

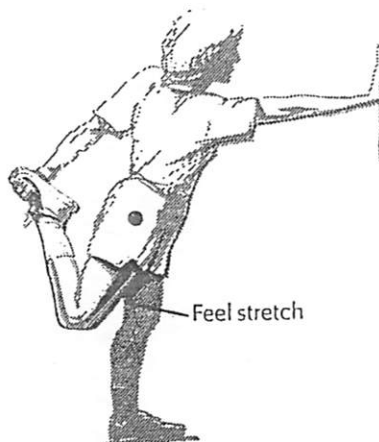
## Exercises for Pain in the Front of the Knee

Both strengthening and stretching exercises are useful in returning your knee to normal. Strengthening the muscles around your knee joint increases the stability (strength) of the joint. Stretching the muscles increases flexibility, which is important for easing stress on the kneecap when you move around. The exercises should not cause pain. If your knee hurts during an exercise, stop doing that exercise.

When you start your exercise program, avoid activities that require weight-bearing on a bent knee, such as climbing, jumping, squatting, running uphill and cycling. After two to three weeks of exercise, you may slowly increase your activities, as long as your knee doesn't hurt.

### Stretching Exercises

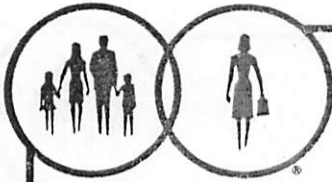
Try to keep your muscles relaxed (loose) during the stretch. Move slowly and breathe deeply. Don't hold your breath! Breathe in through your nose and breathe out through your mouth. Stretch to the point of slight discomfort but not to the point of pain. Hold the position for at least 15 to 20 seconds, then ease out of the position. Repeat the stretch two or three times. Always stretch on both sides of your body, even if only one knee is painful. Remember to stretch slowly and breathe.



**Quadriceps stretches:** This exercise will stretch your quadriceps muscle (the muscle on the front of your thigh). While standing on your left leg, reach back and hold your right foot behind you with your left hand. Balance yourself with your free hand against a wall. Try to straighten your right leg from the hip to the knee. You should feel the stretch in the front of your right thigh, not in the knee. If the knee or your bent leg hurts when you hold it behind you, rest that foot on a chair behind you instead of holding it with your hand. Repeat this exercise with your other leg.

**Hamstring stretches:** This exercise will stretch your hamstring muscle (the muscle on the back of your thigh). While standing on your right leg, place your left foot in front of you on a chair or a bench. Bend your right leg slightly and place your hands on the lower thigh just above the knee of the left leg. Bend forward at your hips with your back straight. You should feel the stretch in the back of your left leg. Repeat this exercise with your other leg.

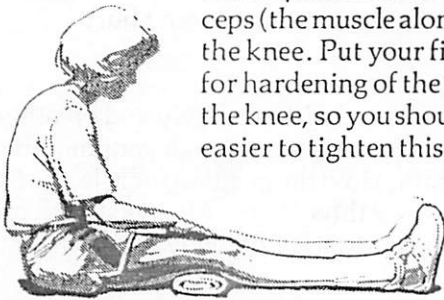




## Patient Information

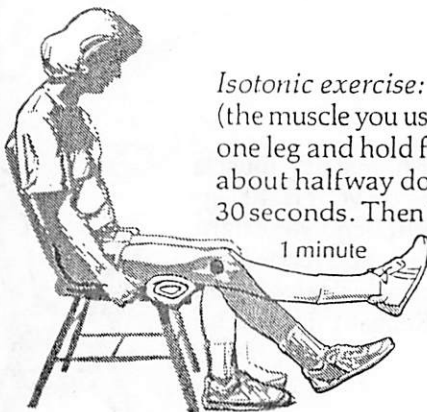
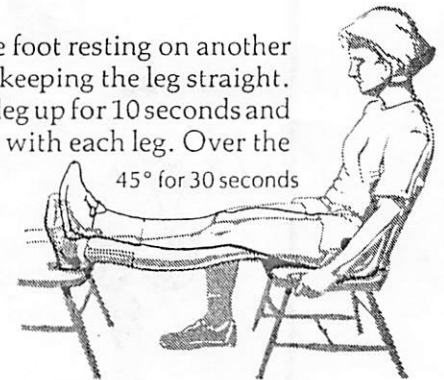
### Strengthening Exercises

Only isometric exercises, which simply tighten the muscle, should be used for muscle strengthening at the beginning of your exercise program. Isometric exercises put no stress on your knee, because you don't move the knee joint while you do the exercises. When your muscles get stronger and bending your knee is no longer painful, you can slowly add exercises that involve bending your knee (isotonic exercises). It usually takes two to three weeks of exercise to get to this point. Don't do any exercise that causes pain in your knee.



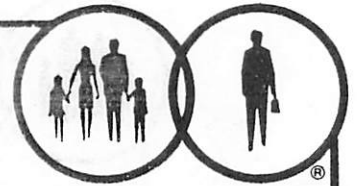
**Static quads:** Sit on the floor with both legs straight and relaxed. Tighten the quadriceps (the muscle along the top of the thigh) of one leg without lifting the leg or bending the knee. Put your fingers on the inner part of your thigh right above the knee to feel for hardening of the muscle. This part of the quadriceps muscle is very important for the knee, so you should be sure that you use this muscle in the exercise. You may find it easier to tighten this muscle if you place a rolled-up towel under your knees and press the back of your knees down into the towel. Hold the thigh muscles of each leg tight for six to 10 seconds and then relax for two to three seconds. Do this two or three times. Repeat the exercise with both legs at least four times a day, and as often as every waking hour.

**Straight-leg raises:** Sit in a chair with one leg extended and the foot resting on another chair or bench. Lift your foot a few inches off the bench while keeping the leg straight. Hold for 10 to 20 seconds. Relax your leg. Repeat, holding your leg up for 10 seconds and relaxing for 10 seconds. Do this exercise for five to 10 minutes with each leg. Over the next few weeks, gradually add weight to your outstretched foot, or use ankle weights. Start with 1 or 2 lb. Add more weight each week,  $\frac{1}{2}$  lb at a time, if you can complete the full routine without pain. Add more weight as your strength increases over the next few weeks.



**Isotonic exercise:** This exercise will strengthen your vastus medialis oblique muscle (the muscle you used in the static quad exercise). Sit on a chair and completely straighten one leg and hold for one minute. After one minute, bend your knee to lower your leg about halfway down to the floor (to about a 45-degree angle). Hold this position for 30 seconds. Then lower the leg the rest of the way and relax for one minute. Repeat the exercise three more times. Perform this exercise four to six times a day, four times for each leg. Weights may be attached to your ankles if you can still perform the entire exercise without pain.

*This information provides a general overview on exercises for knee pain and may not apply in each individual case. Consult your physician to determine whether this information can be applied to your personal situation and to obtain additional information.*



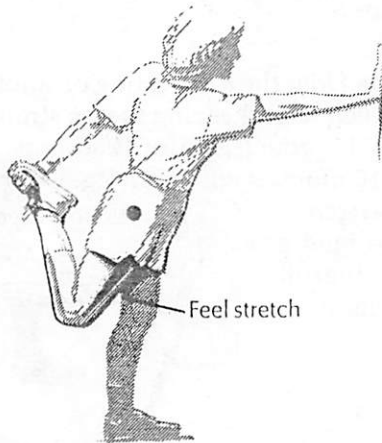
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