

Exercise Guide for **Knee Replacement Surgery**



Name:

Surgery Date:

Surgeon:

Special Instructions:

**Please bring this guide to the hospital
and to all physiotherapy appointments.**

Please refer to the *Before During and After Hip and Knee Replacement Surgery – A Patient’s Guide* for further information.

This guide is available in English, Chinese, Punjabi, and Farsi by searching for the title at: vch.eduhealth.ca



Acknowledgments

The original edition of this guide was produced in 2005 through the efforts of the Provincial Rehab Advisory Group (PRAG) and contributions made by physiotherapists in the following Health Authorities. This revision has been contributed to and reviewed by physiotherapists in all the health authorities.



We would also like to thank the joint replacement clients, surgeons, physicians and other health care professionals who participated in the evaluation and revision process of this guide through its various editions.

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You are about to have knee replacement surgery. People who prepare for surgery and actively take part in their care can recover in less time and with less pain. This guide has general information along with tips and goals for exercising before and after surgery.

The goals and exercises in this guide are to help you along the path to recovery. Different people progress at different speeds, the timelines in this guide are only estimates. You may receive different instructions from your surgeon, doctor or physiotherapist. Always follow the directions of your care team.

Before starting any exercise program check with your physiotherapist or doctor.

Caution:

- **If you have too much pain in your knee to exercise, or if any of the exercises cause more pain or swelling in your knee, stop**
- **Talk to your physiotherapist or doctor about how to modify the exercise and manage your pain**

Before Surgery

General Guidelines

Doing regular exercise before surgery can help you to have a faster and easier recovery. Exercise helps to:

- Maintain the movement in your knee
- Make your muscles strong
- Control your pain
- Reduce/control your body weight
- Improve your sleep
- Increase your knowledge of how to exercise after surgery

To stay active before surgery, do activities that put less stress on your knee.

- Swimming, water walking, water aerobics, water running
- Cycling (stationary or bicycle)
- Seated stepper (eg. Nustep)
- Elliptical machine
- Walking with poles on level ground
- Knee movement and strengthening exercises (pages 5-8)

Always warm up before exercising. Your physiotherapist may tell you to try gentle range of motion, walking or stationary cycling before starting more vigorous exercise.

If you have increased pain or swelling after exercise...

- Put ice or cold gel pack on your knee for 10–15 minutes
- Rest your joint
- Pace yourself (e.g. do exercises one day and errands the next)
- Use a walking aid such as a cane, walking poles, crutches or walker
- Talk to your doctor or pharmacist about pain medicine

What to Expect

Before surgery, you will be offered education in person or through a video or online program to help you prepare for your knee replacement. Some people also see a physiotherapist to learn specific exercises to do before surgery. These exercises will help you to stay active and prevent further decline in day-to-day activities as you wait for surgery. Do the recommended exercises for at least 8 weeks to allow for the muscles to get stronger. If you do not see a physiotherapist for advice before surgery, try doing the exercises on the next few pages to help you prepare.

Some of the exercises are designed to help you turn on or “activate” muscles. You need to practice this skill several times a day. Other exercises are to help you strengthen your muscles and these are suggested 2 to 3 times per week. Follow the instructions in the booklet or from your physiotherapist on how often to do each exercise.

Exercises to Do Before Surgery

Core Muscles

Your core muscles protect your low back and give support to your knee and hip. These muscles include your pelvic floor (muscles that control your bowel and bladder) and your lower abdominals (muscles deep in your belly). They often work poorly due to arthritis or pain, such as after surgery. An important goal is to learn to ‘turn them on’ when doing all of your exercises. The more you practice turning them on, the more automatic it will become.

1. Core Muscle Activation

a. Pelvic floor muscles

- Imagine you are trying to stop the stream of urine

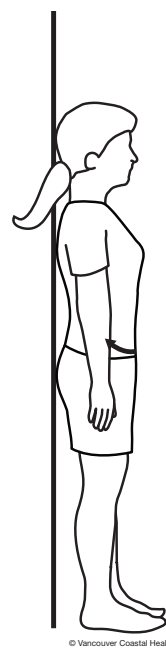
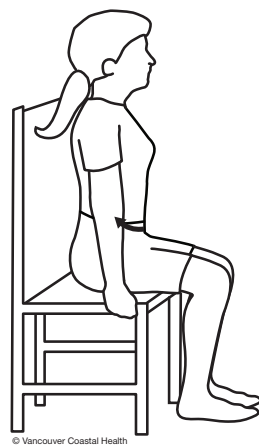
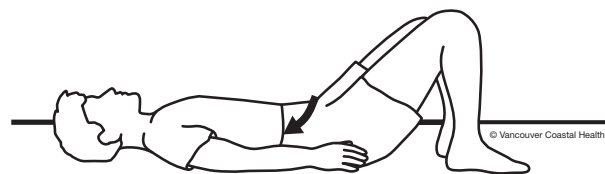
Hold 6 seconds, then slowly relax.

Repeat 6 times, several times a day in different positions.

b. Deep lower abdominal muscles

- Pull your lower belly (below your belly button) toward your spine (imagine zipping up a tight pair of pants)
- Take 6 quiet breaths in and out through your nose, into the sides of your ribs
- Slowly relax your belly (imagine unzipping the pants)

Repeat 6 times, several times a day in different positions.

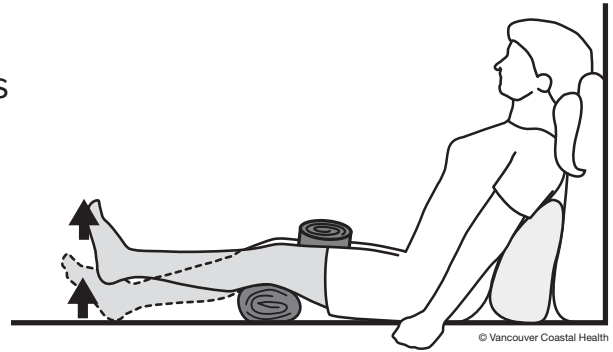


2. Knee Straightening

- Place large rolled towel under both knees and smaller roll or ball between thighs
- Squeeze small roll between thighs and lift one foot to straighten knee

Hold 5–10 seconds and keep squeezing rolled towel while lowering foot down

Repeat 8–15 times, 3–4 days per week.



3. Lower Buttock Squeeze

- Lie on your back with legs straight (if you have back pain, this can be done with a pillow under your knees)
- Squeeze **lower** buttocks together gently, as if holding a pencil between your buttocks

Hold 5–10 seconds.

Repeat 6 times, several times a day.

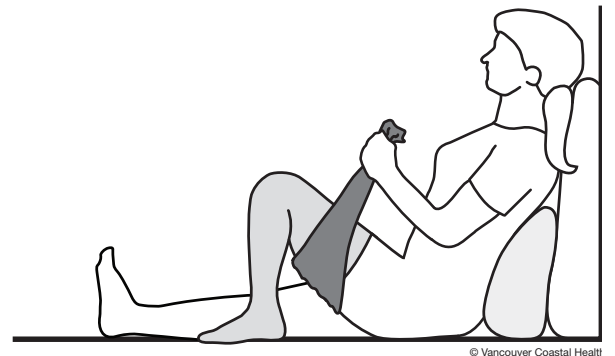


4. Knee Bend (Heel Slides)

- Use towel behind thigh to help bend your knee and slide your heel towards buttocks

Hold 5–10 seconds.

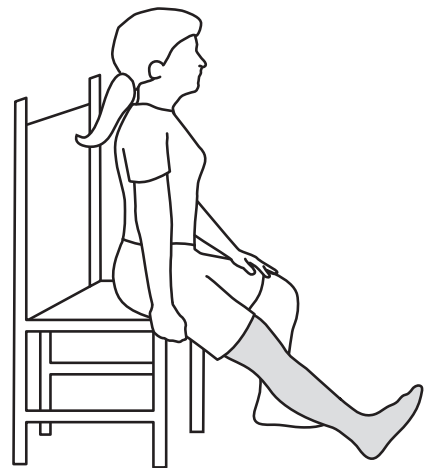
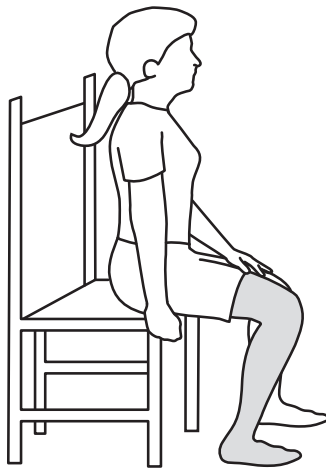
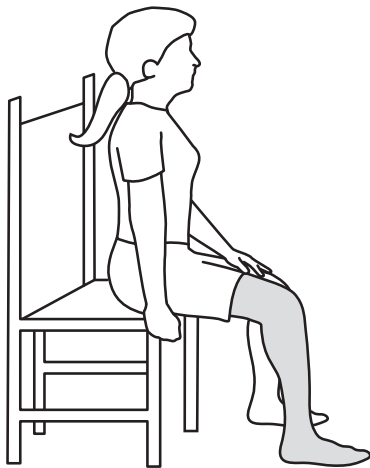
Repeat 10 times, 2–3 times a day.



5. Sitting Knee Bend and Straighten

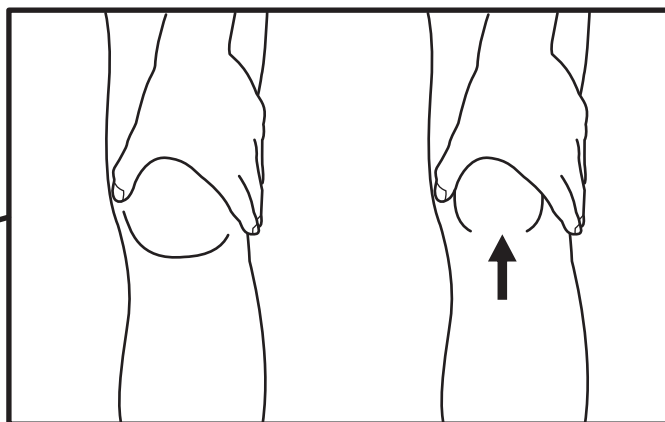
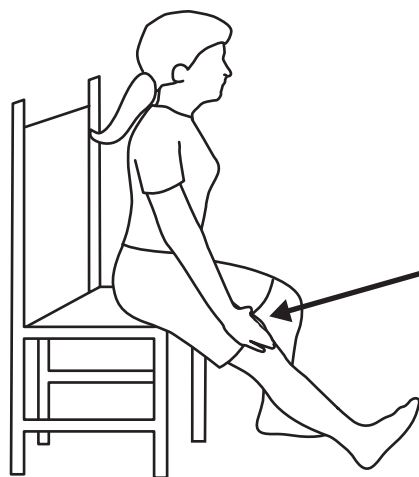
a. Bend and straighten

- Sit on the edge of a firm seat with feet on floor
- Slide heel back to bend your knee
- Slide heel forward to straighten your knee



b. Knee cap movement exercise

- Sit on the edge of a firm seat with knee straight, rest heel on floor
- Use lower thigh muscle to slide knee cap towards you and straighten knee (tighten knee cap towards your hand)
- Keep knee straight and slowly relax knee cap



Hold 5–10 seconds.

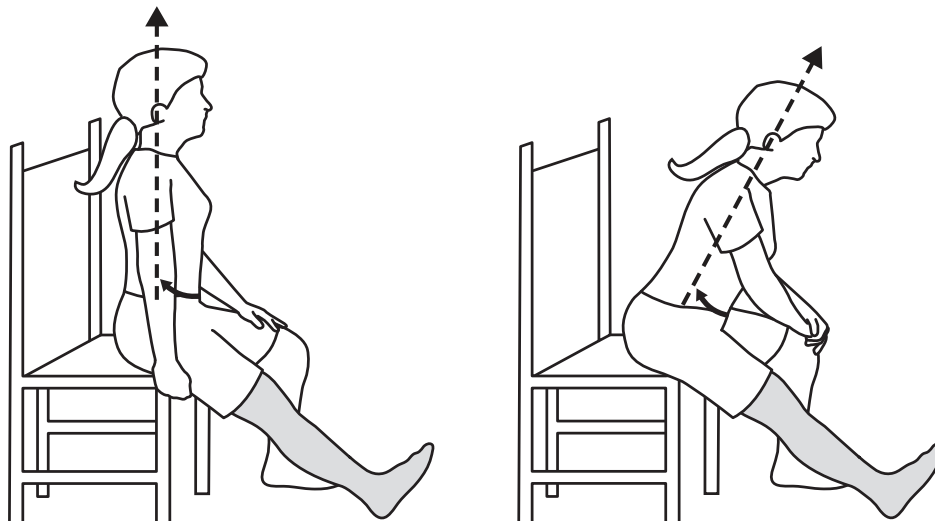
Repeat 10 times, 2–3 times a day.

6. Hamstring Stretch

- Sit up tall on edge of firm seat and straighten leg with heel on floor or stool
- Pull lower belly into your spine and bend forward from your hips, until gentle stretch is felt on back of thigh

Hold 30 seconds up to 1 minute.

Repeat 2–3 times, once a day.



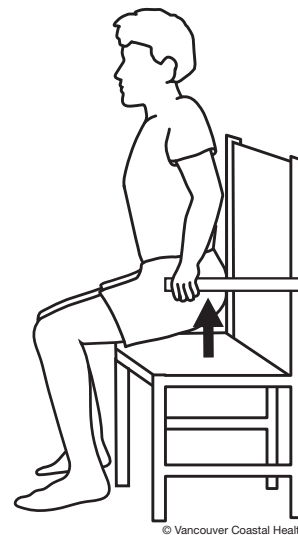
7. Arm Chair Push-Ups

You need strong triceps to use your walker or crutches, help you get out of bed, and stand up from chairs. Triceps are the muscles on the back of your arm.

- Sit on chair with armrests
- Place hands on armrests with elbows bent
- Push through hands to straighten elbows and lift your body up

Hold 5–10 seconds and slowly lower yourself.

Repeat 8–15 times, once a day.



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Use this space to note any other pre-operative exercises suggested by your physiotherapist.

In the Hospital After Surgery

General Guidelines After Surgery

In the hospital, you will be seen by a physiotherapist shortly after your surgery. The physiotherapist will talk to you about managing your pain and swelling and review your in-hospital exercises with you. You will be helped to move from your bed to a chair and to stand and walk within a few hours after surgery. This ‘early mobilization’ helps to reduce the risk of blood clots.

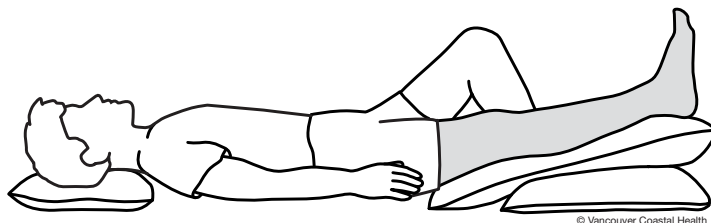
When walking, most people are allowed to put as much weight on the operated leg as they can tolerate. Your healthcare team will let you know if your surgeon wants to limit the amount of weight you can put on the operated leg.

The goal is to do these exercises independently **3 times a day** while in hospital in order to improve the range of motion of your knee. **It is normal to experience some discomfort with these exercises.** Timing your pain medication beforehand and icing afterwards can help.

Tips to manage your pain and swelling in the hospital and at home.

Rest Your Joint

- Lie down 3 times a day for 30 minutes on your bed or sofa. Put your leg up and support it with a wedge, arm rest of couch, or pillows (as shown). **Keep knee straight on the pillows** with foot and ankle higher than your heart
- Change positions often (every 20–30 minutes) when you are awake. Try sitting, standing, and walking
- Pace yourself. Rest the knee after exercise or after a busy day

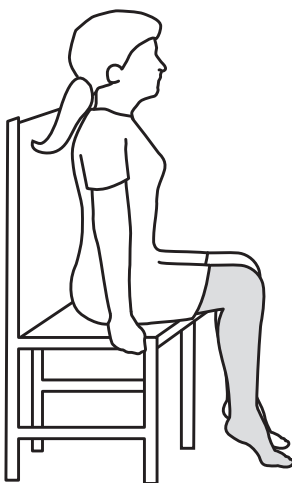
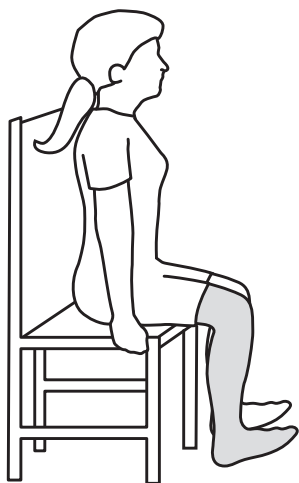


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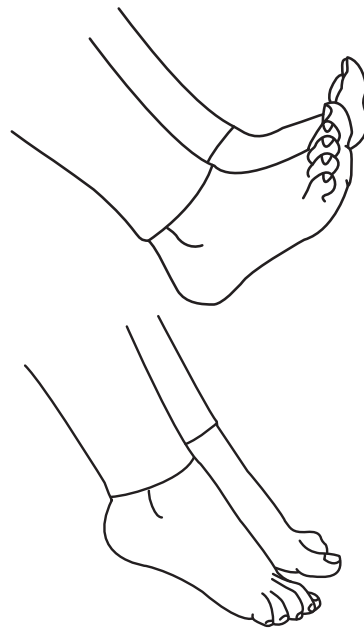
Foot and Ankle Pump

- This helps to reduce swelling and risk of blood clots
- You may do this lying down or sitting on the edge of a chair
- Pump your whole foot up and down

Repeat 10 times every hour.



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Use Ice (Cold Therapy)

- Ask for ice or a cold gel pack in the hospital and talk to your physiotherapist if you are not sure how to apply it
- Follow these steps:
 - If your incision is not healed, cover it with a clean bandage
 - Put one layer of dry towel over your knee
 - Put a flexible gel pack or plastic bag with crushed ice over the towel on your knee
 - Leave the ice ON for a maximum of 10–15 minutes

Repeat several times a day as needed.

Tip: If using a cold compression device, follow the manufacturer's instructions for use or ask your physiotherapist to help you.

DO NOT Use Ice If:

- You are very sensitive to cold (e.g. fingers and toes turn white or blue when you are cold)
- You cannot tell if something is too hot or too cold on the skin around your knee
- You have had a bad reaction to ice previously such as difficulty breathing and/or a red, swollen, itchy, or burning area of skin
- Your doctor has told you that the circulation in your legs is poor and that you should avoid using ice

Use Pain Medicine

Use your pain pills as prescribed by your doctor or surgeon. Tell your doctor or surgeon if the pain is too much or not improving.

Use Walking Aids

Use the walking aid that your physiotherapist has measured for your height and recommended. Check with your therapist or doctor before you stop using your aid, or if you plan to switch to a different aid to progress your recovery. Walkers, crutches and canes help to:

- Reduce the stress on your knee
- Reduce pain
- Improve your walking
- Improve your balance and reduce falls

If you need to use stairs at home, your physiotherapist will teach you how to safely use crutches or cane going up and down stairs before you leave the hospital.

What To Expect

By the time you are ready to leave the hospital, you should be able to...

- Move safely from your bed to a chair and to the toilet
- Walk safely with crutches or walker
- Dress yourself
- Do your exercises on your own so you can continue them at home

Your healthcare team will check your ability to do these activities and recommend when you should leave the hospital and what community services you may need at home.

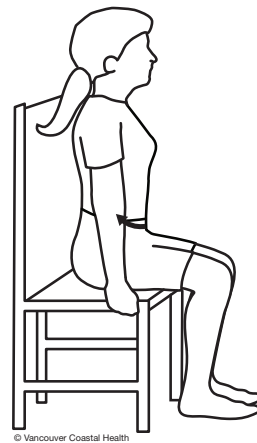
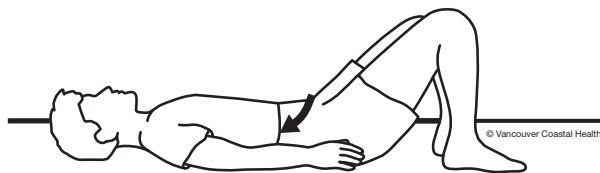
Exercises to Do for Weeks 0 to 6

Exercises to Do in the Hospital

You will have better range of motion if you do these exercises at least 3 times a day in the hospital and continue doing them at home. They will get easier over time. Your next physiotherapist, in the community or outpatient rehab, will gradually make your exercises more challenging.

1. Core Muscles

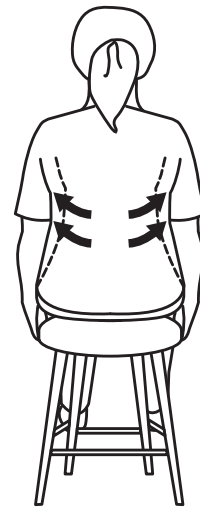
- Remember the core muscle training you did before surgery
- **Pelvic floor muscles:** imagine you are trying to stop the stream of urine
- **Deep lower abdominal muscles:** pull your lower belly (below your belly button) towards your spine (imagine you are zipping up a tight pair of pants)
- Take 6 quiet breaths through your nose, then slowly relax the muscles (unzip your pants)
- Repeat 6 times, several times a day
- Turn on these core muscles before you turn over in bed, go from lying to sitting, or from sitting to standing



2. Breathing

- Sit with shoulders relaxed, hands holding sides of chair
- Pull your lower belly to your spine
- Breathe in slowly through your nose, feel your ribs expand sideways
- Breathe out slowly through your nose, feel your ribs drop down

Take 5–10 deep quiet breaths every hour.



3. Knee Bends (Heel Slides)

a. Support behind thigh

- Use towel or strap behind thigh for support to bend your knee by sliding heel towards buttocks
- Slide heel away to straighten knee

Repeat 10 times.

Tip: If needed, put a plastic bag under your foot.

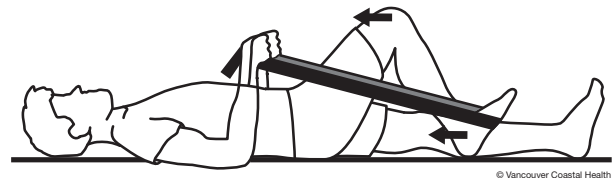


b. Support around foot

- Use towel or strap around foot for support to bend your knee by sliding heel towards buttocks.
- Slide heel away to straighten knee

Repeat 10 times.

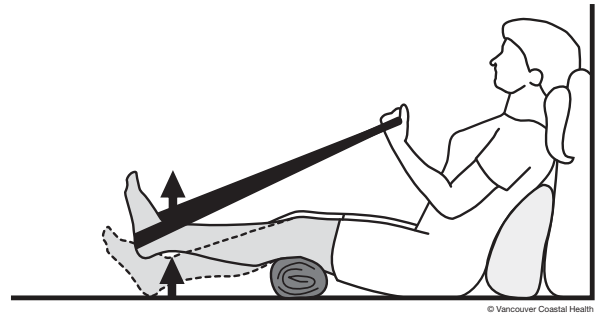
Tip: If needed, put a plastic bag under your foot.



4. Knee Straightening

a. Assisted (using strap)

- Place a large rolled towel under knee
- Loop a long strap around ankle to support leg
- Tighten thigh muscles above knee cap and inner thigh to straighten knee
- Use thigh muscles to keep knee straight, reduce support from the strap as much as possible until you can lift without the strap
- Slowly relax knee cap and lower leg down



Hold 5–10 seconds.

Repeat 8–15 times.

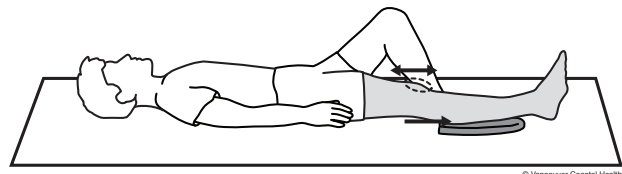
b. Knee cap movement exercise

Place small rolled towel under mid-calf.

- Keep knee cap and toes facing ceiling
- Tighten the muscles on the top of your thigh and straighten your knee. Your knee cap may slide up towards your hip.
- **Keep your knee straight** while gently relaxing the muscles on the top of your thigh.

Hold 5–10 seconds.

Repeat 6 times, several times a day.

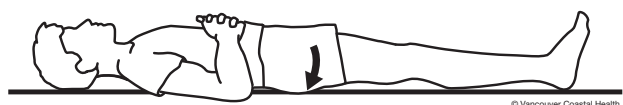


5. Lower Buttock Squeezes

- Lie on your back with legs straight (if you have back pain, this can be done with pillow under your knees)
- Squeeze lower buttocks together gently, as if you are holding a pencil between your buttocks

Hold 5–10 seconds.

Repeat 6 times, several times a day.



Seated Knee Bend and Straighten

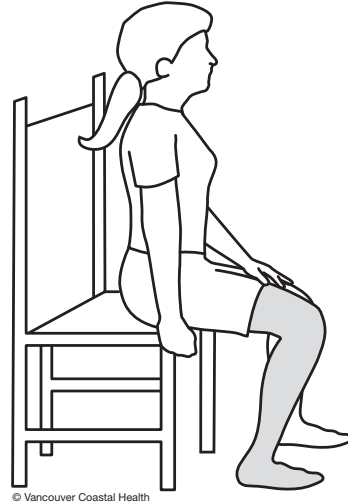
Sit on edge of bed or chair with feet on the floor. Repeat the following 3 exercises 5–10 times each.

6. Knee Bend

- Slide heel backward to bend your knee until you feel a stretch. Some discomfort is expected.

Hold 5–10 seconds.

Repeat 5–10 times.

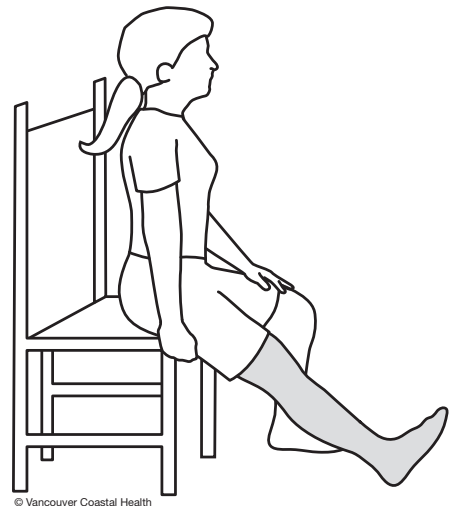


7. Knee Straightening

- Slide heel forward to straighten knee.

Hold 5–10 seconds.

Repeat 5–10 times.



8. Drop and Dangle

Sit on high surface/edge of bed with feet supported on stool.

- Take operated foot off stool support.
Relax muscles on front of thigh; allow your knee to bend and foot to dangle

Some discomfort is expected

Place operated leg back on stool for support to relieve pain

Hold 5–10 seconds.

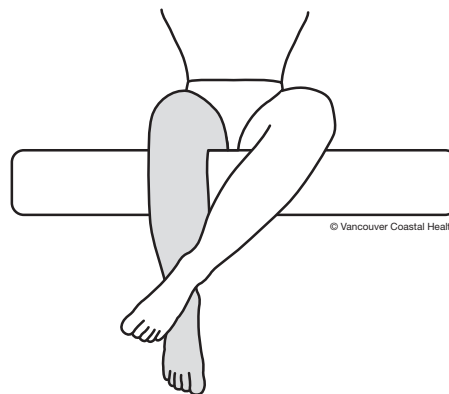
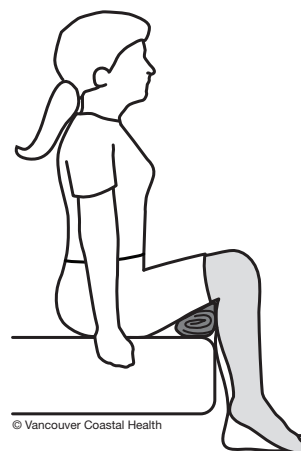
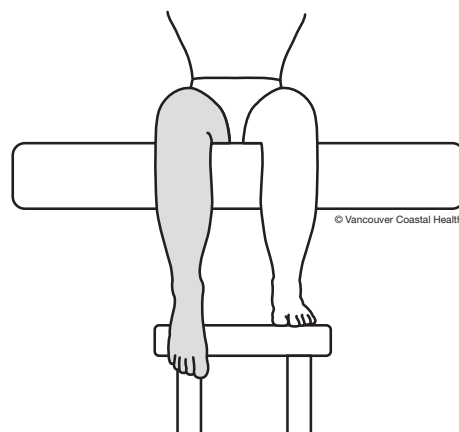
Repeat 5–10 times.

Progression:

- Place a rolled towel or ball under thigh and allow lower leg to dangle for more bend

OR

- Place heel of non-operated leg on the shin of your operated leg, gently push the leg back to increase the bend in your operated knee



Use this space to note any other in-hospital exercises suggested by your physiotherapist.

After Discharge (Post-Acute)

What to Expect

During the initial weeks after discharge from hospital it is important to keep your knee pain and swelling under control. Continue to follow the tips on pages 10-12.

Weeks 0 to 6 after surgery

In this early stage, your physiotherapist will give you exercises to help you bend and straighten your knee and introduce exercises to improve your strength. If you find the in-hospital exercises (#1-7) are easy, you can progress to the next set of exercises. If you aren't sure how to do them or if they cause too much pain, continue to do the exercises you were doing in the hospital until you see your physiotherapist at home, in a clinic or an outpatient hospital department.

The exercises are organized from 'easy', to 'moderate' to 'advanced'. Track your effort and let your physiotherapist know when you are ready to move to the next level.

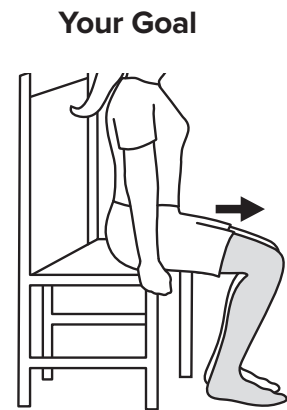
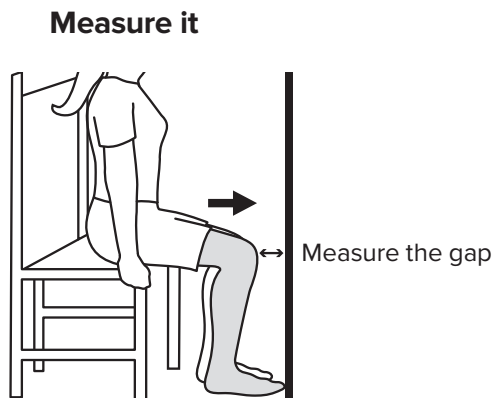
Tip: To avoid losing range, mind your leg position at rest when not exercising. Aim to rest it fully straight or bent to 90° with foot resting on the floor under knee. If the position gets uncomfortable, you can perform repeated bending and straightening to relieve pain.

Goals by end of Week 6:

- Bend your knee at least 110°
 - Straighten your knee so that no more than 3 finger widths can fit behind the knee and floor/bed (about 5° of bend) when lying
 - Walk short distances outside (4 to 6 blocks) using cane or walker
 - Go up and down stairs safely leading with the non-operated leg up and the operated leg down
 - What are your personal goals?
-
-

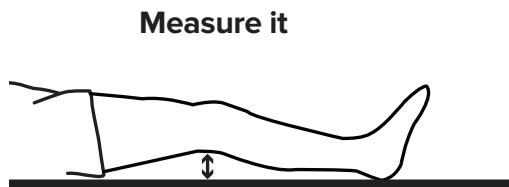
To measure knee bend (flexion)

- Sit on chair with feet flat and toes touching a wall
- Bend your knee by easing forward on the chair
- Measure the gap between the wall and your knee (as shown below) and record it. Use the same chair each time



To measure knee straight (extension)

- Lie on your back on a firm surface
- Keep your foot relaxed and press your knee down
- Have someone measure the gap under your knee (as shown below)

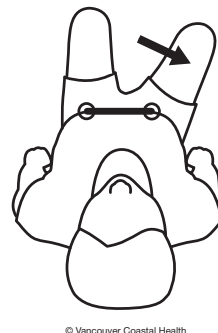


Exercise Progressions Weeks 0 to 6

Core Muscle Exercise Progressions

9. Bent Leg Turn Out

- Lie with legs bent, feet in line with hips
- Turn on core muscles to keep back and pelvis still
- Turn one leg out 30-45° at the hip, do not allow your pelvis to roll side to side
- Use core muscles to hold the opposite hip down
- Re-set or keep core muscles on, pull leg back to starting position



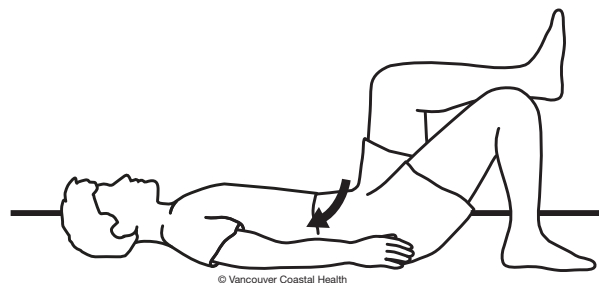
Do 6 times, repeat with other leg.

Do several times a day.

10. Bent Leg Float

Do this exercise only if you can bend your knee comfortably more than 90° (typically after weeks 4–6).

- Lie with legs bent, feet in line with hips
- Turn on core muscles, especially pelvic floor (refer to page 13)
- Float one bent leg up to 90° toward belly button, lower it down without releasing core muscles



Do 6 times, repeat with other leg.

Do several times a day.

11. Hip Turn Out With Resistance Band

Lie on your back with legs bent, feet hip width apart.

- Bring thighs together and tie a light/medium resistance band firmly around upper thighs, then bring thighs back in line with hips
Do not tie band around your knees
- Turn on core muscles to keep body and hips still while doing the following exercises

a. Double leg turn out

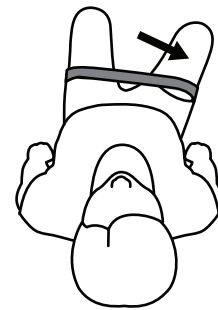
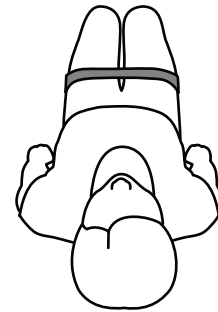
- Turn out both thighs against resistance band through your hips equally
- Bring thighs back in line with hips

b. Single leg turn out

- Turn out one thigh only; keep the other thigh still

Do not hold.

Repeat 6 times each, daily.



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Exercises to Improve Knee Range of Motion (Bending and Straightening)

Do these exercises 3 times a day unless your physiotherapist gives you different instructions.

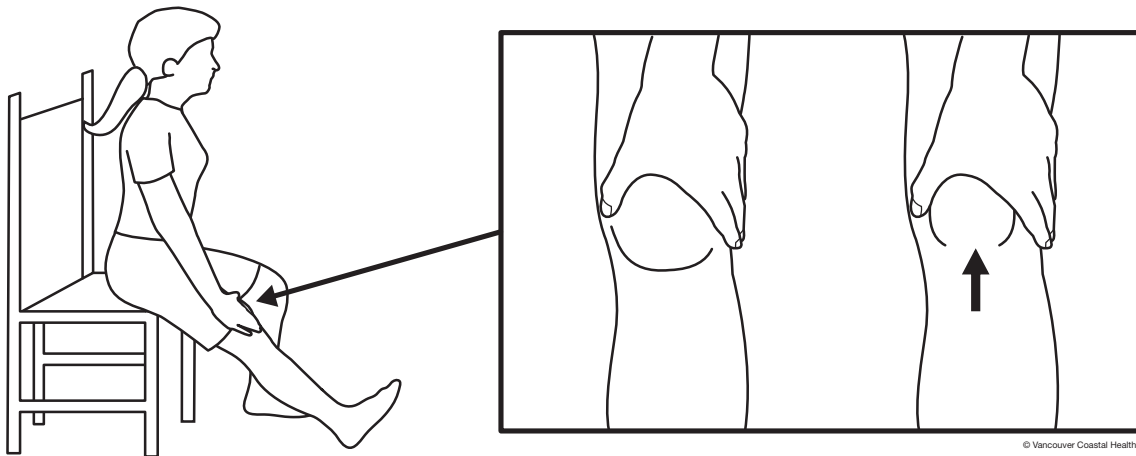
You need about 90° bend to go up the stairs and 110° bend to go down the stairs.

12. Knee Cap Movement Exercise

- Sit on edge of firm seat with knee straight, rest heel on floor
- Use lower thigh muscle to slide knee cap towards you and straighten knee (tighten knee cap towards your hand)
- Keep knee straight and slowly relax knee cap

Hold 5–10 seconds.

Repeat 5–10 times.



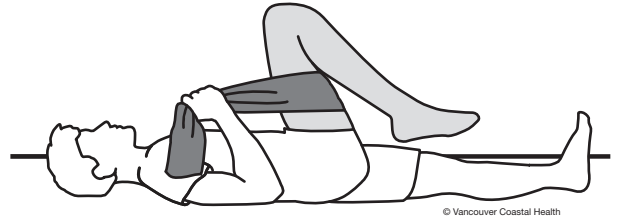
13. Passive Knee Bend

a. Lying down

- Use a towel or strap behind your thigh to provide support and help bend your knee
- Pull thigh towards chest and relax knee to increase bend

Hold 5–10 seconds.

Repeat 5–10 times.



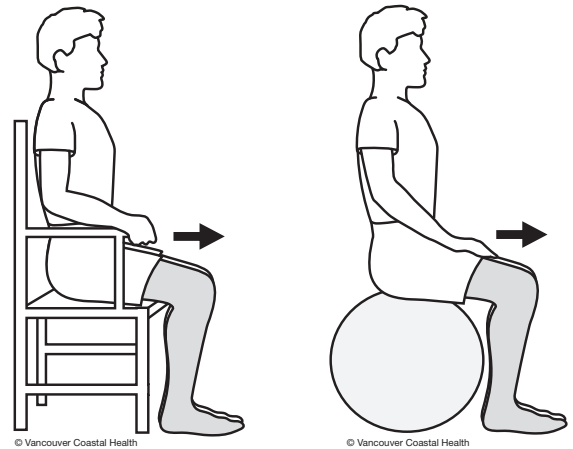
b. Sitting upright

Sit on chair or large therapy ball with feet on floor (if using ball, make sure there is sturdy furniture next to you to rest arms for support).

- Keep feet fixed on floor and slide bottom forwards on chair or roll yourself forward on the ball to bend operated knee

Hold 5–10 seconds.

Repeat 5–10 times.



14. Assisted Knee Bend and Straightening with Therapy Ball

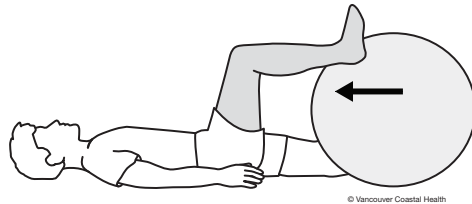
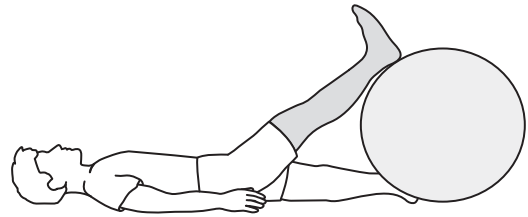
- Lie on your back, resting heel of operated leg on therapy ball
- Keep knee cap pointing to ceiling
- Roll ball towards you to bend knee
- Roll ball away to straighten knee

Repeat 10 times.

Progression:

Do exercise with both heels on the ball, **keep feet hip-width apart.**

Do not do this if you are experiencing back pain.



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15. Active Knee Bend and Straightening

- Lie on your stomach with feet just off end of bed
- Gently squeeze lower buttock muscles
- Bend knee, bringing heel towards bottom
- Straighten leg and leave foot hanging over edge of bed
- Let gravity help to straighten knee (if lower leg is unable to touch bed, support gap with a folded towel, making sure you still feel a stretch)
- To increase knee straightening, tighten muscles on front of thigh to pull knee cap towards you

Hold each position for 5–10 seconds.

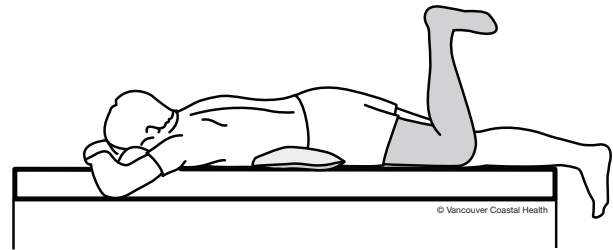
Repeat 5–10 times.

Progression: Add folded towel under thigh.

For bending:

Wrap _____lbs weight around ankle.

For straightening: Increase length of time resting knee straight for as long as you feel comfortable.



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16. Heel Slide on Wall

To increase bending:

- Lie on back with foot of operated leg resting on wall
- Bend operated knee by sliding heel down wall

Hold for 5–10 seconds.

Repeat 5–10 times.

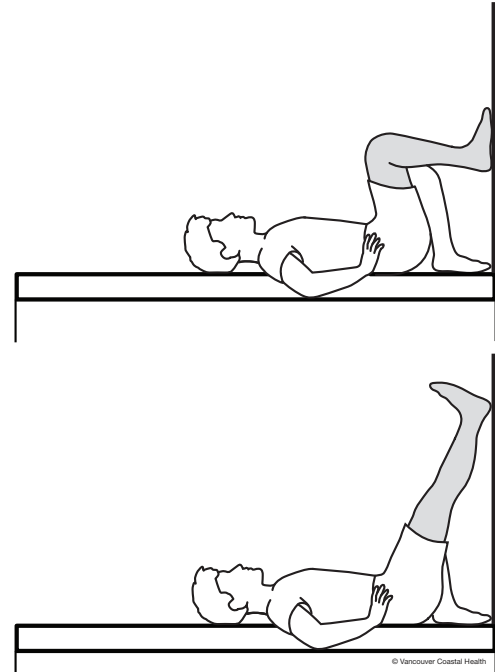
Tip: Use the weight of non-operated leg to bend leg more by resting it on the shin of operated leg.

To increase straightening:

- Slide heel up the wall
- Tighten front of thigh muscles to pull knee cap towards you
- You can straighten knee further by pulling foot towards you

Hold 5–10 seconds.

Repeat 5–10 times.



17. Knee Bend on Step

Place operated leg on the 2nd step.

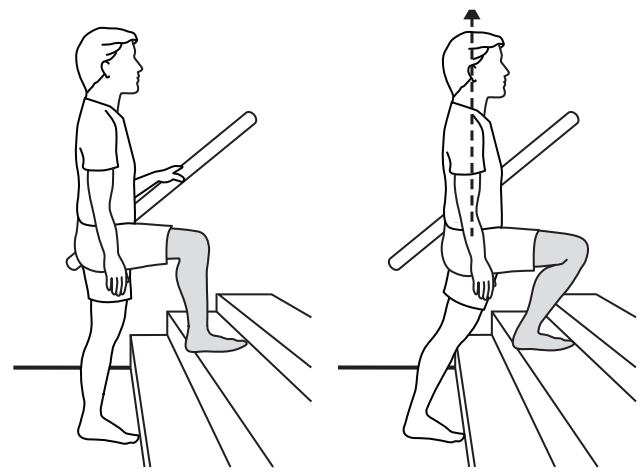
- Hold rail for balance
- Lean forward through the hip to bend knee until stretch is felt at front of knee, maintain upright posture

Hold 5–10 seconds.

Repeat 5–10 times.

Progression:

- Move foot of operated leg to higher step as able



Exercises to Improve Flexibility

If you had tight muscles before surgery it may take longer after joint replacement to get the movement back in your joint. Stretches can be done in many different ways. Ask your physiotherapist how to change a stretch to make it work for you.

Guidelines:

- Stretch when you have done your exercises, after a walk or when your muscles are warmed up. Warm muscles are easier to stretch.
- Ensure that you feel a gentle stretch in the muscle or tissue being stretched. If you don't feel a stretch you won't improve your flexibility.
- Stretch daily, several times a day.

Tip: Heat can help with stretching. Put your leg in the stretched position and apply heat on the tight muscles (where the stretch is felt) for 1–5 minutes.

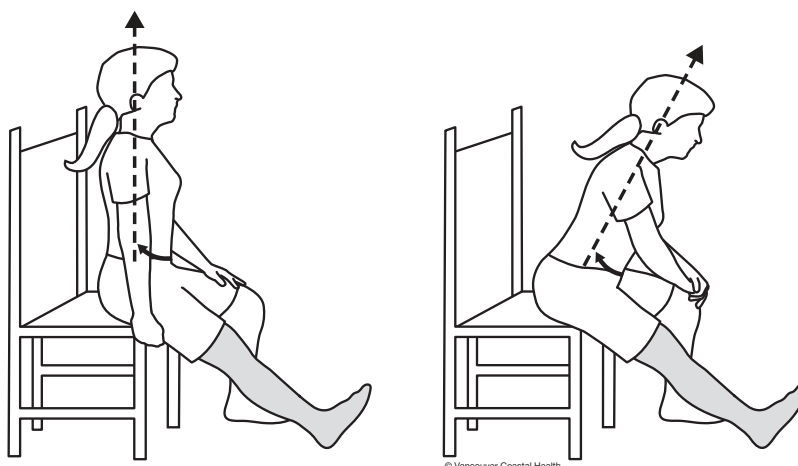
18. Hamstring Stretch (Back of Thigh)

Sit tall on edge of seat with one leg bent, other leg straight (rest heel on floor or raised stool).

- Turn on core muscles
- Bend forward at the hips until a stretch is felt at the back of straight leg

Hold 30 seconds up to 1 minute.

Repeat 3–4 times, several times a day on each leg.

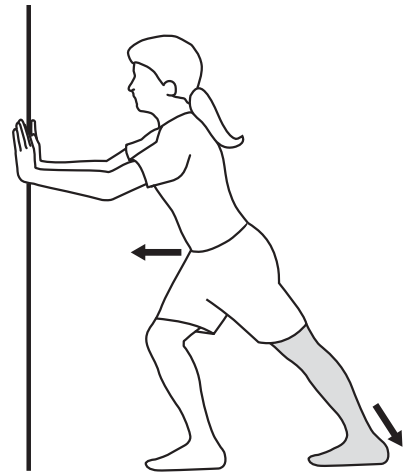


19. Calf Stretch

- Stand facing wall with one leg ahead of the other
- Keep back leg straight with heel on floor and toes pointing forward

a. Upper calf

- Lean into the wall by bending the knee of the front leg until stretch is felt in the calf of back leg

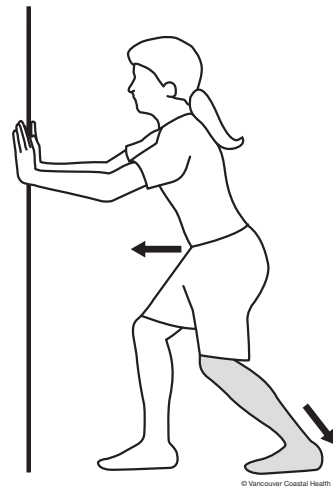


b. Lower calf

- Bend the knee on the back leg, keeping heel on the floor

OR

- Stand with support, feet side by side
- Place a book under the forefoot of one leg to feel a stretch at the back of calf
- Pull your lower belly in, squeeze your lower buttock and bring hips forward to feel more stretch
- Keep the knee straight

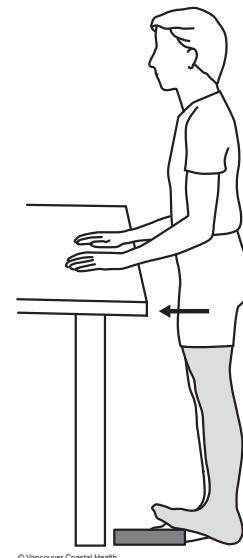


Hold 30 seconds up to 1 minute.

Repeat 3–4 times.

Do several times a day on each leg.

Remember to pull your lower belly in to support body posture during stretch.



20. Psoas Stretch (Front of Groin)

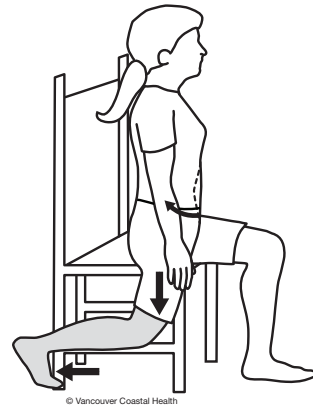
Sit on chair without arm rests, hold on to seat or furniture for support.

- Sit up tall and turn on core muscles
- Let operated leg hang off side of chair
- Slide operated leg back on your toes until you feel a stretch at the front of your thigh

Hold 30 seconds up to 1 minute.

Repeat 3–4 times.

Do several times a day on each side.



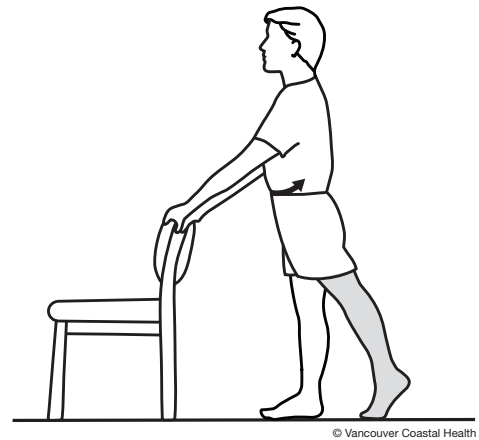
OR

- Stand up tall and turn on core muscles
- Hold on to rail or back of chair
- Slide leg back on your toes until you feel a stretch on the front of your thigh

Hold 30 seconds up to 1 minute.

Repeat 3–4 times.

Do several times a day on each side.



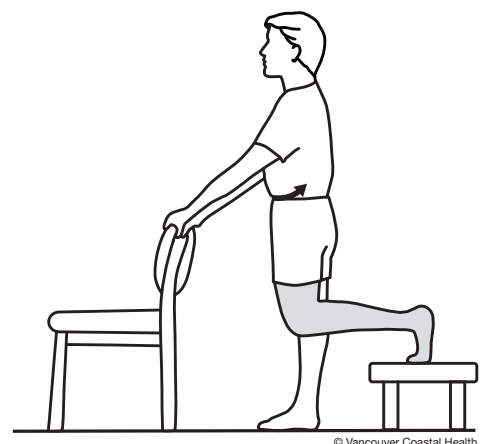
21. Quadriceps Stretch (Front of Thigh)

- Turn on core muscles
- Bend the knee and rest ball of foot on low step or stool.
- Feel stretch along front of thigh and surgical scar

Hold 30 seconds up to 1 minute.

Repeat 3–4 times.

Do several times a day on each side.



Progression:

- For more stretch place toes on higher steps
- Loop a belt or towel around ankle and pull foot towards your buttock to help further bend your knee (keep body straight)

Exercises to Improve Strength

It is important to do strengthening exercises for several months after surgery to help you regain strength, improve day-to-day activities and protect your new joint. Your operated leg will take up to a year or more to regain normal strength.

Guidelines:

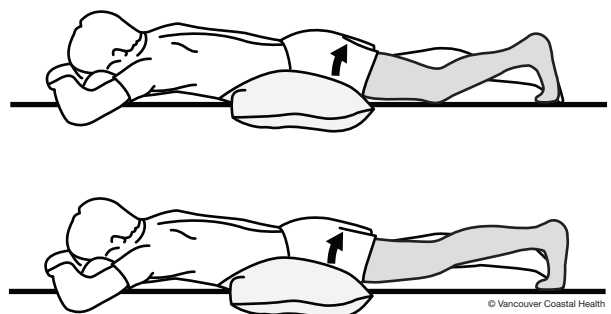
- Do 8–15 repetitions of an exercise. To build strength, your muscle should feel very tired by the last repetition
- If you can't do 8 repetitions of an exercise, you need to make the exercise easier
- If you can complete 1 set of 15 repetitions for 2 strengthening sessions in a row you can progress the exercise (make it harder) by:
 - Adding more weight (e.g. 2-3 lbs) or changing colour of exercise band
 - Doing a bigger movement (open or close your joint more)
 - Switching to a more advanced version of the exercise
- To maintain your current strength, train 2 days a week
- To increase your strength, train 3–4 days per week
- Always rest the day after doing strengthening exercises to let your muscles recover
- Remember to keep your core muscles turned on throughout your strengthening exercises

22. Active Leg Straightening

Lie on stomach with knees bent and toes tucked under or resting over rolled towel.

- Squeeze lower buttocks
- Use one lower buttock to straighten hip by lifting thigh, press into the ball of your foot

Hold 5–10 seconds, repeat 8–15 times.
Do 3–4 times a week.



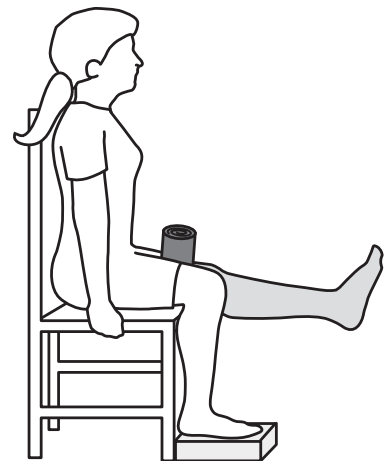
23. Seated Knee Straightening

- Sit tall on firm chair
- Keep thighs fully supported on chair, non-operated leg supported on book/floor
- Squeeze a rolled towel between thighs and straighten operated leg
- Keep squeezing rolled towel while lowering leg down

Hold 5–10 seconds, repeat 8–15 times.
Do 3–4 times a week.

Progression:

Wrap _____ lbs ankle weight above ankle.



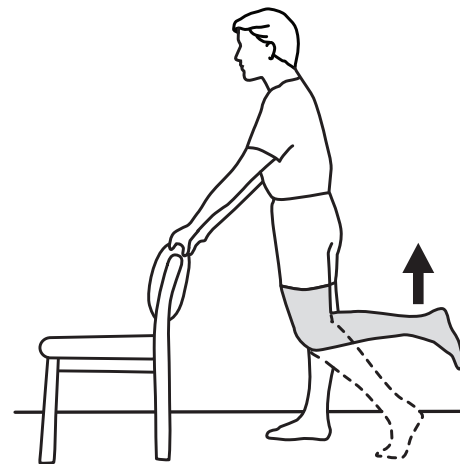
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24. Standing Knee Bend

Stand holding chair or counter for support.

- Place operated leg behind, resting on ball of foot
- Squeeze lower buttocks and bend knee to bring heel towards buttocks

Hold 5–10 seconds, repeat 8–15 times.
Do 3–4 times a week.



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25. Heel Lifts in Standing (Calf Exercise)

(Only do this exercise if your knee can straighten fully)

Hold counter or table for support.
Keep knees straight, do not lean forward.

Static hold exercise:

- Rise up onto toes and hold 5–10 seconds (up to 45 seconds)
- Repeat 5 times with 1 minute rest between repetitions

Controlled movement exercise:

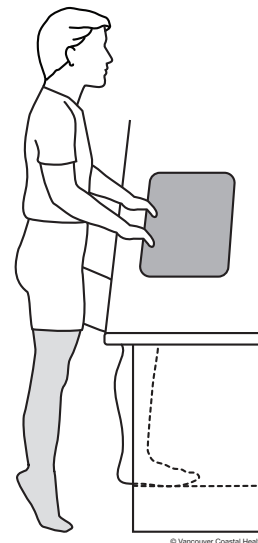
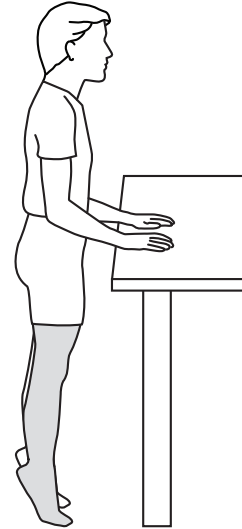
- Rise up onto toes, then lower heel down slowly (2 seconds up, 3 seconds down)

Repeat 8–15 times.

Do 3–4 times a week.

Progression:

- Stand on one leg, rest other heel on step or ledge under sink cabinet, repeat heel lift exercise with the standing leg as above
- Take other leg off support and perform single leg heel lift



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26. Resisted Knee Straightening

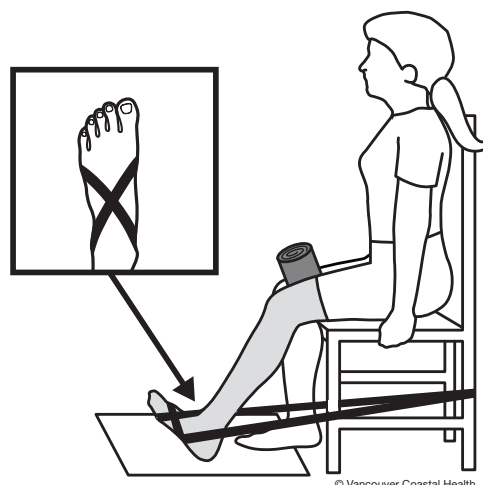
Attach resistance band to a secure object and to ankle of operated leg in figure of 8 as shown.

- Sit tall on chair, squeeze a rolled towel between thighs and straighten knee
- Slowly relax knee into bent position until you feel a stretch on front of knee

Hold 5–10 seconds, repeat 8–15 times.
Do 3–4 times a week.

Progression:

- Use stronger resistance bands



27. Resisted Knee Bending

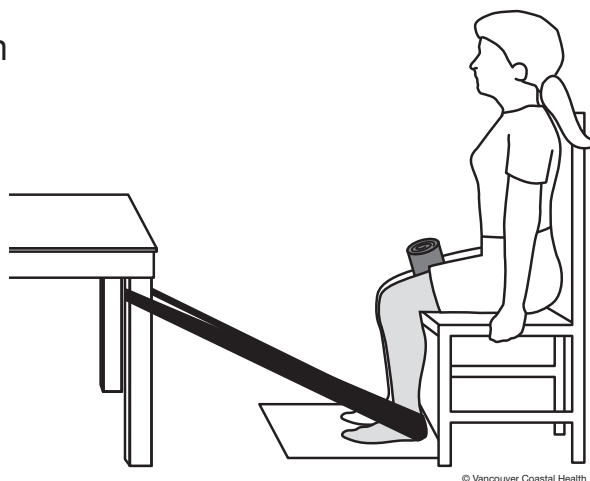
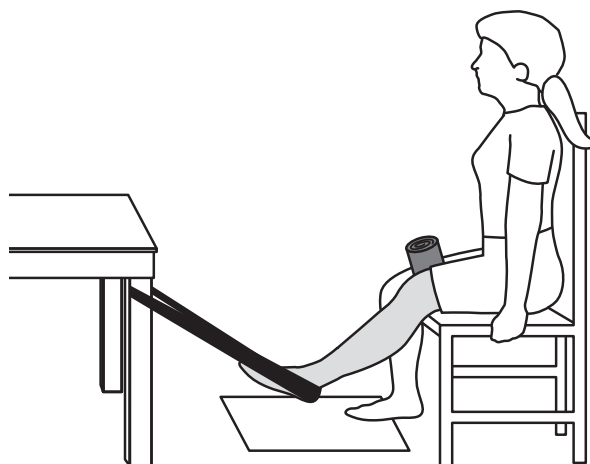
Attach resistance band to a secure object and around ankle of operated leg as shown above.

- Sit tall on chair, squeeze a rolled towel between thighs and bend knee as much as you can
- Keep squeeze on towel as you slowly relax band to start position
- Pull knee cap towards you to straighten knee with the help of the band relaxing

Hold 5–10 seconds, repeat 8–15 times.
Do 3–4 times a week.

Progression:

- Use stronger resistance bands



28. Upright Bike

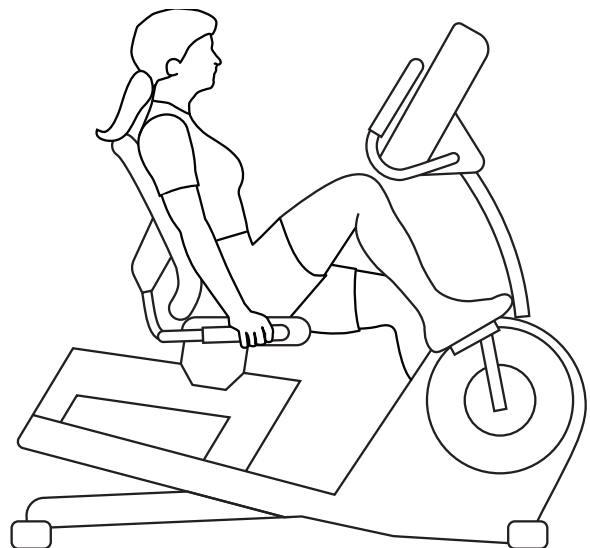
Using a stationary bike or seated stepper (e.g. the Nustep) can assist you in getting your range of movement, and do light to moderate intensity exercise after knee replacement.

Some tips on choosing the type of bike:

- Use an upright bike if your knee has less than 110° , during the early stage
- Use a recumbent bike to encourage more bending $>110^\circ$, most likely during the later stage
- Cycle forwards and backwards
- Adjust bike seat to maximum distance and cycle backward if you are having trouble straightening your knee
- Adjust seat closer to challenge knee bend
- As your knee range improves, you should adjust your seat to get maximum benefit
- Add resistance/tension slowly after your knee feels comfortable with the range



Upright bike



Recumbent bike

Exercises to Improve Balance

Training your balance after total knee replacement will lower your risk of falling and help you feel more confident when walking outside. Always have a firm counter or railing within reach when doing balance exercises. For better control, turn on core and lower buttock muscles when doing balance exercises.

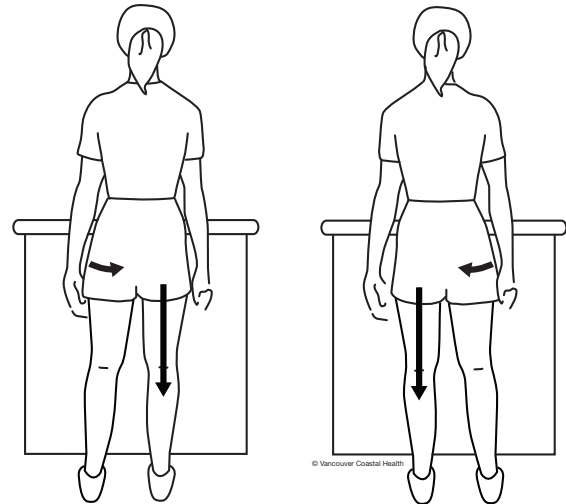
29. Side to Side Weight Transfers

Stand facing kitchen sink or railing.

- Place feet hip-width apart
- Shift your weight fully side to side onto each leg

Hold each position for 5–10 seconds.
Do several times a day.

Progression: March on the spot.



30. Forward and Back Weight Transfers (Rocking Horse)

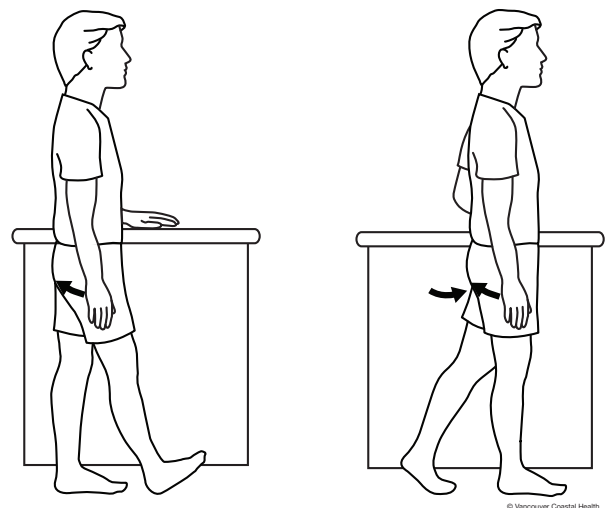
Stand beside counter or table.

- Place one foot in front of the other, resting on the heel (opposite leg to the hand support)
- Shift your weight forward by lifting up from the heel of the back leg, rocking through the ball of your foot forward then roll backwards
- Switch foot position and repeat

Repeat 8–15 times.
Do several times daily.

Progression:

- Take a full step forward and backward without holding on to support
- Walk placing your feet on a straight line. Start with small steps, progressing to bigger steps



Use this space to note any other in-hospital exercises suggested by your physiotherapist.

Exercises to Do for Weeks 7 to 12 After Surgery

By 7 to 12 weeks after surgery you will feel more confident with day- to-day activities and getting back to work or some of your social and leisure activities in your community. In this later stage of rehab, your physiotherapist will give you more challenging exercises to help you bend and straighten your knee, improve your overall strength, balance and daily function.

Remember to keep your core muscles turned on throughout your strengthening exercises.

Track your effort and let your physiotherapist know when you are ready to move to the next level.

Goals by end of Week 12:

- Bend your knee to 120° or more
- Fully straighten your knee
- Go up and down stairs normally with rail assistance
- Ride a stationary bike
- Sit and stand from an average chair height
- Walk longer distances without a limp using 1 cane or no walking aid
- What are your personal goals?

Remember:

You may find that pain and swelling increase as you begin new exercises, spend more time on your feet, become more active or return to work. Continue to manage your pain and swelling with the tips on pages 10-12.

Each person heals differently and the time it takes to meet goals may differ from person to person. Talk to your surgeon and your physiotherapist if you feel that you are not reaching your goals.

Exercises Weeks 7 to 12

Do the strengthening exercises 3–4 times per week to allow your muscles time to recover in between sessions.

31. Bridging

Lie on your back, thighs hip-width apart, squeeze large rolled towel firmly between thighs.

- Use your lower buttock muscles to lift hips off the bed
- Keep squeezing towel and slowly lower hips down

Tips:

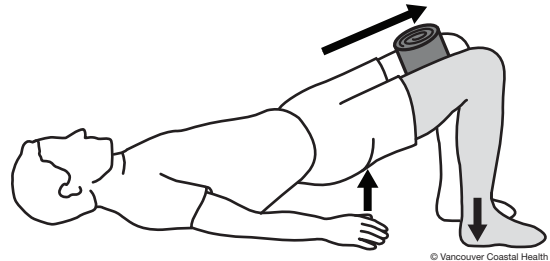
- Use thin pillow under head, or none at all, if possible
- Press arms down into bed to assist the lift

Hold 5–10 seconds, repeat 8–15 times.

Do 3–4 times a week.

Progression:

- Maintain squeeze on towel between thighs, lower hips a little and lift back up in small movements (pulses), using your lower buttocks to press into your feet



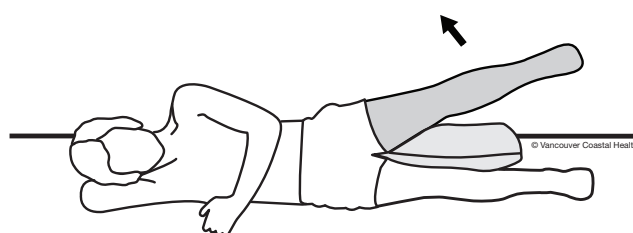
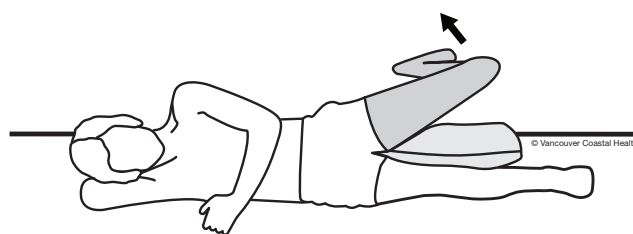
32. Leg Lift in Side Lying

- Lie on your non-operated side, pillow between legs
- Hips straight and knees bent behind you
- Turn on core muscles
- Lift leg off pillow with buttock muscles (back pocket area)
- Keep pelvis still, do not let your top hip roll backward

Hold 6 seconds. Repeat 8–15 times, 3 times a week.

Progression:

- Straighten top leg

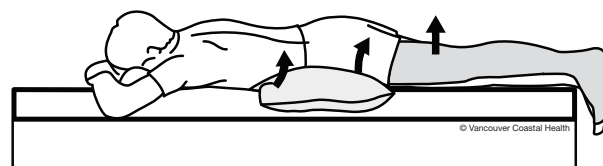


33. Active Straight Leg Hold

Lie on stomach with feet hanging off bed and a pillow under your belly

- Turn on core muscles and squeeze lower buttocks together
- Straighten knee and raise leg slightly off bed

Hold 5–10 seconds, repeat 8–15 times. Do 3–4 times a week.

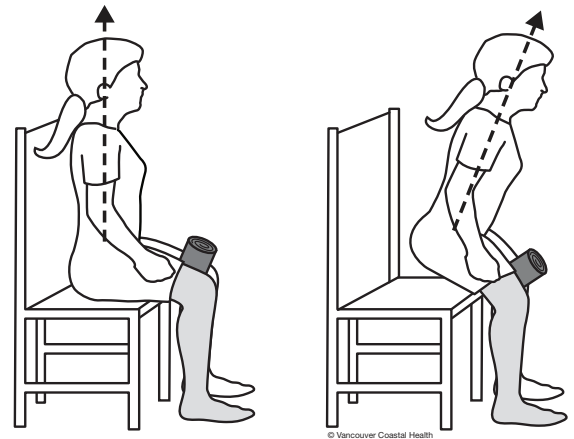


Exercises to Improve Balance and Daily Activities

34. Sit to Stand

Sit on edge of a higher chair, squeezing a large rolled towel between knees.

- Bend forward with back straight, bring shoulders over the knees
- Press feet into the floor and use lower buttock muscles to lift you up to standing. Do not use your arms
- Bend hips and knees to slowly sit back down on chair



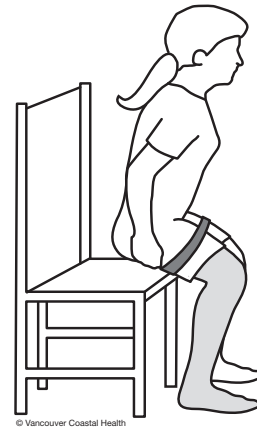
Alternatively, if you find your knees tend to knock together, tie a resistance band around your upper thighs and press thighs against the band to keep hip-width apart.

Repeat 8–15 times.

Do 3–4 times a week.

Progression:

- Use a lower chair
- Stagger legs by placing one leg back and other leg forward to make the back leg work harder. Keep both knees and feet pointing forward. Repeat with the other leg in front



35. Wall Slides

Stand with back against wall.

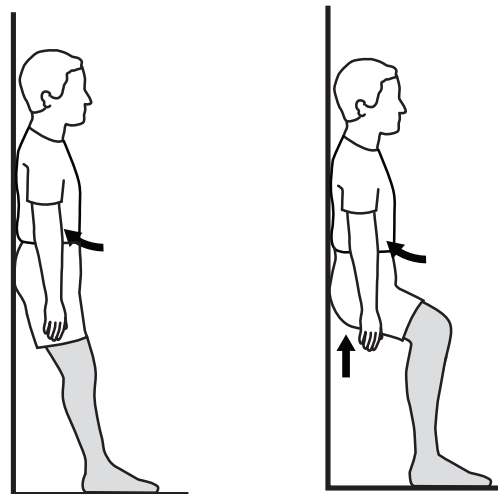
- Place feet hip-width apart and 1 - 1½ feet from the wall
- Bend hips and knees to slide down wall, as low as you feel comfortable. Keep tailbone against wall, knees over ankles and toes pointing forward
- Use lower buttocks to slide back up the wall

Repeat 8–15 times.

Do 3–4 times a week.

Tips:

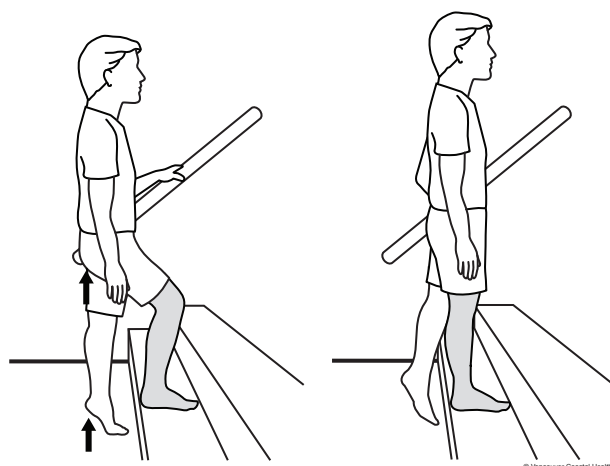
- Hold a rolled towel between thighs to make core muscles and inner thigh work harder
- If knees knock together, tie a resistance band around mid-thighs and press thighs against the band to hold thighs hip-width apart



36. Step Up

Stand facing step, one foot on higher step.

- Hold counter or railing for balance
- Step up by first raising heel of bottom leg, then lift up from lower buttock muscle of the other leg to straighten knee
- Step down backwards onto toes, keep buttock squeezed, roll rest of foot down



Repeat 8–15 times, switch sides.

Do 3–4 times a week.

Tips:

- Avoid leaning forward or pulling on railing
- Keep your pelvis level at all times, and knee over second toe

37. Side Step Ups

Stand sideways next to step.

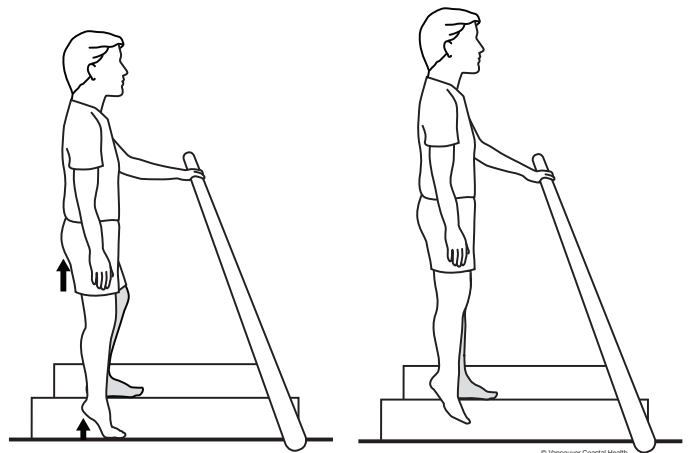
- Hold counter or railing for balance
- Place one foot on top step beside the lower leg
- Step up sideways by first raising heel of bottom leg, then lift up from lower buttock muscle of the other leg to straighten knee
- Step down onto your toes then roll rest of foot down (keep lower buttock squeezed)

Repeat 8–15 times, switch sides.

Do 3–4 times a week.

Tips:

- Keep knee over second toe at all times
- Keep your pelvis level at all times



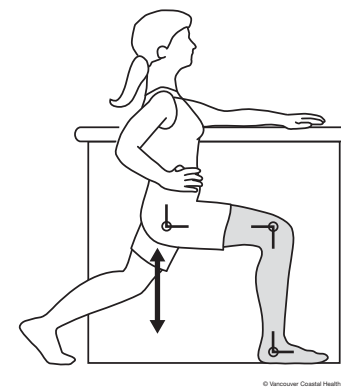
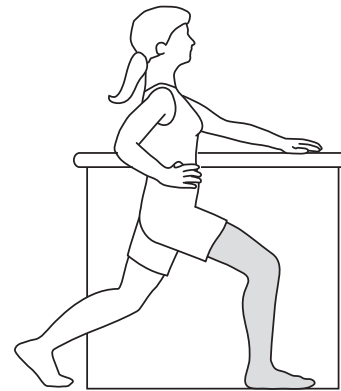
38. Split Squat (Lunge)

Hold counter for support.

- Place one leg in front, other leg behind resting on ball of foot
- Lower body toward the floor, bending from hip and knee
- Use buttock muscles to lift you up to starting position

Repeat 8–15 times, switch sides.

Do 3–4 times a week.



Exercises to Improve Balance

Training your balance after total knee replacement will lower your risk of falling and help you feel more confident when walking outside. Always have a firm counter or railing within reach when doing balance exercises. For better control, turn on core and lower buttock muscles when doing balance exercises.

39. One Leg Balance

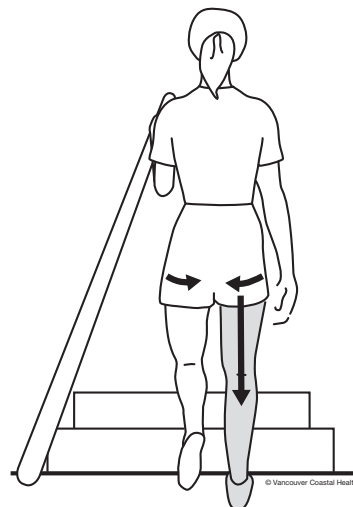
Stand facing stair or kitchen sink with a chair behind you for safety.

- Practice placing one foot up and down on a step (or place the foot on ledge under sink cabinet) while balancing on one leg, keeping pelvis level and posture straight
- Start with using hand support on same side as moving leg, then remove hand support

Hold up to 45 seconds. Repeat on other leg.
Do several times a day.

Progressions:

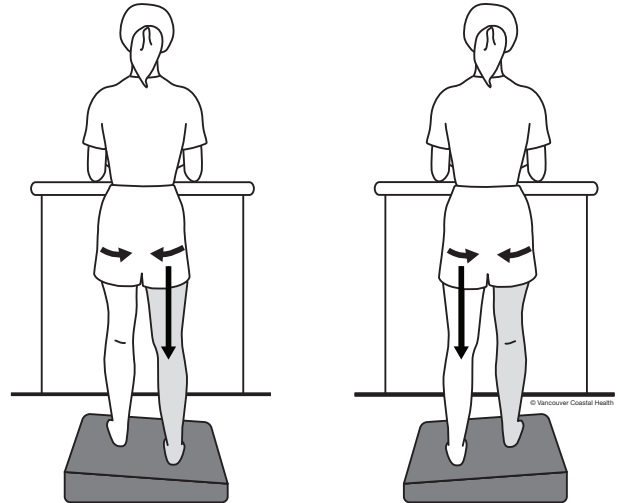
- Stand on one leg
- Slowly turn head side to side while balancing on one leg
- Stand on small cushion



40. Balance Exercise

a. Side to side

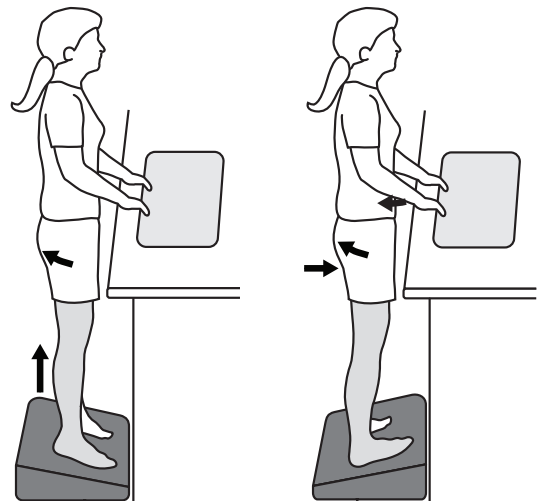
- Step onto firm cushion/pillow or balance board (place board to rock side to side). Keep body still and hips level
- Press down into cushion/pillow (or tip board down on one side) through straight leg, bending other knee
- Repeat movement from side to side



b. Heels and toes

Step onto firm cushion/pillow or balance board (turn board to rock forwards and backwards).

- Keep body and hips still, move through the ankles
- Press forward into cushion/pillow (tip board forward) to stand on toes
- Press backwards into cushion/pillow (tip board backward) to stand on heels



Some other ways to challenge your balance:

- Walking in water (forwards, backwards, sideways)
- Stand with feet close together, slowly turn your head from side to side, then try this standing on a pillow
- Stand with feet staggered one in front of the other, slowly turn your head side to side
- Take a few steps and stop mid-step to balance on one foot. Repeat stopping to balance on other foot
- Try Tai Chi exercises

Staying Active after Joint Replacement

About 3 months after your knee replacement surgery, you will be encouraged to become more active and return to some of your favourite leisure and sporting activities.

Staying active will help to:

- Increase your fitness level and endurance
- Prevent or help you manage other chronic health conditions
- Increase your muscle strength and power (moving speed)
- Improve your bone quality and life of your joint replacement
- Keep your weight under control (extra weight on your body also places extra stress on your replaced joint)
- Improve your mood and help you sleep better

Talk to your surgeon, family doctor or physiotherapist about what activities are right for you. In general, choose activities that:

- Are low impact
- Build on your previous skills and experience
- Have low risk of injury
- You enjoy!

For helpful information and guidance on how to get started and finding the right activity for you, check out these resources:

Get Moving: Maximizing Your Activity After Hip or Knee Replacement
movepainfree.org/wp-content/uploads/Get-Moving-Booklet_2015-EN.pdf

Physical Activity Services at HealthLinkBC
healthlinkbc.ca/physical-activity-services or call 8-1-1.

Contact your local recreation centre to see if a joint replacement exercise program is available in your community!

Helpful Resources

Internet Resources:

Hip and Knee Osteoarthritis Handout:

HIP or KNEE OSTEOARTHRITIS? Here is what you can do!

vch.eduhealth.ca/en/permalink/phem4536

Canadian 24 hour Movement Guidelines: csepguidelines.ca

Mary Pack Arthritis Program: mpap.vch.ca

Osteoarthritis Service Integration System (OASIS): vch.ca/oasis

The Arthritis Society: arthritis.ca

Canadian Orthopedic Foundation: movepainfree.org

Physiotherapy Association of British Columbia (PABC):

To find a physiotherapist in your community: bcphysio.org

Please note: When looking for information on the internet, visit government (.gov), university (.edu) and professional association websites. Not all information found on the internet is credible, reliable or correct. Always check with your healthcare professional.

Resources to Help Prepare for Surgery:

Before During & After Hip and Knee Replacement Surgery

Ask your surgeon for a copy or access online at:

vch.eduhealth.ca/en/permalink/phem662

OASIS Education: vch.ca/en/exercise-osteoarthritis

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<i>After Surgery: Weeks 0–6 continued...</i>																
23.	Seated Knee Straightening															
24.	Standing Knee Bend															
25.	Heel Lifts in Standing															
26.	Resisted Knee Straightening															
27.	Resisted Knee Bending															
After Surgery: Weeks 7–12																
28.	Upright Bike															
29.	Side to Side Weight Transfers															
30.	Forward and Back Weight Transfers															
31.	Bridging															
32.	Leg Lift in Side Lying															
33.	Active Straight Leg Hold															
34.	Sit to Stand															
35.	Wall Slides															
36.	Step Up															
37.	Side Step Ups															
38.	Split Squat (Lunge)															
39.	One Leg Balance															
40.	Balance Exercise															

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The information in this document is intended solely for the
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