

Knee · Range of Motion Quad Strengthening

EXERCISES

The **quadriceps** muscle is the large muscle group on the front of the thigh. When you stand, it keeps your leg from collapsing beneath you. It is crucial for all types of leg function, including walking. It rapidly weakens (atrophies) after other unrelated injuries to the knee or leg because of lack of use.

The quadriceps (quad) is also the muscle that controls the kneecap as it slides through the groove on the front of the thigh bone. When the muscle is not strong and properly toned, the kneecap frequently doesn't track properly and can result in pain behind the kneecap and a sense of the knee "giving out" beneath you.

The following exercises are designed to maintain knee motion and quad strength. All should be done throughout the day while sitting (reading, watching TV) or lying down (in the morning and before going to sleep).

Do at least 5 times each day.



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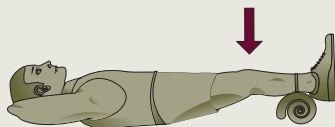
RANGE OF MOTION

1

A. Extension

With a small pillow or rolled towel beneath your ankle just above the heel, hold your leg straight using your own leg muscles. Hold for a count of 15.

Repeat 5 times.



B. Then using both hands, cup them over the front of the knee just above the kneecap and push down gently on the knee to straighten it. Hold for a count of 15.

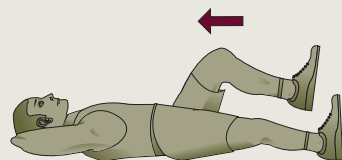
Repeat 5 times.



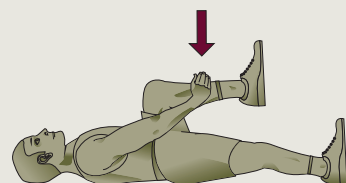
2

A. Flexion

Bend your leg as far as it will go. Hold for a count of 15. **Repeat 5 times.**



B. Now grasp your ankle with your hands and help bend it a little further. Hold for a count of 15. **Repeat 5 times.**



ISOMETRIC QUAD STRENGTHENING

Tighten your quadriceps muscle to make it as hard as possible. Hold for 5 seconds.

While *continuing* to tighten your quadriceps muscle, lift your heel off the bed 6 inches. Hold until the muscle tires out. Then let it fall gently back onto the bed. **Repeat 5 times.**

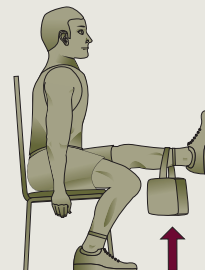


SHORT ARC QUAD SETS

If you do not have access to a weight machine, these exercises can be done at home as follows:

While sitting on a high, firm chair or countertop, set a purse with a wide soft handle, over your ankle. Place soup cans, lead shot or other heavy items in the purse. Bring your leg up straight. Hold for a count of 5. Lower the weight slowly back to the ground.

Repeat as many times as possible.



This is usually most comfortable in the last 45 degrees of extension, but you should do this exercise through whatever range you can without causing pain in your knee. You should be able to do **15-20 reps**. Increase the amount of weights and/or repetitions as you are able. More weight should be added each week or so as your leg becomes stronger.

There are also other “**closed chain**” (anti-gravity) exercises that strengthen your leg muscles and improve natural leg movement. You may mix and match as a part of a balanced exercise program.

These exercises include:

- **Walking (especially on a grade)**
- **Running**
- **Treadmill (especially with a grade)**
- **Bicycling (indoors or out)**
- **Stair stepper**
- **Leg press machine**

