LET'S TALK ABOUT

YOUTH ATHLETE SHOULDER PAIN

(LITTLE LEAGUER'S SHOULDER)

A PATIENT GUIDE

kids back 2 sport

WHAT IS THE MOST COMMON CAUSE OF PAIN IN THE ADOLESCENT SHOULDER?

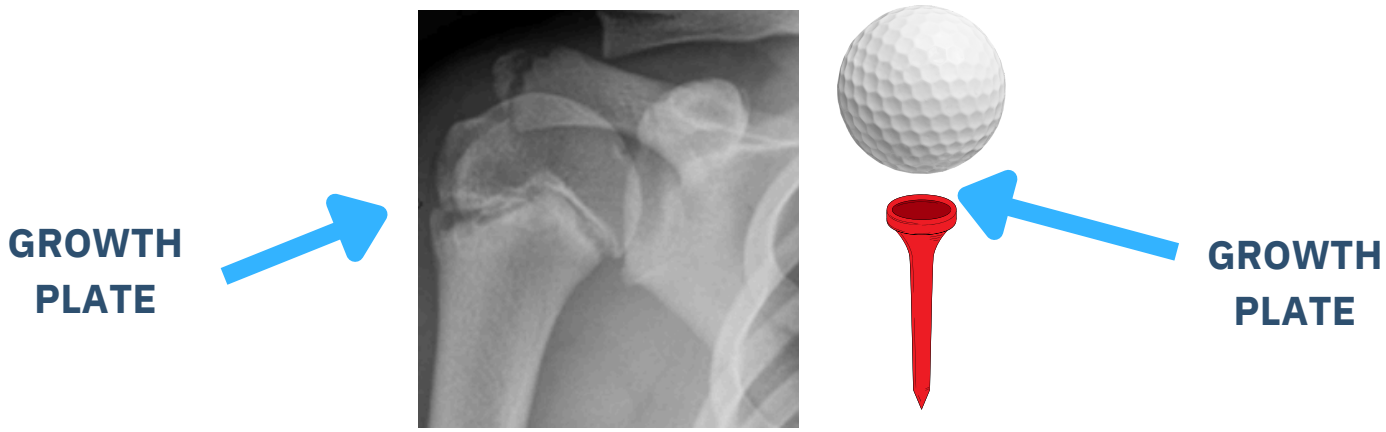
One of the most common sources of pain in the adult shoulder is the rotator cuff muscles and tendons, but this is rarely the case in the adolescent shoulder where the immature bones are more susceptible to injury.

To help us understand the differences between adult and child shoulder conditions it is helpful to understand the anatomy of the adolescent shoulder.

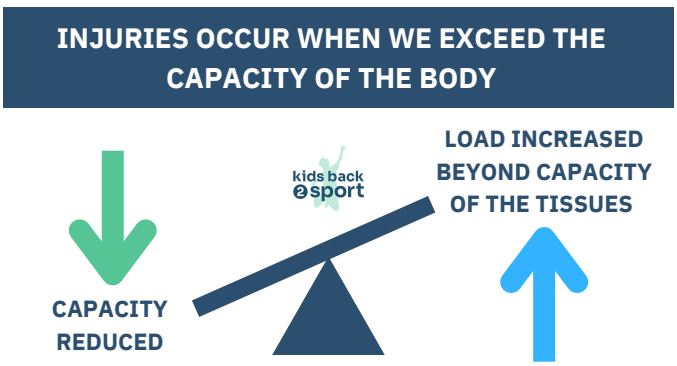
The shoulder joint is a ball and socket joint made up of:

- The ball - a part of the upper arm bone (humerus)
- The socket - part of the shoulder blade (scapula)
- The muscles and ligaments to hold it all together

To allow for growth in length, the humerus has a growth plate which sits just below the ball and above the shaft of the upper arm bone. Think about it like a golf ball sitting on a tee peg. This active growth plate is mostly made of cartilage calls which are softer and more vulnerable to injury than mature bones. After puberty, usually between the ages of 13 and 15 for girls and between 15 and 17 for boys, this cartilage is replaced by more robust bone and the growth plate fuses and no further growth is possible. Until then, the immature growth plate and it's blood supply is more susceptible to torsional, rotatory stresses from repetitive activities such as throwing and pitching.



Bones can adapt to these stresses placed upon them by making themselves stronger over time but this takes years to develop. Sudden spikes in activity relative to what the young athlete has trained for exceed the current capacity of their immature bones. The bone can become stressed, swollen and in some instances the growth plate widens and a small hairline stress fracture can develop in the growth plate. This condition is known as **Little Leaguer's shoulder** or by it's medical name Proximal Humeral Epiphysisitis or Epiphysiolysis. Despite the name it is common in any adolescent athlete involved in repetitive overhead and throwing activities, not just baseball.



These types of overuse injuries occur when he body is exposed to a load not trained for such as starting a new sport, technique or season. This may be due to lack of adequate training during the off season, or following injury.

In addition, to doing too much too soon, the child's capacity fluctuates and differs from day to day and child to child. They might have a lower capacity than usual due to a virus, a growth spurt or lack of adequate sleep or nutrition.

The result is an overload to the immature bone and injuries develop.

WHAT ARE THE SYMPTOMS?

- Pain on throwing, pitching, bowling and overhead activities such as tennis.
- Persistent ache or pain after activity
- Tenderness over the upper arm
- Sensation of fatigue on throwing
- Lack of accuracy/power/speed on throwing
- May alter throwing technique

WHO GETS LITTLE LEAGUER'S SHOULDER?

Little Leaguer's shoulder is more common in sporty children who participate in repeated high intensity and higher volumes of throwing, pitching, bowling and overhead activities such as tennis.

Children want to improve and get faster or more powerful so many train at maximal intensities, close to the limit of their capacity. Professional athletes vary their effort levels to ensure they reserve their hardest efforts for days when they feel well and want to perform at their best in competition. Teaching children how to adjust intensity can really help reduce injury risk especially on days when they are tired, in a rapid growth spurt or have done too much.

It is more frequently seen in boys than girls. The bones in the shoulder mature on average 2 years earlier in girls than boys. Girls between 11-18 may present with Little Leaguer's shoulder and boys from aged 13-20.

WHAT ARE THE RISK FACTORS FOR ADOLESCENT ATHLETE SHOULDER PAIN?

Any activity that causes a spike in activity or a drop in capacity is a risk factor for injury, but other factors also contribute many of which can be reduced through education of the athlete and their parent:

- Repeated overhead activities and throwing without adequate rest days
- Repeated maximal intensity efforts such as when using speed guns
- Throwing when fatigued
- Improper technique
- Lack of muscle strength, specifically in the shoulder and trunk muscles
- Not adhering to age-specific pitch/bowling count guidelines or playing for multiple teams
- Playing multiple overhead sports on one day such as serving at tennis, then bowling at cricket
- Playing one sport for more than 8-9 months of the year
- Recent changes in equipment or technique
- Inappropriate strength programmes

HOW IS LITTLE LEAGUER'S SHOULDER'S MANAGED?

Activity modification as soon as shoulder pain starts:
- Reduce volume, intensity and speed of overhead activities
- Avoid back to back days of activity
- Avoid playing when fatigued

Pain relief:
Pain killers may mask pain and should not be used to enable play. This may result in the youth athlete doing more than they should and delaying the healing process. Ice packs may help to decrease pain in the shoulder. It is not advised to use anti-inflammatory medication as this may affect bone healing.

If after 2 weeks of lowering the intensity and frequency of activity the pain persists, the child needs to see a health professional familiar with treating young athletes as this condition is not seen in adults and many health professionals will not be aware of it. They will know what signs and symptoms to look for and be able to advise on management, but to confirm the diagnosis they may request an MRI scan to grade the severity of the injury and determine the best management plan.

Rest: A period of total rest from overhead and throwing type activities for a period of up to 6-12 weeks may be needed. Ignoring symptoms and playing with pain can increase the bone stress response and a stress fracture can develop. These typically take longer to heal and require prolonged absence from the sport. The sooner a rest period is introduced the shorter the time away from sport.

Physical therapy:
The aim of treatment is to keep them as active as possible so children can do other activities that maintain strength across the rest of the body and to keep themselves fit. Strengthening exercises for shoulder, lower limb and trunk muscles will be prescribed and mobility drills to increase the range of movement in the hip, trunk and shoulder.

HOW TO GET THEM SAFELY BACK TO SPORT

After the pains settles, be careful that they do not to 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.

Progressive return-to-sport program:
- Reduce throwing distance or court size
- Start with low volumes and intensity - technique over power or speed
- Avoid all back to back days of activity for the first month
- Build up distance volume and intensity.
- Count serves/bowling per session building back up slowly to match volume and intensity ahead of a return to competition

Video technical analysis: Prior to a return to sport the child should complete a technical analysis with an experienced coach to ensure proper throwing, bowling or serving mechanics. Simply going back repeating the same errors as before will likely mean a recurrence.

PREVENTING LITTLE LEAGUER'S SHOULDER'S

Injuries cannot be totally prevented, but it is possible to reduce the risk of overuse type injuries.

Education:

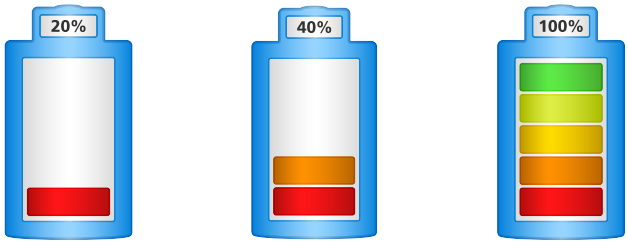
1. Educate parents and coaches about the risks of youth athlete shoulder pain
2. Educate parents and athletes about the importance of tracking overhead activites across all sports played. Serves hit per session, balls bowled per day (spin and fast), number of thows or pitches completed.
3. Limit repetitive overhead activity on back to back days
4. If loads spike one week, reduce the load the following week
5. Increase awareness of the symptoms of Little Leaguer's and what to do if they get pain
6. Encourage them to report pain and fatigue
7. At the start of a new season or after a break, gradually build up volume and intensity of activity
8. Support coaches to act when they observe changes and compensations in technique.
9. Encourage athletes to report periods of arm fatigue and reduce down volume and intensity until they recover
10. Encourage children to report periods when their capacity may drop such as during exam stress or illness so that training loads can be adjusted.

In junior baseball Pitch Smart guidelines for young pitchers have been developed with recommended pitch counts by age and associated rest periods. Similarly in cricket, the ECB have introduced guidelines for frequency of rest days following higher intenisty periods and regularly throughout the season.

TRACK CUMULATIVE LOADS IN ALL SPORTS AND SETTINGS

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

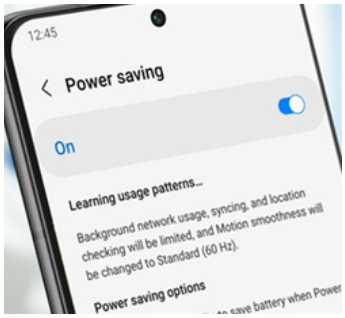
WARM UP BEFORE PLAYING

The shoulder is held together by muscles which keep the ball centred within the joint. These muscles need to be woken up in anticipation of playing. Teach children to do a warm up that replicates the demands of their sport. make sure it becomes a regular habit before they play. This may include balls, bands, crawling and lower limb drills.

HOW CAN I BUILD THEIR CAPACITY TO DO MORE?

RECHARGE THEIR BATTERY

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.



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.

There are multiple resources on the Kids Back 2 Sport website that have further information on youth athlete nutrition, why kids get injured and how to boost capacity so please do visit the site and watch the videos.