



YOUR GUIDE TO PATELLA SUBLUXATION & DISLOCATION

Contents

The Knee	3
What is Patella Subluxation and Dislocation?	4
What causes Patella Subluxation and Dislocation?	4
What Treatment can I receive?	6
What exercises can I do?	8
Exercises	9
Phase 1	9
Phase 2	15

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.

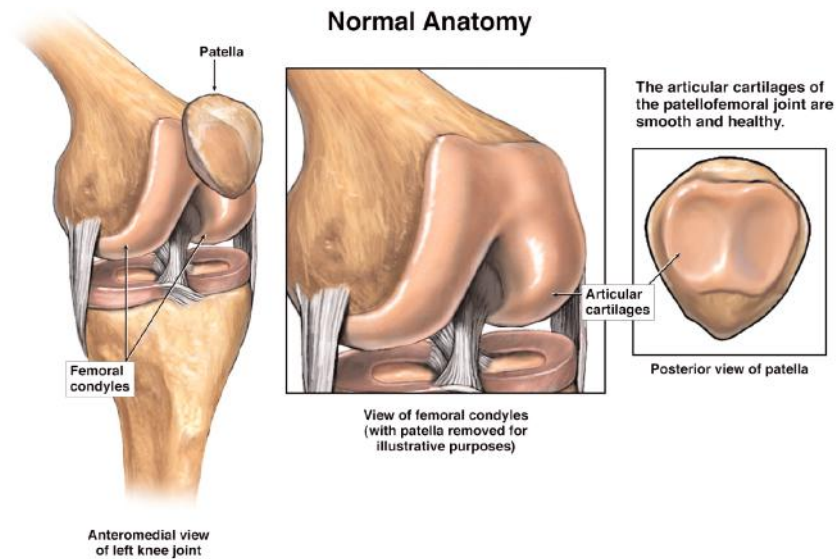
● Many people have found quick and lasting relief from their knee pain by acting upon the information provided, but everyone decides for themselves what to do with this information. Should you doubt a particular exercise in your situation, please consult your health professional.

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

The Knee

There are three bones that make up the knee joint; the knee cap (patella), the thigh bone (femur) and the shin bone (tibia). The patella is a small bone in the front of the knee which glides up and down the groove in the femur as the knee bends and straightens. The patella has a smooth coating (articular cartilage) on its underside which allows it to slide easily in this groove in the femur which is also coated with articular cartilage. The patella acts as a fulcrum to increase the strength of the quadriceps muscle (powerful

muscles on the front of the thigh). It is surrounded by the quadriceps tendon which along with the patella tendon below and very thin ligaments on either side helps to keep the patella gliding in its groove. One of the quadriceps muscles, the vastus medialis pulls the patella inward (medially) while another, vastus lateralis, pulls it outwards (laterally). The small ligaments on either side of the patella work along side the quadriceps muscles to help keep the patella from coming out of its groove.



What is Patella Subluxation and Dislocation?

Patella subluxation and patella dislocation are two conditions in which there is a problem with the patella tracking in the groove on the end of the femur. Subluxation refers to minor slippage or partial movement of the patella out of the femoral groove; a dislocation occurs when the patella moves or is moved to the outside of this groove and onto the bony head of the femur (femoral condyle). It is usually the result of a sudden blow or twisting action of the knee. Normally, soft tissues and muscles around the knee help to stabilize the kneecap allowing it to glide smoothly up and down. However, if the muscles are weak or the soft tissues are loose, the kneecap can slide out of the femoral groove causing pain and swelling. Most of the time the patella dislocates or subluxes

outwards (laterally). In most cases the patella will be relocated into the patellofemoral groove on straightening the knee, but in some cases the patella stays out of the groove and has to be put back in by a specialist. Regardless of how it is relocated, the process is reported to be extremely painful and the knee usually swells and may feel unstable. With lateral patella dislocations, a tear in the medial patella ligament or the vastus medialis obliques (VMO) muscle (inner quadriceps muscle) may be felt. The patella may also be slightly displaced to the outside (laterally) or feel like it is going to dislocate again if pushed laterally. The patient may also experience difficulty bending and straightening their knee without pain.

What causes Patella Subluxation and Dislocation?

There are a number of factors implicated in the cause of patella subluxation and dislocation. It is therefore said to be the contribution of several factors that lead to instability of the knee cap. Some of these are indicated as follows:

- **Q angle:** The Q angle is an important indicator of biomechanical function in the lower limb. It is the angle between the quadriceps muscle and the patella tendon, with the measurement being made of the angle formed by the quadriceps muscle's pull from the pelvis to the patella, and the patella tendons pull

on the tibia. This measurement reflects the effect of the quadriceps muscle contraction on the knee (hence the Q angle). When assessed correctly it provides useful information concerning the alignment of the pelvis, leg and foot. It therefore provides useful information about the alignment of the patella in the groove on the femur. Because of the large forces transmitted through the patella during extension, misalignment will cause problems with knee function.

● **Deformed patella or Femoral Groove:** The back of the patella should have a peak like an inverted mountain top, and the Femoral groove should look like a valley between mountains. If either the mountain or valley is not large enough, the patella is more prone to dislocate.

● **Gender:** Females are said to be more prone to patella dislocations than males due to their genetic make up. The shape of their pelvis which is wider and shallower to accommodate for pregnancy results in them having a larger Q-angle than men

● **Patella Alta:** This is when the patella sits too high in the groove. If the patella sits too high in the groove it may be more prone to dislocation and the bony block of the lateral femoral condyle will not be as much of a restriction to an outwards shift of the patella.

● **Muscle Weakness:** The VMO functions in maintaining the patella in its desired position in the groove during knee movements by pulling it towards the middle of the knee joint. This action is known as tracking. If the muscle is not strong enough, or its fibres are not adequately oriented, the patella is much more susceptible to subluxation or dislocation in conjunction with one or more of the above factors.

What Treatment can I receive?

The treatment of patella dislocations and patella instability depends largely on the severity of the injury and other associated injuries. It is important that each treatment plan is individualised to the specific requirements and injury of the patient. As with most acute injuries, **PRICE** (protection, rest, ice, compression and elevation) of the injured knee will help reduce pain and/or swelling.

Protection: this can be achieved by use of crutches or a rehabilitation brace

Rest: It is important immediately after the injury to take weight off the joint and prevent further injury. Slow return to activity should be done under the supervision of your doctor or allied health professional to ensure you are not returning too soon, and that you are strong enough to return to your required activity.

Ice: This should be applied immediately after the injury to control the inflammatory process and help to reduce pain. It can be applied for 10-15 minutes at a time, at two hourly intervals if possible/necessary. Ice should never be applied directly to the skin as this can result in an ice burn. Precautions should be taken before using ice treatment and these are indicated as follows:

PRECAUTIONS WHEN USING ICE THERAPY.

- **Ice treatment must be used carefully otherwise it may cause a skin burn.**
- **Never put an ice pack directly onto the skin, always use a damp towel or cloth to prevent an ice burn.**
- **Only apply an ice pack to areas of skin with normal sensation i.e. you must be able to feel hot and cold.**
- **Never put an ice pack over an open wound or graze.**
- **Do not apply an ice pack to an area with poor circulation.**
- **Never leave an ice pack on the skin longer than the time stated in this advice sheet.**
- **Adults should always supervise young children when using ice packs. Application may be reduced and extra care should be taken when checking the skin.**
- **Remember to check the skin underneath every 5 minutes for:**

- Whiteness of the skin
- Blueness of the skin
- Blotchy and painful skin
- Excessive numbness

If you get any of these symptoms remove the ice pack immediately.

- **Bracing or taping:** A brace or taping can be used in the acute stages to provide support to the unstable knee. Long term use of a brace or taping is however controversial in the rehabilitation of patella problems, and should therefore only be used for longer periods under the recommendation of your doctor or allied health professional, and in conjunction with a rehabilitation programme to ensure muscle atrophy does not occur. The use of some form of compression in the acute stages can help to decrease the inflammation and pain in the joint as well as provide support to the unstable knee.
- **X-ray or MRI:** These may be taken to help determine the cause of your dislocation or subluxation as well as the damage that may have been caused because of the dislocation or subluxation of the kneecap.

- **Rehabilitation Programme:** After a patella subluxation or dislocation, the long term goal is to return the individual back to their previous level of activity. Achieving this goal will depend on the function and stability of the knee. A general knee rehabilitation programme that can be provided by your physiotherapist, and includes stretching, strengthening, aerobic conditioning, technique refinement and proprioceptive retraining (awareness of the joint in space) is said to be the most important factor in improving knee function and stability.
- **Surgery:** This is rarely required and is seen as a last resort by most surgeons. In cases where conservative treatment has been unsuccessful, it may be decided that surgery is needed, especially in patients who have significant pain or recurrent dislocation.

What Exercise Can I do?

Before starting an exercise programme for a patella subluxation or dislocation, it is important that you consult with your Doctor or allied health professional so that a full assessment can be carried out and the appropriate treatment for the severity of your injury prescribed. A general exercise programme for patella subluxations and dislocations has been included in this pack, which can be adjusted depending on advice that you have been given by your health care professional on assessment. 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 delay your recovery and may result in further damage. The exercises in this pack concentrate on increasing the overall strength and flexibility of the leg muscles, especially around the knee and hip joints. It is important with all the exercises that you progress from phase one only when you are able to complete the exercises in this phase pain free and with good control.

- Keep all exercises in your pain free limits. Trying to work in painful ranges will only prolong your recovery.
- If you experience pain during any of the exercises, decrease the intensity of the exercises by:
 - decreasing the number of sets
 - decreasing the number of repetitions
 - decreasing the range of movement
 - decreasing the resistance
- Do all exercises slowly and breathe normally.
- Progress gradually according to your own level of comfort.
- Following exercise, stiffness or fatigue may result but should not last longer than 24 hrs. The symptoms of your injury should not be aggravated.

Exercises phase 1

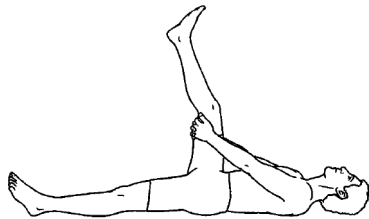
STRETCHES

- Hold each stretch for **30 seconds** and repeat **2-3 sets** on each leg
- **Do not bounce** the stretch
- **Do not work into pain.** You should only be feeling a good pull in the muscles, not pain.



ITB STRETCH

Cross involved leg behind uninvolved leg in standing position, with a stretched leg behind, and lean to the uninvolved side until a stretch is felt over outside of involved hip.

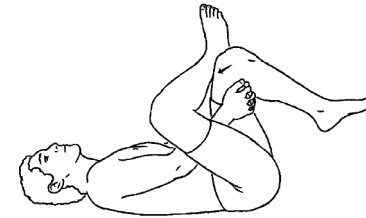


HAMSTRINGS STRETCH

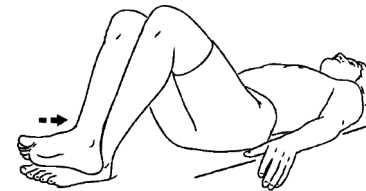
Lying on your back, one leg straight and one knee bent. Raise the bent leg up towards your chest until your knee is in line with your hip. Now straighten the knee. You should feel a stretch at the back of your leg. You can use a towel if necessary to aid you in lifting your leg for the stretch

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° and holding onto your thigh behind your knee. Pull your left leg gently towards your body. You should feel a stretch in the region of your buttocks. Be careful not to bend your involved knee too much and not to stretch into pain. A towel can be used to aid you in the stretch if you are unable to reach your leg

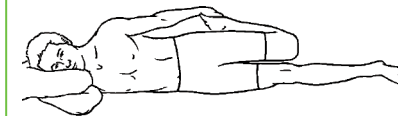


KNEE FLEXION STRETCH

Sitting with the involved leg straight out in front of you. Gently, assisting with the other leg, slide the involved leg up towards your buttock as far as you can go. Hold for a few seconds and return to the start position. Repeat 10 times

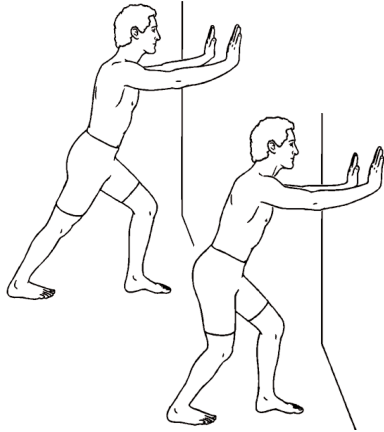
QUADRICEPS STRETCH

Only progress on to this stretch when you are able to do the above exercise with no pain or apprehension. 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 on your right before rolling over to stretch your left leg. It is important to keep the other leg bent at both the hip and the knee, so as not to hyperextend your back. You may need to get someone to help you with this stretch or use a towel if you are unable to bend your knee too much. Extend more at your hip if you are unable to bend your knee too much.

Exercises phase 1 (continued)

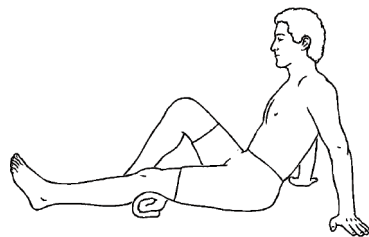


CALF STRETCH

Stand about a meter away from a wall. Place both hands against the wall with one foot further back than the other. Now lean in towards the wall, bending the front knee and keeping the back knee straight and the heel on the floor. Hold for 20-30 seconds, and then simply bend your back knee slightly, still keeping your heel flat on the floor. You should feel the stretch lower down your leg in the region of your Achilles tendon. Hold for 20-30 seconds and then repeat with the other leg.

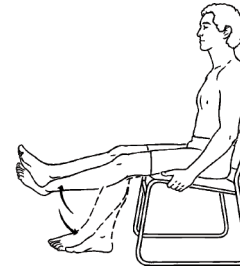
STRENGTHENING EXERCISES

- Complete **2 sets of 10-12 repetitions** on each leg. (unless otherwise stated in the exercise)
- Always work in a pain free range of movement
- The exercises below include both knee and pelvic strengthening exercises as pelvic stability also has a big role to play in knee stability.
- In the initial stages, you may feel more confident performing knee bends and leg strengthening exercise in the water. Discuss this with your therapist as they should be able to give you a hydrotherapy exercise programme to accompany your land strengthening.



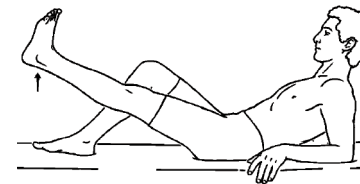
TERMINAL LEG EXTENSIONS

Sitting on the floor with one leg outstretched in front of you and a pillow/rolled up towel under the knee. Push your knee into the pillow/towel while at the same time lifting your heel off the floor. Hold for 10 seconds (contracting your inner quadriceps muscle) and then relax. Repeat 10 times per leg.



SEATED KNEE FLEXION / EXTENSION

Gently push involved leg back with good leg until you feel a stretch. Relax. With good leg underneath involved leg, slowly straighten out leg.



STRAIGHT LEG RAISES

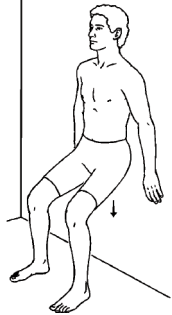
Sitting on the floor with both legs outstretched in front of you and your arms supporting your back by bringing them close to your body. Keep one leg bent, foot flat on the floor, and now raise the other leg 20cm off the floor, keeping the knee straight. Lift and hold for 5 sec, relax and repeat 10 times on each leg in the following foot positions.
1) Toes pointing straight upwards
2) Toes pointing outwards.



STEP-UPS

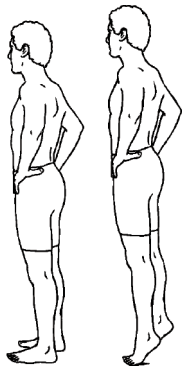
Stand on one leg on a step facing up the stairs. Slowly lower yourself by bending your knee. Return to starting position without pushing off with the opposite leg. Be aware that your knee and foot do not roll inwards. Perform 2 sets of 10 reps per leg.

Exercises phase 1 (continued)



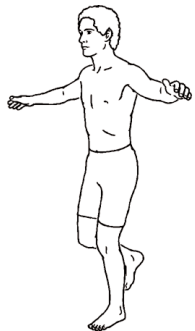
WALL SLIDES

Stand leaning up against a wall, your feet a little away from the wall and pointing slightly outwards. Push your back against the wall. Slowly lower your body into a seated position and hold this position for 5-10 seconds. Complete 10 repetitions. Don't go past a 90° angle at your knees.



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.

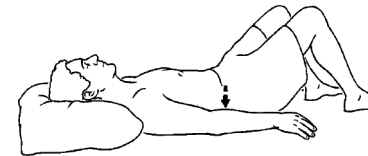


STORK STANDING:

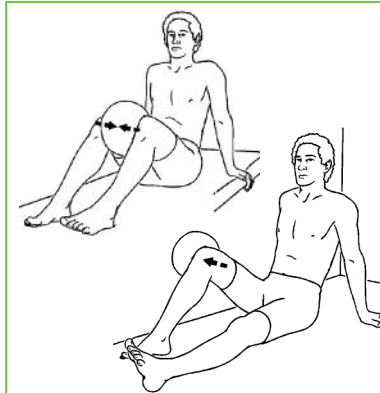
- Balance on one leg for 30 seconds and repeat with the other leg.
 - Repeat the above with your eyes closed.
- Progress the above to standing on an unsteady surface, e.g. a cushion or a narrow piece of wood.

PELVIC STABILITY

Lying on your back with your knees bent, feet flat on the floor. Move your hip bones so they feel as though they are facing towards the ceiling (i.e. not tilted towards you -

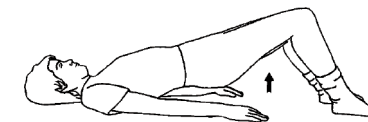


back too flat, or towards your knees - back too arched). This is your neutral pelvic position. Feeling just inside your hip bones, now pull your belly button towards your spine (i.e. contract TA), and you should feel the muscle under your fingers contract slightly. You should still be able to breathe normally. Hold this contraction for 10 seconds and repeat this 10 times. Keep your spine in neutral throughout the contraction.



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 5 times. Now place the ball between your knee and the wall, push out for 10 seconds and repeat 5 times on each leg



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

Exercises phase 2

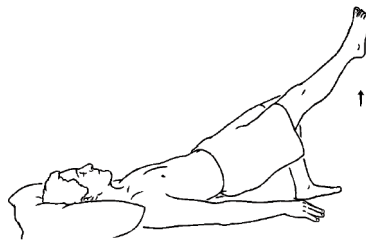
Phase 2 exercises can be started when you are able to do all the Stretching and Strengthening exercises in Phase 1 with no adverse effects and good control. Continue to

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

STRENGTHENING EXERCISES

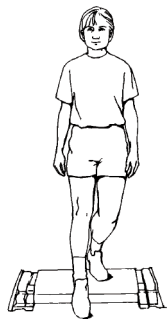
- Repeat **2 sets** of **10-15 reps** on each side (unless otherwise stated in the exercise)

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



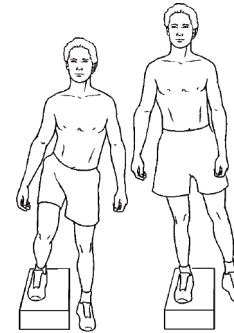
BRIDGING WITH ONE LEG EXTENDED

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 5 sec, put it back down, repeat with the other foot, and then relax completely. Begin again. Keep the TA and Glutes tight throughout the movement to keep the pelvis stable and without dropping to the one side. Repeat 5 times per leg.



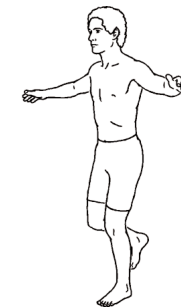
STEP-DOWNS

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.



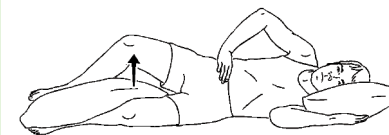
LATERAL STEP-UPS

Standing side on to a step, with one leg hanging off the step. Slowly lower the outside leg towards the floor, ensuring that your weight is more on your heel but foot is flat, and that as you bend, your knee goes in a straight line. Make sure the movement is controlled and that you do not let the hanging leg touch the floor before you return to your start position.



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)



OYSTER EXERCISE

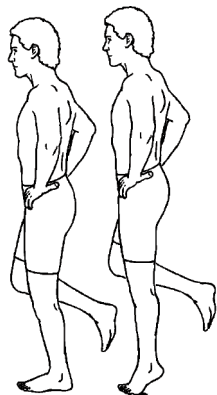
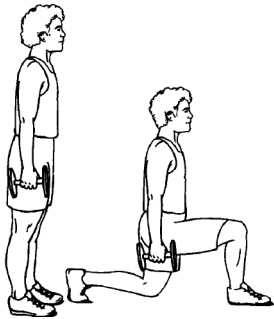
Lying on your side with your knees bent and feet in line with your buttocks, contract your TA. Now allow the top leg to rise into the air as far as you can without moving your pelvis, and hold for 10 seconds. Make sure you control the entire motion (up and down).

Exercises phase 2 (continued)



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). Progress this exercise to stepping lunges (i.e. start with feet together and step into a lunge position) once you are pain free with the above. Again when you lunge down, make sure that both knees are at a 90° angle and then return to the starting position



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

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:

Phone 017890400999 / 07870166861

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