



Banff Sport Medicine

BANFF SPORT MEDICINE  
Orthopaedic Surgeons

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## PRE-OPERATIVE INSTRUCTIONS

### PREPARING FOR SURGERY

#### 1 Month Before:

**If you are taking acne medication:** Research has shown that Accutane (Isotretinoin) which is used to treat acne can interfere with healing after orthopaedic surgery and may be a factor in tissue and graft stretching or failure. To ensure that your surgery is not cancelled ***please stop taking Accutane at least 1 month prior to your surgery date.*** You should not restart Accutane medication for at least 3 months after your surgery.

#### 2 Weeks Before:

**Stop taking:** Advil, Motrin, and Aspirin as well as all Herbal Supplements for ***10-14 days prior to your surgery date.*** This is important because these medications and supplements can increase your risk of bleeding.

#### 1 Week Before (approximately):

A nurse from the hospital will contact you approximately one week prior to your surgery date to give you information regarding your surgery.

#### Day/Night Before:

**CLEAR FLUIDS ONLY** (Gatorade, apple or cranberry juice, water - pulp free, clear) ***from Midnight (24:00) to 2hrs prior to arrival to hospital*** (4 hrs before surgery).

Do not shave your surgical site the day before or the day of your surgery.

You may brush your teeth and rinse your mouth but do not swallow any water.

### DAY OF SURGERY

- Date and time will be confirmed with you approximately 2 weeks before your surgery.
- Check-in at the Admitting Desk or Emergency Department of the hospital.
- If required for your surgery, please bring your own crutches to the hospital, clearly marked with your name. The hospital has a VERY limited supply of crutches for sale at this time. The hospital does carry braces for purchase if needed after your surgery.
- You **MUST** have someone drive you home from the hospital.

### AFTER YOUR SURGERY

- Your first Follow up Appointment details (if required) will be included in an email from our office which you will receive on or shortly after the day of your surgery.
- If you have any problems or complications after your surgery please refer to the Post-Op Concerns section included in your surgery package or refer to our website - <https://banffsportmed.ca/after-your-surgery/>.



## Pre-Operative Information

### Knee Arthroscopy

#### **What is a Knee Arthroscopy?**

Arthroscopy uses a very small camera to look inside a joint. The camera is inserted through a small incision and allows the surgeon to see all of the knee structures. As the surgeon moves the arthroscope around, magnified views are shown on a TV screen. The surgeon can then perform any necessary procedures inside the knee such as trimming or repairing a torn meniscus, performing a lateral release, micro-fracturing damaged bony (articular) cartilage, and cleaning up the joint spaces by removing floating particles of bone or cartilage.

#### **Diagnosis:**

- The surgeon will diagnose your knee injury by taking a detailed history of how it occurred and by completing a careful physical examination. The surgeon may also order x-rays to assist with making this diagnosis. Once the diagnosis is made the surgeon will discuss treatment options with you. Many different problems inside the knee joint can be treated via arthroscopy.
- MRI (magnetic resonance imaging) is only used when the diagnosis is still in question, the extent of damage is unclear, or to assess the amount of damage to other structures (e.g. other ligaments or bones).

#### **Why have a Knee Arthroscopy?**

- To decrease knee joint pain
- To prevent further episodes of knee catching or locking
- To complete other procedures inside the knee such as a lateral release, microfracture or meniscal repair

#### **Options other than Surgery**

- Your surgeon may recommend non-operative treatments such as physiotherapy, bracing, lifestyle modifications, injections or medications to treat your injury. Surgery is not usually recommended until after non-surgical treatments have been tried. Some conditions such as osteoarthritis may not benefit from knee arthroscopy.

#### **Surgery Timing**

- We recommended all patients stay as active as possible before surgery by following the pre-surgery rehabilitation program. This will allow you to improve or maintain range of knee motion, improve your strength and balance, and build your endurance by doing non-impact sports (biking, swimming, elliptical). Regaining strength, increasing movement in your knee, and maintaining your fitness will prepare you for surgery and will also help you to recover faster after surgery.
- If your knee symptoms improve significantly while you are preparing for surgery and you would like to discuss non-operative management of your knee problem please call the office (403 760 2897) to arrange a follow-up appointment before your surgery date.

#### **The Procedure**

- After an appropriate anaesthetic has been administered, your leg will be washed and covered with sterile drapes. A camera (arthroscope) is inserted into the knee joint through a small incision. The surgeon will then assess all the structures in your knee.

- Through a second small incision the surgeon can put other instruments into your knee to perform procedures such as trimming, cleaning up and repairing of meniscus or cartilage.
- Other procedures such as a lateral release, meniscal repair, or microfracturing can be done if the surgeon sees injuries that need these treatments .

### **RISKS OF SURGERY**

- *Risk of Infection: less than 1 in 100*
  - Intravenous antibiotics are given before and after surgery to help prevent infection.
  - If an infection occurs, it will usually happen within 5-7 days of your surgery. Some minor wound infections can be treated with a short course of oral antibiotics, whereas more severe wound or skin infections may require a longer course of intravenous antibiotics. In less than 1 in 400 cases, a deep infection can occur in the joint. In these cases, surgery is required to wash out the infection, followed by 4-6 weeks of intravenous antibiotics.
- *Risk of Clot in Leg Veins (deep vein thrombosis): less than 1 in 100*
  - If severe calf, ankle and foot swelling occurs 3 days to 2 weeks after surgery, you could have a clot in a deep vein of your leg (DVT). See a doctor as soon as possible. Treatment for a blood clot is usually blood-thinning medication (anticoagulants) for 3-6 months.
- *Risk of Clot in Lungs (pulmonary emboli): less than 1 in 500*
  - It is possible for a blood clot to travel to your lung; this is called a pulmonary embolism. If you suddenly get short of breath or have chest pain go to the nearest emergency room or call 911. A pulmonary embolism is a medical emergency and can cause death.
  - In certain patients with risk factors for a blood clot, preventive blood thinners will be prescribed for a short period of time after surgery
- *Risk of Skin Numbness around Incision: very common*
  - Every patient gets some numbness around their incision because some small surface nerves are cut during surgery
- *Risk of Persistent Swelling and Pain: less than 5 in 100*
  - In a small percentage of cases, persistent, non-localized pain and swelling develops after surgery; these symptoms may respond to anti-inflammatory medications, physiotherapy, cortisone or viscosupplementation injections
- *Risk of Failure to relieve symptoms: 5-10 in 100*
  - Depending on your injury, your symptoms may only be partially alleviated or not decreased at all following knee arthroscopy

### **Your Stay in Hospital**

- You are not allowed to have anything to eat or drink after midnight (24:00) before your surgery.
- If you have prescribed medications you need to take each day, the nurse from the Pre-Assessment Clinic will give you instructions before your surgery about if and when to take them.
- You will be admitted to the hospital on the day of your surgery. Your admission time will be approximately 3-hours before your actual surgery time. Report to the Front Desk of the Banff Mineral Springs Hospital, unless instructed otherwise. Your surgery will take ½-1 hour.
- Your total hospital stay will be approximately 4-6 hours. Please bring something to read or occupy yourself with while you are waiting. Make sure that your driver is aware of this time frame.

- The knee arthroscopy procedure is usually done with a local anaesthetic (with or without sedation), but spinal and general anaesthetic can also be used. Your anaesthetist will discuss these options with you on the day of surgery.
- You will be able to go home the same day as your surgery, as long as your pain is well controlled. If needed you may stay in hospital for 1 night after surgery.
- Please do not go to the dentist two weeks before, or up to six weeks after surgery, as this can increase your risk of infection after surgery.
- If you have insurance forms please bring them to our office on the day of, or before your surgery. This will ensure your forms are completed and posted back to you as efficiently as possible. Alberta Health Care does not cover the cost of completing insurance forms and a fee will be charged.

#### **Other Costs**

- Crutches are not usually necessary, but if needed they can be purchased at the Banff Mineral Springs Hospital. If you bring your own with you please make sure they are clearly labeled.
- Cold Therapy Unit - is used to help control pain and swelling after the surgery. This unit can be purchased from our office by ordering at least a week before your surgery. The order form is included in this package
- Brace - in the majority of cases a brace is not used after surgery unless other ligaments or tissues are repaired.

#### **Postoperative Pain Control**

- Rest, ice, compression, and elevation of your surgery leg
- Your surgeon will give you medication recommendations after surgery. You may be given a prescription for pain medication or recommended to take a pain relief medication such as Tylenol. You may also be told to take an anti-inflammatory medication along with your pain medication. If you have any questions about medication please ask your surgeon.

#### **Postoperative Wound Care**

- The nurses will check the dressing on your knee before you go home, and replace it if necessary. You should take this dressing and the bandage off four (4) days after your surgery. If the tensor bandage on your leg rolls-up or causes pressure in one area you should take it off and have someone reapply it for you.
- You may shower four (4) days after surgery and should dry your incisions gently with a clean towel. You can peel the steri-strips off 2-weeks after your surgery. Due to the risk of infection, do not fully immerse the incisions in bath water for 2-3 weeks after your surgery and do not enter a swimming pool or hot tub for at least 3-weeks after surgery.
- With local anaesthetic it is common to have some redness around your incisions; if you are feeling well and your knee is improving, you probably do not have an infection.
- **If you have concerns please call our office at 403-760-2897 during business hours. Of an evening or weekend please call the Banff Mineral Springs Hospital at 403-762-2222.**

#### **Discharge from Hospital**

- You will be discharged from hospital shortly after your surgery. The amount of time you have to wait before discharge will depend on the type of anaesthetic you received.
- Ensure you have your prescriptions for pain medication, anti-inflammatory medication and if required, physiotherapy before you leave the hospital
- You must have someone to drive you home
- Your surgeon will recommend that you spend most of the first 2-3 days after surgery at home. You should rest with your surgery leg elevated and regularly use ice or cold therapy to decrease swelling and help manage any pain.
- Please discuss any travel plans with your surgeon because long trips can increase the risk of blood clots

**Follow-up Visits with Dr. Heard/ Buchko/ Hiemstra**

- For a simple knee arthroscopy, follow-up appointments are usually not needed
- Contact your orthopaedic surgeon if you are experiencing ongoing problems (i.e. if your knee does not feel better than it did pre-operatively after 6-8 weeks).

**Recovery Time**

- For simple knee arthroscopy including trimming of meniscus = 6-8 weeks
- For debridement of osteoarthritis = 6-12 weeks, and sometimes longer
- For meniscal repairs = 3-6 months
- For microfracture of bony cartilage = 3-6 months

**Physiotherapy**

- After a simple knee arthroscopy, there are no restrictions in your activity level; pain and swelling will be your guide (unless otherwise specified by your surgeon). You may see a physiotherapist if you require assistance with your rehabilitation, but this is not required unless prescribed by your surgeon. If you have had a more complex procedure during your scope, please discuss your rehabilitation with your surgeon. Examples of these include: lateral release, meniscal repair, micro-fracture, manipulation.

**Return to Sport**

- As a general rule, you may start using low impact exercise equipment such as a stationary bike or elliptical trainer 1-2 weeks post-operatively if your knee is not too sore or swollen. Slowly progress exercises by following the post-operative rehabilitation protocol for knee arthroscopy.



# Pre - Operative Rehabilitation Program for Knee Arthroscopy

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

## **THE KNEE ARTHROSCOPY PROCEDURE:**

Arthroscopy is the visual inspection of a joint with a camera. After a local anesthetic is injected into your knee, a camera (arthroscope) is inserted into the joint space through a small incision. As the doctor moves the arthroscope around, magnified views are shown on a monitor. Through another small incision the surgeon can perform procedures in the knee such as trimming, cleaning up and repairing of meniscus or cartilage.

## **THE IMPORTANCE OF PRE-SURGERY EXERCISES:**

The surgeons at Banff Sport Medicine recommend an exercise program or 'pre-habilitation' before surgery. Regaining the strength and movement in your knee before surgery will improve your recovery after arthroscopic surgery. Muscles play a very important role in knee stabilization and they react to the amount of stress placed on them. With a decreased amount of stress (e.g. immobilization, instability, decreased weight-bearing), the muscles weaken and atrophy (waste away). For this reason, the exercises in this program are extremely important to help you to prepare for surgery.

This exercise program has several important benefits:

- Return range of motion to normal and decrease the risk of post-operative stiffness
- Increase muscle strength in your legs and core
- Improve balance
- Maintain fitness in preparation for surgery
- Decrease the time to full recovery after surgery
- Decrease the risk of post-operative complications such as deep vein thrombosis

The following exercise program is a guideline. Other exercises that strengthen the same muscle groups can be substituted or added if desired. Some exercises may cause pain or flare up your knee; if this happens the exercise should be avoided and an easier exercise included instead. These exercises range in difficulty from easiest to more challenging and you should slowly build up your number of repetitions and progress to the more difficult exercises over 6-8 weeks. All exercises should be completed with control and proper form.

## **EXERCISES:**

- Ideally, some form of exercise should be performed each day
- 20-30 minutes of cardio exercises **at least** 3 times and ideally 5 times per week. These should be low-impact, straight-line activities, i.e. elliptical trainer, cross-country skiing, biking, swimming, walking, hiking or skating
- 15-20 minutes of strengthening exercises 3-5 times/week (please see below for some recommended exercises)

**IMPORTANT:** If you have increased knee pain or swelling after these exercises please use rest, ice, compression and elevation, and see your physiotherapist.

## 1. Strengthening Exercises:

☐ **Quadriceps Contraction** - In sitting with your knee straight and leg supported, tighten the thigh muscle to hold the knee straight. Avoid lifting your leg from the hip. Perform 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. The use of EMS is recommended for this exercise.



☐ **Straight Leg Raises** - In the position shown, tighten your thigh muscle while keeping your knee straight and lift your leg 3-5 cm. Perform exercise 5 -10 times holding each contraction for 5 secs. Progress to 30 times, holding each contraction for 5-10 secs. The use of EMS is recommended for this exercise.



☐ **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 seconds. Progress to 30 times, holding each contraction for 10-15 secs, resting for 5 secs between 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, 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.





□ **Calf Raises - Single leg:** Start on one leg with toes pointed straight ahead, and raise up onto your toes. Start with one set of 10, 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



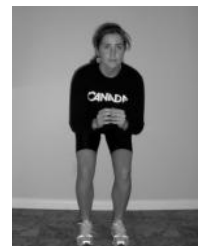
□ **Gluteals** - In lying with your knees bent and your arms by your sides, squeeze your buttocks and lift up to create a bridge. Keep equal weight on each leg and straight alignment from your shoulders to your knees. Be careful not to push down on your neck or shoulders – use your buttocks to do the work. Start with one set of 10, holding each lift for 5 secs. Increase the number of reps as your strength increases. Once you can complete 20 reps holding for 10 sec each, change to single leg bridges.



□ **Hamstrings** - In sitting, place a resistance band around your ankle and also have it attached to a chair or table leg in front of you. Bend your knee backwards slowly against the resistance of the band using the muscles under your thigh. Start with 1 set of 10 reps and increase to 3 sets of 15 reps.



□ **Squats (Quadriceps)** - 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, holding each squat for 5 secs and increase the number of reps as your strength increases, up to 30 reps x 15 secs hold. EMS can be used with this exercise with the 'contraction' time at least double the 'rest' time.



□ **Single leg squats** - 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, holding each squat for 5 secs and increase the number of reps as your strength increases, up to 30 reps x 15 secs hold.



## 2. Balance and Proprioception Exercises:

- ☐ **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)



- ☐ **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, holding each squat for 5 secs and increase the number of reps as your strength increases, up to 30 reps x 15 secs hold.



- ☐ **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, 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, holding each lunge for 5 secs. Increase the number of reps as your strength increases up to 3 sets of 10.



### 3. Stretching Exercises:

☐ **Calf Stretch** - Standing in front of a wall in the position shown. Lean forward until you feel a stretch in your calf. Hold each stretch for at least 30 seconds and repeat 4 times. Do exercise with back leg straight and again with back leg slightly bent.

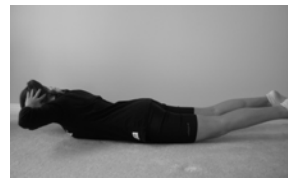
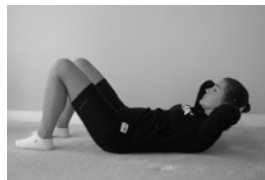


☐ **Hamstring Stretch** - In lying, place a towel or belt around your foot and bring your leg up until a stretch is felt at the back of the thigh. Hold each stretch for at least 30 seconds and repeat 4 times.



### 4. Core Strengthening Exercises:

☐ **Abdominal and core** - some exercise ideas include planks, crunches, extensions and also bridging with **legs** on physio ball and bridging with **back** on physio ball.



The page is decorated with several stylized, light brown maple leaves scattered across the background. There are five leaves in total, positioned at various angles and sizes, creating a subtle pattern around the central text.

# 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



**Covenant Health**  
Banff Mineral Springs

May 2012



**Banff Sport Medicine**

# 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

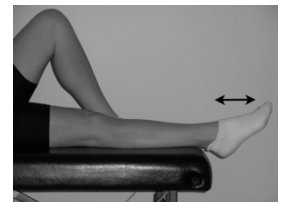
A Cold Therapy Unit or an ice pack should be applied immediately after surgery and used for at least 20 minutes every other hour while you are awake. Your operative leg should be elevated with the knee straight when applying cold therapy and/or when resting.



## Exercises:

### 1. Ankle pumps

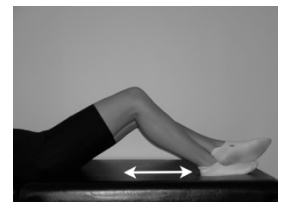
- The foot and ankle should be actively “pumped” up and down 10-20 times every hour to promote circulation and decrease swelling.



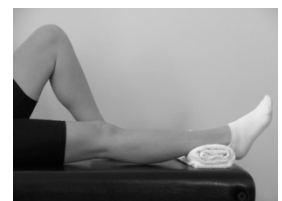
### 2. Range of Motion

- **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.

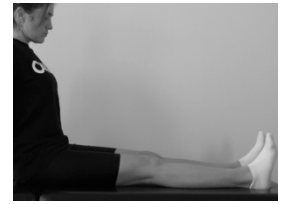


- **Extension** - In lying, place a roll beneath your ankle to passively (i.e. allow gravity) stretch your knee into extension. Start with 2 minutes at a time and increase as tolerated up to 5 minutes. Perform 2 or 3 times daily. It is very important in this phase to work on straightening your knee.



### 3. Strengthening

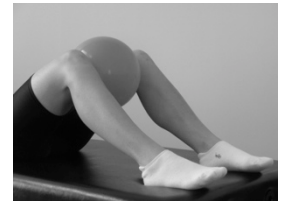
- **Quadriceps Contraction** – In sitting with your knee straight and leg supported, tighten your thigh muscle by pushing your leg downwards. Focus on tightening the muscle and avoid lifting your leg from the hip. Perform exercise 5 -10 times holding each contraction for 5 secs. Progress to 30 times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

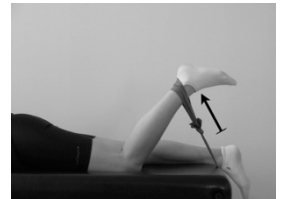
### Exercises:

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

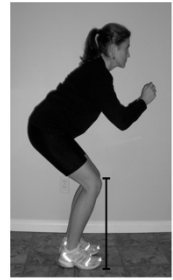
1. **Range of motion** - Progress flexion using active, active-assisted and pain-free passive exercises.  
**IMPORTANT:** if you had a Meniscal Repair you **should not** force flexion (bending) in the first 12 weeks.

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

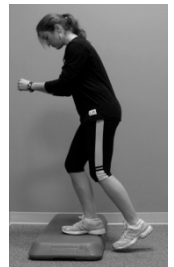
Manage any swelling by continuing to use cold therapy and elevation, especially after exercise or physiotherapy sessions.

### Exercises:

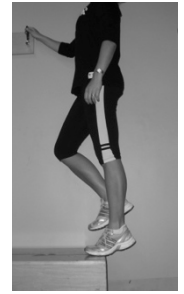
1. **Range of motion:** should be full at this stage unless you had a meniscal repair, in which case it may take up to 12-16 weeks before you gain full range of knee flexion.

2. **Strengthening**

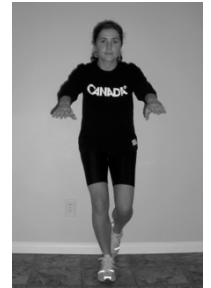
- **Step ups** – Do graduated heights, starting at 4" and increasing to 8". Stand in front of a stair or stepping stool and place one foot on the step in front of you. Rise up onto the step by shifting all of your weight onto this leg and tighten your quadriceps muscles. Put all of your weight through 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.



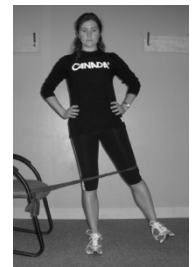
- **Single leg Calf Raises** – Start on one leg with toes pointed straight ahead, and raise up onto your toes. Start with one set of 10 reps, holding each raise for 5 secs. Increase the number of reps up to 30 with 5 secs hold. Start by using support at a wall or table and progress to no support as able.



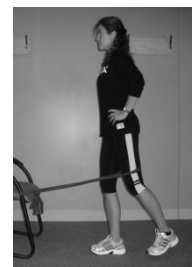
- **Single leg Squats** - Initially use a chair or railing for support. Stand on one leg and slowly bend your knee to squat. Bend as far as you can while keeping control. Start with one set of 10, holding the squat for 5 secs; increase the number of repetitions as you get stronger. Work up to performing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



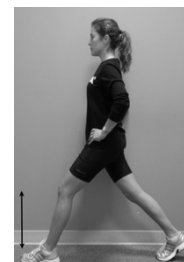
- **Hip Abduction** – With a resistance band around your outside thigh just above your knee, lift your leg to place slight tension on the band. Move this leg sideways slowly against the resistance of the band using the muscles in your buttock and your hip. Start with 1 set of 10 reps and increase to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

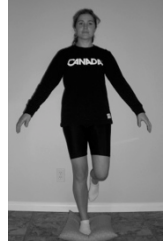


- **Lunges** – Standing with feet as pictured, move down and lunge as shown. Control the descent ensuring your knee that is forward does not move beyond your toes. Start with 1 set of 10, holding each lunge for 5 secs. Increase the number of reps as your strength increases up to 3 sets of 10.



### 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

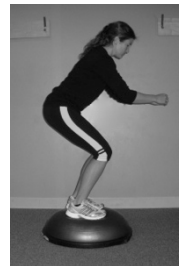
### COLD THERAPY & ELEVATION

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  $0^{\circ}$  to a maximum of  $90^{\circ}$  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



**Banff Sport Medicine**

**BANFF SPORT MEDICINE**  
**Orthopaedic Surgeons**

[banffsportmed.ca](http://banffsportmed.ca)

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## Opioid Medication: Pain Control after Surgery

### What are my options for safe and effective pain control?

Managing your pain after surgery is important. Combination therapy (using different medications together) along with education can offer the best pain relief. Some of these medications work via different pathways and can be used together. After surgery a moderate amount of pain is a normal and expected part of the process. Pain medications help you function better and cope with the amount of pain you are experiencing, but **these medications will not eliminate your pain entirely.**

Talk to your surgeon about medication options, which can include both prescription strength and over the counter drugs. These medications include:

- **Non-steroidal Anti-inflammatory Drugs (NSAIDs)** can be used to decrease swelling and fever, and to treat mild to moderate pain. (These can be prescription or over-the-counter medications, such as Naprosyn, naproxen: *Aleve*, ibuprofen: *Advil*, *Motrin*).
- **Acetaminophen** is used to decrease mild to moderate pain and fever. (These are over-the-counter medications such as Tylenol or Paracetamol).
- **Local anesthetics** which can be injected near a set of nerves (nerve block) or the surgery wound site. (This option is performed immediately after your surgery at the hospital).
- **Opioids** are used to decrease severe pain. (These are prescription medications such as Morphine, Tramacet, Percocet, OxyContin, Vicodin or Tylenol #3 which contains codeine).
- **Nerve pain medication** used to prevent nerve pain and irritation. (These are prescription medications such as Lyrica and Neurontin).

### When should I take pain medication?

The goal is to keep you moving and control your pain. In general, the most painful time is the first 72 hours (3 days) after surgery. The amount of pain usually decreases after these first few days. If your pain increases or does not decrease with medication you should contact your surgeon. Call our office at 403-760-2897 (during regular business hours 8am-4pm Monday to Friday), or the Banff Mineral Springs Hospital at 403-762-2222 (outside of business hours).

Some medication is taken on a schedule (for example, every 4-6 hours) and other medications can be taken when you feel pain. Here is a useful guide:

- I am moving slowly and either have no pain or only a little pain = I don't need any medication.
- I am feeling some pain and having trouble moving around = I could use some over-the-counter medication. (For example ibuprofen: *Advil/Motrin* or acetaminophen: *Tylenol*).
- I am thinking about my pain all the time and it is painful for me to move = I should take some stronger medication. (For example a prescription medication such as Morphine, Percocet or Tramacet).

It usually takes 25-40 minutes for the medications to start working effectively so you should take your medication before your pain becomes severe or you are unable to move because of the pain.

### Are there ways to reduce my pain besides medication?

**Yes!** You can do a number of things to help decrease your pain (*continued on next page*)

- Use ice packs or cold therapy to decrease swelling and pain.
- Rest for the majority of time for the first few days after surgery.



- Elevate and support your surgical limb as shown on your rehabilitation exercise protocol.
- Keep moving after the first few days, without over doing it.
- Distraction such as watching movies, listening to music, playing games, or talking to friends and family, has been shown to help reduce pain after surgery.

## Why are opioids used?

Opioids are strong medications and when used properly, they can help to relieve short-term pain like the pain experienced after surgery. When opioids are used improperly, they can cause dependence or addiction, overdose and death.

## How to use your prescribed opioid medication.

**If you have been prescribed an opioid medication, such as Percocet or Tramacet, it should:**

- **Only** be taken as prescribed
- **Never** be used by someone for whom it was not prescribed
- **Never** be taken with alcohol or other medications (except as prescribed).
- **Never** to be used while driving or operating machinery

**Keep your medication safe to help prevent use by others by:**

- **Never** sharing your medication with anyone else. (Sharing opioid medication is illegal and may also cause serious harm or death to the other person).
- **Keeping track** of the number of pills remaining in the package
- **Storing** opioids in a safe and secure place, out of the reach of children and teenagers

**Unused portions of opioid medicine should always be:**

- Kept out of sight of children and pets
- Stored in a safe place to prevent theft, problematic use or accidental exposure
- **Returned to the pharmacy** for safe disposal when no longer needed or expired. Medications should never be thrown in the trash or flushed down the toilet.
- This will prevent the possibility of illegal use and protect the environment from contamination.

## Opioid Side Effects

Short-term side effects	Long-term side effects
Drowsiness	Increased tolerance
Decreased reaction time, which can impair driving and decision-making	Substance use disorder or dependence (addiction)
Constipation	Liver damage
Impotence in men	Infertility in women
Nausea and vomiting	Worsening pain
Difficulty breathing, which can lead to or worsen sleep apnea	Life-threatening withdrawal symptoms in babies born to mothers taking opioids
Euphoria (feeling high)	Overdose
Headaches, dizziness and confusion, which can lead to falls or fractures	

**Anyone who takes prescription opioids can become addicted.**

If you take opioid medications for more than a few weeks, your body becomes used to that dose. This physical dependence means you may experience withdrawal symptoms if you stop taking the drug.

**Withdrawal symptoms include:** insomnia, anxiety, racing heartbeat, and headaches. Withdrawal symptoms can be managed by gradually decreasing your medication dose with advice from a health care provider.

**Signs of opioid overdose include small pupils, trouble breathing and unconsciousness.  
Call 911 immediately if you think you or a family member took too much pain medication.**





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## Post-Operative Concerns

Contact us if you have any concerns after your surgery

*For Surgery performed at Banff Mineral Springs Hospital (Banff)*

- ✓ During regular business hours - 8 am to 4 pm, Monday to Friday (closed Statutory Holidays):

403-760-2897 Ext 1

*Note: Call our office and **not** the hospital. If you get a voice mail response, please leave a detailed message, our office staff will call you back as soon as they are able.*

- ✓ Weekends and after regular hours:

If you have any urgent concerns **after** regular business hours that cannot wait please call the Mineral Springs Hospital at 403-762-2222 and ask for Acute Care.

- ✓ Anytime:

Health Link (811) will connect you to a nurse 24hrs a day who is able to give advice.

*For surgery performed at other locations:*

- ✓ Golden and District General Hospital (Golden): 250-344-5271
- ✓ Hinton Healthcare Centre (Hinton): 780-817-5019
- ✓ Elk Valley Hospital (Ferne): 250-423-4453

## Common Concerns

1. **Uncontrolled pain**, if the prescribed painkiller (Tylenol #3, Tramacet or Percocet) is not controlling your pain, you may also take ibuprofen (Advil or Motrin) up to 600 mg every 6 hours in addition to the prescribed medication. Try not to take ibuprofen on an empty stomach. However, if you have already been prescribed Naproxen (Naprosyn), do not take ibuprofen at the same time. Other actions such as loosening the tensor bandage, elevating the leg and ice packs can also help.
2. **Calf, foot and ankle pain and swelling** within the first 2 weeks after knee surgery is common. If you have calf pain and swelling you should loosen the tensor bandage around your knee and also elevate your leg so that your knee and ankle are above your heart. (Please see the Cold Therapy and Elevation picture on the first page of your rehabilitation protocol). If this does not improve the pain and swelling, please contact us. *If the pain and swelling is associated with sudden chest pain and/or shortness of breath immediately go to the nearest emergency department.*
3. **Swelling and redness of the shin** after ACL or other knee ligament surgery is not uncommon. Contact us only if the redness extends into the surgical incision sites or if there is persistent drainage of fluid (yellowish or cloudy fluid) after removing your bandage at the recommended time.

4. **Skin redness above or below the bandages**, when you get home from the hospital, you may notice that the skin is red above or below the bandage. The most likely cause of this is the surgical preparation solution that was used to clean your skin before the operation. This solution has a red dye in it so if you are concerned that the redness may be caused by an infection, try washing that area with soap and water to see if it comes off. If your leg is still red and/or hot to touch after you have washed the area, then you should go to your local doctor or hospital to be assessed.
5. A **fever** is not uncommon within the first 48 hours after surgery. Call us only if the fever continues more than 2 days after surgery and is associated with a feeling of general unwellness. Fevers occurring within the first 48 hours post-operatively can be managed with Tylenol and deep breathing exercises.
6. A small amount of **bleeding** through the bandage can occur within the first 48 hours after surgery. Call the office or hospital if the bandage becomes saturated with blood, or if bleeding continues after removing the bandage at the recommended time.
7. **Swelling of the hand** is common after shoulder and elbow surgery. This swelling can be prevented or reduced by frequent pumping of the fingers (or squeezing a rubber or foam ball) and by taking your arm out of the sling and fully straightening your elbow (as when doing a pendulum exercise).
8. For post-operative **nausea and vomiting** if you can tolerate the pain, try stopping your prescribed painkiller, or take gravol (can be purchased over the counter in pill and suppository form). Sometimes taking the painkiller with food will help. Call us if you have uncontrolled vomiting.
9. Occasionally, an itchy, red, blotchy **skin rash** can occur with the use of ice packs or a cold therapy unit. This is not an infection but is a skin reaction to the cold. This can happen when cold is used for long periods of time, even when a cloth is used to protect the skin. If this happens, stop using the cold therapy until the rash settles down (this may take hours or even a day or two). When you start using cold therapy again, apply it intermittently (20 minutes on, then 20 minutes off).
10. After ACL surgery using your **hamstring tendons**, it is not uncommon to strain or pull the hamstring muscle in the first 6-weeks after surgery. This may occur while pulling on your socks or shoes, or bending over to pick something up. You may feel a sudden painful “pop” in the back of your knee or lower thigh. This does not mean that you have torn your ACL graft and the pain will settle down within a few days. You may also notice some bruising or swelling at the back of your thigh. However, if the pain is not improving after a few days, or is associated with a significant increase in knee swelling, please call our office and not the hospital, as this concern can wait until regular office hours.
11. When you remove your bandage for the first time, you may notice a clear string that looks like fishing line sticking out of the skin near the incision(s). This is a **biodegradable stitch or suture** that is used to close the skin incision. It will eventually fall off. However, you may snip these clear strings off at the level of the skin as early as 2 weeks after surgery, or you can wait to have this done by your surgeon at your first follow-up appointment. After removing your bandage, avoid the temptation to touch your healing incisions as your own hands are the most common source of bacteria which can cause wound infections.
12. **Steri-strips** are white strips of tape that are used to reinforce the stitching of the skin incisions. You may peel these strips of tape off by yourself 2-weeks after surgery, by which time the incision should be healed.