



YOUR GUIDE TO JUMPERS KNEE

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Introduction

Please take note of the following before starting any of the exercises in this guide:

- The information contained in this guide is intended to assist in managing your recovery.
- This guide is based on the latest medical research in the field and contains the best advice available to the best of our knowledge.
- This guide is complimentary to other medical services and is not intended as a substitute for a health care provider's consultation. Never disregard medical advice or delay in seeking advice because of something you have read in this guide.

● Many people have found quick and lasting relief from their knee pain by acting upon the information provided, but everyone decides for themselves what to do with this information. Should you doubt a particular exercise in your situation, please consult your health professional.

When consulting your health professional, it is wise to take this guide with you to show them.

What is Jumpers Knee?

The Patellar Tendon is located just below the knee cap (Patellar) and is approximately two finger-breadths wide. The tendon is where the Quadriceps (thigh) muscles at the front of the thigh converge and attach to the shin bone, connecting the kneecap to the shin bone (tibia). The function of the Patellar Tendon is to transfer the force of the Quadriceps muscles, which results in the straightening (extension) of the knee. The greatest amount of stress is put through the Patellar Tendon during jumping and, just as importantly, during landing. During jumping, you develop an explosive spring by forceful contraction of the Quadriceps muscles, which straighten the knees. Together with the Calf muscles, the Quadriceps muscles push you up into the air. As you land, the Quadriceps

helps to control the landing by allowing a small amount of knee bending to take place. Interestingly, it has been shown that the patellar tendon experiences a greater load during landing than it does during jumping, because of the eccentric muscle contraction (contraction against gravity) of the quadriceps muscle. Therefore it is the landing from a jump, rather than the jumping action that is believed to exert the loads that lead to injury.

This tendon therefore comes under a large amount of stress especially in individuals who actively put extra strain on the knee joint e.g. individuals who regularly perform sports that involve direction changing and jumping movements. If this type of activity is practiced too much, the

strain on the Patellar Tendon becomes too great and microscopic damage occurs to the tissue that makes up the tendon. This is known as patellar tendinopathy or Jumpers Knee. It should be distinguished from patellar tendonitis as this latter condition indicates an inflammation of the tendon whereas tendinopathy is more about degeneration of the

tendon. At first, this damage may be too small to cause you any problems and just seem like a niggling injury. However if you continue to over do jumping activities, the damage will become progressively worse. If left to become chronic it can be very difficult to treat and may require surgery.

What Causes Jumpers Knee?

Jumper's knee is believed to be an overuse injury that is mostly caused by repetitive stress placed on the patellar or quadriceps tendon during jumping. It is therefore an injury that is more specific to athletes, particularly those participating in jumping sports such as basketball, volleyball, high or long jump etc.

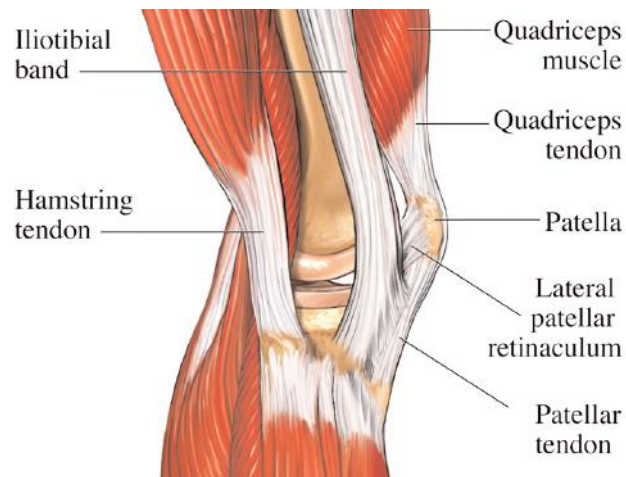
Jumper's knee is occasionally found in football players and in rare cases in athletes participating in non-jumping sports such as weight lifting and cycling where a large amount of stress is still being transferred through the tendon during quadriceps contractions.

Research has implicated that there are a number of factors that may predispose an individual to developing jumpers knee, some of these being; gender, a greater body weight, knock knees, bow legs, an increased Q angle (the angle between the hip joint and tendon attachment),

a high or low lying knee cap and leg-length differences. However the main biomechanical link to jumper's knee is poor quadriceps and hamstring flexibility. Over training and playing on hard surfaces have also been linked to the development of jumper's knee.

SYMPTOMS

- Pain at the bottom and front of the kneecap especially when pressing in, and an associated feeling of fullness or swelling may be present
- Aching and stiffness after exertion
- Pain when you contract the quadriceps muscles
- The affected tendon may appear larger than the unaffected side
- The athlete may experience a momentary giving away or weak feeling about the knee without the knee becoming truly locked
- Calf weakness may be present



Depending on the duration of symptoms, jumper's knee can be classified into 1 of 4 stages:

- **Grade 1:** Pain only after activity, without any problems during activity
- **Grade 2:** Pain during and after activity, but pain does not prevent you from performing well at your activity

- **Grade 3:** Prolonged pain during and after activity, which prevents you from performing at the required level in your activity

- **Grade 4:** Pain during every day activities which may or may not be getting worse. This is often an indication of a complete tendon tear which requires surgical repair.

What Treatment can I receive?

Treatment may involve both conservative and/or surgical treatment:

CONSERVATIVE TREATMENT

- **Quadriceps muscle strengthening programme** in particular eccentric strengthening. These exercises involve working the muscles as they are lengthening and are thought to maximize tendinopathy recovery.

- **Muscle strengthening of other weight bearing muscle groups** such as the calf muscles, may decrease the loading on the patellar tendon. Assessment and reconditioning of other joints and muscle groups in the leg is important as it is often these factors that contribute to alignment issues which can predispose an individual to Jumper's knee

- **Ice packs** to reduce pain and inflammation. Ice should be applied for 10-15 min at a time and can be applied regularly throughout the day. Never apply ice directly to the skin as this could lead to an ice burn

- **Massage therapy** Transverse (cross) friction techniques can be used, which will aid in the recovery process.

- **Aprotinin injections** These may help tendinopathies by restoring enzyme balance in the tendon.

- **Corticosteroid Injection** A local corticosteroid injection may be considered in more severe cases. The physician should explain that the steroid could cause further tendon degeneration, and perhaps even rupture, if the athlete begins loading the tendon too quickly once the symptoms improve.

SURGICAL TREATMENT

- This is normally advised as a last resort. Also, there is little convincing evidence to support the use of surgery over conservative treatment for patellar tendinopathy. Surgery either includes excision of the affected area of the tendon or a lateral release where small cuts are made at the sides of the tendon which take the pressure off the middle third.

- An intensive rehabilitative programme is normally advised following surgery. In particular the use of eccentric strengthening exercises (resisting against gravity) may help stimulate healing.

Treatment does however depend on the grade of the injury

Grade 1

- Apply ice to the tendon after the activity for approx 10-15 min. Cold therapy can be applied by ice massage or the use of ice packs. It is important that the ice is applied at the point of pain on the tendon and should not be applied directly to the skin.

- Non-steroidal anti-inflammatory medication can also be of benefit at this stage and can be obtained from your doctor or local pharmacist. It is not advised to take anti-inflammatory medications for long periods of time and therefore if your pain persists it is important to seek further treatment

- Taping or knee supports can be used and have been seen to be beneficial in off loading the tendon and thus reducing the pain.

- See a chartered physiotherapist / rehabilitation specialist who will use various techniques to reduce your pain and aid in the recovery process. An eccentric strengthening programme is generally recommended

Grade 2

- Modify training activities to reduce the load on the tendon. Stop jumping or sprinting activities which aggravate the tendon and replace them with steady running or swimming / running in water.

- Continue with the application of ice as described above

- See a chartered physiotherapist / rehabilitation specialist who will use various techniques to reduce your pain and aid in the recovery process. They will also advise you on a rehabilitation programme

Grade 3:

- Rest completely from the aggravating activity. Replace it with swimming / running in water (if pain allows)

- See a chartered physiotherapist / rehabilitation specialist who will use various techniques to reduce your pain and aid in the recovery process. They will also give you advice on a

rehabilitation programme that will suit your sport and stage of injury

- Surgery may be required at this stage if conservative therapy does not alleviate your pain

Grade 4

- Rest for a long period of time (at least 3 months).
- It is at this stage that surgery is usually the only option as tendon

rupture has occurred, and it is essential that you consult with your GP/Orthopaedic surgeon

- See a chartered physiotherapist for a full assessment of your knee post operatively for treatment and rehabilitation. It is important that you have a specialised treatment regime post operatively to ensure that you regain full function and can return to sport safely.

What can I do to prevent this condition from recurring?

Often, correcting pre-existing leg strength and flexibility deficits and following a good conditioning and flexibility programme can help you to avoid this condition in the future. Be realistic about the length and duration of each activity session. Exercising more than four times a week should be avoided unless you are in peak condition or are following

a well constructed programme that involves cross training. Rest is a very important aspect of your training therefore it is essential that you don't leave it out of your routine. Should symptoms of jumper's knee reappear, recognize the problem and seek early medical treatment for the condition so that you can continue full participation in your sport.

What exercises can I do?

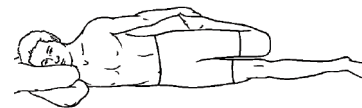
It is important that you are aware that this is a general exercise programme for Jumper's Knee that can be adjusted depending on advice given by your health care provider on assessment. It should only be attempted without seeking further advice if you have a grade 1 or 2 injury as described above. The goal of rehabilitation is to return you to your sport or activity as soon as is safely possible. If you return too soon, you

may worsen your injury which will delay your recovery. It is also important that you work in a pain free range of movement throughout the exercise programme. Working into pain will have no benefit and may even delay your recovery. Technique is also essential and these exercises should be performed in a controlled manner concentrating on the position of your knee.

Exercises phase 1

STRETCHES

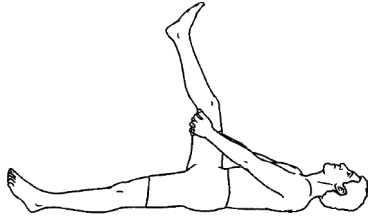
- Repeat each of these stretches **3 times** (on both sides if necessary).
- Hold each stretch for at least **30 seconds**.
- Hold a steady stretch, **do not bounce**.



QUADRICEPS STRETCH

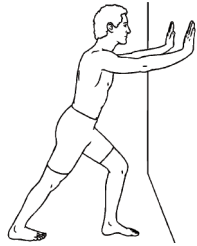
Lying on your right side, your right arm extended up to cushion your head, use your left hand to grasp your left ankle as you bend your left knee backwards. You should feel the stretch along the front of your thigh. Repeat this twice. It is important to keep the other leg bent at both the hip and the knee, so as not to hyperextend your back. A towel can be used to aid you in this stretch if you are unable to reach your ankle or bend your knee too far.

Exercises phase 1 (continued)



HAMSTRING STRETCH

Lying on back with one leg straight, raise the bent knee towards you and hold behind your knee. Now slowly straighten your knee until a stretch is felt in the back of the thigh. A towel can be used to aid you in this stretch if you are unable to reach your leg.



CALF STRETCH

Keeping back leg straight, with heel on floor and turned slightly outward, lean into wall until a stretch is felt in calf.



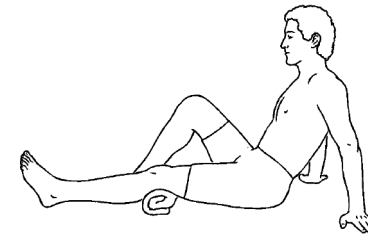
BUTTOCKS STRETCH

Lying on your back, rest your right ankle on your left knee. Using your hands lift your left leg into the air, bending the knee at 90°. Pull your left leg gently towards your body. You should feel a stretch in the upper back part of your right leg. A towel can be used to aid you in this stretch if you are unable to reach your leg.

STRENGTH EXERCISES

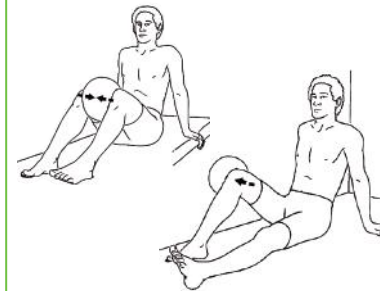
- Repeat **2 sets** of **10-15 repetitions** on each side (unless otherwise stated in the exercise)
- Perform each exercise in a controlled manner and within a pain free range of movement

● If you are experiencing pain with any of these exercises and have already reduced your range of movement, it is important that you consult with a physiotherapist or allied health professional.



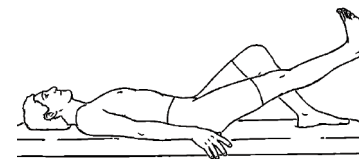
TERMINAL LEG EXTENSIONS

Sitting on the floor with one leg outstretched in front of you and a pillow/rolled up towel under the knee. Lift the heel off the floor straightening the leg, hold for 10 sec. (contract the inner thigh muscle (VMO) group), and then relax.



BALL SQUEEZING AND PUSHING (A PILLOW CAN BE USED)

Lying on your back with your knees bent, firstly place the ball between your knees and squeeze. Hold for 10 seconds and repeat 10 times. Now place the ball between your knee and the wall, push out for 10 seconds and repeat 10 times on each leg

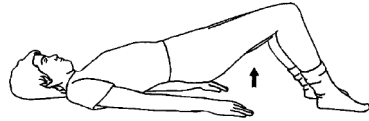


STRAIGHT LEG RAISES

Lying on your back with your arms next to your side and one leg out stretched in front of you. Keep one leg bent, foot flat on the floor, and now raise the other leg to the height of the bent knee, keeping the leg straight. Repeat 10 times on each leg in each foot position

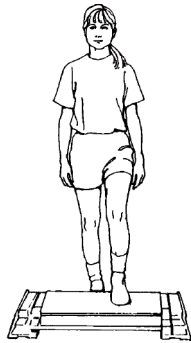
1. Toes pointing straight upwards
2. Toes pointing outwards.

Exercises phase 1 (continued)



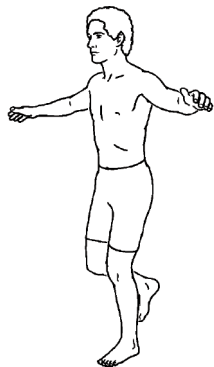
BRIDGING

With your pelvis in neutral (hip bones facing towards the ceiling) and TA contracted (pull belly button to spine), slowly raise buttocks from floor, keeping your pelvis stable and body in a straight line. Hold for 10 seconds and repeat 10 times



STEP-UPS

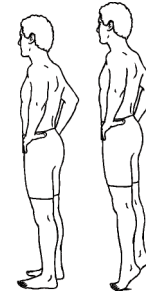
Stand on one leg on a step facing up the stairs. Slowly lower yourself by bending your knee. Return to starting position without pushing off with the opposite leg. Have your weight on your heel more than your toe, but foot flat, and your knee should be in line with your second toe when bending it i.e. be aware that your knee and foot do not roll inwards. Perform 2 sets of 10 reps per leg.



STORK STANDING

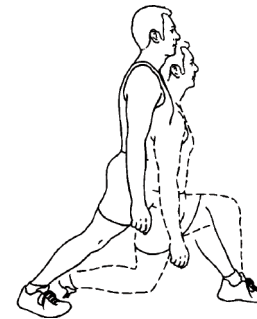
- Balance on one leg for 30 seconds and repeat with the other leg.
- Repeat the above with your eyes closed.

Progress the above to standing on an unsteady surface, e.g. a cushion or a narrow piece of wood.



CALF RAISES

Supporting yourself against a wall, raise up onto your toes in the following manner: First onto your big toe, then onto the middle of your foot and then onto your little toe. Repeat this sequence 10 times.



STATIC LUNGES

Place one foot in front of the other. Bend both knees together until you have a 90° bend in both. Ensure that your front knee does not go over your front foot when bending to 90°. Return to the starting position. Perform 1 set of 10 reps per leg (complete all 10 reps with the one foot forward before changing and starting with the other leg in front).

Exercises phase 2

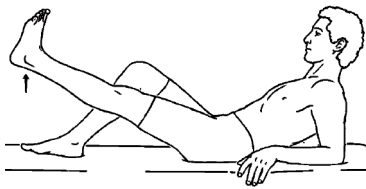
Phase 2 exercises can be started when you are able to do all the Stretching and Strengthening exercises in Phase 1 with no adverse effects and good control. Continue to

work in a pain free range of motion, and continue to do the stretching exercises of phase 1 with each exercise session.

STRENGTH

● Repeat **2 sets of 10-15 reps** on each side (unless otherwise stated in the exercise)

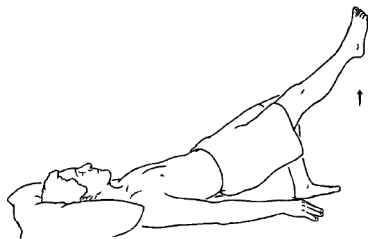
● Maintain good control and form throughout the exercise i.e. in both directions of movement



STRAIGHT LEG RAISE

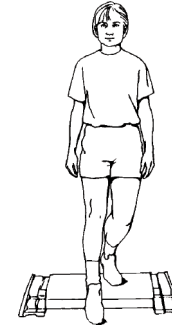
Rest on your forearms, and lift your leg to the height of your bent knee. Keep your leg straight and don't let it rest on the floor on the return down. Repeat 10 times on each leg in each foot position

1. Toes pointing straight upwards
2. Toes pointing outwards.



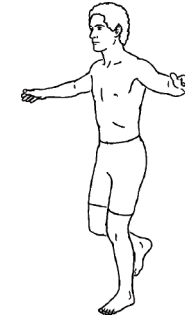
BRIDGING WITH ONE LEG EXTENDED'

Lying on your back, bend both knees to 90° with your feet flat on the floor. Tighten T.A. and lift your pelvis and lower back off the floor. Now lift one foot off the floor, hold for 10 sec, put it back down, repeat with the other foot, and then relax completely. Begin again. Keep the T.A. and Glutes tight throughout the movement to keep the pelvis stable and without dropping to the one side. Repeat 10times per leg.



STEP-DOWNS

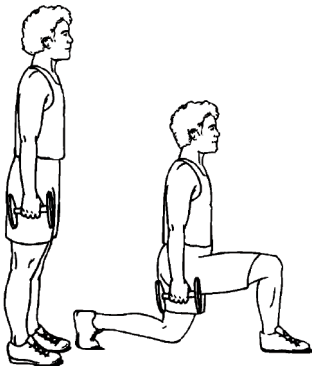
Stand on one leg on a step facing down the stairs. Slowly lower yourself by bending your knee. Return to starting position without pushing off with the opposite leg. Be aware that your knee and foot do not roll inwards, that your weight is mostly on your heel with your foot flat, and that your knee goes down in line with your second toe.



STORK STAND PICK-UP

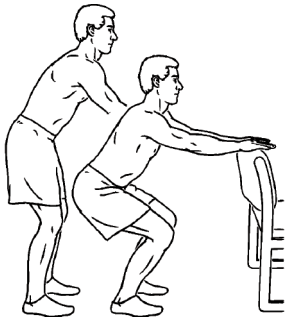
Standing on one leg, with your weight on your heel, bend down to pick up a weight with the opposite hand ensuring that your weight stays on your heel, and that your knee goes down in line with your second toe. Also ensure that your knee and not your back does the bending work. Repeat 10 times on each leg (up and down is one repetition)

Exercises phase 2 (continued)



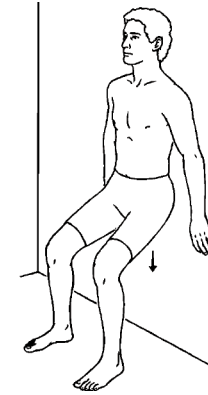
LUNGES

Stand with feet together and step forwards with one leg into a lunge position. Both knees should be at a 90° angle as you lunge down, and then return to the starting position. Make sure that as you lunge forward your knee goes down in a straight line and does not go over your toes. Alternate with each leg and repeat 10 times on each side.



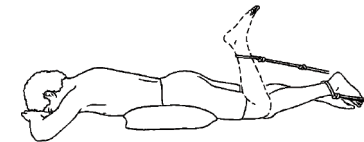
MINI SQUATS

Stand with your feet hip width apart and hold your hands out in front of you. Now bend the knees keeping your feet flat on the floor, and ensure that your knees do not go past a 90° angle. Return to the starting position. Make sure that both movements are slow and controlled and that your knee goes down straight (no rolling inwards).



WALL SLIDES

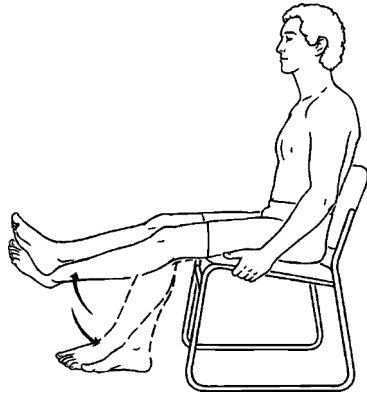
Stand leaning up against a wall, your feet a little away from the wall with your toes pointing forwards. Push your back against the wall. Slowly lower your body into a seated position and hold this position for 10 seconds. Complete 10 repetitions. Make sure that you work in a pain free range of movement, that you don't go down further than 90° in your knees, and that your feet are far enough forwards that your knees do not go over your toes



PRONE LYING HAMSTRING CURLS

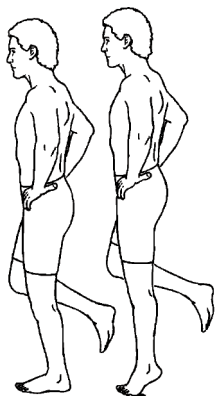
Lying on your stomach with one end of the band tied around your ankle and the other end tied to the top of a table leg. Start with your knee straight and, whilst keeping your hips on the floor and stable, bend your knee pulling against the band. Attempt to bring your foot down towards your buttocks without allowing your knee or hips to lift off the floor. You can get theraband from a local sport store or physiotherapy practice.

Exercises phase 2 (continued)



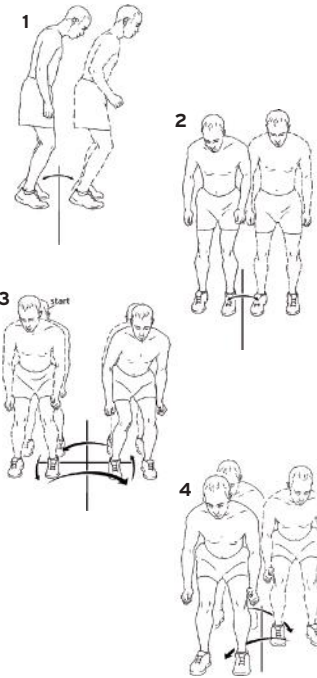
ECCENTRIC KNEE EXERCISE:

Sitting on a chair with your affected leg straight. Place the opposite leg on top. Push up with the affected leg, but resist this movement with the opposite leg. The top leg's pressure should be greater than the bottom leg, allowing the bottom leg to move towards the floor all the time applying an upward resistance to the movement. This can also be done by attaching one end of the band around your ankle and the other around the leg of the chair. Now straighten your knee against the band, and on the way down resist the pull of the band towards the floor i.e. move your leg slowly down. You should feel your quadriceps working on the way down as well.



SINGLE LEG CALF RAISES:

Standing on one leg, supporting yourself against a wall, raise up onto your toes in the following manner: First onto your big toe, then onto the middle of your foot and then onto your little toe. Repeat this sequence 10 times per leg.



HOPPING

Standing on two legs hop from one point to another in the following manner

1. Forward and backward
2. Side to side
3. Jump in a square
4. Jump diagonally forwards and backwards across a central imaginary line

Repeat each sequence 10 times per leg. Progress to hopping on one leg.

RUNNING DRILLS:

These can be done once the above can be performed without pain and good control. With the drills try replicating movements that you could do in your sport i.e. running forwards, backwards, side to side, sudden change of direction, zig-zag running etc. Also try and change the pace as you do them i.e. sudden sprinting, sudden stopping.

Contact us

This guide is designed to assist you in the self-management of your injury/condition.

We are here to assist your recovery in the shortest but safest possible time. If you have any uncertainties or queries regarding the information, please do not hesitate to contact us on:

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