



Post Surgery Rehabilitation Program for Knee Arthroscopy

This protocol is designed to assist you
with your rehabilitation after surgery
and should be followed under the
direction of a physiotherapist

PHASE 1: Initial Recovery

This phase involves the initial recovery from surgery and usually lasts 1-3 weeks. In the first week you should rest and elevate your leg for a significant amount of the time.

Goals

1. Control inflammation and swelling
2. Full range of motion
3. Quadriceps muscles activation
4. Hip strengthening
5. Core strengthening

WEIGHT BEARING

You should be able to fully weight bear and walk comfortably on your leg after surgery. If your surgeon recommends you use crutches, you will be told how long you need to use them for.

COLD THERAPY & ELEVATION

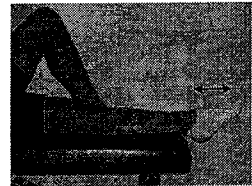
A Cold Therapy Unit or an ice pack should be applied immediately after surgery and used for at least 20 minutes every other hour while you are awake. Your operative leg should be elevated with the knee straight when applying cold therapy and/or when resting.



Exercises:

1. Ankle pumps

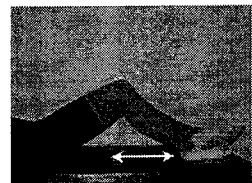
- The foot and ankle should be actively “pumped” up and down. 10-20 times every hour to promote circulation and decrease swelling.



2. Range of Motion

- **Flexion** – In lying, bend your knee by sliding your heel towards your buttocks. You can use your other leg to help you as needed. Perform up to 20 times; repeat 2- 3 times daily.

IMPORTANT: if you had a Meniscal Repair you **should not** force flexion (bending) in the first 12 weeks.



- **Extension** - In lying, place a roll beneath your ankle to passively (i.e. allow gravity) stretch your knee into extension. Start with 2 minutes at a time and increase as tolerated up to 5 minutes. Perform 2 or 3 times daily. It is very important in this phase to work on straightening your knee.



3. Strengthening

- **Quadriceps Contraction** – In sitting with your knee straight and leg supported, tighten your thigh muscle by pushing your leg downwards. Focus on tightening the muscle and avoid lifting your leg from the hip. Perform exercise 5 -10 times holding each contraction for 5 secs. Progress to 30 times holding each contraction for 10 secs, resting for 5 secs in between reps.



- **Straight Leg Raises** – In the position shown, tighten your thigh muscle while keeping your knee straight and lift your leg up 2 inches. Perform exercise 5 -10 times holding each contraction for 5 secs. Progress to 30 times holding each contraction for 5-10 secs.



- **Hip Adduction** – In lying with your knees bent as shown, squeeze a soft ball or a pillow between your knees. Perform exercise 5 -10 times holding each contraction for 5 secs. Progress to 30 times holding each contraction for 10-15 secs, resting for 5 secs between reps.



**** Perform all exercises 2-3 times per day to build your strength and endurance. You should perform all the strengthening exercises on both legs****

Also consider:

- Other ROM exercises as tolerated (heel slides on wall, passive flexion in sitting using other leg to push, prone hangs and passive knee extension)
- Core strengthening as tolerated
- Stationary bike – no resistance, start with arc's (swinging) and progress range of motion as tolerated
- Upper body exercises - weights and arm ergometer

Requirements for progression to Phase 2:

1. Knee Flexion $\geq 110^\circ$ or the ROM instructed by your surgeon
2. Straight leg raise with no lag
3. Full Knee extension
4. Pain and Swelling levels managed to enable exercise progression

PHASE 2: Muscle Strength and Core Stability

This phase emphasizes progressive activation of the quadriceps muscles with significant core strengthening. This phase usually starts 2-3 weeks after your knee surgery.

Goals

1. Manage pain and swelling
2. Increase Range of Motion
3. Strengthen quadriceps and other muscles

WEIGHT BEARING

You should walking normally without crutches

COLD THERAPY & ELEVATION

Manage your swelling by continuing to use cold therapy and elevation, especially after exercise or physiotherapy sessions.

Exercises:

Continue increasing the difficulty of the exercises from phase 1 as well as adding the following new exercise into your program

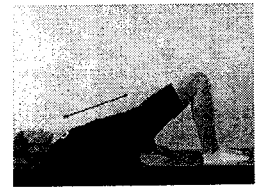
1. **Range of motion** - Progress flexion using active, active-assisted and pain-free passive exercises.
IMPORTANT: if you had a Meniscal Repair you **should not** force flexion (bending) in the first 12 weeks.
2. **Strengthening:**
 - **Hamstrings (prone)** – Lying on your stomach, place a resistance band around your ankle and also have it attached to an anchor point as shown. Bend your knee slowly against the resistance of the band pulling your foot towards your buttock. Start with 1 set of 10 reps and increase to 3 sets of 15 reps.
 - **Calf Raises** – Both legs: Start with feet shoulder width apart and toes pointed straight ahead, and raise up onto your toes. Start with one set of 10 reps, holding each raise for 5 secs. Increase the number of reps up to 30 with 5 sec hold. Start by using support at a wall or table and progress to no support as able.



- **Mini squats** – Slowly squat with equal weight on each leg. Bend your knees from 0° to a maximum of 45° of flexion, making sure your knees do not move beyond your toes. Start with one set of 10 reps, holding each squat for 5 secs and increase the number of reps as your strength increases, up to 30 reps x 15 secs hold.



- **Gluteals** – Lying on your back with your knees bent and your arms by your sides. Squeeze your buttocks together and lift up to create a bridge. Keep equal weight on each leg with your pelvis straight. Be careful not to push down on your neck or shoulders – use your buttocks to do the work. Start with one set of 10, holding for 5 secs and increase the number of repetitions as you get stronger. Once you can complete 20 reps holding for 10 sec each, change to single leg bridges. Complete the single-leg bridges on each leg.



3. Proprioception/Balance

- **Single leg stance** – Start using some support (i.e. railing or table) and progress to unsupported. Stand balancing on your non-operated leg. Then try standing on your operated leg. Hold for 15 seconds each leg. Perform that 3 times. Once it gets easy you may progress to doing that with your eyes closed.

4. Stretching

Hamstrings (supine)
Calf Stretch (standing)
Illiotalibial band (roller)

Quadriceps femoris (prone)
Hip flexors
Hip rotators

Also consider:

- Clam shells; abductor resistance band exercises
- Abdominal strengthening (i.e. planks, isometrics, obliques, transverse abdominis)
- Deep-water walking (only after surgery incisions are healed)
- If you have good balance and enough ROM you can commence outdoor cycling on a smooth, flat surface

Requirements for progression to Phase 3:

- Full range of motion
- Double leg squat with good motor control
- Good control and alignment during hip and core strengthening exercises.

PHASE 3: Strength and Control

This phase will usually start 4-6 weeks post-op and may continue until 4-6 months following surgery.

Goals

1. Increase quadriceps, hamstrings, gluteal and core strength
2. Improve proprioception and balance
3. Aerobic activity 20-30 minutes per day, 3-4 times a week

COLD THERAPY & ELEVATION

Manage any swelling by continuing to use cold therapy and elevation, especially after exercise or physiotherapy sessions.

Exercises:

1. **Range of motion:** should be full at this stage unless you had a meniscal repair, in which case it may take up to 12-16 weeks before you gain full range of knee flexion.

2. **Strengthening**

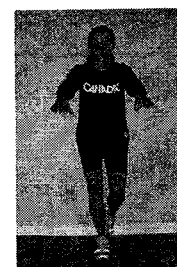
- **Step ups** – Do graduated heights, starting at 4" and increasing to 8". Stand in front of a stair or stepping stool and place one foot on the step in front of you. Rise up onto the step by shifting all of your weight onto this leg and tighten your quadriceps muscles. Put all of your weight through this leg and do not step up onto the step with your other leg. Start with one set of 10 reps, holding at the top of the step-up for 5 secs. Increase the number of reps as your strength increases, up to 20 reps with 15 secs holds on each leg.
- **Step downs** – Do graduated heights, starting at 4" and increasing to 8". Start with one leg standing on the step and slowly bend your knee to lower your other leg to lightly touch floor. Keep all of your weight through the leg that is on the step. Start with one set of 10 reps, holding at the bottom of the step down for 5 secs. Increase the number of reps as your strength increases, up to 20 reps with 15 secs holds on each leg.



- **Single leg Calf Raises** – Start on one leg with toes pointed straight ahead, and raise up onto your toes. Start with one set of 10 reps, holding each raise for 5 secs. Increase the number of reps up to 30 with 5 secs hold. Start by using support at a wall or table and progress to no support as able.



- **Single leg Squats** - Initially use a chair or railing for support. Stand on one leg and slowly bend your knee to squat. Bend as far as you can while keeping control. Start with one set of 10, holding the squat for 5 secs; increase the number of repetitions as you get stronger. Work up to performing squats without support with 'contraction' time at least double the 'rest' time on the EMS. (Up to 20 reps x 15 secs each leg).



- **Hip Abduction** – With a resistance band around your outside thigh just above your knee, lift your leg to place slight tension on the band. Move this leg sideways slowly against the resistance of the band using the muscles in your buttock and your hip. Start with 1 set of 10 reps and increase to 3 sets of 15 reps.



- **Hip Extension** – Do not start this exercise until 6 weeks post op. Stand with legs shoulder width apart with a resistance band around one of your thighs just above your knee. Extend your leg to place slight tension on the resistance band. Move the leg backwards slowly against the resistance of the band using the muscles in your buttock and the back of your thigh. Start with 1 set of 10 reps and increase to 3 sets of 15 reps



- **Lunges** – Standing with feet as pictured, move down and lunge as shown. Control the descent ensuring your knee that is forward does not move beyond your toes. Start with 1 set of 10, holding each lunge for 5 secs. Increase the number of reps as your strength increases up to 3 sets of 10.



3. Proprioception/Balance

- **Single leg stance** (eyes open, eyes closed)
- **Double leg squats on an unstable surface** (thick carpet, foam block, camping mattress)
- **Single leg stance on an unstable surface** (thick carpet, foam block, camping mattress)



4. Stretching

- Continue with stretches from phase 2.

Also consider:

- Wall squats (with/without ball squeeze)
- Hamstring curls in supine lying with a physio ball
- Double leg squats with ball squeeze
- Core stability exercises (i.e. planks, physio ball exercises)
- Wobble board balance and weight shift activities
- Stationary Bike- increasing resistance and duration
- Swimming
- Elliptical Trainer/X-country ski machine

Requirements for Progression to Phase 4:

- Single leg squat with good motor control on an unstable surface to 70° flexion
- Ability to demonstrate good core control and posture in single leg stance activities
- Evidence of improvement in strength (hamstrings, hip abductors, hip extensors, hip rotator)

PHASE 4: Optimising Function

Begins as early as 4-6 weeks but may not start until 16 weeks postoperative. Depending on pre-operative knee function this phase may not be completed by all patients. Realistic goals of what is attainable should be discussed with your surgeon.

Goals

1. Maximize quadriceps, hamstrings, gluteal and core strength using functional exercises
2. Accurately perform plyometric drills
3. Training with sport specific drills
4. Increase aerobic endurance

COLD THERAPY & ELEVATION

Monitor and control swelling by using cold therapy and elevating your surgical leg as needed.

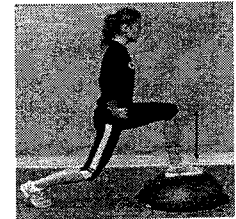
Exercises

1. Strengthening / Proprioception

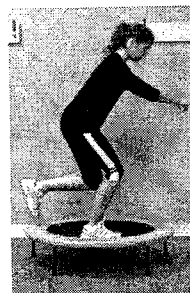
- **Squats on a BOSU** - Slowly squat with equal weight on each leg. Bend your knees from 0° to a maximum of 90° of flexion, making sure your knees do not move beyond your toes. Start with one set of 10 reps, holding each squat for 5 secs and increase the number of reps as your strength increases, up to 30 reps x 15 secs hold.



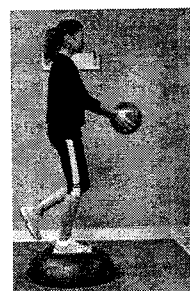
- **Lunges on a BOSU** – Step forward/back and lunge as shown. Control the descent ensuring your knee that is forward does not move beyond your toes. Start with 1 set of 10 reps, holding each lunge for 5 secs. Increase the number of reps as your strength increases up to 3 sets of 10.



- **Single leg squats on trampoline** - Standing on one leg, slowly squat bending your knee from 0° to a maximum of 90°, making sure your knee does not move beyond your toes. Start with one set of 10 reps, holding each squat for 5 secs and increase the number of reps as your strength increases, up to 30 reps x 15 secs hold.



- **Single leg stance with ball toss** - Standing on one leg on a BOSU or other unstable surface (ie. foam block), toss and catch a light ball against a wall. Start with 3 sets of 30 tosses and progress as strength increases.



2. **Cardio** – Maintain or improve aerobic fitness to complete ≥ four 30 minute workouts per week. Some ideas include walking, hiking, cycling, skating, swimming, cross country skiing, and/or using an elliptical.
3. **Plyometrics** - Depending on goals and surgery results, some patients may not complete this series of exercises) Patient must be able to perform a controlled single leg squat before commencing plyometric exercises.
 - **Agility jumping** – backward/forward/side to side/diagonal. Progress to single leg hop.

Agility jumping

Agility hopping

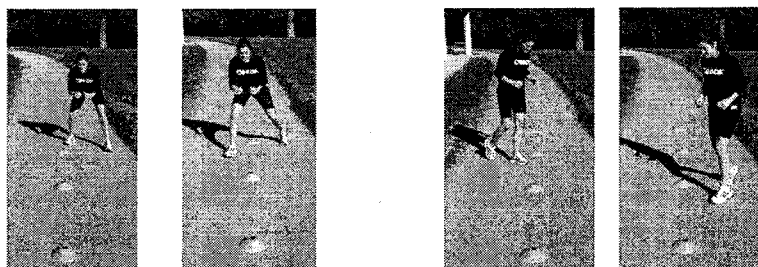


- **Straight line jumping activities** (shuttle jumps, standing long jumps).
- **Straight line hopping activities** (single leg hop for distance, timed single leg hop, single leg vertical hop, figure 8 hop).

- **Side to side steps on the BOSU** – Perform quick steps in both directions over BOSU. Start with 1 set of 10 steps in both directions and progress to 3 sets of 15 steps in both directions as your strength increases.



- **Jogging:** straight line activity → indoor track → treadmill (walk to run) → outdoor even ground → outdoor uneven ground/trails
- **Running:** shuttle runs, wide angle cutting, running and pivoting.



- **Sport specific drills:**

- Basketball:** Lay-up drills, defence drills, run-pivot-vertical jump, dodging drills
- Soccer:** dribble around cones, shooting drills, defence drills, tackling drills
- Football/rugby:** defence tackling drills, dodging/deking drills, running and throwing drills
- Hockey:** skating figures, stick handling drills, deking drills

Also consider:

- Skipping rope – double and single leg
- Cariocas
- Box hop up/down (start at 6 inches)
- Tuck jumps