



# Pre - Operative Rehabilitation Program for Patellar Instability

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



**Covenant Health**  
Banff Mineral Springs



**Banff Sport Medicine**

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## **Patellar Instability Pre-habilitation:**

### *Why are these exercises important?*

- Your surgeon recommends that you complete this exercise program to prepare for your upcoming surgery and/or to get the best possible result from your injury rehabilitation
- Strengthening the muscles at the front of your thigh and around your knee will make your knee cap more stable and will help your recovery from surgery

### *How often should I do these exercises?*

- All exercises should be done **1 - 2 times per day**
- It is important that you do all of the exercises on both legs (however you will be using the electronic stimulation (EMS) unit on your effected/surgical leg only)
- Carefully follow the instructions for your **EMS unit**
- Whenever you can, do your exercises in front of a mirror to make sure you are doing them correctly

### *How many exercises should I do?*

- Each exercise should be done smoothly and slowly
- Start with one set of each exercise. Your therapist will recommend the number of exercises you should do based on your muscle strength and endurance.
- Once you can comfortably do one set of each exercise, progress to 2 sets and once you are strong enough then 3 sets. Your physiotherapist might recommend for some exercises to be done until you fatigue or until you lose the form of the original exercise position.
- Aim to challenge yourself when doing your exercises to get the greatest strength and stability improvements.

### *What if I have pain?*

- If you have increased pain that lasts longer than 1 or 2 hours after you have finished your exercises, decrease the amount you are exercising by 20% the next time. If the pain does not improve, call your physiotherapist to review your program.

## **Notes for Physiotherapists:**

Please teach your patient how to apply and use the EMS unit, and assess the number of sets/repetitions, ranges of motion and theraband for the exercises as applicable. Thank you.

\*\*If you have any questions please contact Sarah Kerslake, Research Coordinator at:  
[sarah@banffsportmed.ca](mailto:sarah@banffsportmed.ca) or 403 760 2897 ext 6\*\*

## Pre-habilitation Phase 1

### 1. Towel Squeeze

- Sit on the edge of a chair with your feet flat on the floor
- Place a rolled towel or small pillow between your knees
- Place your arms and hands beside you on the chair to support your back in an upright position
- While the muscle stim is “on”, squeeze the towel between your knees
- Set the muscle stim on for \_\_\_\_\_seconds, relax for \_\_\_\_\_seconds and repeat \_\_\_\_\_times.



### 2. Wall squats

- Stand with your feet shoulder-width apart, 20-30 cms out from a wall. Rest against the wall and keep your back upright.
- With your kneecaps pointing straight ahead (in line with your feet and hips), slowly lower into a squat
- Don't bend your knees beyond a \_\_\_\_\_ degree angle
- While the muscle stim unit is “on”, hold steady in the squat position with equal weight on each leg
- Set the muscle stim on for \_\_\_\_\_seconds, relax for \_\_\_\_\_seconds and repeat \_\_\_\_\_times



### 3. Step up

- Stand below a stair or a step stool. Place one foot on the step in front of you
- Tighten the quadriceps muscles of your leg on the step as the muscle stim unit comes “on”
- Keep the muscles tight and active as you rise up onto the step by shifting all of your weight onto the front leg
- Hold the position steady for the whole time the muscle stim unit is “on”
- Set the muscle stim on for \_\_\_\_\_seconds, relax for \_\_\_\_\_seconds and repeat \_\_\_\_\_times.



Note: If you are unable to perform this exercise due to pain, try a lower step, or even just take a step forward on the floor and keep it as a weight shifting exercise to the front leg.

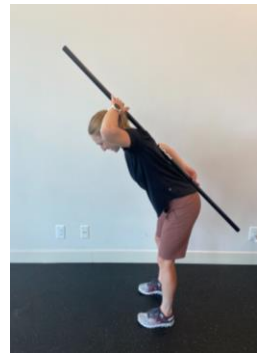
#### 4. Side Step Down

- Stand on a step \_\_\_\_\_ cms in height
- Tighten the quadriceps muscle of the leg which will stay on the step as the muscle stim unit comes “on”
- Keep the muscle tight as you slowly step down to the side with the other leg, barely touching your foot to the floor
- Hold the position steady for the whole time the muscle stim unit is “on”
- Set the muscle stim on for \_\_\_\_\_seconds, relax for \_\_\_\_\_seconds and repeat \_\_\_\_\_times



#### 5. Two Leg Hip Hinge

- Stand with feet shoulder width apart
- Keep knees “soft”, ie with a slight bend
- Hinge forward at the hip joints, keeping your back straight
- Stop before you feel your back start to bend
- Squeeze your glutes & hamstrings to return to standing
- Repeat \_\_\_\_\_ times
- Note - to practice form you may want to start by holding a broomstick or pole along your spine. It should be touching the upper back and tailbone with a small gap where your lower back naturally curves in. See photo.



### Pre-habilitation Phase 2

After you have completed 4 - 6 weeks of the first phase of pre-habilitation you should be reassessed by your physiotherapist and taught the second phase of exercises. Before you start the second phase you must be able to complete 3 sets of  $\geq 10$  repetitions of the phase one exercises with good control.

Again in this second phase each exercise should be done slowly and smoothly. These exercises focus more on hip strengthening while continuing use of the EMS unit on your affected leg. Start with one set of each exercise, each session. Your physiotherapist will recommend the number of exercises you should do and the color of tubing you should use based on your muscle strength and endurance.

Once you can comfortably do one set of each exercise, progress to 2 sets and once you are strong enough then 3 sets. Make sure you maintain good posture throughout all of your exercises by activating your core muscles.

**\*\*Start with smaller ranges of movement, for example, 20-30 cms and increase range as you become stronger\*\***

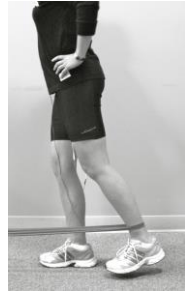
## 6. Hip Abduction

- Loop tubing to attach one end securely at ankle height around a railing or table leg, and the other end around your ankle
- Standing with your knees slightly bent, stabilize your core muscles and lift your leg out to the side. Put your fingers on a wall for balance if you need
- Contract the muscles at the side of your pelvis as you lift your leg and hold it for \_\_\_\_\_ seconds
- While the muscle stim is “on” you should be contracting your hip and thigh muscles to lift your leg. When the stim goes “off” you should slowly return to start position
- Set the muscle stim on for \_\_\_\_\_seconds, relax for \_\_\_\_\_seconds and repeat \_\_\_\_\_times



## 7. Hip Extension

- Loop tubing to attach one end securely at ankle height around a railing or table leg, and the other end around your ankle
- Standing with your knees slightly bent, stabilize your core muscles and move your leg backwards 15 - 20 cms
- Contract the muscles of your buttock and thigh and hold for \_\_\_\_\_ secs
- While the muscle stim is “on” you should be contracting your buttock and thigh muscles to move your leg. When the stim goes “off” you should relax your muscles and slowly return to start position
- Set the muscle stim on for \_\_\_\_\_seconds, relax for \_\_\_\_\_seconds and repeat \_\_\_\_\_times.



## 8. Hip Internal Rotation

- Loop tubing to attach one end securely at ankle height around a railing or table leg, and the other end around your ankle. Stand facing forward and slightly diagonal to the tubing so your other leg doesn't touch it
- Standing with your knees slightly bent, stabilize your core muscles and move your leg across your body while rotating your leg inwards
- Contract your core, buttock and thigh muscles and hold for \_\_\_\_\_ secs
- While the muscle stim is “on” you should be contracting your buttock and thigh muscles to move your leg. When the stim goes “off” you should relax your muscles and slowly return to start position
- Set the muscle stim on for \_\_\_\_\_seconds, relax for \_\_\_\_\_seconds and repeat \_\_\_\_\_times



## 9. Hip External Rotation

- Loop tubing to attach one end securely at ankle height around a railing or table leg, and the other end around your ankle. Stand facing forward and slightly diagonal to the tubing so your other leg doesn't touch it.
- Standing with your knees slightly bent, stabilize your core muscles and move your leg away from your body as you rotate your leg out
- Contract your core, buttock and thigh muscles and hold for \_\_\_\_\_ secs
- While the muscle stim is "on" you should be contracting your buttock and thigh muscles to move your leg. When the stim goes "off" you should relax your muscles and slowly return to start position
- Set the muscle stim on for \_\_\_\_\_seconds, relax for \_\_\_\_\_seconds and repeat \_\_\_\_\_times



\*\*If you are not able to maintain the muscle contraction or good posture you can start the exercises with the tubing just below your knee and as you become stronger move the tubing down towards your ankle\*\*

## 10. Single Leg Hip Hinges

- Stand on one leg, keeping knee "soft" (ie with slight bend)
- Keep weight under your big toe, little toe, and heel in order to stay balanced
- Hinge forward at the hip joints, keeping your back straight
- Stop before you feel your back start to bend
- Make sure to keep the hips level by keeping the belly button pointed straight to the floor
- Squeeze your glutes & hamstrings to return to standing
- Repeat \_\_\_\_\_ times on each side



## 11. Side Plank Raises

- Perform a side plank on your forearm/elbow and your knees
- Inhale and lower your hips to the ground
- Exhale and squeeze your bum to thrust your hips up and forward
- Repeat \_\_\_\_\_ times on each side
- To increase the level of difficulty, keep the top leg raised in the air above the bottom leg throughout the entire movement and hover above the ground when you lower instead of fully touching down.

