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Chondromalacia

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What is chondromalacia patellae?

Chondromalacia patellae, also known as “runner’s knee,” is a condition where the cartilage on the undersurface of the patella (kneecap) deteriorates and softens. This condition is common among young, athletic individuals, but may also occur in older adults who have arthritis of the knee.

Chondromalacia is often seen as an overuse injury in sports, and sometimes taking a few days off from training can produce good results. In other cases, improper knee alignment is the cause and simply resting doesn’t provide relief. The symptoms of runner’s knee are knee pain and grinding sensations, but many people who have it never seek medical treatment.

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CAUSES

What causes chondromalacia patellae?

Your kneecap normally resides over the front of your knee joint. When you bend your knee, the backside of your kneecap glides over the cartilage of your femur or thigh bone at the knee. Tendons and ligaments attach your kneecap to your shinbone and your thigh muscle to the kneecap. When any of these components fails to move properly, it can cause your kneecap to rub up against your thigh bone. This abnormal rubbing can lead to deterioration in the patella, resulting in chondromalacia patellae or runner's knee.

Improper kneecap movement may result from:

- poor alignment due to a congenital condition
- weak hamstrings and quadriceps (the muscles in the back and front of your thighs)
- muscle imbalance between the adductors and abductors (the muscles on the outside and inside of your thighs)
- repeated stress to your knee joints, such as from running, skiing, or jumping
- a direct blow or trauma to your kneecap

RISK FACTORS

Who is at risk for chondromalacia patellae?

There are a variety of factors that may increase your risk for developing chondromalacia patellae.

Age

Adolescents and young adults are at high risk for this condition. During growth spurts, the muscles and bones develop rapidly, which may contribute to short-term muscle imbalances.

Sex

Females are more likely than males to develop runner's knee, as they typically possess less muscle mass than males. This can cause abnormal knee positioning, as well as more lateral (side) pressure on the kneecap.

Flat feet

Flat feet may place more stress on your knee joints than in people who have higher arches in their feet.

Previous injury

A prior injury to the kneecap, such as a dislocation, can increase your risk of developing runner's knee.

High activity level

If you have a high activity level or engage in frequent exercises that place pressure on your knee joints, this can increase the risk for knee problems.

Arthritis

Runner's knee can also be a symptom of arthritis, a condition causing inflammation to the joint and tissue. Inflammation can prevent the kneecap from functioning properly.

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SYMPTOMS

What are the symptoms of chondromalacia patellae?

Chondromalacia patellae will typically present itself with pain in the knee region, known as patellofemoral pain. You may feel sensations of grinding or cracking when bending or extending your knee. Pain may worsen after sitting for a prolonged period of time or during activities that apply extreme pressure to your knees, such as standing for an extended period or exercising.

Talk to your doctor if you have knee pain that doesn't improve within a few days.

DIAGNOSIS

Diagnosing and grading chondromalacia patellae

Your doctor will look for areas of swelling or tenderness in your knee. They may also look at how your kneecap aligns with your thigh bone. A misalignment can be an indicator of chondromalacia patellae. Your doctor may also apply resistive pressure to your extended kneecap to determine the tenderness and severity.

Afterward, your doctor may request any of the following tests to aid in diagnosis and grading:

- X-rays to show bone damage or signs of misalignment or arthritis
- magnetic resonance imaging (MRI) to view cartilage wear and tear
- arthroscopic exam, a minimally invasive procedure involving an endoscope and camera inserted into the knee joint.

Grading

There are four grades, ranging from grade 1 to 4, that designate the severity of runner's knee. Grade 1 is least severe, while grade 4 indicates the greatest severity.

Grade 1 severity indicates softening of the cartilage in the knee area.

Grade 2 designates a softening of the cartilage along with abnormal surface characteristics. This usually indicates the beginning of tissue erosion.

Grade 3 shows thinning of cartilage with active deterioration of the tissue.

Grade 4, the most severe grade, indicates exposure of the bone with a significant portion of cartilage deteriorated. Bone exposure means bone-to-bone rubbing is likely occurring in the knee.

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TREATMENT

Treatment options for chondromalacia patellae

The goal of treatment is to reduce the pressure on your kneecap and joint. Resting, stabilizing, and icing the joint may be the first line of treatment. The cartilage damage resulting in runner's knee can often repair itself with rest.

Your doctor may prescribe several weeks of anti-inflammatory medication, such as ibuprofen, to reduce inflammation around the joint. If swelling, tenderness, and pain persist, the following treatment options may be explored.

Physical therapy

Physical therapy focusing on strengthening the quadriceps, hamstrings, adductors, and abductors can help improve your muscle strength and balance. Muscle balance will help prevent knee misalignment.

Typically recommended are non-weight-bearing exercises, such as swimming or riding a stationary bike. Additionally, isometric exercises that involve tightening and releasing your muscles can help to maintain muscle mass.

Surgery

Arthroscopic surgery may be necessary to examine the joint and determine whether there's misalignment of the knee. This surgery involves inserting a camera into your joint through a tiny incision. A surgical procedure may fix the problem. One common procedure is a lateral release. This operation involves cutting some of your ligaments to release tension and allow for more movement.

Other surgical options may involve smoothing the backside of the kneecap, implanting a cartilage graft, or relocating the insertion of the thigh muscle.

PREVENTION

Tips to prevent chondromalacia patellae

You can help reduce your risk of developing runner's knee by following these recommendations:

- Avoid repeated stress to your kneecaps. Wear kneepads if you have to spend time on your knees.
- Create muscle balance by strengthening your quadriceps, hamstrings, abductors, and adductors.
- Wear shoe inserts that correct flat feet by increasing your arch. This will decrease the amount of pressure placed on your knees and may realign the kneecap.

Finally, excess body weight may stress your knees. Maintaining a healthy body weight can help take pressure off the knees and other joints. You can take steps to lose weight by reducing your sugar and fat intake, eating plenty of vegetables, fruits, and whole grains, and exercising for at least 30 minutes day, five times a week.

Article Resources

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