LET'S TALK ABOUT

LITTLE LEAGUER'S ELBOW

MEDIAL EPICONDYLAR APOPHYSITIS

A PATIENT GUIDE

kids back 2 sport

WHAT CAUSES ELBOW PAIN IN THE ADOLESCENT ATHLETE?

There has been an increase in numbers of children playing sports such as baseball, cricket and tennis and with that has come an increasing number of elbow injuries. If elbow injuries are not diagnosed correctly and timely they can quickly escalate to being more serious and require much longer recovery times.

Bones are largely made of cartilage at birth and gradually this is replaced by bone as the skeleton matures. This process is usually complete in the elbow around the age of 17 in boys and on average 2 years earlier in girls, but until then, the immature growth plates and soft tissues are more vulnerable to injury.

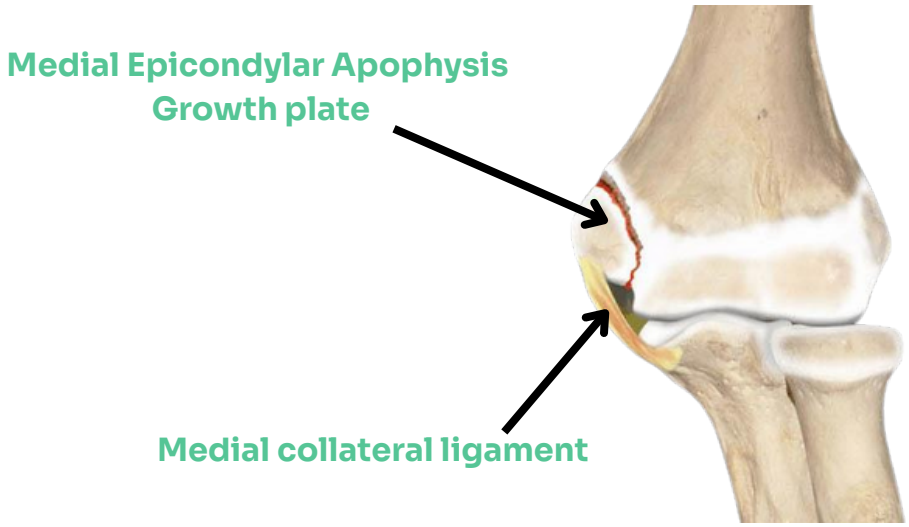
On the inside of the arm bone at the elbow there is a growth plate called the medial epicondylar apophysis. This provides an attachment for the ligaments and forearm muscles that stabilise the elbow.

During throwing and pitching type activities, the growth plates in the elbow and shoulder are particularly susceptible to traction and rotational forces.

In the elbow this generates compressive forces on the outer side of the elbow and distraction forces on the inner side which can lead to different types of injuries.

Elbow pain can be split in to:

- Medial elbow pain on the inside of the elbow such as LIttle Leaguer's Elbow
- Lateral elbow pain on the outside of the elbow pain affecting the joint surfaces



Traction produced by repetitive rotational forces that occur in the early and late cocking phases of throwing and pitching put stress on the immature growth tissue on the inside of the elbow (apophysis) and in particular the attachments of the wrist flexors and the ulnar collateral ligament to the growth plate.

If the athlete does too much too soon at the start of a new season, or after injury, it creates a sudden spike in load not trained for. This may result in inflammation around the medial epicondylar apophysis (growth plate) causing swelling and thickening of the soft tissues. By starting the season slowly, the bones and muscles can better adapt and get stronger enabling higher loads to be tolerated.

MEDIAL ELBOW PAIN IN THE ADOLESCENT ATHLETE

Throwing and pitching repetitively can result in slightly different overuse injuries depending upon age and maturation. These are often collectively termed **“Little Leaguer’s Elbow”.**

Medial epicondylar apophysitis (MEA) – In younger athletes injury occurs at the attachment of the ligament & tendon to the immature bone. We call this **apophysitis**. Onset is usually gradual.

Medial epicondyle avulsion fracture - In adolescents, the muscles get stronger and the forces generated in overhead activities are often greater than the capacity of the immature bone. This may result in an **avulsion injury** where the ligament and muscle attachments at the apophysis separate from the parent bone. This can be sudden or follow a build-up in symptoms over time.

Ulnar collateral ligament (UCL) injury – Around the age of 17 in boys the growth plate closes and becomes replaced by bone. The capacity of the bone is then stronger than that of the soft tissues and injuries occur to the **ulnar collateral ligament** more commonly.

WHO GETS LITTLE LEAGUER’S ELBOW?

Who’s at Risk?

Boys greater than girls aged 9–14 who participate in higher intensity and higher volumes of overhead sport elbow pain is common. Any activity that causes a spike in activity or a drop in capacity is a risk factor for injury and many of these are controllable once the athlete, coach and parent become aware of them through education programmes. Other sport related factors include:

- Throwing too many pitches or balls per week or per season
- Playing on multiple teams
- Training while fatigued
- Pitching/Throwing greater than 8 months of the year pre puberty
- Using a weighted ball to pitch or throw
- Trying to pitch or throw at maximal intensities against speed or radar guns
- Pitching and throwing with improper mechanics
- Not adhering to age-specific pitch count guidelines
- Playing catcher after pitching in a game
- Recent changes in equipment or technique
- Lack of muscle strength, specifically in the shoulder
- Experience rapid growth spurts
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WHAT ARE THE SYMPTOMS?

Pain at late cocking phase of throwing and pitching

Typical symptoms of apophysitis

- Pain on the inside of the elbow that gets worse on activity and settles with rest
- Loss of throwing speed or accuracy
- Swelling around the inside of the elbow
- Tender over inside of elbow
- Pain that becomes worse over time
- Difficulty fully straightening the arm – feels locked or stif

Swelling and separation of the apophysis

Indications of an avulsion injury

- A sudden onset of pain stiffness & swelling
- A popping sensation
- Excess movement when the arm is taken into a valgus position that replicates the action of throwing.
- Locking on straightening the arm

These symptoms do require athletes to stop playing and seek a medical opinion from a health professional who understands the unique injuries that occur in this age group as t is rarely taught at undergraduate level.

HOW IS LITTLE LEAGUER'S ELBOW MANAGED?

MODIFY WHAT THEY ARE DOING AS SOON AS PAIN BEGINS

Parents and athletes need to be educated about what to do when elbow pain occurs.

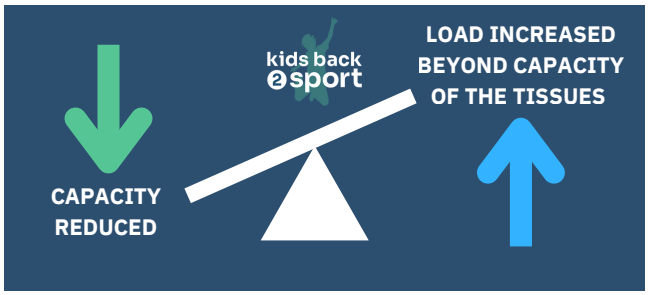
No child should play through elbow pain as there may be a risk of exacerbating the degree of injury and there is a risk of greater growth plate separation.

As soon as elbow pain starts, the athlete needs to modify their activity:

- Sometimes simply reducing the volume of activity by avoiding back to back days can be enough to allow the body to adapt and become used to the level of activity.
- In addition, reducing the intensity and speed of overhead activities down to a level that enables the athlete to be pain free during and after activity can help.
- Many children play multiple sports on the same day but where the activities create similar forces on the elbow such as serving at tennis and bowling at cricket this can overload the growth tissue. Limiting activities to only one source of stress on the elbow per day can be effective.

These types of injuries are not just due to overuse. Injuries do occur when the load exceeds what has been trained for but also when a child's capacity to tolerate that load is lower such as during growth spurts, poor sleep or nutrition and in times of stress. There is evidence that baseball pitching when fatigued is a risk for injury therefore avoiding playing at high intensity when fatigued or unwell can reduce risk.

INJURIES OCCUR WHEN WE EXCEED THE CAPACITY OF THE BODY



INJURIES DO OCCUR WHEN THE LOAD EXCEEDS WHAT HAS BEEN TRAINED FOR BUT ALSO WHEN A CHILD'S CAPACITY TO TOLERATE THAT LOAD IS LOWER SUCH AS DURING GROWTH SPURTS, POOR SLEEP OR NUTRITION AND IN TIMES OF STRESS.

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.

An MRI is helpful to establish which structures are injured and grade the severity of the injury to determine the best management plan.

In cases of apophysitis a graduated return to play is often possible in 6-12 weeks.

Avulsion injuries take longer to heal and a medical opinion is needed to discuss whether the bony fragment can heal naturally without surgery.

SHOULD I GIVE THEN PAIN RELIEF MEDICATION?

DO NOT USE PAIN RELIEF MEDICATION TO MASK SYMPTOMS

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 affecting the healing process.

It is not advised to use anti-inflammatory medication as this may affect bone healing.

If they require pain relief after playing, they are doing too much and risk the condition becoming more serious.

Physical therapy

The aim of treatment is to keep them as active as possible to maintain strength across the rest of the body and keep them fit. Strength and mobility exercises for the shoulder, lower limb and trunk muscles will be prescribed by a physical therapist. As the symptoms settle, elbow muscle strength-based exercises will be added to restore range of motion and power.

After the pains settles, be careful that the young athlete does 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.

HOW TO GET THEM SAFELY BACK TO SPORT

Calculate how many pitches/throws needed in a competitive game so you understand what the demands of the sport are.

Start by introducing a smaller throwing distance or court size and then moving further back if there is no recurrence of symptoms.

Start with low volumes and intensity focussing on technical development over power or speed

Introduce a gradual return-to-throwing programme that builds strength and control before returning to full competition.

Learn about the safety guidelines for the sport such as Pitch Smart in baseball or fast bowling and safety regulations issued in cricket

Avoid all back-to-back days of activity for the first month

PITCH SMART USA BASEBALL

DONT SEND THEM BACK MAKING THE SAME MISTAKES

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 ELBOW

⚾ Smart Training & Workload Management

- Follow pitch or bowling guidelines (e.g. MLB Pitch Smart, ECB fast bowling directives) — and make sure parents understand and support them.
- Track throwing, bowling, and serving loads across all sports to spot overload early.
- Avoid back-to-back days of overhead activity whenever possible.
- After breaks or at the start of a new season, build up volume and intensity gradually.
- Reduce workload following growth spurts, illness, or exam periods.
- If training loads spike one week, plan a lighter week to allow recovery.

TRACK CUMULATIVE LOADS IN ALL SPORTS AND SETTINGS

💪 Technique, Movement & Strength

- Prioritise good technique — and empower coaches to step in when they notice changes or compensations.
- Develop strong, balanced movement patterns across the whole body, not just the throwing arm.
- Educate young athletes about pacing their high-intensity efforts and avoiding weighted balls until they are physically mature.





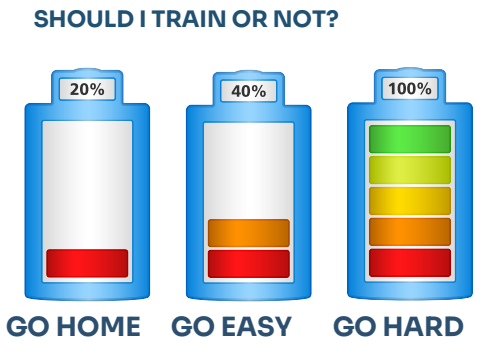
🧠 Awareness & Early Action

- Raise awareness of Little Leaguer's Elbow — what it is, how it develops, and the early signs to watch for.
- Encourage athletes to speak up about pain or fatigue and teach them how to adjust their effort to allow recovery.

🌙 Recovery, Sleep & Nutrition

- Promote healthy habits around sleep, nutrition, and maintaining a positive energy balance — all vital for growth, recovery, and performance.

EDUCATE THE ATHLETE TO LISTEN TO THEIR BODY



At times when athletes 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. 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

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 phones need to be recharged so does the brain and body. In the deep part of sleep, the body performs many of the same functions achieved by plugging a phone in to the mains. The body performs vital updates, virus scans, repairs damaged tissues, builds stronger muscles and bones and upload skills learnt in the day to the hard drive.

Children need more sleep during growth spurts so they need to prioritise regular bedtimes to ensure good quality sleep.

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. Focus on giving them a balanced diet including good protein sources for building muscles and repairing injured tissues and carbohydrates and fats for energy. 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.

FURTHER READING

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.