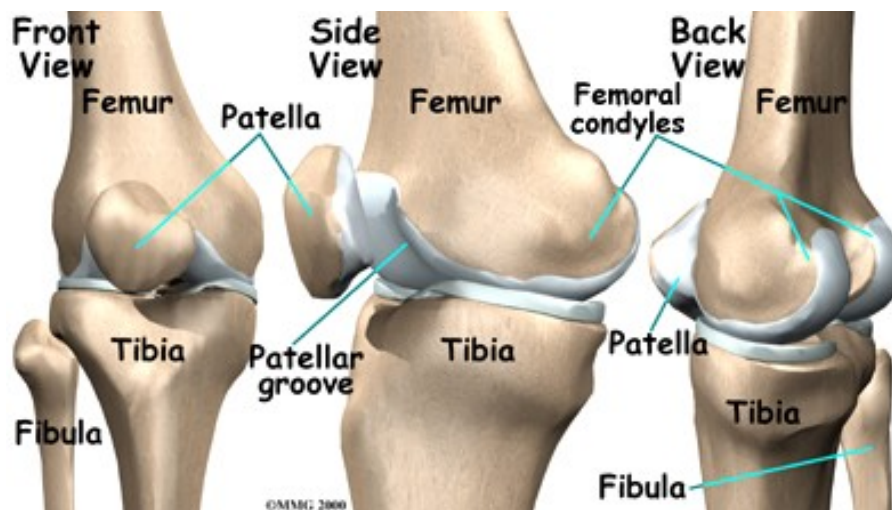


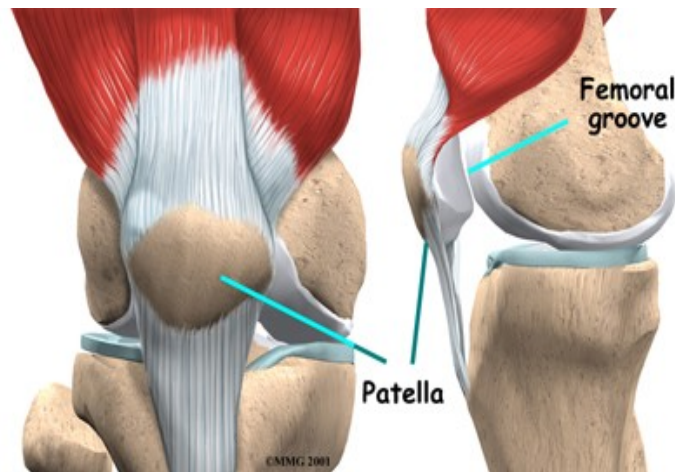
The mystery about “Knee -cap pain”

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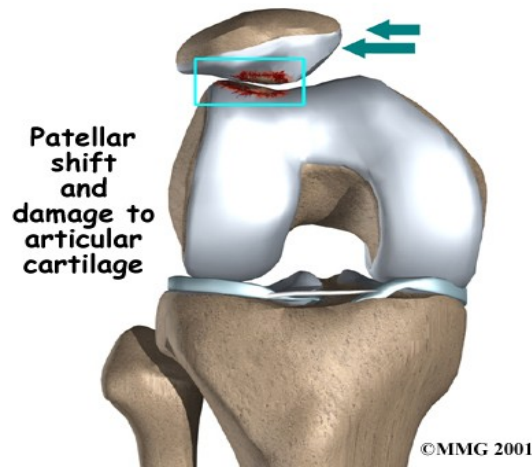
The knee is the meeting place of two important bones in the leg, the *femur* (the thigh bone) and the *tibia* (the shin bone). The *patella* (or *kneecap*, as it is commonly called) is made of bone and sits in front of the knee. This unique, weight bearing joint is wrapped by capsule, ligaments, muscles and tendons. A smooth, shiny and slippery covering material that covers the ends of the femur, top of the tibia and back of the patella is called articular cartilage. The cartilage is one-quarter of an inch thick and rubbery consistency allows the surfaces to slide against one another without damage to either surface. The function of articular cartilage is to absorb shock and provide an extremely smooth surface to facilitate motion.



Generally kneecap will be moving on the front of the knee in a special groove made by the thighbone or femur called the *femoral groove*. There are four muscles that form the quadriceps muscle group, is responsible for straightening of the knee. The patella acts like a fulcrum to increase the force of the quadriceps muscles. The quadriceps muscle helps control the patella so it stays within the femoral groove.

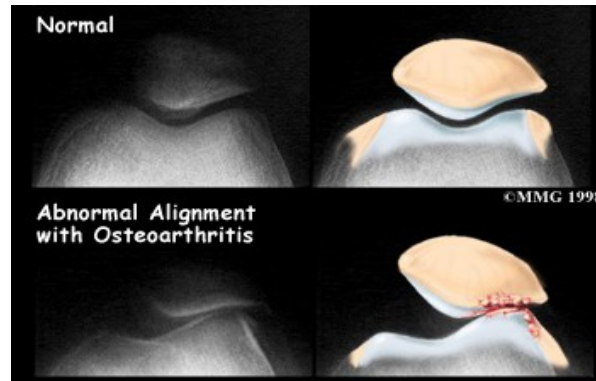


Knee – cap pain (patello - femoral syndrome) is a common syndrome characterized by pain in young adults worsened by sitting and climbing stairs. Commonly, the knee- cap pain occurs when the articular cartilage of the knee cap begins to degenerate (damage) and knee cap suffers wear and tear. The damage to the articular cartilage occurs when the knee cap will be pulled to one side (patella tilt). This occurs due to the imbalance between the muscles of the quadriceps muscle groups. Apart from quadriceps muscles tightness, hip muscles, calf muscles, and hamstrings contributes for the patella shift. Other than muscle imbalance, biomechanical factors such as flat foot or high arched foot, larger angle (Q angle) between the thigh bone and leg bones and high riding patella (Patella sits higher than usual) leads to patella tilt which eventually contributes for the damage of the articular cartilage of the knee cap.

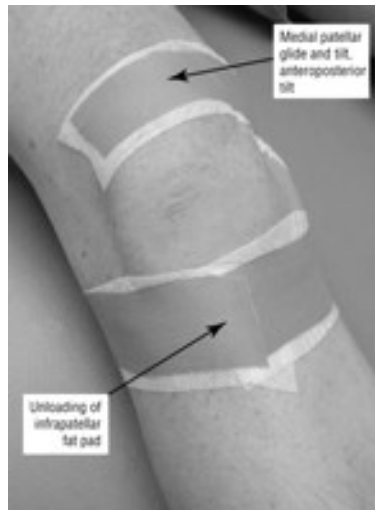


The most common presentation of knee - cap pain (patello - femoral syndrome) is pain. Even though a vague pain characteristically is located behind the kneecap, sometimes pain is felt along the inner edge of the knee cap. Most often the pain manifests during activities that require knee flexion and forceful contraction of the quadriceps muscles. (e.g., during squats, ascending/descending stairs). Pain may worsen in intensity, duration, and rapidity of onset if the aggravating activity is performed repeatedly. Pain may be exacerbated by sitting with the knee flexed for a protracted period of time, such as while watching a movie, hence leading to the terms "theatre sign" and "movie-goer's knee." Patients with this condition often may prefer to sit at an aisle seat, where they may more frequently keep the knee extended. Symptoms often occur during the activity, such as playing games such as volley ball, tennis etc for 30 minutes, or may occur later after the activity has been completed. Sometimes symptoms manifest as late as the next day. You may also hear grinding or crunching sounds when you squat or climbing up or down stairs, this happens when the uneven surface of the underside of the patella rubs against the femoral bon

Diagnosis of patello - femoral syndrome begins with history taking, observation of the knee cap, gait pattern, testing of the muscle length and strength. X- Ray will be ordered to determine the patella position. X – Ray also helps to identify Osteophytes (bones spur) or joint space narrowing, suggesting arthritic changes in the articular cartilage



Conventional way of treating patellofemoral syndrome was Anti-inflammatory medications, Icing, heat and quadriceps strengthening exercises. Patellar taping techniques are used in patients with knee- cap pain to reduce the friction on the patella. The American college of Rheumatology recommends knee taping for patients with knee – cap pain and osteoarthritis knee. When performed correctly and with exercises, taping offers effective pain relief. Most physical therapists are trained in taping and can teach patients to tape themselves



Exercises for the management of knee- cap pain

Sit on the floor and place a rolled up towel under your knee. Rotate your leg so that your foot is pointing out at about 45 degrees. Place your fingers over the VMO muscle. Contract the VMO and hold for 30 seconds. Repeat for a set of 5. Practice contracting the VMO first, before the other quadriceps muscles. Your fingers can help give you feedback.




Step Place right foot on the foot stool then lift the left knee into air hold for 10 seconds and return to start. Repeat 10 sets each side.

CLOSED CHAIN - 9
 Coordination, Quad Strength,
 Proprioception, Timing:
 Diagonal Step-up

Place right foot up on step
 at 45° toward left.
 Thrust left knee into air
 and return to start.
 Repeat to other side.

____ Inch Step.
 Repeat ____ Reps
 or ____ Minutes.
 Do ____ Sessions per Day.

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Quadriceps stretch:



Calf stretch



Iliotibial stretch



Hamstring stretch



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