



REHABILITATION PROTOCOL

Osteochondral Allograft Transplantation (OAT)/Cartilage Transplantation

Instructions for Physiotherapist:

EQUAL ICING AND REST/WORK RATIO IS IMPORTANT. SIGNIFICANT PAIN SHOULD NOT OCCUR WITH ANY ACTIVITY DURING REHAB WORK OR LAST LONGER AFTER REHAB. IF THIS OCCURS, MODIFICATION OR RE-EVALUATION NEEDS TO BE UNDERTAKEN.

Dressings and sutures:

- The dressings on your leg should be left in place and kept dry when showering for 3 days.
- After 3 days you can remove your dressings and shower normally but do NOT scrub the incisions.
- Apply Band-Aids over the incisions to keep them clean once the initial dressing has been removed.
- If sutures/staples were used, they will be removed at your first post-op visit (approx. 2 weeks post-op).
- Do NOT soak the leg (i.e. hot tub / bath, etc) until 2-4 weeks after your sutures are removed and the incisions are well healed.

Pain and swelling:

- Local anesthetic has been placed into your knee – this will wear off in 6-8 hours after surgery.
- You have been provided with a prescription for pain medications that when used together will provide the most effective pain relief after your surgery.
- Use an ice pack or cold therapy delivery system for 20 mins every hour while awake to help with pain and swelling.
- It is common to have some spotting through the dressings following surgery. Place an additional dressing over the area if this occurs.
- The incisions may continue to “leak” fluid after removal of the initial dressing – this is common and should not raise concern. Place an additional bandage or Band-Aids over the incisions to help them heal. Keep the incisions clean and dry.
- DO NOT apply any ointments or topical creams to the incisions until they are completely healed – this will risk the incisions becoming infected.
- When sitting or lying, keep your leg elevated with several pillows placed under the ankle (not the knee) to help decrease swelling and relieve pain.

Red flags:

- Complications after arthroscopic surgery are very rare but can occur. If you develop any of the following symptoms go to your nearest emergency department for assessment:
 - Increasing calf pain / swelling that does not improve with elevation and ice
 - Shortness of breath
 - Chest pain



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Phase 1 (0-6 weeks)

Precautions:

- Foot flat feather weight bearing with crutches (week 0-6)

Range of motion:

- May progress to full ROM without restrictions

Suggested Exercises:

- Week 0-2:
 - Patellar mobilizations
 - Heel slides (+/- slider board), calf & hamstring stretches
 - Quad/ham co-contraction, gluteal activation (supine or standing), isometric hip adduction/abduction, ankle pumping, sitting passive leg extension with roll under heel for extension if needed
- Week 2-6:
 - Supine legs up wall: heels slides (knee flexion); supine legs on Swiss ball: knee flexion
 - Bike pendulums: ½ circles forward/backward – lower seat as tolerated
 - Quadriceps isometrics in long sitting, standing (+/- muscle stimulation)
 - Non-weight bearing hip stability exercises: abduction, extension, external rotation, clam shells, supine bridging on Swiss ball
 - Ankle Theraband plantar flexion, sitting calf raises



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Phase 2 (6-12 weeks)

Criteria for advancement to Phase 2:

- Full extension and minimum of 90 degrees flexion
- Minimal swelling/inflammation and normal gait on level surfaces

Precautions:

- If concomitant ACL reconstruction was performed, can transition to ACL rehabilitation protocol

Goals:

- Restore normal gait with stair climbing
- Obtain knee range of motion
- Increase hip, quadriceps, hamstring and calf strength and proprioception

Weight-Bearing:

- Advance to weight bearing as tolerated
- Wean off crutches

Range of Motion:

- Progress to full, painless ROM

Suggested Exercises:

- Continue with patellar mobilizations
- Low resistance stationary bike, progressing to full rotations
- Weight shifting: 2 weigh scales → 50-50 weight bearing → progress to mini squats
- Leg extension (or quad over roll), active terminal knee extension with Theraband
- Initiate abdominal and core strengthening (i.e. curl-ups, transversus abdominis with SLR x4)
- Standing hip flexion/extension, abduction/adduction → weights/pulleys/bands (watch for excessive trunk shift/sway)
- Supine bridging: 2 → 1 leg → Swiss ball → bridge + knee flexion
- Shuttle/leg press: 2 leg squat/calf raises, progress 2-1 leg; increase ROM & resistance
- Mini wall squats 30-60° → 60°-90°; sit to stand
- Hamstring curls: prone, sitting progress 1-2 lb weights
- Calf raises 2/1 foot, up on toes walking (when fully weight bearing)
- Wobble boards with support: side-to-side, forward/backward
- Single leg stance 30-60 seconds (when fully weight bearing)



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Phase 3 (3-5 months)

Criteria for advancement to Phase 3:

- No soft tissue complaints
- Necessary ROM, strength, endurance, and proprioception to return
- Physician clearance to resume partial or full activity

Precautions:

- Continue wearing valgus/varus unloader brace when weight bearing (if it was prescribed to you by your surgeon)

Goals:

- Improve strength, endurance, proprioception
- Patient education with regards to any possible limitations

Suggested Exercises:

- Continue with bike, add elliptical
- Stairmaster if adequate strength (must not hip hike when pressing down on step)
- May begin jogging / running program once regained full range of motion with a quiet knee and appropriate neuromuscular control
- Continue core strengthening functionally (i.e. obliques, planks, Pilates)
- Progress leg extensions with weight as tolerated (pain free arc)
- Sit to stand → lower bed height (watch mechanics) → single leg
- Progress resistance of Shuttle working on strength & endurance, 2 → 1 leg
- Static Lunge → dynamic lunge (with proper alignment: shoulders over knees over toes) → lunge walking as pain free range tolerates
- Bungee cord walking: forward, backward, sidestep, lunging → speed/direction change PRN
- Forward and lateral step-ups 2-4-6" and eccentric lateral step down on 2-4-6" step with control (watch for hip hike or excessive ankle dorsiflexion)
- Squats, Lunges on Dynadisc, Airex, Bosu, etc. as range tolerates
- Continue hip strengthening: weights, pulleys, tubing
- Tubing kickbacks (mule kicks)
- Pro-Fitter: hip abduction and extension → progress side-to-side
- Shuttle standing kickbacks (hip/knee extension)
- Supine Swiss ball → bridge + knee flexion → 1 leg
- Chair walking/stool pulls
- Hamstring curls: standing & sitting weights/pulleys/ Bungee
- Eccentric heel drops off step or Shuttle2 → 1 leg
- Continue wobble boards and add basic upper body skills (i.e. throwing, catching)
- Single leg stance on unstable surface i.e. pillow, mini-tramp, BOSU, Airex, Dynadisc single leg stance performing upper body patterning specific to patient goal(s)
- Standing 747s: eyes open/closed → progress to mini trampoline

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Phase 4 (5+ months)

Exercise Suggestions:

- Agility: Cariocas/grapevine, Figure 8's around cones, ladder drills, lateral shuffle cone-cone
- Side to side steps → jumps on the BOSU
- Line jumping, backward/forward/side-to-side -> progress to diagonals / combined patterns; 2 → 1 leg
- Jumping: tuck jumps, box jumps, long jumps
- Skipping rope double and single leg
- Hopping: single-leg (distance), 6m timed, triple hop (distance), cross-over: 2 → 1 leg
- May implement sport-specific multi-directional drills/contact when adequate core/lower extremity patterning (stop and go drills, sideways and backwards drills, sprinting with cutting and pivoting)