



Sinding-Larsen-Johansson Syndrome (Distal Patella Apophysitis)

What is Sinding-Larsen-Johansson Syndrome?

Sinding-Larsen-Johansson Syndrome (distal patella apophysitis) is irritation and inflammation of the growth plate (apophysis) at the bottom of the patella (kneecap), where the patella tendon inserts. In a child, the bones grow from areas called growth plates. The growth plate is made up of cartilage cells, which are softer and more vulnerable to injury than mature bone. Sinding-Larsen-Johansson is most often seen in children between the ages of 10 and 15 and usually appears during a period of rapid growth.

How does it occur?

Sinding-Larsen-Johansson Syndrome is caused by increased tension and pressure on the growth center. This pressure usually results from overuse of the knee (repetitive running and jumping). Having tight quadriceps muscles (in the front of the thigh) also puts pressure on this growth center and may make this condition more likely to occur. Tight muscles are more common during a growth spurt.

What are the symptoms?

Your child will complain of a pain at the bottom of the kneecap. They may have swelling at this location, and this pain may limit their activities.

How is it diagnosed?

Your doctor will do a physical examination of the knee and review your child's symptoms. X-rays may show irregular bone edges or fragments at the bottom end of the kneecap but are not generally required to make the diagnosis.

How is it treated?

Your child will need rest from painful activities to take the pressure off the growth center and allow the inflammation to resolve. Ice packs should be applied to the knee for 15-20 minutes every 2-4 hours for 2-3 days or until the pain goes away. Your child's doctor may prescribe a strap to support the kneecap and recommend stretches for tight muscles.

When can my child return to activities and sports?

The goal is to return your child to his or her sport as quickly and safely as possible. If your child returns to sports or activities too soon or pushes through pain, the injury may worsen, which could lead to chronic pain and difficulty with sports. Everyone recovers from injury at a different rate. Return to sport or activity





will be determined by how soon your child's knee recovers, not by how many days or weeks it has been since the injury occurred.

Your child may return safely to sports or activities when each of the following is true (Begin at the top of the list and progress to the bottom):

- Your child's lower kneecap is no longer tender, and there is no swelling.
- The injured knee can be fully straightened and bent without pain.
- The knee and leg have regained normal strength compared to the uninjured knee and leg.
- Your child can jog straight ahead without limping.
- Your child can sprint straight ahead without limping.
- Your child can do 45-degree cuts.
- Your child can do 90-degree cuts.
- Your child can do 20-yard figure-of-eight runs.
- Your child can do 10-yard figure-of-eight runs.
- Your child can jump on both legs without pain and hop on the injured leg without pain.

How can Sinding-Larsen-Johansson Disease be prevented?

The most important thing to do is to have your child limit activity as soon as he or she notices the pain at the bottom of the kneecap. Warming up before activity and quadriceps stretching after activity may also help to prevent Sinding-Larsen-Johansson Syndrome.

- **Warm up.** Ten minutes of light jogging or cycling before practice will increase circulation to cold muscles, making them more pliable and less prone to strain or rupture.
- **Stretch.** Tight muscles are more prone to injury. Tight muscles also put more stress on the attached tendons and bones, putting these tissues at risk for injury as well. Regular stretching can improve muscle flexibility. The ideal time to stretch is after your workout. Include all major muscle groups. Don't bounce. Hold each stretch for 20-30 seconds.

Stretching Exercises for Sinding-Larsen-Johansson Syndrome

- **Seated Hamstring Stretch.**
Start by sitting up nice and tall with your legs straight out in front of you. Reach your arms out to touch your toes until you feel a stretch in the back of your legs. Remember to keep your back straight and your legs straight, bending only at the hips. Hold for 30 seconds.





- **Standing Hamstring Stretch.**

Start by standing nice and tall. Reach your arms down to touch your toes until you feel a stretch in the back of your legs. Remember to keep your back straight and your legs straight, bending only at the hips. Hold for 30 seconds.



- **Standing Quadricep Stretch.**

Start by standing nice and tall. You may hold on to something for support. Lift and bend one leg back and grab the top of that foot with the same side hand. Continue to stand up straight. Keep your knees directly next to each other. You should feel the stretch in the front of your leg. Hold for 30 seconds. Switch legs and repeat on the opposite side. Perform 3 times on each leg.

