

**LET'S TALK
ABOUT**

**PATELLA
APOPHYSITIS**

**(SINDING LARSEN
JOHANSSON SYNDROME)**

A PATIENT GUIDE



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WHAT IS PATELLA APOPHYSITIS?

A common source of pain in the front of the knee in sporty children is Sinding Larsen Johansson Syndrome. This term is used to describe pain & inflammation just below the knee cap (lower pole of the patella) where the thigh muscles (the quadriceps) attach via a tendon a growth plate called the apophysis. This condition should really therefore be called distal patella apophysitis to describe inflammation at the junction between the growth tissue and the tendon. Every time the leg is straightened, the patellar tendon puts stress on the growth plate.



These types of injuries are usually caused by a spike in activity relative to what the young athlete has trained for. They exceed their current capacity of their immature body. That might be because the child did too much too soon, such as at the beginning of a new term, or they might have had a lower capacity than usual due to a virus, a growth spurt or lack of adequate sleep or nutrition. During rapid growth spurts, tension increases in the quadriceps muscle and can cause traction, compression and shearing forces that act on the growth plate causing inflammation and irritation.

WHO GETS PATELLA APOPHYSITIS?

Distal patella apophysitis is more common in sporty children who participate in repeated high intensity and higher volumes of hopping, jumping and change of direction type activities.

The children who get symptoms are usually around 9-15 years of age, and it occurs especially in those children who grow faster and those who have a large growth spurt. These growth spurts may result in the child developing more tension in the hamstrings and this can mean the quadriceps muscle has to work harder to extend the knee during activities like running and kicking.

There have also been links made to low Vitamin D levels so it is worth considering supplementation in some parts of the world. Another theory is that some children may be more at risk due to a slightly altered alignment of their shin bone during growth.

WHAT ARE THE SYMPTOMS?

The onset of pain is usually gradual, and gets worse with activity and settles with rest. It may cause limping but is not usually too severe. If the patient experiences a sudden onset of intense pain in the area just below the knee cap, it is less likely to be an apophysitis and should be checked by a health professional.



**A GRADUAL ONSET OF PAIN
WORSE ON ACTIVITY
THAT EASES WITH REST**

**PAIN BELOW THE KNEE
ON RUNNING, JUMPING,
HOPPING**

**SWELLING & TENDERNESS
JUST BELOW THE KNEE CAP**

HOW IS PATELLA APOPHYSITIS DIAGNOSED?

A trained health professional will know what signs and symptoms to look for and be able to diagnose the condition without x-rays. If the symptoms do not settle down with modifying activity and seeking professional help, getting an ultrasound or MRI scan can be helpful to grade the severity of the injury and confirm the diagnosis.

CAN I PLAY WITH PAIN?

If the child has been diagnosed with Patella Apophysitis by a health professional, it is not usually harmful to continue to play sport. The aim of treatment is to keep them as active as possible. If they do nothing, their tissues get even less tolerant of loading and the muscles get weaker. However, it is important that they do not cause a more extensive injury.

To work out whether they can play with pain, ask them these questions:

1. How much pain are they in during play?
2. Does it settle within an hour of stopping?
3. Does it make them limp or have to play differently?
4. Is it worse the next day?
5. Has it swollen up more?

Using a pain scale of 0-10 (where 10 is severe pain and 0 is no pain), assess their pain level during and after activities. They then need to adjust their activity level back to a point where they can meet these criteria every time they play.

Trying to get kids to do less is never popular so try to find a way to increase the capacity of the body to tolerate more activity. Building stronger muscles, getting more sleep, improving their energy intake and factoring in days when their body can adapt and recover all help. Learn more about how to boost capacity at the Kids Back 2 Sport you tube channel and website.

REDUCE THE FREQUENCY AND INTENSITY OF ACTIVITY TO A LEVEL OF ACTIVITY THAT:

1. Creates only MILD pain(<3/10)
2. Settles within an hour
3. Does not cause them to limp
4. Is no worse the next day
5. Does not increase swelling

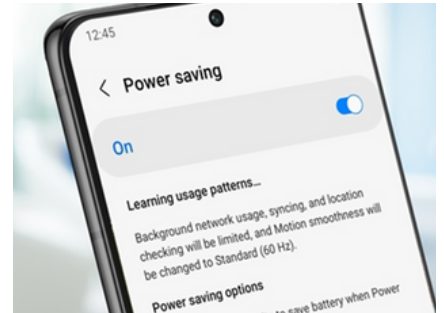
NO PAIN 0 1 2 3 4 5 6 7 8 9 10 SEVERE PAIN

HOW CAN I BUILD THEIR CAPACITY TO DO MORE?

RECHARGE THEIR BATTERY

Just like our phones need to be recharged so does our brain and body. In the deep part of our sleep, we perform many of the same functions achieved by plugging our phone in to the mains. We perform vital updates, virus scans, repair damaged tissues, build stronger muscles and bones and upload skills learnt in the day to the hard drive.

Children need more sleep during growth spurts so make sure they are getting lots of early nights and feel refreshed in the morning.



EAT FOR ENERGY

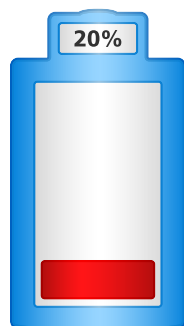
Getting adequate nutritional intake for the level of activity that the child does is important for bone health and growing stronger muscles. Make sure they eat a balanced diet including good protein sources for building muscles and repairing injured tissues. Many children don't feel hungry in the morning, but it is difficult to achieve adequate energy intake if children miss breakfast.

On days when they do more, they may need more regular intake of food and drink, especially during growth spurts. Adjust what they eat to meet the demands of what they do. Just like cars need refuelling, so do young athletes and the faster they go, the more they need..

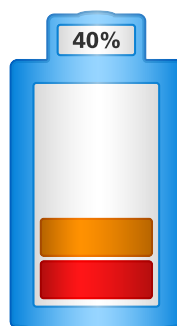
Many children require a Vitamin D supplement to improve bone health so discuss appropriate dosage with a health professional.

LISTEN TO YOUR BODY

SHOULD I TRAIN OR NOT?



GO HOME



GO EASY



GO HARD



At times when they are ill, sore, stressed or tired, their body is more at risk of illness or injury. It is important to adapt how much and how hard they play to allow their body to recover and avoid increasing the risk of further injury. Sometimes a day out to recover can avoid weeks off ill or injured. For more information, see the Kids Back 2 Sport ebook on Let's Talk About Why Kids Get Injured

GET STRONGER

Stronger athletes have been shown to develop fewer injuries and be able to tolerate greater changes in sport volume and intensity. Some muscles may feel tight when they are growing. Doing some daily stretches for the calf, hamstrings, and hips may improve this, however in some children, doing quadriceps stretches can cause greater traction on the attachment of the muscle at the knee and may well aggravate the symptoms, so seek guidance from a health professional.

Children with Tibial Apophysitis often develop weaker quadriceps muscles over time as they are forced to do less and their level of pain inhibits the muscles from working as effectively. Other muscle groups in the trunk, calf, and hip may also need strength training, so it is recommended to see a health professional to learn which exercises are right for you.

You could try these exercises with your child, but stop if they make the child's symptoms worse than they STOP.

THE ATHLETIC READY POSITION IS COMMON TO MANY SPORTS.

The way you initiate the movement may aggravate knee pain. To initiate the movement, imagine you are perching on a stool. Push the hips back rather than buckle at your knees (see Fig. 2). See if helps relieve the pain and practice the position regularly if it does.



Fig 1. Good athletic set up initiated with hip hinge
“Imagine you want to sit on the stool ”

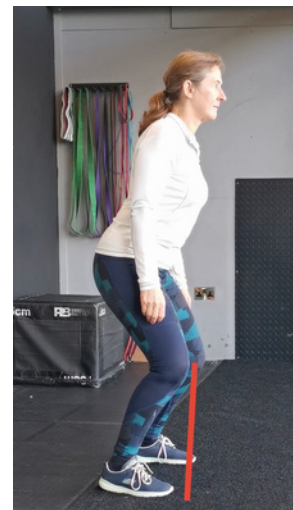


Fig 2. Example of initiating movement at knees rather than hip hinge

IS STRETCHING GOOD FOR THEM TO DO?

Increase hamstring mobility (Fig 3.). Start in your athletic ready posture by pushing the hips back and then straighten one leg. Keep your spine straight. It may help to hold a stick down your back to keep the spine straight. You should feel the pull in the back of the thigh.

Hold x 5 seconds, repeat 10 times.
Repeat 2-3 x per day.



Fig 3. Hamstring mobility maintain athletic set up

GET STRONGER



STATIC QUADS

In sitting, put your foot up against a table leg, swiss ball or your other leg. Bend the knee to any degree that is pain free (See Fig. 4)

Push against the ball making sure you keep the knee still. Hold x 5 seconds and then release slowly. Repeat x 8-12 times. Build up hold times and repetitions.

When you can do this exercise pain free, progress to the exercise in Fig 5.

Fig 4. Strengthen quads with static pain free holds x 5 second holds



WALL SQUAT

Lean against a wall. Gently lower yourself in to a comfortable mini squat. You may not be able to fully take your weight on to the sore leg initially but gradually try to take your weight equally.

Build up the hold times each day. As it gets easier, increase the knee bend.

When you can do this exercise pain free for 30 seconds, progress to the exercise in Fig. 6

Fig 5. Progress to static wall squat in pain free range x 5 second holds



SINGLE LEG WALL SQUAT

Gradually start to vary the degree of bend in your knee and take more and more weight on to one leg. Build up the hold times each day until you can hold for 30 seconds.

Fig 6. Single leg wall squat in pain free range x 5 second holds

THESE EXERCISES SHOULD NOT BE PAINFUL DURING OR AFTER YOU COMPLETE THEM.

HOW TO REDUCE THEIR PAIN



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If they are still experiencing pain it may be that they are still doing too much and need to do less strenuous activity until it settles. The best way to improve symptoms is to modify what they are doing in terms of volume or intensity until they get stronger.

If their pain is greater than a 2/10 then you might be able to settle their symptoms, by using some ice packs, but do not give your child pain killers to help them get through a game. This will mask the pain and is likely to just make the whole episode last longer.

The other thing that helps some kids is using a small knee strap or using taping to support the knee cap.



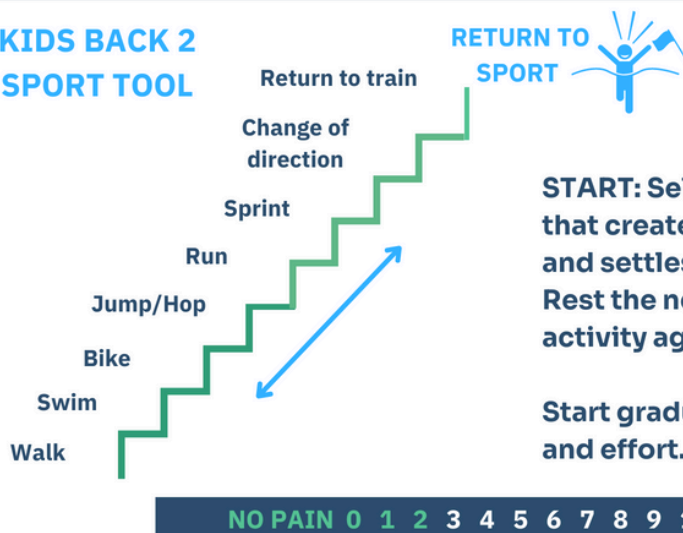
Taking a short break from high impact activities such as jumping and running for 2-4 weeks can help.

HOW TO GET THEM SAFELY BACK TO SPORT

After the pains settles, be careful that they do not go straight back to doing the high levels of sport that they were doing when they got injured. Build back up gradually so their body can adapt to what is being demanded of it and get itself strong. Find a level of activity on the steps diagram below that they can do with minimal pain and settles quickly without causing more symptoms the next day. For example they may be able to go on their bike, but not run. Leave a day between exercise sessions to assess if there has been any adverse reaction, then repeat that same exercise.

FIND A LEVEL OF ACTIVITY THEY CAN TOLERATE

KIDS BACK 2
SPORT TOOL



START: Select with an activity level that creates no more than a 2/10 pain and settles quickly after stopping. Rest the next day then repeat the activity again.

Start gradually building up the time and effort.

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NO PAIN 0 1 2 3 4 5 6 7 8 9 10 SEVERE PAIN

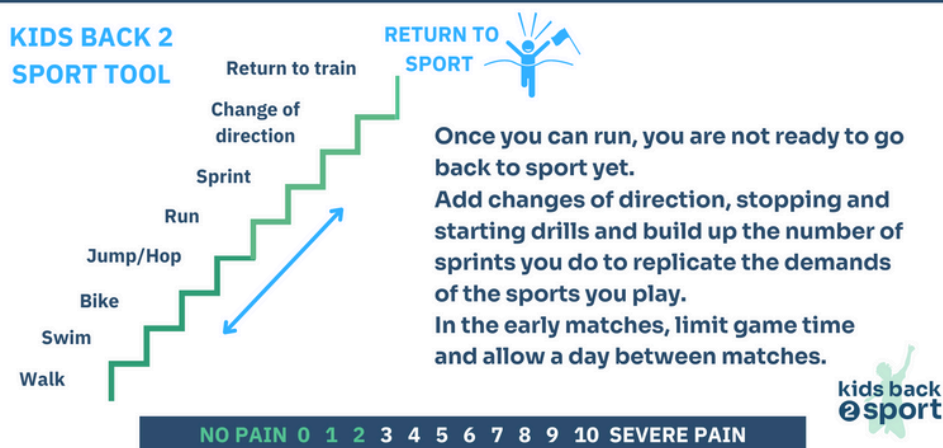
www.kidsback2sport.com

HOW TO GET THEM SAFELY BACK TO SPORT

If there are no increase in symptoms, move up the steps one level at a time repeating the process. Continue to leave a day between activities and vary the intensity of the sessions so some days it is easier than others. It may take several weeks or longer to achieve their previous level of activity, but this process allows the immature bone time to become stronger and tolerate more load.

Once they can run, they are not ready to go back to sport yet. Start adding changes of direction, stopping and starting drills and build up the number of sprints they do to replicate the demands of the sports they play. When they do start back playing in competitive settings, in the early matches, limit game time and allow a day between matches.

FIND A LEVEL OF ACTIVITY THEY CAN TOLERATE



WHAT IF THEIR PAIN FLARES UP?

If the pain starts to flare up again, drop down a level on the activity steps for 2 consecutive sessions and then build up again gradually adding more effort and time.

They don't have to stop everything if the pain recurs, just find a level that is more tolerable and then begin to build up again.

If the pain persists, consider seeing a therapist with experience in treating children. They will confirm the diagnosis as not all pain in the front of the knee is caused by tibial apophysitis. They will also prescribe some strength exercises based on the type of symptoms the child presents with.

HOW DO I STOP THEIR PAIN COMING BACK?

If they do not change the factors that contributed to developing pain, it is likely that the pain will recur. The highest incidence of apophysitis occurs in the third week of a school term or season. This is because children return to sport after a long holiday and exceed their capacity. The amount of sport they do exceeds the training completed in recent weeks. Their symptoms may also recur at times when their capacity has dropped such as during a growth spurt or if they are ill or stressed, so when the child has a dip in health or energy levels, adjust how much they do that week. For more information, see the Kids Back 2 Sport ebook on Let's Talk About Why Kids Get Injured

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