Tyneside Integrated Musculoskeletal Service
Information for Patients
www.tims.nhs.uk

Training start date 17/02/2023

Management of Acute Knee Injuries

Introduction

This leaflet is designed to give you the most appropriate information and advice to help you recover well from your recent knee injury. The information enclosed is relevant to most milder injuries to various structures in and around the knee, such as Ligaments, Cartilage and Muscles. Please take the time to read the leaflet and follow the advice provided.

There are a few situations where simply following the enclosed advice may not be appropriate and you may need more urgent assessment. If you have had a sudden onset of knee pain and either:

- Are unable to put any weight through your leg
- Developed immediate significant swelling of your knee within a few minutes of injury
- Are unable to fully straighten your knee
- There is a new visible deformity and/or significant bruising to your knee
- Your knee is warm to touch, red and swollen and you feel unwell

Then you should seek more urgent assessment at a Walk in Centre or A&E department as this could signify more significant injury or joint infection.

Basic Knee Anatomy

The knee is a complicated joint made up of 3 bones - the Femur (thigh bone), the Tibia (Shin bone) and the Patella (knee cap). They are surrounded by a sleeve of ligaments called a joint capsule with a lining inside called the Synovium. The Synovium creates fluid in the joint called Synovial Fluid which helps to give nutrition to the cartilage and provide lubrication for movement.

©PhysioTools

The sides of the joint are re-enforced by strong fibrous bands of ligament called the Medial (on the inside) and Lateral (on the outside) Collateral Ligaments. Deep inside the joint are 2 more strong ligaments called the Anterior and Posterior Cruciate ligaments.

Hyaline Cartilage is found on the ends of the bones to help provide smooth movements and cushioning, whilst a different type of Cartilage called the Meniscus sits on top of the shin bone to provide extra stability and shock absorption for the knee.

©PhysioTools

Common Injuries

Any of the structures of the knee can be injured, depending on the mechanism of injury. However, some structures are more commonly injured than others due to their location and function within the joint. The severity of the injury can also vary and may require a different amount of intervention or support, with milder injuries often just requiring time to heal and advice on the best way to manage them.

Ligament Injuries

Ligaments are tough bands of tissue that connect the bones in your body. They are usually injured when something causes the ligament to be stretched forcefully beyond its normal limits.

After injuring the ligaments of the knee there can be swelling, pain, limitation of movement and an inability to weight bear. The joint can even feel unstable. The management of a ligament injury depends on the ligament involved and the severity of the injury. Milder injuries may have low level swelling that develops several hours or days after the injury, may have some mild restrictions in movement with some mild to moderate pain and difficulty moving around. If you feel you have a milder knee ligament injury, or have already been assessed by a health professional you can follow the advice on this leaflet.

Medial Ligament Injuries

The Medial ligament is located on the inside of the knee as you look at it (the side closest to the other leg). Injuries to this ligament often occur due to twisting on the leg such as a sudden change in direction, or if there is a blow or trauma to the outside of the knee causing the knee to be pushed sideways. Pain can be local to the inside area of the knee and is worse with certain twisting movements.

Cruciate Ligament Injuries

There are 2 Cruciate ligaments in the knee called the Anterior and Posterior Cruciates (ACL and PCL). The ACL is much more commonly injured and is usually associated with either a direct trauma to the knee during sport or a sudden forced twisting with the knee slightly bent while the foot is on the floor. ACL injuries are a more significant injury and often people report feeling or hearing a pop or crack. The knee swells quite quickly (often within minutes) and it is painful weight bearing. If you are concerned you have recently injured one of your Cruciate ligaments then you should seek assessment by a health professional.

Signs of a more serious injury in which the ligament is very badly damaged or completely torn are immediate severe swelling into the knee and difficulty walking. The knee might feel unstable and you may have heard or felt a snap or pop at the time of injury. If you have these symptoms you should attend your local A&E department for further assessment and advice

Cartilage Injuries

There are 2 types of Cartilage in the knee - Hyaline Cartilage and Meniscus. Damage to the Cartilage in the knee is a relatively common cause of knee pain. Symptoms of cartilage injury include:

- joint pain – this may continue even when resting and worsen when you put weight on the joint
- swelling – this may not develop for a few hours or days after the injury
- stiffness - particularly after resting
- a clicking or grinding sensation
- the joint locking, catching, or giving way

Hyaline Cartilage

Hyaline Cartilage is a tough, flexible tissue found throughout the body. It covers the surface of joints, acting as a shock absorber and allowing bones to slide over one another. Sometimes it can become damaged as a result of a sudden injury, such as while playing sport or twisting or jarring the knee with simple daily tasks. More commonly it is due to ageing and a gradual wear process (osteoarthritis), although the symptoms may suddenly appear if you have done too much making it feel like a new injury. Minor cartilage injuries following a sudden twist or jarring of the knee may get better on their own within a few weeks or months. Giving them time to settle with the advice in this booklet is recommended.

Meniscus Cartilage

Meniscus Cartilage is a thicker Crescent shaped cartilage attached to the end of the Tibia (shin bone) that provides further shock absorption, and helps transfer forces between the Tibia and Femur. Similar to Hyaline Cartilage it can be injured with an acute injury such as twisting the knee or playing sport, but also can develop 'degenerative' tears over time due to aging. Many Meniscus tears have the ability to heal with time, although this depends on the location of the tear within the cartilage. However, even when tears don't heal, they often stop causing symptoms and the knee can return to normal function. Giving them time to settle with the advice in this booklet is recommended.

Signs of a more significant Cartilage injury requiring more urgent assessment are an inability to straighten the knee (also known as a 'locked' knee) or regular giving way of the knee causing you to fall. If you feel your knee is 'locked' following a recent injury - ie. it feels like something inside is blocking it from going straight - then you should seek assessment at a local Walk in Centre or A&E department

Muscle and Tendon Injuries

3 main muscle groups attach to the knee joint via tendons - the Quadriceps (front of the thigh), the Hamstrings (back of the thigh) and calf (back of the lower leg). When muscles contract they cause a pull through the tendon to make the joint move. When a muscle or tendon is injured, it usually causes pain when trying to contract the muscle. If there is significant injury, the muscle or tendon can't create force and the muscle becomes weak.

Minor injuries to the tendon can cause localised pain and a small amount of swelling. These injuries can be managed with the advice in this leaflet.

Signs of a more serious injury that requires immediate assessment include:
- A sudden 'pop' or feeling of something 'snap' at the time of injury
- significant swelling or bruising with a visible gap or lump in the tendon
- being unable to contract the muscle or to hold your leg fully straight
- inability to stand on the leg without it giving way

If you feel you may have a more serious tendon injury you should seek assessment at a Walk in Centre or A&E

Patella Dislocation

A kneecap (Patella) dislocation is an injury in which the kneecap is forced out of its usual position. It's often caused by a blow or a sudden change in direction when the leg is planted on the ground, such as during sports or dancing.

The kneecap (patella) normally sits over the front of the knee. It glides over a groove in the joint when you bend or straighten your leg. When the kneecap dislocates, it comes out of this groove and the supporting tissues can be stretched or torn. It usually looks like it is sitting on the outside of your knee rather than the front.

When a kneecap dislocates, it will usually look out of place or at an odd angle. In many cases it will pop back into place soon afterwards on its own, although sometimes it can need re-locating by a medical professional if this doesnt happen.

If your injury is acute and you are worried that your kneecap still looks dislocated you should call an ambulance or attend your nearest Walk In Centre or A&E department

Treatment for a dislocated kneecap

Once the kneecap is back in place, you may require an X-ray to check the bones are in the correct position and there's no other damage to the knee cap or thigh bone. However, a dislocated kneecap is not usually serious and most of the time treatment isn't necessary, and you can use the information provided in this leaflet.

If you were seen in an emergency or urgent care department, your leg might be immobilised in a removable splint to begin with. You can usually remove this after a couple of weeks unless you have been told otherwise. A few weeks of physiotherapy exercises is then recommended to aid your recovery and regain normal movement of the joint.

Your knee may be swollen for some time and painful to bend and straighten.

Surgery is usually only necessary if there was a fracture or another associated injury, such as a ligament tear.

Initial Treatment of an Acute Knee injury

Mild to moderate Knee injuries, regardless of the structure involved are initially managed with 6 steps. This can be remembered with the word **POLICE**:

- Protect the injury with relative rest in the early stages - you should try to keep moving as tolerated but rest often.

- Optimal Loading - gradually increasing the weight through the affected limb early on as pain allows. Evidence suggests this aids quicker recovery. If you are struggling with your walking or weight bearing, you may be provided with crutches to help.

- Ice - use crushed ice in a damp towel over the knee. Leave on for 5 - 10 minutes. You can repeat this every 2 - 3 hours. Check your skin often. Make sure you use a damp towel between the ice and the skin to avoid an ice burn. Do this a few times per day until you begin to feel better.

- Compression You can wrap the joint in a stretchy bandage to apply a small amount of pressure to the area. This can help to reduce any swelling. Make sure the bandage is not applied too tightly and never wear it in bed at night. If it begins to feel tight, remove the bandage and put it on again more loosely, or use a larger size of bandage.

- Elevation of the leg to aid with reducing the swelling is also important

It's also important to start some gentle exercises which you will find at the end of this leaflet. As the pain starts to settle down you should be able to gradually return to normal activity as comfort allows. Try to walk as normally as possible; early weight bearing can aid quicker recovery.

Removable Knee Braces or Splints

Some acute knee injuries may be treated initially by putting the knee in a removable splint. This is quite common if you attend A&E at the time of injury, and it is felt that your knee would benefit from a short period of immobilisation to protect the early healing phase. Usually this should be removed after a couple of weeks unless otherwise instructed. Wearing the splint for too long can be unhelpful and slow recovery as it can make your muscles weak and cause the knee to stiffen.

Pain Management

If you are able to take simple pain relief this may help initially, however, if you are not sure whether you can take them, please speak to either a pharmacist or your GP. Keeping mobile and exercising will help to increase your confidence and reduce the pain and swelling around the site of injury.

Injury Healing Times and Factors Affecting Healing

Healing of acute knee injuries usually takes six to eight weeks depending on the severity of the injury, your age, activity levels and other health factors. Some more severe injuries can take months whilst minor injuries may feel much better within a couple of weeks. Experiencing discomfort and swelling whilst healing is taking place is normal for this type of injury. Staying on top of the following factors can help move the healing process along and give your injury the best chance of a quick recovery:

Stress relief - utilise techniques such as mindfulness, meditation and deep breathing cycles. Speak to your health care professional for more information.
Sleep hygiene - consistently getting 6-9 hours is recommended by the NHS. Only use your bedroom for sleep, e.g. not for TV.
Nutrition - make sure you have a balanced diet to ensure you have all the right ingredients in your body for good healing
Smoking – this has been linked with musculoskeletal pain and delayed healing. For more advice speak to a pharmacist or your GP
Alcohol – avoid alcohol in the early stages of healing (first three days). Evidence has shown this can slow down recovery and increase the chances of re-injury.

Knee Exercises to aid Recovery

The following exercises are suitable for most acute knee injuries, to regain the normal range of movement and strengthen the muscles around the joint while the tissues heal.

When starting them, make sure you start small and gradually build up the number of repetitions over time. A good rule of thumb to help guide you with finding the appropriate starting point is to use the 'rule of 5':

Injuries can sometimes REACT if we do too much too soon causing an increase in pain or swelling. However it is OK to have SOME pain when exercising. A basic rule is if the pain reaches **greater than 5/10 on a scale of 0-10 where 10 is the worst pain ever imaginable and 0 is no pain** - either **at the time of activity or within the first 24 hours** afterwards - then this may be too much and try making the exercise easier.

When you have found a level that is acceptable, stick at this for a while and then see if you can make it a little harder by increasing the number of repetitions or progressing to a slightly harder exercise (see below for 3 different levels of exercise). **Use the rule of 5 again** to determine if this level is appropriate, and if it is stick at it again for a while. If you get a REACTION with unacceptable pain (more than 5/10) at the time or within the first 24hrs then back off, rest for 48 hours and try again using a reduced the load until you find a level you can manage.

Try doing the exercises 2-3 times per day to begin with.

Easiest Exercises to begin with:

Active Knee Flexion in Supine

Lie on your back, with legs straight.

Bend your knee by sliding your heel towards your buttocks and return to the starting position.

Repeat 10 - _____ times.

Isometric Knee Extension in Supine

Lie on your back with one leg bent and the other leg straight.

Bend the ankle of the straight leg and press the back of the knee against the floor using your front thigh muscles.
Hold the tension for 5 seconds and then relax.

Repeat 10 times.

Knee Flexion in Sitting

Sit up straight on a sturdy chair, so that your feet are supported on the floor.

Slide your foot backwards on the floor and bend your knee as much as possible.
Return to the starting position.

Repeat 10 - _____ times.

Slightly Harder Exercises - progress to these when you feel able to:

©Physiotools

Active Knee Flexion in Standing

Stand tall and take support if needed.

Bend your knee and take the heel towards your buttocks. Keep both thighs parallel.
Return to the starting position.

Repeat 10 - _____ times.

©Physiotools

Knee Extension in Sitting

Sit up straight on a sturdy chair, so that your feet are supported on the floor.

Bend your ankle and straighten your knee using your front thigh muscles.
In a controlled manner, return to the starting position.

Repeat 10 - _____ times.

Toughest Exercises - do these as you feel you are recovering well and swelling and pain have reduced:

©Physiotools

Chair Squat

Stand tall with your feet approximately hip-width apart and weight distributed evenly on both feet.
Make sure the chair behind you is at a suitable distance from you.

Bend your knees and hips and squat down onto the chair. Knees and toes should be pointing in the same direction.
Sit down lightly and push back up to the starting position using your front thighs and buttock muscles.

Repeat 10 times.

©Physiotools

Stand.

Push up on your toes.

Repeat 10 times.

For further information

If this advice sheet does not help your symptoms there are more resources available for you to look at on the TIMS website. or ring the TIMS booking office on (0191) 4452643.

Most patients will improve within a six to nine week period with this advice, however, should your knee problem persist then contact TIMS on the number below.

Please email **ghnt.newcastlegatesheadtims@nhs.net**, ring on **0191 213 8800** or visit our website at: **www.tims.nhs.uk** which provides online guidance and support on managing your musculoskeletal (MSK) condition effectively.

The NHS website also provides trusted online information and guidance on all aspects of health and healthcare to help you manage your condition and/or inform your choices about your health: **www.nhs.uk.**

Useful links

The Patient Advice and Liaison Service (PALS) can offer on-the-spot advice and information about the NHS. You can contact them on freephone **0800 032 02 02** or e-mail **northoftynepals@nhct.nhs.uk.**

Tyneside Integrated Musculoskeletal Service

TIMS is a partnership between Newcastle upon Tyne Hospitals NHS Foundation Trust and Gateshead Health NHS Foundation Trust
Information provided by Scott Bowley, Senior Physiotherapist
Review date: October 2024