

KNEE PAIN

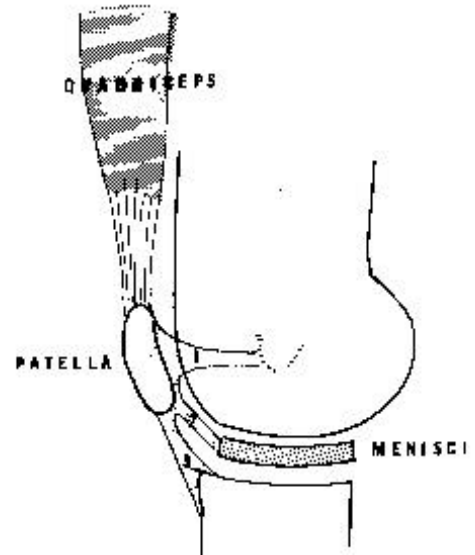
The knee is the largest and one of the most complex joints in the body. It is made of three bones, the patella (kneecap), femur (thigh bone), and tibia (lower leg bone) as well as numerous ligaments, tendons, and cartilage. The muscles in the front of the thigh are called the quadriceps or "quads". The muscles of the back of the thigh are the hamstrings. These two muscle groups move the lower leg and play a major role in providing stability and strength for the knee. Your doctor has determined that the cause of your knee pain is the "Patello-femoral Pain Syndrome" (PFPS). PFPS is one of the most common reasons for adolescents to visit a doctor.

Usually, the teen develops pain in the knee, especially on the medial (inner) side. It is often mild at first and may gradually get worse. Occasionally, it may seem to start suddenly after an injury. It may be in one or both knees. Symptoms are worse after activity, especially with going up or down stairs or hills, doing deep knee bends, and after sports that involve a lot of stress on the knees like basketball, volleyball, running, or skiing.

You may also have aching and stiffness after sitting with your knees bent for a long time (the "movie sign"). It sometimes feels that the knee "gives out" with running or walking but this is seldom severe enough to cause you to fall. It may make clicking or popping noises or may feel like it is "locked" for a short time.

Abnormal patellar tracking appears to be the underlying cause of PFPS. In other words, the kneecap is not gliding back and forth in the correct area as smoothly as it should when the knee moves. Instead, it is being pulled to the side of the knee, gliding over rougher areas, causing soreness. This may be due to one or a combination of several factors:

1. The part of the quad muscle on the outside of the thigh (vastus lateralis) is stronger than the muscle on the inside of the thigh (vastus medialis).
2. The person is somewhat "knock-kneed".
3. The patellar tendon is too lax (loose or more flexible) or tighter than average.
4. The shape of one or more of the bones of the knee is unusual.
5. There has been a previous injury to a knee ligament, causing instability.
6. Being overweight causes more stress on the knee than it was



designed to handle.

7. There is a foot problem, like pronation or poor arch (flat foot).

TREATMENT

For immediate relief of pain, several therapies should be employed:

1. Ice: Apply ice 20 minutes on, then 40 minutes off as often as possible. You may use a plastic baggie filled with ice or a package of frozen vegetables.

2. Anti-inflammatory type pain relievers like ibuprofen (Advil, Nuprin, etc.) or aspirin may be taken.

3. For severe pain, your doctor may recommend a knee immobilizer or crutches.

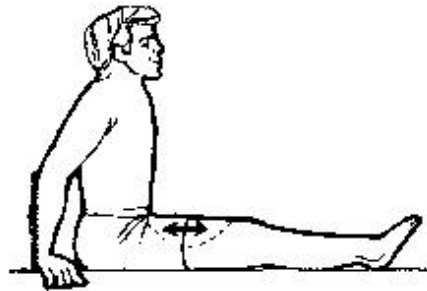
4. Rest: i.e. if it hurts too much, don't do it.

The long term treatment of PFS requires patience and motivation.

By following the prescribed exercise program designed to strengthen the quads, especially the vastus medialis muscle, most patients will be able to fully participate in all activities with minimal or no pain.

1. *Isometric Quadriceps Exercises (Quad Sets):*

With leg straight, tighten the thigh muscles (quads) as tightly as possible and hold. You may place a tennis ball under the backside of the knee and try to squash it. Hold for 5 seconds, then relax. Repeat this 25 times, 2 to 3 times per day. As this gets easier, you may increase the amount of time that you hold the contraction or increase the number of repetitions.



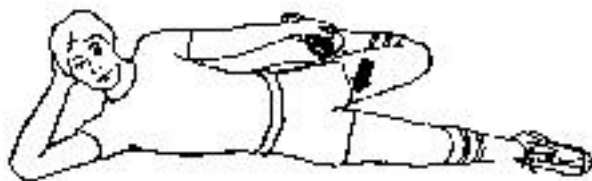
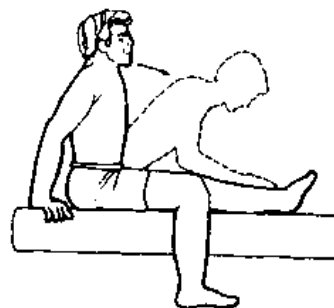
2. *Bicycling:* A stationary bicycle is probably the easiest way to not only strengthen the quads, but to improve overall fitness as well. It also allows one to read, watch TV, or listen to music while exercising. For it to be effective, you have to pedal fast enough to work up a sweat or to increase your pulse above 150. Make sure that the seat is set high enough so that your knee is almost fully extended when the pedal is at the bottom. Riding a regular bicycle outside will also work, but is more dangerous (you need to go pretty fast or go uphill to work up a sweat) and less



convenient because of darkness, weather conditions, etc. Don't forget to wear a helmet.

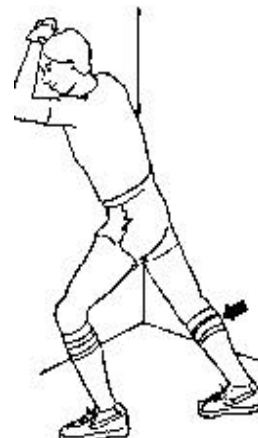
3. *Stretching:*

a) Hamstrings: In a sitting position with one leg extended out in front, lean forward and attempt to touch your toes. Reach out toward your toes until you feel the muscles in the back of your thigh stretching and hold this position for 30-60 seconds.



b) Quads: lying on your side (or standing), grab one foot and pull it back toward your buttock. Hold the stretch for 30-60 seconds.

c) Lower leg (calf muscles): Lean against a wall with one leg extended back behind you. Keep the heel of the back leg planted on the ground and lean in toward the wall. Do this exercise first with the knee of the back leg straight and again letting the knee bend. Again, hold the stretch for 30-60 seconds.



If you belong to a health club, avoid knee extension machines and stairsteppers.

Most people find that a neoprene or elastic knee brace (patellar stabilizing unit or knee stabilizer) worn during sports or P.E. helps. These are made by several different companies and can be bought at most large sporting goods stores.

Most have a hole in the center for the kneecap. Your physician may also recommend arch supports for your shoes if appropriate.

Unlike many knee injuries, like torn ligaments or cartilage, PFPS is not a permanent condition. It will not lead to arthritis. Although PFPS also occurs in adults, most teens tend to "outgrow it".

However, this may take several years. By following the above advice, especially the exercise program, one can recover much more quickly and be able to return to full activity with minimal or no pain a lot sooner.