

# KNEE STRENGTHENING EXERCISES

## BENEFITS OF STRENGTHENING EXERCISES FOR KNEE OSTEOARTHRITIS

This strengthening exercise program includes exercises that have been shown to be beneficial for people with knee osteoarthritis. The exercises aim to improve the strength of certain muscles that will provide better support for the knee during walking and other tasks. Stronger muscles help to cushion as well as support and protect the joint. Stronger muscles also make it easier to perform many daily activities, such as standing up from a chair

There are points to remember when doing strengthening exercises:

- ✔ Do all your exercises at least 3 times a week.
- ✔ To get stronger, you need to feel like the exercise was 'hard' or 'very hard' when you did it. If it felt 'easy', you may not be gaining strength

If you experience difficulty performing any exercise, talk to your health professional on your next visit so that the exercise can be reviewed and modified if necessary. Sometimes it takes a bit of trial and error to get the right set of exercises for you. You should progress to the next stage when knee exercises feel 'easy'

## SAFETY

Be safe when doing your home exercises!

- ✔ If you are standing to do an exercise, use a chair or bench for support, or have one close, just in case you lose your balance
- ✔ Move carefully and at a medium speed. Try to avoid sudden or jerky movement.
- ✔ Consider your footwear. Is it appropriate for what you are doing? Choose shoes that will not make your feet sore or give you blisters. Make sure your shoes will not make you trip or lose balance

## EQUIPMENT

To increase the resistance of the home exercises, adjustable ankle weights or elastic exercise bands can be used. The elastic bands are available in a variety of brands, such as Theraband®, and come in different resistances. Ankle weights and resistance band can be purchased at most sporting equipment stores or your local physiotherapy or medical clinic. Talk to your healthcare professional for advice about what level to start at

Feeling some discomfort or pain during exercise is normal; however, revise the exercise dosage if:

- ✔ The pain is excessive
- ✔ The pain remains elevated for more than 2 hours after exercise
- ✔ There is increased joint swelling the next day

## GETTING STARTED

### Inner range quads over roll with resistance

This strengthening exercise program includes exercises that have been shown to be beneficial for people with knee osteoarthritis. The exercises aim to improve the strength of certain muscles that will provide better support for the knee during walking and other tasks. Stronger muscles help to cushion as well as support and protect the joint. Stronger muscles also make it easier to perform many daily activities, such as standing up from a chair

### Starting position

Sit on a firm surface with body weight supported by arms behind. Alternatively, you can lie down if you prefer. Support the affected knee on a rolled up towel. Your affected knee should be bent about 30° (or 1/3 bent).

Keep the knee cap and toes pointing toward the ceiling

### Exercise

Keeping the knee in contact with the towel, straighten the affected leg and SLOWLY lift the heel off the surface over 2 seconds

Hold the leg as straight as it will go for 5 seconds then SLOWLY lower down over 2 seconds

Hold the leg as straight as it will go for 5 seconds then SLOWLY lower down over 2 seconds

'Slowly up, hold, 2, 3, 4, 5, slowly down.'



Starting position



Fully straighten knee

# KNEE STRENGTHENING EXERCISES

## Progression

Use appropriate ankle cuff weight

## BRIDGE

### Starting position

Lie on a mat on the floor

### Exercise

Lift your bottom off the floor. Keep your shoulder blades on the floor. Hold for 5 seconds and slowly lower

### Progression

Split leg bridge - move the affected leg closer to your bottom. Lift hips in this position. Make sure your hips stay level



## SEATED KNEE EXTENSION WITH RESISTANCE

### Starting position

Sit in a firm chair (one where the seat is quite high above the ground if possible)

### Exercise

Slowly straighten the knee until it is fully straight

Hold for 5 seconds and lower slowly

'Slowly up, hold, 2, 3, 4, 5, slowly down

### Progression

Use appropriate level of resistance band - red through to black or ankle cuff weight



Fully straighten knee



Tie your resistance band into a loop. Place the looped resistance band around the leg of a chair. Sit on the chair and put your leg into the loop with the band just above your ankle.

Straighten knee to about 2/3 straight

# KNEE STRENGTHENING EXERCISES

## I CAN DO MORE

### SIT TO STAND (WITHOUT USING HANDS)

#### Starting position

Sit in a chair of standard height and firm seat. Place the chair back against a wall or close to it

#### Exercise

Slowly stand without using your hands to help

Start by leaning forward over your toes. As your buttocks lift, bring your hips under your body and straighten up

Sit back down slowly

#### Variations

- ✓ Use a lower chair to make it more challenging
- ✓ Hold for 3 seconds with the buttocks just off the chair without touching down
- ✓ Increase the amount of body weight taken through the arthritis knee



Arthritis knee behind



## I CAN DO MORE

#### Starting position

Use the back of a chair or a wall to provide support

Maintain a good upright posture with shoulders and hips both facing forwards throughout. It's very easy to allow yourself to twist around as you do the exercise, but this will mean the wrong muscles are being exercised

#### Exercise

Keeping body still and knee straight, lift arthritis leg out sideways leading with the heel. Do not allow the leg to turn or swing forwards – keep the knee and toes pointing forward and your heel slightly behind you as you perform the movement.

Hold for 5 seconds and then lower slowly

'Slowly up, hold, 2, 3, 4, 5, slowly down.'



Add resistance band looped around the ankles to provide more resistance.

# KNEE STRENGTHENING EXERCISES

## SINGLE-LEG BRIDGE

Version A - Bridge with both legs down, keep hips level as you lift one leg

Version B - Lift one leg first, then lift hips, keeping one leg raised. Make sure hips stay level



## FULL PROGRAM

### STEP-UPS AND STEP-DOWNS

#### Starting position

Place your arthritis leg onto a step in front of you

Be safe!! Use a hand support (back of chair or handrail) for balance

#### Exercise

Step up onto the step slowly, carefully controlling the movement of your arthritis knee

Your weight should be on your arthritis leg through the whole exercise

Concentrate on the alignment of your arthritis leg - hip, knee and ankle - position your knee over your foot throughout



#### Starting position

Stand on the step

#### Exercise

Taking care to control the movement of your arthritis knee, reach your other foot towards the floor in front. If you can reach the floor, just touch it lightly. Return to the starting position

Your weight should be on your arthritis leg through the whole exercise

Concentrate on the alignment of your arthritis leg - hip, knee and ankle - position your knee over your foot throughout



## CRAB WALK WITH RESISTANCE BAND

#### Starting position

Place a loop of red resistance band around both thighs just above the knees, so that there is tension when ankles are separated 10 cm. Slightly bend both knees

#### Be safe!

You should stand facing a table, a kitchen bench or a wall which you can reach if you lose balance

Select appropriate level of resistance band to vary resistance





# KNEE STRENGTHENING EXERCISES

## Exercise

Step sideways against the pull of the resistance band

Do not twist or turn your body or legs. Your feet must point forwards while you are stepping sideways

## Options

Place the band around the ankles instead of thighs

## CALF RAISES

### Starting position

Stand holding onto back of the chair

### Exercise

Slowly rise up onto toes

Hold for 5 seconds

Slowly lower

'Slowly up, hold, 2, 3, 4, 5, slowly down.'

### Progressions

✓ Single heel raises

✓ Raises from the edge of a step



## STEP-UPS AND STEP-DOWNS

### Starting position

Stand near a wall. Lean your trunk and buttocks against the wall and keep your back straight

Step feet away from the wall until your feet are approximately 30 cm (1 ft) away from the wall. Stand with feet apart  
Slightly turn your feet outwards.

Keep your trunk and buttocks against the wall and keep your back straight

### Exercise

Slowly slide down the wall (as if to sit), keeping your trunk and buttocks in contact with the wall as you do

Keep your knees moving over your toes

Stop when your knees are bent to about 60 degrees (or less if it is painful)

Slowly slide back up keeping your trunk and buttocks in contact with the wall as you do



Lean against the wall



Step feet away from the wall  
Keep buttocks, back and shoulders against the wall



Slide down the wall  
Keep buttocks, back and shoulders against the wall