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Knee pain and the Mistracking knee cap

For a major complaint of knee pain: You get knee pain and grating or popping when you ride a bicycle, or walk up or down stairs, or stand up from sitting in a chair. The leg muscles feel very weak. You may feel the knee has developed severe arthritis. The pain is due to an *imbalance in the quadriceps muscle* causing the knee cap to miss-track. In medical terms the problem is patella-femoral syndrome or chondromalacia patella.

The knee cap or patella connects by a thick ligament to the bony knob on the front of the shin-bone (tibia). Along the top of the patella are the attachments of four thigh strap muscles termed the quadriceps. When the quadriceps is active it pulls on the knee cap. In turn the knee cap pulls on the shin bone and the knee straightens out.

On the knee cap underside is a ridge lined up with the shin and thigh bones. This ridge normally runs in the valley between the two knobs at the lower end of the thigh bone. Straightening the bent knee works smoothly as long as the knee cap ridge rides centered between these two knobs. If the knee cap tracks toward the inside or outside of the knee during straightening, the underside of the knee cap rubs on one of the knobs. Over time the cartilage under the knee cap wears producing popping, grating, and pain whenever the knee is straightened. This is chondromalacia patella. If the medial two strap muscles are stronger than the outer two muscles, the knee cap moves inward toward the other leg. If the lateral strap muscles are stronger the knee cap moves outward.

It is surprisingly easy to correct this problem. The fix is at least semi-permanent. We use a rebalancing exercise for the quadriceps. These exercises are done sitting on a surface high enough so you can swing the knee. Place a one or two pound weight around your ankle (most shoes weigh 1-2 pounds).

For a knee cap that rides tracks toward the **outside** of the knee:

1. Roll your thigh outward so your ankle is closer to your other leg.
2. Holding this position, swing your foot and lower leg **front to back**.
3. The target is fifty swings a day for two weeks. After two weeks the quadriceps muscle will be balanced and the knee cap should track properly.

For a knee cap that tracks toward the **inside** of the knee:

1. Roll the thigh inward so the ankle is outside the thigh. Holding this position, swing your foot and lower leg **front to back**.
2. The target is fifty swings a day for two weeks. After two weeks the quadriceps muscle should be balanced. The knee cap should track properly.

In more than twenty-five years of medical practice this strategy has been successful in dealing with this type of knee pain virtually every time.