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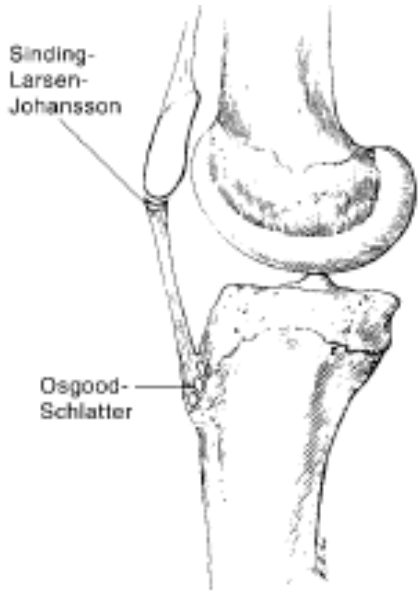
Sinding-Larsen-Johansson Syndrome

Description



- Sinding-Larsen-Johansson syndrome is characterized by inflammation of the kneecap (patella) at its lowest point in the area of the growth center. This is the site of origin of the patellar tendon. There is traction on the kneecap at this point due to action of the large, powerful thigh muscle (quadriceps), as well as with deep bending of the knee.
- The injury is usually due to repeated stress or vigorous exercise.

Common Signs and Symptoms

- Slightly swollen, warm, and tender bump below the kneecap
- Pain with activity, especially when straightening the leg against force (such as with stair climbing, jumping, deep knee bends, or weightlifting) or following an extended period of vigorous exercise in an adolescent
- In more severe cases, pain during less vigorous activity

Causes

- Sinding-Larsen-Johansson syndrome results from stress (a single sudden incident or repeated) or injury of the lower patella that interferes with development, causing inflammation. This may be inflammation of the cartilage of the growing patella, death of tendon cells from repeated stress, or pulling off of the lining of the patellar bone.

Risk Increases With

- Overzealous conditioning routines, such as running, jumping, or jogging
- Being overweight
- Boys between 10 and 15
- Rapid skeletal growth
- Poor physical conditioning (strength and flexibility)

Preventive Measures

- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
- Thigh and knee strength
- Flexibility and endurance
- Ideal body weight

- Cardiovascular fitness
- Exercise moderately, avoiding extremes.
- Use proper technique.

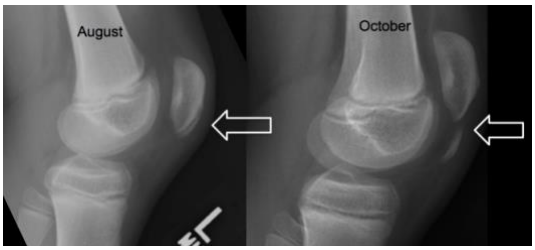
Expected Outcome

- Mild cases can be resolved with a slight reduction in activity level, whereas moderate to severe cases may require significantly reduced activity (12-16 weeks) and even immobilization (cast/brace) at times.

Possible Complications

- Complete separation / fracture of the growth center. (Figure 1)
- Recurrence of the condition in adulthood, with symptomatic bone fragments below the affected knee (ossicle)
- Persisting prominence (bump) below the kneecap

Figure 1



General Treatment Considerations

- Initial treatment consists of medications and ice to relieve pain, stretching and strengthening exercises, and modification of activities. Specifically, kneeling, jumping, squatting, stair climbing, and running on the affected knee should be avoided. The exercises can all be carried out at home for acute cases. Chronic cases often require a referral to a physical therapist or athletic trainer for further evaluation or treatment. Uncommonly, the affected leg may be immobilized for 6 to 8 weeks (in a cast, splint, or reinforced elastic knee support).
- A patellar band (brace between the kneecap and tibial tubercle on top of the patellar tendon) may help relieve symptoms. (Figure 2)

Figure 2

- Observe for extreme pain to palpation at the patella site, visible swelling, limp, inability to straight leg raise as these findings may be considered prodromal type symptoms that may precede an avulsion fracture and when present should refrain from sport. If they persist despite rest, ice, stretching, activity modification then a return appointment for further management should be arranged.
- Rest = however long it takes for symptoms to resolve to double the amount of time prior to returning to activity and return at a 50% volume and intensity. (EXAMPLE: *If it takes 2 weeks for symptoms to go away then rest would be 4 weeks and if usual participation in activity was 8 hours per week, then would return at 4 hours per week and then slowly add time and intensity over several weeks if no symptoms*)
- Rarely, surgery is needed (if conservative treatment fails) in the growing patient. In addition, surgery may be necessary after skeletal maturity if the

ossicle becomes painful.

Medication

- • Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Cortisone injections are rarely, if ever, indicated. Cortisone injections may weaken tendons, so it is better to give the condition more time to heal than to use them.

Heat and Cold

- Cold is used to relieve pain and reduce inflammation. Cold should be applied for 10 to 15 minutes every 2 to 3 hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage.
- Heat may be used before performing stretching and strengthening activities prescribed by your physician, physical therapist, or athletic trainer. Use a heat pack or a warm soak.

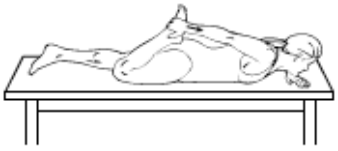
Notify Our Office If

- Symptoms get worse or do not improve in 4 weeks despite treatment
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

➢ **RANGE OF MOTION AND STRETCHING EXERCISES** · Sinding-Larsen-Johansson Syndrome

These are some of the ***initial*** exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.
- A ***gentle*** stretching sensation should be felt.

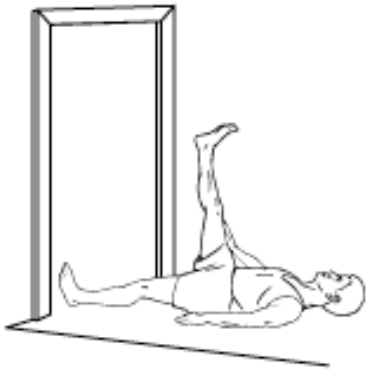


STRETCH · Quadriceps, Prone

1. Lie on your stomach as shown.
2. Bend your knee, grasping your toes, foot, or ankle. If you are too "tight" to do this, loop a belt or towel around your ankle and grasp that.
3. Pull your heel toward your buttock until you feel a stretching sensation in the front of your thigh.
4. Keep your knees together.
5. Hold this position for _____ seconds.
6. Repeat exercise _____ times, _____ times per day.

FLEXIBILITY · Hamstrings

1. Lie on your back with your leg bent and both hands holding on to it behind the thigh as shown.
2. Your hip should be bent to ***90 degrees*** and the thigh pointing straight at the ceiling.
3. Straighten out your knee as far as you can. Keep your thigh pointing straight toward the ceiling.
4. Keep the other leg flat on the floor.
5. Hold this position for _____ seconds.
6. Repeat exercise _____ times, _____ times per day.



FLEXIBILITY · Hamstrings, Doorway

1. Lie on your back near the edge of a doorway as shown.
2. Place the leg your are stretching up the wall keeping your knee straight.
3. Your buttock should be as close to the wall as possible and the other leg should be kept flat on the floor.
4. You should feel a stretch in the back of your thigh.
5. Hold this position for _____ seconds.
6. Repeat exercise _____ times, _____ times per day.

FLEXIBILITY · Hamstrings, Ballet

1. Stand and prop the leg you are stretching on a chair, table, or other stable object.
2. Place both hands on the outside of the leg you are stretching.
3. Make sure that your hips/pelvis are also facing the leg you are stretching.
4. Slide your hands down the outside of your leg.
5. Lead with your chest/breast bone. Keep your chest upright and back straight. Do not hunch over at the shoulders. Keep your toes pointing up.
6. You should feel a stretch in the back of your thigh.
7. Hold this position for _____ seconds.
8. Repeat exercise _____ times, _____ times per day.

➢ **STRENGTHENING EXERCISES** · Sinding-Larsen-Johansson Syndrome

These are some of the ***initial*** exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- Strong muscles with good endurance tolerate stress better.
- Do the exercises as ***initially*** prescribed by your physician, physical therapist, or athletic trainer. Progress slowly with each exercise, gradually increasing the number of repetitions and weight used under their guidance.

STRENGTH · Quadriceps, Isometrics

1. Lie flat or sit with your leg straight.
2. Tighten the muscle in the front of your thigh as much as you can, pushing the back of your knee flat against the floor. This will pull your kneecap up your thigh, toward your hip.
3. Hold the muscle tight for _____ seconds.
4. Repeat this exercise _____ times, _____ times per day.

STRENGTH · Quadriceps, Short Arcs

1. Lie flat or sit with your leg straight.
2. Place a _____ inch roll under your knee, allowing it to bend.
3. Tighten the muscle in the front of your knee as much as you can, and lift your heel off the floor.
4. Hold this position for _____ seconds.
5. Repeat exercise _____ times, _____ times per day.

Additional Weights: OK TO USE DO NOT USE!!!

If okay'd by your physician, physical therapist, or athletic trainer, **a _____ pound weight may be placed around your ankle for additional weight.**

STRENGTH · Isometric Quad/VMO

1. Sit in a chair with your knee bent 75 to 90 degrees as shown in the drawing.
2. With your fingertips, feel the muscle just above the kneecap on the inside half of your thigh. This is the VMO.
3. Push your foot and leg into the floor to cause the thigh muscles to tighten.
4. Concentrate on feeling the VMO tighten. This muscle is important because it helps control the position of your kneecap.
5. Tighten and hold for _____ seconds.
6. Repeat exercise _____ times, _____ times per day.

STRENGTH · Quadriceps, 7 Count

The quality of the muscle contraction in this exercise is what counts the most, not just the ability to lift your leg!

1. Tighten the muscle in front of your thigh as much as you can, pushing the back of your knee flat against the floor.
2. Tighten this muscle ***harder.***
3. Lift your leg/heel 4 to 6 inches off the floor.
4. Tighten this muscle ***harder again.***
5. Lower your leg/heel back to the floor. Keep the muscle in front of your thigh as tight as possible.
6. Tighten this muscle ***harder again.***
7. Relax.
8. Repeat exercise _____ times, _____ times per day.