CONDITION

Unstable kneecap

An unstable kneecap slips partly or completely out of its groove at the front of the knee.

WHAT IT IS
Kneecap slipping partly or completely out of position

BODY SYSTEM
Bones, joints and muscles

MAIN SYMPTOMS
Knee pain, swelling, buckling, visible kneecap displacement

WHAT CAUSES IT
Injury and knee anatomy

HOW IT IS DIAGNOSED
Examination, knee X-rays and sometimes MRI

MAIN TREATMENT
Rehabilitation, bracing and sometimes surgery

CAN IT BE CURED?
Sometimes - treatment can restore stability

IS IT AN EMERGENCY?
Sometimes - visible dislocation or cold, numb foot

LONG-TERM OUTLOOK
Many regain function, but repeat instability can occur

Overview

An unstable kneecap means the patella, the small bone at the front of your knee, does not stay securely in its normal groove. This groove is at the lower end of the thigh bone and is called the trochlea.

The kneecap may move partly out of place and return by itself. This is called a subluxation . If it moves completely out of the groove, it is a dislocation . It usually shifts toward the outside of the knee.

Some people have one dislocation after an injury and never experience another. Others have repeated slipping, a feeling that the knee may give way, or discomfort during sport and everyday activities. The term patellar instability covers these different patterns.

A dislocation can stretch or tear the tissues that guide the kneecap. It can also damage the

smooth joint cartilage or knock off a small piece of bone and cartilage. Proper assessment matters even if the kneecap has moved back into place on its own.

Symptoms

A complete dislocation is usually obvious. The knee may look misshapen, with the kneecap sitting toward the outside. Pain can be severe at first, and bending or straightening the knee may be difficult.

If the kneecap returns to position by itself, the shape may look normal by the time you are assessed. Common symptoms include:

Repeated instability may cause less dramatic episodes. You might feel the kneecap briefly slide, especially when turning or landing from a jump. Some people describe a lack of trust in the knee rather than strong pain.

Front-of-knee pain alone does not always mean the kneecap is unstable. Several other knee problems can cause pain in the same area.

- Pain at the front or inner side of the knee
- Rapid swelling after a slip or dislocation
- A popping sensation when the injury happens
- Buckling or a sense that the kneecap is moving sideways
- Fear or discomfort when twisting, changing direction or using stairs
- Tenderness around the kneecap

Causes and risk factors

A first dislocation often happens when the foot is planted and the body turns. It can also follow a direct blow to the inner side of the kneecap. Sports involving quick changes of direction, jumping or contact are common settings, but the same injury can happen during an everyday movement.

The kneecap is held in place by the shape of the bones, ligaments and muscles. One important ligament is the medial patellofemoral ligament , or MPFL. It helps stop the kneecap moving too far outward and is often stretched or torn during a dislocation.

Certain features can make instability more likely:

Several factors may occur together. Having one does not mean that your kneecap will

definitely dislocate.

- A shallow or unusually shaped kneecap groove, called trochlear dysplasia
- A kneecap that sits higher than usual, called patella alta
- The kneecap tendon attaching relatively far toward the outside of the shin
- Knock-knee alignment or rotation of the thigh or shin bones
- Loose or unusually flexible joints
- Weakness or poor control of the thigh, hip and trunk muscles
- A previous dislocation, particularly at a young age

Diagnosis

A healthcare professional will ask how the injury happened, whether the kneecap returned by itself and whether you have had earlier episodes. They will examine the knee once it is safe to do so, looking for swelling, tenderness, movement and signs of damage to nerves or circulation.

X-rays show the position of the kneecap and may reveal a fracture or a loose piece of bone. They can also show some features of the knee's shape.

An MRI scan gives a more detailed view of cartilage, ligaments and bone. It may be used after a first dislocation if there is concern about an osteochondral injury, meaning damage to both cartilage and the bone beneath it. MRI can also help plan treatment for repeated instability.

A CT scan is sometimes used to measure bone alignment or rotation, particularly when surgery is being considered.

Not every feeling of slipping is caused by true kneecap instability. Examination and imaging help distinguish it from meniscus injuries, ligament injuries and other causes of front-of-knee pain.

Treatment and management

Treatment is based on whether the kneecap is still dislocated, whether there is cartilage or bone damage, how often instability occurs and the shape of your knee.

A kneecap that remains dislocated needs to be moved back into position by a trained healthcare professional. This is called a reduction . Do not try to force it back yourself. Pain relief may be given, and the leg is checked afterward for circulation, nerve function and

associated injuries.

Many first-time dislocations can be managed without an operation when there is no major fracture or loose cartilage-and-bone fragment. Management may include:

Rehabilitation usually focuses on the quadriceps muscles at the front of the thigh, along with hip and trunk strength. Balance, landing technique and confidence in changing direction may be added later. The timing of each stage should reflect pain, swelling, movement and control rather than a fixed date alone.

Surgery may be considered when a substantial bone or cartilage fragment has been displaced, the kneecap repeatedly dislocates, or instability continues despite suitable rehabilitation.

One common operation reconstructs the MPFL using a tendon graft. This provides a new restraint on the inner side of the kneecap. Some people also need a procedure that changes the attachment of the kneecap tendon or corrects an important bone-shape problem. These operations are selected according to the cause of the instability; there is no single procedure that suits everyone.

In children and teenagers who are still growing, treatment planning must account for open growth plates.

- A brace or support for a limited period
- Pain relief appropriate for your circumstances
- Gradual return to weight-bearing and knee movement
- Physiotherapy to restore movement, strength and control

Complications

A dislocation can injure the cartilage that allows the kneecap and thigh bone to move smoothly. A fragment may break loose inside the joint, causing ongoing swelling, catching or locking.

Other possible complications include:

Surgery has additional risks, including infection, stiffness, blood clots, continued instability or excessive tightness around the kneecap. Your surgical team should explain the expected benefits and the risks of the specific procedure being considered.

- Repeated subluxations or dislocations
- Persistent pain or reduced confidence in the knee

- Knee stiffness and muscle weakness
- Damage that may contribute to arthritis behind the kneecap over time
- Falls or further injury when the knee gives way

Prevention

The knee shape and inherited joint flexibility that contribute to instability cannot usually be prevented. A first traumatic dislocation also cannot always be avoided.

After an episode, completing rehabilitation may improve strength, movement and control. Returning to demanding activity before the knee has recovered may increase the chance of another injury.

For sport, a gradual return that includes balance, landing and direction-change practice can help prepare the knee. A brace may help some people feel more secure during selected activities, but it cannot correct the underlying shape of the joint or guarantee that another dislocation will not happen.

Living with it and what to expect

Recovery after a first dislocation commonly takes several weeks to months. Swelling and pain often settle before strength, control and confidence fully return. Progress may not be steady; the knee can feel more uncomfortable after an increase in activity.

Some people have no further instability after rehabilitation. Others continue to feel brief slips or have another complete dislocation. Repeat episodes are more likely when several anatomical risk factors are present or when the first episode occurs at a younger age.

Return to work or study depends on how much standing, kneeling, climbing or carrying is required. Return to sport usually comes later and is based on knee movement, strength, balance and ability to perform sport-specific tasks without instability.

If instability becomes recurrent, it can affect exercise choices and confidence. Further imaging and a specialist assessment can clarify whether continued rehabilitation, activity changes or surgery may help. Surgery often improves stability in appropriately selected people, but it does not guarantee a pain-free knee or prevent all future cartilage wear.

Routine follow-up is appropriate if swelling is slow to settle, the knee remains weak, or you continue to avoid normal activities because it feels unreliable.

When to get medical help

Seek emergency care if:

Keep the knee still and supported while waiting for help. Do not force the kneecap back into place.

Get prompt medical assessment after a suspected dislocation even if the kneecap returned by itself. An examination and imaging may be needed to check for a fracture or cartilage injury.

Arrange routine follow-up if the knee repeatedly buckles, the kneecap keeps slipping, swelling continues, or rehabilitation is not restoring movement and function. A knee that locks and cannot fully bend or straighten also needs prompt assessment because a loose fragment may be blocking movement.

- The kneecap is visibly out of place
- The foot becomes cold, pale, blue, numb or unusually weak
- There is an open wound over the knee or bone is visible
- The injury involves major trauma or severe uncontrolled pain

Common questions

Can an unstable kneecap heal on its own?

The stretched tissues can heal after a first dislocation, and many people recover with rehabilitation rather than surgery. However, healing does not change features such as a shallow groove or a high-riding kneecap. These can leave a continuing risk of instability.

Can I walk after my kneecap dislocates?

Do not walk on a knee while the kneecap remains out of place. After reduction, some people can gradually bear weight with a brace or crutches. The safe amount depends on pain, swelling and whether there is a fracture or cartilage injury.

Why does my kneecap keep slipping?

Repeated slipping can result from tissue damage during the first dislocation, the shape or alignment of the knee, loose joints, or reduced muscle control. Imaging may be needed to identify which factors are important in your knee.

Will I need surgery?

Not everyone needs surgery. It is more likely to be discussed when there is a displaced bone or cartilage fragment, repeated dislocation, or continued instability after rehabilitation. The

operation should address the specific cause rather than instability in general.

Can I return to running or sport?

Many people do return, but the knee should first have good movement, strength and control without significant swelling or instability. Activities involving jumping, contact and rapid changes of direction usually require more rehabilitation than straight-line walking or jogging.

Is kneecap instability the same as kneecap pain?

No. Instability means the kneecap is moving partly or completely out of its groove. Pain around the kneecap can occur without instability and may have a different cause. A clinical assessment can help tell them apart.

Sources

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