> <li>Patella mobilisations</li> </ul>   | <ul style="list-style-type: none"> <li>Minimal/no effusion</li> <li>Full range of extension</li> <li>Normal gait pattern without crutches</li> <li>Full range of flexion</li> <li>Single leg stand eyes shut at least 5 seconds</li> <li>Bilateral squat, thighs parallel to floor with even, symmetrical weight bearing</li> </ul> |
| Regain/maintain full range of extension/hyperextension (compare to non-operative knee)        | <ul style="list-style-type: none"> <li>Extension exercises as above</li> <li>Passive stretching</li> </ul>   |   |
| Restoration of normal gait pattern  | <ul style="list-style-type: none"> <li>Ensure FWB, wean off crutches</li> </ul>  |   |
| Regain full range of flexion  | <ul style="list-style-type: none"> <li>Active flexion exercises</li> <li>Progress to quads stretch</li> </ul>  |   |
| Improve quads, hamstring and general lower limb strength                                      | <ul style="list-style-type: none"> <li>CKC – wall slide squats with gym ball, squats, lunges, leg press, dips etc.</li> <li>Hamstring curls, bridging</li> <li>Calf raises, hip extensions, hip abd/add, glut med/max</li> </ul> |   |
| Increase aerobic capacity   | <ul style="list-style-type: none"> <li>Exs bike</li> <li>Treadmill walking</li> <li>Step ups</li> <li>Cross trainer</li> <li>Rower</li> </ul>  |   |
| Improve proprioception  | <ul style="list-style-type: none"> <li>Single leg stand eyes open/eyes closed</li> <li>Wobble board</li> <li>Sitfit</li> <li>Trampoline</li> </ul>   |   |
| Neuromuscular control   | <ul style="list-style-type: none"> <li>Core stability work</li> <li>Knee alignment/prevent valgus – squats, lunges, step ups (ensure good hip/knee/ankle alignment)</li> </ul>   |   |

## PHASE 3: Upon achievement of phase 2 goals. Approximately week 6 to week 12.

| Goal  | Treatment   | Milestone to progress  |
|---|---|--|
| Control activity related swelling and pain                | <ul style="list-style-type: none"> <li>Use of cryotherapy post exercise if knee swells with increased activity</li> </ul>   | <ul style="list-style-type: none"> <li>Minimal/no activity related effusion</li> <li>Full ROM</li> <li>Normal gait and stair pattern – good alignment and control</li> <li>10 x single leg squats to 60° with good biomechanical alignment and control (i.e. no valgus and good hip/knee/ankle alignment)</li> </ul> |
| Regain/maintain full range of movement                    | <ul style="list-style-type: none"> <li>Continue stretches</li> </ul>  |  |
| Normalise gait and stair pattern                          | <ul style="list-style-type: none"> <li>Treadmill walking – forward/backward/incline</li> </ul>  |  |
| Improve quads, hamstring, and general lower limb strength | <ul style="list-style-type: none"> <li>Continue CKC – double &amp; single leg press, squats, lunges, increase weight</li> <li>Hamstring curls – double &amp; single leg, increase weight</li> <li>Calf, gluteals, adductors, VMO strengthening</li> </ul> |  |
| Increase aerobic capacity                                 | <ul style="list-style-type: none"> <li>Exs bike</li> <li>Treadmill walking</li> <li>Step ups</li> <li>Cross trainer</li> <li>Rower</li> <li>Pool walking/running</li> </ul>   |  |
| Improve proprioception                                    | <ul style="list-style-type: none"> <li>Single leg stand eyes closed</li> <li>Wobble board</li> <li>Sitfit</li> <li>Trampette</li> </ul>   |  |
| Neuromuscular control                                     | <ul style="list-style-type: none"> <li>Core stability work</li> <li>Knee alignment/prevent valgus as above – add trunk rotation</li> </ul>  |  |
| Commence bilateral load acceptance/ early plyometrics     | <ul style="list-style-type: none"> <li>Bilateral drop jumps</li> <li>Jumps with symmetrical squat landing</li> <li>Progress to straight line jogging when good load acceptance</li> </ul>   |  |

## PHASE 4: Upon achievement of phase 3 goals.

| Goal   | Treatment  | Milestone to progress  |
|--|--|--|
| No swelling or pain  | <ul style="list-style-type: none"> <li>Continue as above if necessary</li> </ul>   | <ul style="list-style-type: none"> <li>Normal straight line running pattern</li> <li>Single leg press &gt;75% body weight</li> <li>Single leg stand eyes shut &gt;80% unaffected leg</li> <li>Hop tests &gt;85% LSI: single hop, triple hop, cross over hop, 6m timed hop, side to side hop</li> </ul> |
| Normal straight line running pattern without pain and in full control              | <ul style="list-style-type: none"> <li>Progress from jogging to running</li> <li>Increase speed/distance</li> <li>Change surface/incline</li> <li>Forward running/backward running</li> </ul>  |  |
| Increase muscle strength and endurance   | <ul style="list-style-type: none"> <li>Increase load on strengthening exs (60-80% 1RM)</li> <li>Single leg press – push for &gt;75% x body weight</li> <li>Commence open chain quads and gradually increase resistance</li> </ul>  |  |
| Improve proprioception   | <ul style="list-style-type: none"> <li>Increase dynamic proprioception</li> </ul>  |  |
| Progress bilateral load acceptance/commence unilateral load acceptance/plyometrics | <ul style="list-style-type: none"> <li>Tuck jumps with stable landing</li> <li>Squat jumps, forward/ back/ rotational</li> <li>Bilateral plyometric static and multi-plane exs</li> <li>Single leg hop with controlled landing</li> <li>Forward, side hops/ drops from step with controlled single leg landing</li> <li>Unilateral plyometric static and multi plane activities</li> </ul> |  |

## PHASE 5: SPORTS SPECIFIC. Upon achievement of phase 4 goals.

| Goal  | Treatment  | Milestone to progress   |
|---|--|---|
| Increase muscle strength and endurance                            | <ul style="list-style-type: none"> <li>Increase load on resistance work</li> </ul>   | <ul style="list-style-type: none"> <li>Symptom free sports specific training</li> <li>Hop tests &gt;90% LSI : single hop, triple hop, cross over hop, 6m timed hop, side to side hop</li> <li>Single leg stand eyes shut, equal to unaffected side</li> </ul> |
| Progress unilateral load acceptance and work to fatigue           | <ul style="list-style-type: none"> <li>As above – increase speed/intensity to fatigue</li> </ul>   |   |
| Commence sports specific running agility drills                   | <ul style="list-style-type: none"> <li>Sprinting</li> <li>Cutting and pivoting</li> <li>Acceleration/deceleration</li> </ul>   |   |
| Commence sports specific skills                                   | <ul style="list-style-type: none"> <li>Ball skills</li> <li>Dribbling</li> <li>Boxing</li> <li>Kicking</li> <li>Sports specific activity with controlled opposition e.g. one on one practice drills</li> </ul> |   |
| Neuromuscular control following fatigue                           | <ul style="list-style-type: none"> <li>Ensure ability to control alignment under random practice and after fatigue</li> </ul>  |   |
| Return to non-contract sports (only when nearing 6months post-op) | <ul style="list-style-type: none"> <li>Golf/swimming/gentle racquet sports</li> </ul>  |   |

**PHASE 6: FULL UNRESTRICTED SPORTS TRAINING. Upon achievement of phase 5 goals.  
MUST BE AT LEAST 6 MONTHS POST-OP**

| Goal   | Treatment  |
|--|--|
| Symptom free training                            | <ul style="list-style-type: none"> <li>• Full, unrestricted training</li> </ul>                                  |
| ROM and muscular flexibility equal to other side | <ul style="list-style-type: none"> <li>• Continue stretching</li> </ul>  |
| Good results of all functional testing           | <ul style="list-style-type: none"> <li>• Functional tests prior to returning to contact sports</li> </ul>        |
| Return to full unrestricted, confident activity  | <ul style="list-style-type: none"> <li>• Progress to uncontrolled practice situations and competition</li> </ul> |

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