

# ACL Reconstruction: A Guide to Recovery After Surgery

## General Information about the ACL & ACL Tears

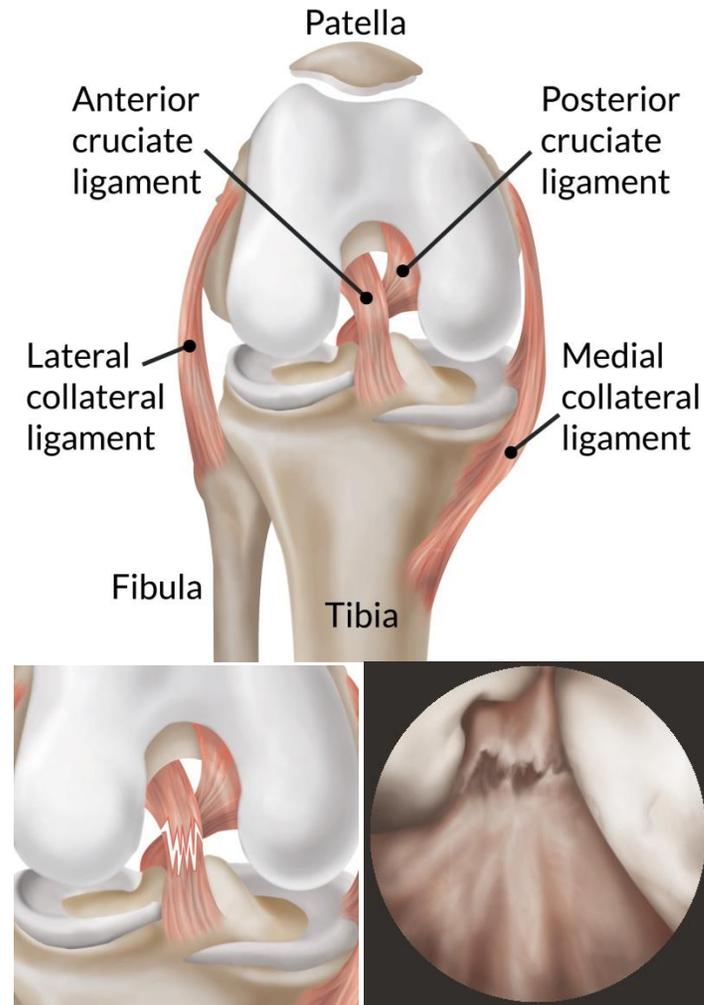
### What is the ACL?

The Anterior Cruciate Ligament or ACL is a large ligament deep in the knee joint. The ACL is like a thick rope that helps keep the thigh bone 'femur' connected to the shin bone 'tibia'. The ACL can be torn in different ways, most commonly during a sudden change in direction or awkward landing that puts the ACL under too much stress. Many patients hurt other parts of their knee, like the cartilage or meniscus (cartilage cushion) when they tear their ACL.

### How to you treat a torn ACL?

A completely torn ACL cannot be repaired. Your surgeon may recommend reconstructing your ACL if you have symptoms like the

*knee buckling or feeling like you can't trust the knee.*



**What happens during ACL reconstructive surgery?**

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*During the surgery, a lighted telescopic lens called an arthroscope is inserted directly into the knee joint to confirm that the ACL is torn and look for other injuries to the joint. Several small incisions or cuts are made in the skin. These cuts are used to insert the arthroscope and surgical instruments into the knee. If there is damage to other parts of the knee like the meniscus (the cartilage bumper), your surgeon will treat that at the same time.*

*Most ACL reconstructions are done by using a graft or 'donor' tendon from your body. A new ACL will then grow along the graft. Most commonly, two of the hamstring tendons from the back of the thigh are used as a graft. The hamstring tendons are harvested or removed from a small cut around the knee. Other graft options include the patellar tendon or an allograft - a tendon donated by another person. Your surgeon will discuss with you what type of graft is recommended.*

*ACL reconstruction is performed in the operating room. Most commonly, general anesthesia ('going to sleep') is used. The surgery usually takes around 60-90 min. ACL surgery is 'day care' surgery meaning you will go home on the same day of the surgery.*

### **How will my knee recover after ACL reconstruction?**

*Recovery from ACL reconstruction is a slow and gradual process. During the first few months after surgery, you will focus on getting over the pain and swelling of the operation and making sure that the knee gets all of its movement back. The next few months will focus on getting the leg stronger -but in a safe way to protect your ACL reconstruction. Returning to activities before the knee is ready will cause the new ACL to tear and the reconstruction will fail.*

*Returning to pivoting sports takes at least 6-9 months.*

*Around 80-90% of people are able to return to all the sports and activities that they were doing before their ACL injury. There is a risk of developing osteoarthritis ('thinning of the cartilage') in the knee after tearing the ACL. This is often related to other injuries in the knee, such as cartilage tears.*

*Around 5-8% of people who have their ACL reconstructed will go on to tear that same ACL again. Around 5% of people who tear their ACL will go on to tear their other ACL.*

### **Information for Recovering after ACL Reconstructive Surgery**

#### **Going Home after Surgery:**

- You will need to have someone take you home after surgery, even if you are taking a taxi

#### **Bathing:**

- Keep your dressings dry until your follow up appointment at 10-14 days after surgery.
- Cleanse around the area or use a plastic bag sealed with duct tape to keep the dressings dry.
- If the dressings get wet, change them
- You may bathe 2 weeks after surgery, if the wound is healed and dry

#### **Care of your Incision & Wound:**

- Please do not change your dressing unless it gets wet or soiled
- Leave dressings clean, dry and covered until your follow up appointment 10-14 days after surgery
- If there is a bulky dressing, you can remove the bulky dressing 2-3 days after surgery and leave a simple dressing like a 'mepore' on the wound

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- The tensor band should be snug but not too tight. If the tensor is applied too tight (causes tingling or change in skin colour), loosen and reapply
- If the tensor is too loose, take it off and re-wrap it snugly, starting below the knee and working up

### How to change your dressings if they become soiled or wet:

- Wash your hands with soap & water before you take care of your wound
- Remove tensor bandage
- Throw out the white gauze bandages—the dressings will be stained with blood - and remove the white mepore dressings.
- Do not remove the Steri-Strips- small tapes that are right on top of the wound. They will fall off themselves.
- Cover wounds with new dressing. Apply new 'mepore' or waterproof 'aquacell' dressing.
- You can use bandaids to cover the small (1-2 cm) wounds
- Buy 'mepore' dressings at pharmacy. You must apply a new mepore dressing after each shower.
- Buy waterproof 'aquacell' dressing at One Bracing @ Rebalance<sup>MD</sup>. You may shower with the aquacell dressing on.
- After you change your dressing, put the tensor back on starting to wrap the leg below the knee and then work your way up.
- The tensor band should be snug but not too tight. If the tensor is applied too tight (causes tingling or change in skin colour), loosen and reapply
- If the tensor is too loose, take it off and re-wrap it snugly

### Weight bearing:

- Most patients are allowed to put their weight on their leg right after surgery but will want to use to crutches for around 2-3 weeks
- As the pain gets better, you will start to put more weight through the leg and slowly get rid of the crutches
- Some patients will want to use crutches for around 2 weeks and others for up to 6 weeks
- In some cases, if there has been another repair such as a cartilage repair, your surgeon may tell you not to put weight on your leg

### Activity & Physiotherapy:

- Focus on resting for the first week after surgery
- Slowly restart your regular activities
- Physiotherapy exercises should be started within a few days of surgery
- A physiotherapy or rehabilitation protocol is at the end of this guide
- Give the physiotherapy protocol to your physiotherapist
- Most patients should see a physiotherapist for the first time within 1-2 weeks of surgery
- A physiotherapist can help you reduce some of the pain and swelling from the surgery
- Expect to attend physiotherapy around every 1-2 weeks for the first 3 months after surgery

### Pain:

- Discomfort will be moderate and may occasionally be severe for the first few days and will gradually get better
- Use pain medications as instructed by your surgeon

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- In the first day or two after the surgery, it is better to take pain medication regularly e.g. every 4-6 hours, rather than wait until the pain is bad.
- Usually a strong narcotic and an anti-inflammatory are prescribed
- Gradually reduce pain medications as your pain decreases

### **Swelling & Bruising:**

- Expect swelling & bruising for a few weeks following the surgery. This is due to inflammation and fluid that was introduced into the knee during surgery
- It is common for the swelling and bruising to go down to the toes and even up into the thigh
- There can often be quite a lot of swelling.
- It is common to have more swelling after the surgery than when the ACL was torn.
- To reduce swelling:
  - elevate the leg on pillows
  - avoid keeping the foot down for the first few days after surgery
  - wrap your leg with a snug tensor bandage, starting at the toes and working your way up above the knee to the middle of the thigh

### **Numbness:**

- Most patients will have some numbness around their incisions after an ACL reconstruction.
- There is often numbness over the front of the shin or the outside of the leg
- Usually this numbness gets better and becomes a smaller patch of numbness, but this takes many months
- Most patients do not find this bothersome in the long term

### **Icing:**

- Apply ice packs or use a CryoTherapy 'Ice Machine' to reduce pain and swelling
- Apply ice for 15-20 minutes, every 2-3 hours while awake or 4-6 times per day
- Do not apply ice directly to skin

### **Return to Work:**

- When you are able to return to work depends on:
  - the kind of job you have and its physical demands
  - how much pain & swelling you have after surgery
  - how your physiotherapy is progressing
  - if you are able to modify your job or work from home
- Your surgeon will help you decide when to return to work
- Expect to take off at least 4-6 weeks for a desk job that does not require much walking
- Expect to take off 3-6 months for more physically demanding work

### **Healthy Eating:**

- Start with clear fluids after surgery
- Gradually increase to a well balanced diet as your appetite allows
- Drink at least 6 cups of fluids daily

### **Going to the Bathroom:**

- Changes in medications, activity and diet can cause constipation (hard, dry bowel movements)
- To avoid constipation: drink lots of fluids, eat high fibre foods such as prunes, fruits, bran, whole grains and vegetables

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- Take a stool softener or laxative if needed. Ask your doctor or pharmacist to suggest one.

### Smoking:

- Smoking causes problems with the healing of bones and tissues
- Not smoking or smoking less for 2 months before surgery and for 3-6 months after surgery will reduce the chance of a problem with healing
- visit [www.quitnow.ca](http://www.quitnow.ca) for information about tools and medications to help you quit smoking

### Driving:

- Do not drive while taking narcotic pain medications.
- Discuss with your doctor when it is safe to drive
- If your right leg was operated on or if you drive a manual car, you may not be safe to drive for around 1-2 months
- If your left leg was operated on, you may be able to drive an automatic car around 2-3 weeks after surgery
- You must be able to walk confidently without crutches in order to safely drive with your right leg
- If your ability to safely drive (e.g swerve sharply, perform an emergency stop) is impaired, your insurance may not be valid in the case of an accident

### Your Medications:

- Resume your regular medications unless instructed otherwise by your doctor
- Oral contraceptive Pills (Birth Control Pills) should not be taken for 1 month before surgery and 1 month after the surgery because of the risk of blood clot. Use a different method of birth control.

### Supplies/special equipment:

- **Crutches:** are required and can be obtained from a medical supply store, some pharmacies or One Bracing @ Rebalance<sup>MD</sup>
- **Cryotherapy "Ice Machines":** are an alternative to ice packs. They can be extremely helpful to reduce pain and swelling. These can be bought at One Bracing @ Rebalance<sup>MD</sup> or other medical supply stores such as McGill & Orme, Island Orthotics and others.
- **Knee Compression Sleeve:** a compression sleeve such as the Bauerfeind GenuTrain may help to control swelling and pain during recovery. This type of brace can also be worn when returning to sport. These can be bought at One Bracing @ Rebalance<sup>MD</sup> or other medical supply stores such as McGill & Orme, Island Orthotics and others.
- **Compression Socks:** an above the knee compression sock can help to control swelling in the foot and leg after surgery. This may be more comfortable than using a tensor bandage. 15-30 mm Hg compression is suggested. These can be bought at One Bracing @ Rebalance<sup>MD</sup> or other medical supply stores such as McGill & Orme, Island Orthotics and others.
- **ACL Stabilizing Brace:** Not all patients need an ACL stabilizing brace. This should be discussed with your surgeon and the decision to use a brace based around your needs. Patients do not need an ACL brace immediately after surgery. Some patients who are returning to pivoting and cutting sports may decide to wear a brace for the first 6-12 months

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after they return to sport. This may provide some extra protection to the ACL reconstruction but a simple compression sleeve may work just as well.

Patients who have had more than one ACL injury, often feel more secure if they wear an ACL stabilizing brace during sports for a prolonged period of time.

### **Follow Up Appointment:**

- A post-operative appointment should be scheduled for approximately 10-14 days after surgery
- Call the office if you do not have an appointment scheduled
- Write down your questions for the doctor before the appointment

### **Call your Surgeon if you have:**

- Worsening pain or swelling that does not get better with rest, elevating the leg, loosening the tensor bandage and icing
- Incisions that are red, puffy, hot or leaking fluid more than 72 hrs after surgery
- Fever greater than 38.5°C
- Signs of circulation problems in your leg (e.g coolness, change in skin colour, numbness that is getting worse) which is not relieved by loosening the tensor and elevating the leg
- Irritation or blisters from your dressings, Steri-Strips or tape
- Nausea and vomiting that continues for hours
- Difficulty passing urine
- Signs of a blood clot like worsening leg swelling and trouble breathing or pain in your chest that is unusual for you

### **If you cannot reach your Surgeon:**

- Call your family doctor, go to a walk-in clinic or hospital emergency department

### **Non-emergency health information and services:**

- HealthLinkBC [www.healthlinkBC.ca](http://www.healthlinkBC.ca)
- Tel: 811 from anywhere in BC
- Tel: 711 for deaf and hearing impaired assistance (TTY)

*The information in this handout is intended only for the person it was given to by the health care team. It does not replace the advice or direction given to you by your doctor.*

### **Physiotherapy Protocol for ACL Reconstruction Follows Below**

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## Physiotherapy Protocol for ACL Reconstruction:

Please read and follow the instructions in this protocol to guide your activity and rehabilitation exercises after surgery.

This protocol should be given to your physiotherapist to guide a safe recovery.

The recovery is gradual to reduce the risk of the ACL reconstruction failing

## Weeks 1-2 After Surgery

### Goals:

1. Protect reconstruction
2. Ensure wound healing
3. Maintain full knee extension (straightening)
4. Gain knee flexion (bending) to near 90 degrees
5. Promote quadriceps muscle strength

### Activities:

#### Walking with Crutches:

You may put as much weight on your operated leg as possible, with crutches used for support until you are confident in the operated knee's ability. If you have a splint or brace, wear it when walking. Crutches can be used to improve balance and should be used when walking outside, or in crowded environments. Crutches are not necessary while at home. Practice walking without crutches in an empty room, aiming for a heel to toe walking pattern.

#### Icing:

Apply ice packs or use a Cryo Therapy "Ice Machine" five times daily for 20-minute periods each. Do this for the first week.

#### Wound Care:

Follow the instructions in this guide for how to take care of your wound.

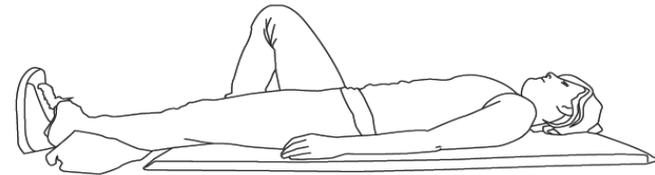
#### Knee Range of Motion Exercises:

The following exercises will develop the range of motion of the knee, from full-flexion (0 degree) to 90 degree flexion, while enhancing stability.

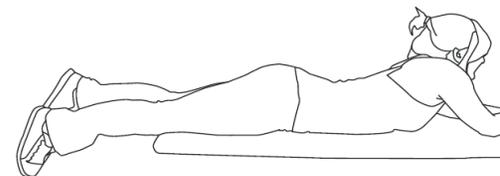
##### 1. Passive Knee Extension Stretch:

Do the following exercises five times per day, for 10 minutes each, for the first two weeks following the surgery:

Elevate the heel on a rolled towel. Allow the knee to sag into full extension.



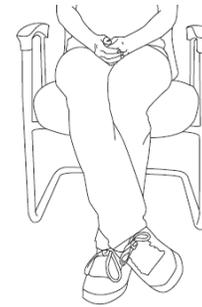
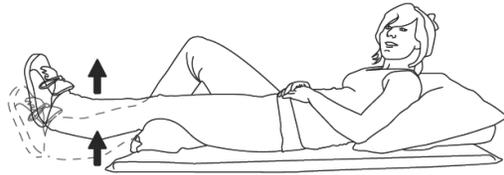
Lie on your stomach with a towel under your thigh and let your knee extend.



##### 2. Active Quadriceps Straight leg Raise:

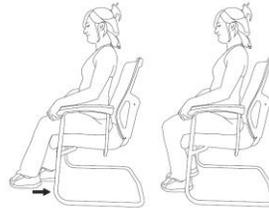
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Try to do 10 sets of straight leg lifts every waking hour of the day. This is done as follows: lift the heel off the bed with the knee fully extended.



### 3. Active Knee Flexion Stretch:

When sitting in a chair, allow your knee to bend 90 degrees by contracting the hamstrings and pulling your foot toward you.



### 4. Passive Knee Flexion Stretch:

sit on a table or a high chair with the knee bent comfortably. Cross the non-operated leg over top of the operated leg at the ankle. Use the good leg to bend the operated leg back towards the buttocks.

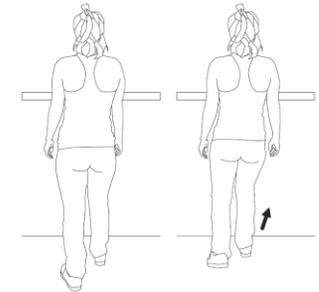
Rest one minute and repeat. Repeat: Two or three times a day. Three repetitions each

### Standing Exercises:

These exercises will help you gain confidence standing on your operated leg and help the muscles reactivate.

#### 1. Standing Exercise 1:

- Using a table for support, practice taking weight on the operated leg. Straighten the knee as much as possible, place weight on operated leg, and hold for 30 seconds. Rest one minute. Repeat 5 times.



#### 2. Standing Exercise 2:

- Repeat Standing Exercise 1 but push up at the ankle to stand on toes. Rest 1-minute and repeat three times. Do two or three times a day.



#### 3. Standing Exercise 3:

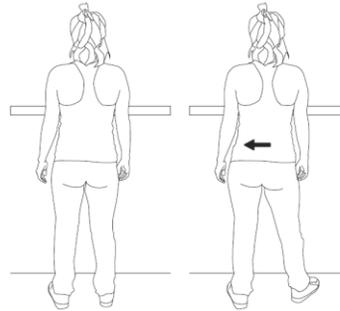
- Repeat Standing Exercise 2. Flex the knee to 30 degrees, then extend.

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- Repeat: Three sets of 10 repetitions

## 4. Standing Exercise 4:

- Use a table for support. Stand with your feet approximated 18 inches apart. Step sideways slowly, two steps left, then two steps right
- Repeat: 20 times



## Weeks Two – Four:

### Walking:

Spend more time walking without crutches. Increase your walking time outside to 15-20 minutes per day. Retain crutches if necessary for longer walks. Practice walking sideways and backwards.

### Exercises:

Continue previous exercises and progress as recommended below:

1. Passive Knee Extension Stretch:
  - Many patients are now able to fully straighten the knee, but some patients will take a few more weeks to get the knee straight.
2. Passive Knee Flexion:
  - Once the knee can flex easily to 90 degrees, continue without the support of the non-operated leg.
3. Standing Exercises:

- Progress standing exercises by abandoning support. Increase time standing on the operated leg. As you are able, do this with your eyes closed.

## 4. Hamstring Exercise:

- Lie on your stomach with knees extended and cross the operated leg over the good leg at the ankle. Rest one minute and repeat three times.

## 5. Stationary Bicycle:

- Once knee can easily be flexed to 90 degrees, the stationary bicycle may be used
- Raise seat if necessary and lower resistance.
- Build up to 20 minutes per day.

## 6. Pool:

- In waist deep water, progress walking exercises.
- Beginning kicking
- Avoid breaststroke, as this kick involves abnormal knee movement

## 7. Gymnasium:

- If you have access to a gymnasium the following equipment may be used. Commence with little to no resistance and proceed slowly:
  - Stepping Machine
  - Leg Press (closed chain)
  - Leg Curl
  - Rower

### Physiotherapy:

At this stage you may need treatment to help regain full range of movement and strength.

## Weeks Four– Ten:

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### Walking:

Walk up to 30 to 40 minutes each, while increasing stride length and speed.

1. Figure Eight Walking
  - Begin figure eight walking with large 10-15 meters length loops. Do ten in each direction, decreasing the size of the figure eights, and increasing walking in speed as confidence increases.
2. Square Walking
  - Walk 20 paces then turn left. Continue until you complete a square and return to starting point. Do ten in each direction, decreasing the size of the squares to five paces in each direction.
3. Walking Swerves
  - Position 10 objects in a straight line, each 10 feet apart. Swerve between the objects, increasing in speed as confidence increases.

### Exercises:

Your physiotherapist will work you through the following exercises programs:

1. Strengthening:
  - Lower abdominals and gluteals—to gain stability
2. Walking:
  - Correct alignment and co-contraction—you may develop new pain if your alignment is poor or muscles do not tighten correctly
3. Gymnasium:

- Closed kinetic chain exercises—leg press, squats, calf raises, phantom chair, step-ups and step-downs, lunges, hopping, skipping

#### 4. Balance:

- Balance board, rebounder, exa-slide, swiss ball – poor balance could contribute to the risk to re-injury.

### Weeks Ten– Sixteen:

#### Stationary / Road Bicycle:

You may continue cycling to your tolerance limit

#### Jogging:

Light jogging may commence 3-4 months following surgery.

Jogging may begin as you gain confidence. You should be comfortable cycling at least 30 minutes and begin jogging in a straight line on even ground. Maintain short slow strides and avoid limping.

Progress by incorporating sideways and backwards jogging. Introduce figure eight and square jogging.

#### Exercises:

Your physiotherapist will work you through the following exercises programs:

#### 1. Gymnasium:

- Open kinetic chain exercises—leg curl, hip extension, hip abduction. All gym exercises need to

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be progressed through concentric and eccentric strengthening .

- A generalized upper limb and trunk program may be formalized with your trainer

### ***Sport Specific Rehabilitation:***

It is necessary to co-ordinate the strengthening and balance work so that specific drills can be practiced and perfected before a return to your particular sport. These will include jumping and landing, hopping, lateral running and plyometrics.

The addition of ball skills and grids will precede a return to training sessions – initially training will be un-opposed and then against opposition as capable.

A fitness test including co-ordination, resisted movement, speed, and balance will precede a return to sport

At no stage should exercises cause an increase in pain or swelling— if this happens discuss with your physiotherapist who will normally suggest a return to previous level of activity that was asymptomatic.

### ***Competitive Sport Training:***

You can start training for competitive sport after four months from surgery. You should be confident jogging and have passed a fitness test.

### ***Competitive Contact Sport:***

You may be ready for competitive contact sport by six-nine months following surgery. Your surgeon and physiotherapist will help you decide when you are ready.