

Diagnosis

Osgood Schlatter's disease is an overuse injury of the knee that occurs in junior players. The affliction is most commonly observed in adolescence, particularly in 10 to 15-year-old boys and 8 to 13-year-old girls. It is seen more often in boys than in girls. The powerful quadriceps group of muscles converge to a single patellar tendon attached to a vulnerable area of the lower leg (*tibial tubercle, figure 1*). Continuous pulling of the patellar tendon on the developing tibial tubercle leads to pain, tenderness and swelling at the point of repeated stress. Sometimes, both knees can be affected. The symptoms are a warm, swollen and painful bump below the knee. Cycling, stair climbing, starts, stops, sprints, deep knee bends and kneeling are usually painful. In tennis, low volleys, court drills involving sudden changes in direction and serving may provoke pain. The symptoms may appear suddenly or develop gradually, and may be intermittent. The injury takes six months to heal on average, with a range from two months to more than two years. Occasionally, a player will have symptoms during adulthood. This is caused by bone fragments, which must be removed surgically.

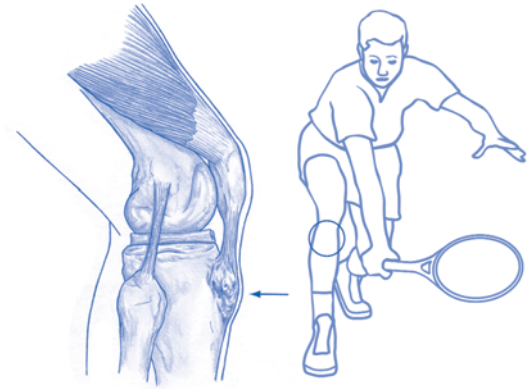


Figure 1. The Osgood Schlatter knee injury

First Aid

- Cool the painful area with ice cubes or with a cold pack for 10 to 15 minutes, repeating this process several times a day. Do not place ice directly on the skin, but wrap it in a towel.
- If the knee hurts, stop play or reduce the intensity of the training. The injury usually heals well if the load on the knee is reduced.
- Do not treat the painful area with ultrasound, since this may affect the growth plate.

Fast and adequate first aid is of major importance for a rapid recovery. Serious injuries should be evaluated by a physician. Occasionally, patients will be referred for further evaluation (ultrasound scan or X-rays of the knee).

How to Ensure the Best Recovery

Pain is a signal to rest the knee. Do not to cross the pain threshold, as this will slow the healing process. The increase of the training load occurs in two stages. This program is described below, including several tips.

Stage 1. Improvement of Normal Function

- Regular stretching of the muscles at the front and back of the thigh (quadriceps and hamstrings) decreases the tension of the muscles and the pulling forces on the patellar tendon. Stretching should not hurt, so do not stretch too much in the acute phase of the injury.
- Quadriceps. Stand up straight, with support for one hand. Bend one leg, hold the ankle of the other leg and pull the heel towards the buttocks until you feel the stretch in the thigh. The stretch can be increased by extending the thigh backwards (*figure 2*). Stretch for 10 to 15 seconds, followed by a break of 10 to 20 seconds. Repeat three times.
- Hamstrings. Place one leg horizontally on a bench or step. Bend forwards while keeping the back straight and extend the toes towards your body. Keep both legs straight. Hold for 10 to 15 seconds, followed by 10 to 20 seconds rest. Repeat three times (*figure 3*).
- Co-ordination exercises. Stand on the injured leg, with the arms spread for balance. Close your eyes and try to keep your balance. Count to 20. Now try to perform 10 to 20 small knee bends.
- Use a patellar tendon strap (*figure 4*) or brace during play. This ensures that the load on the insertion point of the patellar tendon at the tibial tubercle is spread out over a larger area, decreasing the point pressure.
- Use a bike with gears. Use the lightest gear, which results in a high pedal frequency. This is easiest on the knees. Try to avoid cycling uphill or against the wind.
- Avoid prolonged sitting in the same position or with the knees pulled up.

Stage 2. Return to Play

It is not necessary to stop playing tennis completely if the complaints are minor. However, training programmes should be adapted. Even with serious complaints, most players can resume play after three to six months.

- Try to play on clay or sandy surfaces that allow gliding and avoid playing on hard courts as much as possible. Because of the longer braking phase, the peak load on the knee is lower on a clay court than on a hard court.
- Ask your coach to adapt your training load so that you do not have to run so much, but can hit the ball from an area of 2 square meters. This will still enable you to do the footwork well (take small steps, position yourself well for the ball) without putting excessive load on the knee.
- If the adapted training sessions go well, you can introduce exercises with longer distances to reach the ball (tennis drills from corner to corner).

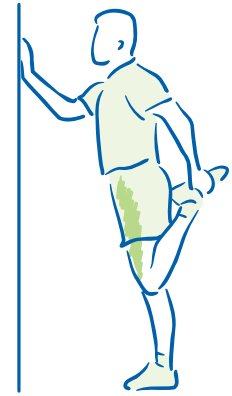


Figure 2. Stretching the quadriceps muscles



Figure 3. Stretching the hamstring muscles

Preventing Re-injury

It is not always possible to prevent an Osgood Schlatter knee injury, but paying attention to the following can reduce the risk:

- Perform a complete warm-up each practice or match, and a cool-down afterwards, of 10-15 minutes each practice. Pay attention to correct performance of stretching exercises.
- Ensure a gradual build-up of the training load, so your body can adapt to the extra load.
- Sprinting and jumping exercises should be introduced gradually. The day after intense sprint training, the training load should be reduced.
- Do not do too many jumping exercises during the growth spurt.
- Make sure to wear well-fitting tennis shoes, e.g. shoes with adequate shock absorption, sideways stability, feeling with the surface (grip) and optimal comfort.
- When there are leg length discrepancies (valgus or bow knees, flat or cavus feet), inlays should be worn in firm shoes with sturdy soles.



Figure 4. Patellar tendon strap