

A CYCLIST'S GUIDE TO  
**INJURY  
PREVENTION**



# Noisy kneecaps

## Patellofemoral pain syndrome

**PAINFUL, GRINDING SENSATIONS** at the front of your knee? Your kneecap tracking may be the problem, explains sports physio *Lewis Wood*

**M**any cyclists have a noisy knee that makes a popping or crunching sound as they squat down. This is very common, and is a sign that there is pressure on your kneecap and it's not gliding up and down freely.

Pain at the front of your knee joint with clicking, cracking or grinding sensations may be the result of restricted movement or mal-tracking of your patellofemoral joint (kneecap) —

described in medical circles as crepitus. This condition is caused by tissues rubbing together abnormally, creating shearing forces that lead to cartilage breakdown. But don't panic — the noise doesn't necessarily mean there is arthritis in the joint.

**What is patellofemoral pain syndrome?**

Patellofemoral pain syndrome (PFPS), known as 'jumper's knee', is one of the most prevalent types of knee pain and

is fairly easy to diagnose. The condition can be triggered by any compressive and repetitive activities, such as cycling. It happens when your kneecap and cartilage in your joint are affected by imbalances in the muscles and connective tissue tracts surrounding your knee. This results in patella mal-tracking, where the kneecap slides not up and down in a straight line but is pulled over to one side by tight lateral structures, often because of an increased 'Q' angle (alignment of the femur to tibia).

One theory is that the natural V-shaped trochlea groove, formed by the underlying tibial bone that keeps the

kneecap in place, may in sufferers be flatter and more L-shaped at one side, allowing the kneecap to move sideways.

Practitioners use a simple test called the Clarke's Sign to assess for PFPS. This involves tightening your quadriceps muscles while compressing your kneecap down, to see whether the pain is reproduced. Often there is slight swelling either in the knee joint, and a bursa (fluid-filled sac) around the knee may be enlarged. It's important to be aware that a large amount of swelling may indicate another type of knee problem or internal knee joint injury, such as cartilage or ligament damage; this would need a different course of treatment.

Chondromalacia patellae (CP) is another term used to describe generalised kneecap pain; however, this is a chronic degenerative condition and involves arthritic wear and tear of the articular cartilage surfaces of the kneecap — one of the symptoms is PFPS — but CP is recurring or constant and will not improve with time.

**How to alleviate PFPS**

A systematic review of research showed that implementation of an exercise-based intervention programme for this condition reduced pain in 80 per cent of cases, while 75 per cent of patients benefited from improved function as well. The goal of treatment is to control the symptoms, strengthen muscle deficits and improve flexibility to address muscle imbalances. You should consider and/or implement the following:

- Reduce/modify your amount of exercise
- Avoid squats and lunges
- Avoid prolonged kneeling
- Move your saddle slightly forwards
- Foam-roller your iliotibial band
- Stretch shortened quadriceps/hamstrings muscles
- Strengthen quadriceps muscle
- Improve your patella mobility
- Apply ice therapy after exercise
- Use shoe orthotics to correct abnormal foot arches
- Try a patella stabiliser knee brace

**Should I stop cycling?**

Firstly, you should check that you have full movement in your knee joint and are able to fully bend or straighten your knee in a conventional quadriceps and hamstrings stretch. Secondly, your kneecap should be floating; you should be able to move it from side to side and note the play in the joint. At this point, if this movement is pain-free, you should try a self-help routine with the main aim of encouraging improved downward gliding of your kneecap and help it to resist the strong upward pull of the quadriceps tendon.

If you experience your knee giving way, joint locking, excessive swelling and/or significant crepitus, it is advisable to stop cycling until symptoms improve. If your kneecap is immobile and there is internal knee joint pain when bending or straightening your knee, it's imperative to consult a medical professional (GP, physiotherapist, osteopath or orthopaedic consultant) to correctly identify the exact cause of your pain or related symptoms.

**SELF  
HELP**

**Self-help exercises**

It's not all bad news; cyclists who regularly use these self-help exercises can swiftly alleviate their PFPS symptoms. Complete these specific exercises immediately before and after each ride and 24 hours after each ride.

**QUADRICEPS MUSCLE ENERGY TECHNIQUE**

Lying face down, bend your knee (keeping your knees together) and place a non-elastic strap around your ankle. Using the strap, pull your ankle upwards towards your hip to feel a quadriceps muscle stretch for 30 seconds. Between each stretch, contract your quadriceps muscle for 10 seconds by straightening your knee against the resistance of the strap around your ankle. Repeat this cycle of stretch-contract-stretch five times.



**VASTUS LATERALIS TENDER POINTS**

Use a massage or tennis ball to apply a constant pressure to your outer quadriceps tender points. Hold each point for 30 seconds until it eases, then move the ball down your thigh and repeat. To increase the intensity, straighten your knees and roll your body in towards the floor.



**DOWNWARD  
PATELLA MOBILITY**

Stand with knees slightly bent, affected leg in front with the thigh muscle relaxed. With your index finger and thumb, gently push the patella (kneecap) down towards your foot to create a mild traction effect and hold the position for five seconds. Return to the starting position and repeat a further 10 times.

**THE EXPERT**

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