Tennis Injury Free

Jumper's Knee

Description

Jumper's knee (patellar tendinopathy) is an overuse injury of the patellar tendon. The patellar tendon is the tendon between the underside of the patella (knee cap) and the tibia (shin). In the area just underneath the patella there are microscopic tears and degeneration in the tendon (*figure 1*). It is a common complaint in tennis players due to the explosive muscle contractions needed for the sprinting, jumping and quick changes of directions during tennis. Poor flexibility of the quadriceps (thigh muscles), hamstrings and variations in leg and foot type (knock knees, bow legs, flat feet etc.) can contribute to extra load on the tendon and development of jumper's knee.

Symptoms

Typically there is a sharp pain in the tendon below the knee cap which is present during jumping, sprinting, serving and change of direction after running wide to reach a ball. Often there is an aching pain after finishing playing tennis.

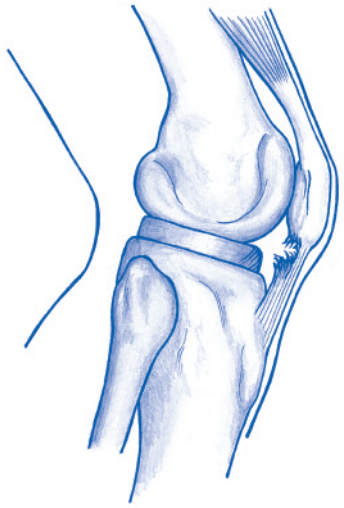

figure 1. Jumper's knee

First Aid

- It is advisable to modify activities (reduce playing and training), use ice to cool the area, stretch and strengthen the thigh muscles and make sure that your shoes are not worn and offer good support.
- Have a (sports) physician examine the injury if it looks serious (if the knee gives way due to the pain or if you have a lot of pain even when not playing tennis) or if there is any doubt. In some cases the doctor may refer you to a (sports) physiotherapist.

How to Ensure the Best Recovery

Pain is an important signal and you should only begin with the exercises when severe pain has subsided. If pain occurs do not play or train through the pain, because this will delay recovery.

Rehabilitation progresses in three steps, from light to demanding. Here is a list with descriptions and tips for doing these exercises.

Stage 1. Improvement of Normal Function

- By stretching the muscles at the front and back of the thigh the tension on the tendon can be reduced.
  - Stretch for the quadriceps (thigh muscles): Stand up straight and find support for one hand. Bend one leg, take hold of the ankle and pull the ankle towards the buttocks until you can feel the strain in the upper leg. Bringing the upper leg further backwards can increase the stretch. Hold this position for ten to twenty seconds, followed by ten to twenty seconds rest and repeat three times.
  - Stretching exercise for the hamstrings (back of the thigh). Stand up straight. Place the heel of the leg to be stretched in front of you and keep the heel on the ground. Keep your back straight and lean forward slowly from the hips until you feel a slight pull. Hold this position for ten to twenty seconds, followed by ten to twenty seconds rest and repeat three times.
- Co-ordination training. Stand on the injured leg with arms spread, then close your eyes and try to keep your balance. Try to hold this position for 30 seconds.
- Swaying lunges. Place the feet shoulder-width apart. Bend the leg until the knee is bent at a 90-degree angle. Do not let the knee protrude in front of the foot. Keep your back straight. Sway gently back and forth transferring your weight but do not step backwards. Build up to two to three series of ten to fifteen repetitions.
- Quadriceps exercise (static). Sit down on the floor with your legs straight. Place a rolled-up towel under your knee. Try pushing the towel into the floor by contracting your quadriceps muscles. Hold for three seconds and relax. Build up to three series of fifteen repetitions (*figure 2*).
- Cycling. A good exercise in this stage is non-strenuous cycling every day for 15 to 30 minutes. When cycling be sure to use a bicycle with gears. Stay in the lowest gear which will allow a high cadence. This produces the least strain on the knee. Try to avoid headwind and steep terrain.

Stage 2. Build-up

As soon as you are able to perform the exercises described above without discomfort, you can consider resuming your sport. Listed here below are a few exercises to improve your sport condition.

- Quadriceps exercise (static). Sit down on the floor with your legs straight. Place a rolled-up towel under your knee. Try pushing the towel into the floor by contracting your quadriceps muscles. Hold for three seconds and relax. Build up to three series of fifteen repetitions (*figure 2*).

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Exercises

- Quadriceps exercise (dynamic): Half squats. Stand with the feet shoulder-width apart. Bend the knees while keeping your back straight. Hold your arms out in front of you. Do not bend the knees further than 90 degrees or allow the knees to go further forward than the toes. Build up to three sets of 15 repetitions (*figure 3*).
- Quadriceps exercise (dynamic): Single leg step. Stand on the involved leg facing sideways on a step leaving the other leg hanging over the edge. Bend the involved leg and point the toes of the other foot towards the ceiling. Touch the step below you with the heel of the other leg and then straighten the involved leg. Start with one to two sets of ten to fifteen repetitions and build up to three sets of fifteen repetitions (*figure 4*).
- Make small quick steps on the spot, shifting support between the left and right leg.
- Quadriceps exercise (dynamic): Lunges. Place the feet at shoulder-width from each other. Bent the leg until the knee is bent at a 90-degree angle. Do not let the knee protrude in front of the foot. Keep your back straight. Bend further into the knee and then step backwards. You can make the exercise more difficult by holding a weight or by performing the exercise more quickly. Build up to two to three series of ten to fifteen repetitions.
- Eccentric strengthening exercise for the quadriceps. Place your feet shoulder-width apart on an inclined board. Lower yourself while standing on the injured knee (bend the knee approximately 60 degrees), then raise yourself while standing on the uninjured knee. Build up to three sets of fifteen repetitions, twice a day.
- If this goes well, you can start jogging. Start off jogging and progress to short accelerations, followed by turning and pivoting exercises. Eventually you can include sprints in the exercise.
- Following this you can do jumping exercises, such as hopping, lateral jumps (skating jumps) on alternating legs and skipping.

Stage 3. Return to Play

In the event of a mild injury, there is no need to stop playing tennis altogether, as long as you adapt your game to the restrictions imposed by the injury. With more serious injuries, training can usually be resumed after six weeks to three months.

- Try to play on clay courts as much as possible, and avoid hard courts. The peak strain on the knee is less on a surface that allows some sliding than it is on surfaces where this is not possible.
- Adapt your training programme, allowing you to start off hitting the ball from an area measuring two square meters(approx. two square yards). In this way you can continue practicing your footwork (taking small steps, positioning yourself correctly to hit the ball) without putting excess strain on the knee.
- Initially, you should limit activities that will put excess strain on the knee, such as sprints, jumping exercises, low volleys, intensive left-right exercises and serve and volley training.
- If the adapted training goes well you can gradually start doing more exercises, and increasing the distance you have to run to reach the ball (tennis drills from corner to corner)
- After this, low volleys and smash hits can be added to the training program and you can resume playing (practice) matches.
- If practice matches can be played without problems, then you are ready to get back to playing competitively.

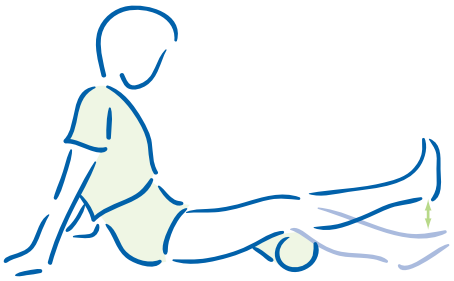

figure 2. Static strengthening exercise for the quadriceps muscles

figure 3. Quadriceps strengthening exercise: half squats

figure 4. Quadriceps strengthening exercise: single leg step

Preventing Re-injury

- Be sure to perform a thorough warming-up. Do, in any case, some stretching exercises for the quadriceps muscles. In this way your muscles and the rest of your body are prepared for the work to come.
- Increase the intensity and the extent of the exercise gradually in order to avoid straining. This is especially relevant in the change from summer season to winter season when clay courts are exchanged for the harder indoor courts.
- Perform muscle strengthening exercises for the thighs to avoid (new) knee injuries.
- Wear properly fitting tennis shoes when playing tennis, and properly fitting trainers when working out. It is essential for the shoes to be adapted to your weight and to the surface you will be playing on.
- In the case of (moderate) foot deformities, such as bunion deformity (hallux valgus) or high arches, it is advisable to buy special, individual orthotics for the shoe to help correct the form of the foot and to give arches additional support.
- Fatigue will cause your condition to deteriorate and lessen the strength of the muscles. This increases the chances of stumbling and straining a muscle. So, make sure to stay in shape!
- Regular cycling (low resistance and on flat surfaces) helps the knee to keep functioning well.
- You can try a patellar tendon strap to see if it helps.

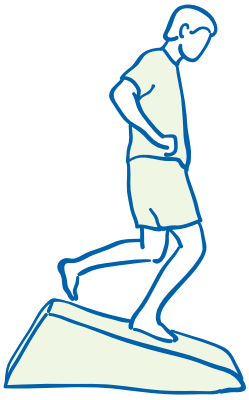

Figure 5. Eccentric quadriceps strengthening exercise

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