

Eliminating Knee Cap (Patellofemoral) Pain

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Knee cap pain is caused by excess friction on the back of the knee cap as it glides up and down when the knee bends. Some of the characteristics of knee cap pain include:

- Pain around or behind the knee cap.
- Often accompanied by cracking or creaking sounds.
- Pain is worsened by high impact activities, kneeling, squatting and going up and down stairs.

There are many things you can do to help eliminate knee cap pain. Take a look at the following tips and instructions:

Shoes

- Avoid high heels.
- Wear street shoes with rubber soles rather than leather soles to reduce impact.
- Wear shoes with good arch support to correct for foot pronation (tendency for the ankles to lean inward).
- Select running shoes for “overpronators.”
- Add insoles to athletic shoes to reduce impact and improve arch support. Examples include:
 - Superfeet
 - Spenco PolySorb
 - Sorbothane Stabilizer
 - Graphite Arch

These insoles are available at large sports stores, stores that sell running shoes such as Foot Locker and some pharmacies.

Sitting and Standing

- Avoid sitting with your knees bent for long periods of time – it’s better to sit with the knees relaxed and extended.
- Avoid sitting cross-legged.
- Avoid kneeling or squatting positions.
- Go down stairs or down hill gently to reduce impact.

Sports and Fitness Activities

- Decrease high impact activities (running or jumping activities).
- Decrease stadium running, stair climbing and step aerobics.
- Stairmaster use may be okay if the step height is low and you can do it without causing pain.
- Swimming: avoid breast stroke kicking.

Weight Training

- Avoid full squats and lunges.
- Avoid the leg extension machine at the gym – some people can tolerate “terminal” extension (the last 20 degrees from a slightly bent to fully straight leg).
- Leg press: may be okay if you avoid bending knees more than half way.
- Weight training activities that cause pain around the knee cap either during or afterward should be avoided. (It’s okay to feel soreness in the thigh muscle above the knee cap.)

Therapeutic Exercises

The goal of these exercises is to strengthen the inner thigh muscle (vastus lateralis oblique or VMO) that is responsible for keeping the knee cap centered and gliding smoothly. These exercises will also help stretch tight thigh muscles that place additional stress on the knee cap.

Bicycling

- Fast pedaling at low resistance, increasing resistance as tolerated.
- Bicycle seat should be high enough to fully straighten the knee.
- Keep knee bending up and down in line with your foot – avoid turning knee inward.

Straight Leg Raises

- Lie on your back with one knee bent.
- Lift the straight leg approximately one foot off the ground.
- Turn the leg outward to emphasize the use of your inner thigh muscles.
- Do three sets of 15 lifts, alternating legs.
- Add ankle weights and work up to 10 to 12 pounds per ankle.

Swimming

- Flutter kick: use fins for extra strengthening.
- Avoid breast stroke kick.

Stretching

- Stretch quadriceps (front of thigh) and hamstrings (back of thigh).
- Tightness of these muscles puts additional stress on the knee cap.

Other Helpful Strategies

Knee Sleeves

Select a supportive knee sleeve with a hole in the middle made of neoprene material for best support. These sleeves help:

- Support the kneecap and keep it centered.
- Keep the knee warm during cold weather activities.

Knee sleeves are usually not needed once thigh muscles are strong enough to support the knee cap.

Ice

Remember to ice the knee 15 to 20 minutes as soon as possible after activity. Icing helps:

- Reverse the inflammatory reaction that leads to knee soreness after activity or the next day.
- When done consistently, it can prevent a cycle of progressively worsening symptoms.

Anti-Inflammatory Medication

Anti-inflammatory medication is useful in helping to settle down existing symptoms or flare ups. You should not take it routinely or to prevent symptoms.

- **Examples of non-prescription anti-inflammatory medications:**
 - Ibuprofen (Advil, Motrin, Nuprin)
 - Naproxen sodium (Aleve)

Note: Acetaminophen (Tylenol) is NOT an anti-inflammatory medication.

Consult your physician regarding medications risks and potential drug interactions.