

## **Patello-femoral pain syndrome (PFPS)**

### About the injury

Patello-femoral pain syndrome is the term given to describe pain around and within the Patella (knee cap) and the joint it forms with the femur (thigh bone). This is called the Patello-Femoral joint and is a very difficult condition to treat as the cause of pain can come from a number of different problems.

PFPS is the most common of all running injuries accounting for approximately 25% and is more common in females than males. It can also affect other sporting activities and daily life such as walking, squatting, descending stairs and sitting for long periods. You may also likely have pain when resisting leg extension, and possibly tenderness if you push against the kneecap itself. Pain at this joint is not self-limiting meaning that unless treated can last for a long time, maybe several years.

### Anatomy

The patella tracks along a groove in the femur called the trochlea. The articulating surfaces are lined with cartilage to make this joint run smoothly. When you bend and straighten your knee, the patella transmits force from the large quadriceps muscles at the front of the thigh to a point on the tibia called the tibial tuberosity to allow the knee to move. The patella's role is to increase the efficiency by altering the angle of pull at the knee joint and is called patella tracking. Pain at this region can occur for several reasons and these can be classified into extrinsic and intrinsic factors.

### Extrinsic & Intrinsic factors.

These are factors outside the body that cause an increase in load to the PFJ when the foot hits the ground such as increased training volume, starting a new activity, not allowing sufficient rest between activities and performing activities which involve increased knee flexion.

Intrinsic factors are those that occur within the body and alter the distribution of force at the PFJ which then alters the movement of the patella at the trochlea groove. Unevenly distributed forces at the patello-femoral joint is termed "mal-tracking" and occurs as a result of multifactorial reasons.

## Contributing factors to PFPS

1. Poor pelvic control: this can be observed as the opposite hip drops during the gait cycle causing increased tension on the outside of the affected leg altering the forces at the PFJ.
2. Poor hip control: Muscles that control the hip (and pelvis) are not stabilizing the hip joint efficiently and allowing excessive femoral rotation inwards causing altered forces at the knee joint.
3. Reduced quadriceps strength: resulting in inadequate strength and control at the knee.
4. Over pronation: this is the term given to excessive inwards collapse of one of the arches within the foot resulting in tibia rotation and altered forces at the knee.

Previously research has attributed mal-tracking as a result of the patella moving laterally (to the outside of the knee). However, recent evidence suggests that it is actually the femur moving inwards as a result of poor pelvic and hip muscle strength and control. Therefore, effective treatment of this knee condition involves an in-depth assessment of your hip joint, pelvis and lumbar spine as well as your core stability. Rehabilitation programmes focus on core control, hip and quadriceps strengthening and good technique during squatting and functional activities.

## Other treatment modalities

Foot posture assessment and possibly orthotic devices may assist in pain relief although I do not advocate this as a first line of treatment. Taping techniques to off load the joint and facilitate muscle patterns have some evidence to show improved symptoms and may also increase exercise compliance. Other physiotherapy techniques such as mobilizations and soft tissue work can also be appropriate in your recovery programme. The most important aspect of your recovery is to understand why you have this pain, what has caused your symptoms and what you need to do to relieve these. Targeted exercise rehabilitation, goal setting and perseverance are key to your recovery.