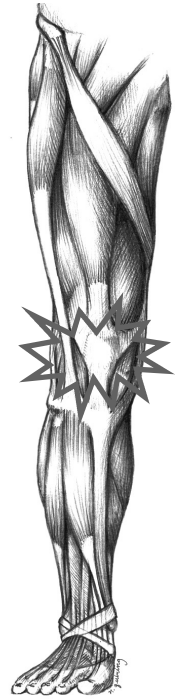




# Runner's Knee

## Patellofemoral Pain Syndrome



### SYMPTOMS

#### **PAIN**

- Along the medial (inner) aspect of the kneecap or just below the kneecap
- When using stairs or going up/down hills
- Worse after prolonged sitting with the knees bent
- More of a dull ache
- Cracking or grating in the knee
- Eventually, knee may want to “catch” and may feel like it wants to give out

### DEFINITION

- Softening of the cartilage on the patella (kneecap)
- Roughening of the cartilage under the patella caused by the kneecap not tracking properly (patella does not glide smoothly over the femur/thigh bone)
- May also be referred to as Chondromalacia Patella
- One of the most common knee problems in running and other sports (may occur at any age)

### PRIMARY CAUSES

#### **EXCESSIVE PRONATION**

- Pronation is a normal movement of the foot, that allows the arch to flatten to a degree, which helps the body to absorb shock and adapt to different ground surfaces.
- In analyzing one's gait, first contact is on the heel and outside of the foot, followed by a shift of body weight forward, toward the arch and toes.
- If the foot is weak or tired and/or the footwear is not supportive, then the arch can flatten more than normal, which is excessive pronation.
- Flattening of the arch (excessive pronation) increases stresses on the foot, which can further contribute to ankle, knee, hip and low back problems (a chain reaction).
- This repetitive, excessive pronation, is the main contributor to many lower extremity, overuse injuries.

### CONTRIBUTING FACTORS

- Mechanical conditions including wide hips (females), knock knees, patella alta (high patella) and subluxating patella.
- Over pronation of the foot.
- Weakness of the quad, especially the VMO (Vastus Medialis Oblique Muscle) which runs along the inner aspect of the thigh and connects at the knee.
- Overuse, or an increase in hill running or stair use.
- Too large of a Q-angle at the knee (this is the angle of the quad muscle's effective pull on the kneecap) Less than 12 degrees is normal and greater than 15 degrees is abnormal.

## **TREATMENT – ADVICE GIVEN MOST OFTEN IN CURRENT LITERATURE**

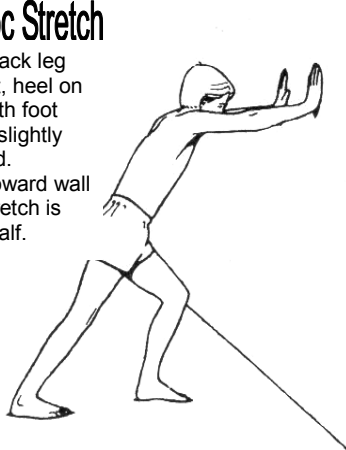
The 3 S's — **Stretching, Strengthening and Supporting**, along with ICE and REST, have been found to be the simplest and most effective for these injuries.

- **Stretching** of the hamstring, quad, calf and IT Band with help to decrease pressure at the kneecap
- **Strengthening** of the quad, especially the VMO (vastus medialis oblique muscle) will help the kneecap to glide more correctly through the groove at the knee joint.
- **Supporting** the foot with proper shoes and insoles, can prevent or help to eliminate the vast majority of lower extremity problems due to faulty biomechanics. This may be a Birkenstock sandal, with a broad base and contoured footbed, that is low to the ground and conforming to the foot. It may be a shoe with an upper that wraps the foot and supports the arch and heel thus limiting excessive pronation. The vast majority of footwear have more than enough cushion but very little support for the arch and heel. One of the easiest and most effective solutions is to add a simple over the counter insole that provides a forgiving support for both the arch and heel.
- Avoid downhill running or going up/down stairs.
- Avoid exercises done with the knee bent unless being done as an isometric.
- Physical Therapy including exercise, ultrasound, iontophoresis and patellar mobilization

***THE FOLLOWING ARE A FEW HELPFUL EXERCISES. CHECK WITH YOUR DOCTOR FOR SPECIFICS ON YOUR CONDITION AND WHAT YOU SHOULD OR SHOULD NOT DO FOR YOUR PROBLEM***

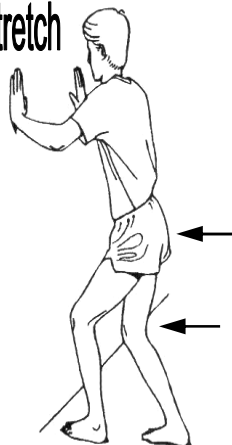
### **Gastroc Stretch**

Keep back leg straight, heel on floor with foot turned slightly outward. Lean toward wall until stretch is felt in calf.



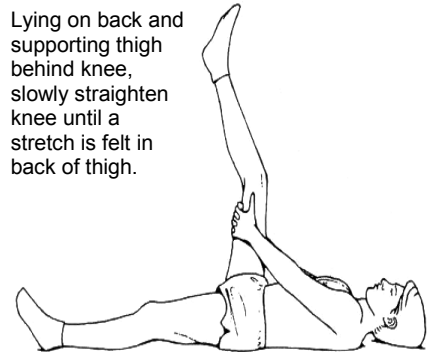
### **Soleus Stretch**

Stand with both knees bent, and involved foot back. Gently lean into wall until stretch is



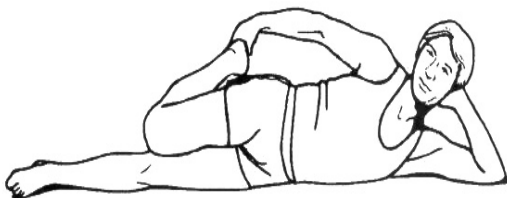
### **Supine Hamstring Stretch**

Lying on back and supporting thigh behind knee, slowly straighten knee until a stretch is felt in back of thigh.



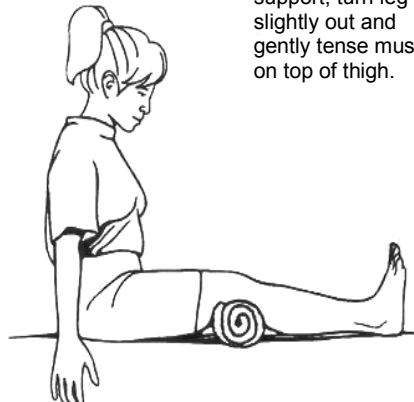
### **Lying Quadriceps Stretch**

Lying on side, pull heel toward buttock until stretch is felt in front of thigh.



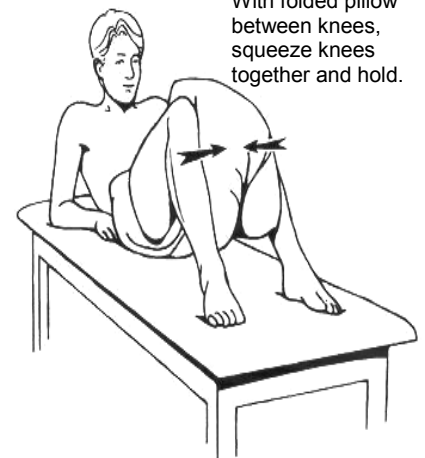
### **Quad Set in Slight Flexion**

With rolled towel under knees for support, turn leg slightly out and gently tense muscle on top of thigh.



### **Isometric Hip Adduction**

With folded pillow between knees, squeeze knees together and hold.



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