

Knee Strengthening Exercises

The following knee strengthening exercises have been grouped by muscle. Aim to pick 2 or 3 exercises from each section. For each exercise, aim for 10-20 repetitions, 2-3 x a day.

To find out how to vary and progress these exercises, or for more information visit

www.knee-pain-explained.com

Quads Strengthening Exercises

These are the **muscles** at the front of the thigh that straighten the knee. Weak quads is one of the most common causes of pain making quads knee strengthening exercises an important part of any rehab programme.

1) Quad Clenches

Purpose: Maintain and strengthen the Quads without moving the knee, enable full straightening of the knee. Ideal in the early stages following an injury or surgery

Starting position: Lying flat on your back or sitting up. Leg and knee straight

Action: Tighten the muscle on the front of the thigh by pushing your knee down. You should feel your thigh muscles clench. Hold for 3 secs



2) Short Arcs

Purpose: Strengthen the quads muscles without much knee movement. Helps improve strength and control

Starting position: Lying flat on your back or sitting up with your leg horizontal on a flat surface such as a bed. Place a rolled up towel (approx 10cm diameter) under the knee.

Action: Pull your toes towards you and clench your thigh muscles. Slowly lift your foot up off the bed until your knee is straight (keep your knee resting on the towel). Hold for 3-5 secs and slowly lower



3) Straight Leg Raise

Purpose: Strengthen the Quads muscles without bending the knee NB Do not do this if you have a history of back problems

Starting position: Lying flat on your back. Leg and knee to be worked straight, other leg bent

Action: Pull your toes towards you and tighten/clench the muscle on the front of the thigh, locking your knee straight. Lift your foot up about 6 inches off the bed. Hold for 3-5 secs and slowly lower. Ensure your knee stays straight the whole time



4) Long Arcs

Purpose: Strengthen quads, increase knee mobility, great to do anytime sitting for prolonged periods (30mins+) to stop the knee getting stiff

Starting position: Sitting on a firm chair with your knee bent and your foot on the floor

Action: Lift your foot up and straighten your knee as much as possible. Hold for 3-5 secs and slowly lower



5) Knee Marching

Purpose: Increase quads strength without putting weight through the knee joint. Good in the early stages of recovery

Starting Position: Sit in a chair with your feet on the floor

Action: March your legs up and down one at a time. Lift your knee and foot up and then back down

Repetition: Repeat for about 1 minute, 2x daily and any time you are sitting for more than 20 minutes to stop your knee getting stiff



Hamstring Strengthening Exercises

The hamstrings are the muscles on the back of the thigh that bend the knee. You need a good combination of strength and length in these muscles. These hamstring knee strengthening exercises are a great place to start.

1) Hamstrings Clenches

Purpose: Strengthen the hamstrings muscles without having to move the knee - perfect after an injury or surgery

Starting Position: Sit in a chair with your heel against the leg of the chair and your feet firmly on the floor

Action: Press your heel firmly backwards into the chair leg feeling the back of your thigh tightening/clenching. Hold for 3-5 secs

Note: The foot shouldn't move during this exercise

2) Buttock Kicks

Purpose: Strengthen hamstrings without any weight going through the knee joint, increase knee mobility (flexion), aid circulation

Starting position: Lie on your tummy (on the floor or bed) with your legs straight

Action: Lift your foot off the floor and bring it towards your bottom as far as you can. Slowly return to the starting position

Notes: 1) You are aiming to get your heel all the way to your bottom 2) Make the exercise easier by hooking your good leg underneath the bad and using it to help lift the bad leg up



3) Kick Backs

Purpose: Improve the strength of hamstrings and mobility of the knee

Starting Position: Stand up straight holding on to something stable e.g. chair or table

Action: Lift your foot up as far as you can towards your bottom, bending the knee. Hold for 3-5 secs

Note: 1) Don't bend forwards - keep your body upright 2) keep your knees in line with each other- don't let your thigh come forwards



Glutes Knee Strengthening Exercises

These are the buttock muscles, vital for ensuring the forces go through the knee evenly. Virtually everyone who suffers from knee pain has weak glutes, so they are well worth doing.

1) Buttock Clenches

Purpose: Maintain and strengthen the Glutes without the knee moving - the perfect place to start

Starting position: Lying down or sitting up.

Action: Clench your buttocks together and hold for 3 seconds. You should feel yourself rise up slightly

2) The Clam

Purpose: Strengthen the glutes to help support the knee and prevent excessive weight going through the inner side of the knee – a must for anyone with knee pain!

Starting position: Lie on your side with your hip and knees bent approx 90°, feet together.

Action: Keeping your feet together, lift the top knee up as high as you can. Hold for 3 seconds and slowly lower

Note: Do not let your top hip roll backwards



Calf Strengthening Exercises

The calf muscles can be found on the back of the leg between the knee and the ankle. They move the foot and ankle, and help support the knee so should always been included with knee strengthening exercises.

1) Heel Raises

Purpose: Strengthen the calf muscles to help support the knee, helps with walking and running

Starting position: Stand with your feet slightly apart, weight equally distributed, holding onto something solid for balance if needed

Action: Rise up onto your toes lifting your heels as high as possible. Keep your body upright (don't bend forwards). Hold for 3-5 secs and slowly lower



Combination Knee Strengthening Exercises

Here you will find knee strengthening exercises that work two or three muscle groups at the same time.

1) Sit to Stand

Purpose: improve knee mobility, strengthen quads and glutes, improve general fitness

Starting position: Sit in a firm chair, feet on the floor

Action: Lean forwards, lift your bottom and stand up straight and then sit back down

Notes: 1) You can make this exercise easier by pushing up through your arms too 2) The higher the chair, the easier the exercise



2) The Bridge: Stage 1

Purpose: Excellent knee strengthening exercises for the hamstrings, quads and buttock muscles

Starting Position: Lie on your back with both knees bent about 90° and your feet on the floor/bed

Action: Clench your buttocks and lift your bottom off the bed as high as you can without arching your back. Hold for 3-5 seconds and slowly lower

Note: 1) Keep your back straight – don't let it arch as you lift up, it should be your bottom doing the work 2) Don't hold your breath – keep breathing normally



Balance Retraining

Balance / proprioception is really important to prevent knee injuries. A quick way to tell whether you should be doing balance exercises as part of your knee strengthening exercises programme is to try standing on one leg with your eyes closed. If you can't do it for one minute, you should do some balance exercises. This exercise helps your body learn the subtle adjustments needed for good balance.

1) One Leg Standing: Stage 1

Starting position: Standing near a wall or chair for support

Action: Lift up your good leg and stand on one leg for as long as you can. It is normal to wobble a bit

Progression: 1) Close your eyes and perform the exercise as above - you'll be surprised how much harder it is

