

SPORTS MEDICINE NEWSLETTER

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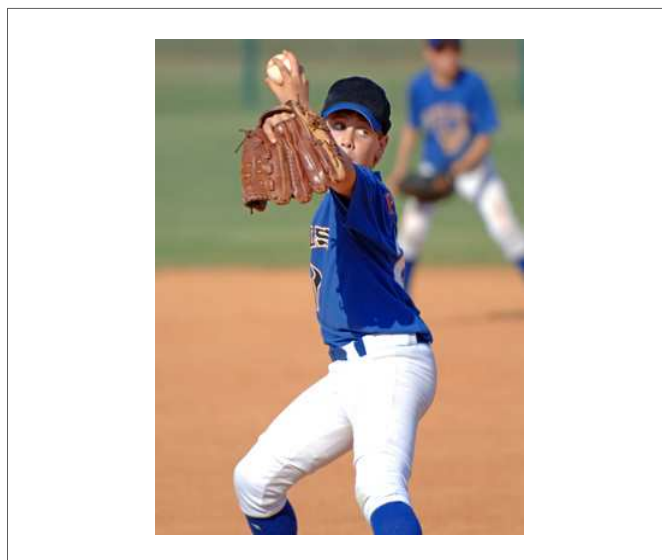
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LITTLE LEAGUER'S ELBOW

BY RYAN TRONBAK, OTR/L AND SETH DEATON, COTA/S

Springtime is fast approaching and the baseball diamonds across South Central Kentucky are preparing to play host to hundreds of young athletes. It is important for parents, coaches and players to educate themselves on a common sports injury, Little Leaguer's Elbow. This condition, also known as medial apophysitis, is a painful condition most commonly seen in young athletes involved in overhead throwing sports, such as baseball. With too much repetitive throwing, the inside of the elbow, known as the medial epicondyle, becomes very painful. The condition involves overuse of the wrist flexor tendons where they originate at the elbow's growth plate. In Little Leaguer's Elbow this growth plate can become chronically irritated, inflamed or even fractured. It is caused by the repetitive trauma of throwing; this trauma is greatly increased by pitching curve balls and other breaking pitches, which require more forceful forearm rotation and flexion of the wrist.

Little Leaguer's Elbow is most commonly seen in adolescent-aged athletes, typically between the ages of 9 and 14 whose bones are still growing. Adult pitchers do not experi-



ence the same injury because they do not have developing growth plates in the elbow. The stresses being placed on the post-adolescent's elbow during throwing are absorbed primarily by the ligaments and tendons. The more commonly seen throwing conditions on the inside of the elbow for adult athletes are medial epicondylitis or an injury to the ulnar collateral ligament. A commonly performed procedure to correct this type of ligament injury in the adult athlete is Tommy John surgery.

With the growing popularity of baseball, as well as other sports requiring an overhead

throwing motion, the prevalence and risk of developing Little Leaguer's Elbow is increasing dramatically. If a young athlete is complaining of pain and tenderness on the inside of the elbow and is experiencing decreased throwing distance or accuracy, they could be developing this condition. Initially, you should have the child rest until you have spoken with a health professional, so the degree and severity of the injury can be assessed. This condition can become a chronic and long-standing problem if it is not treated appropriately.

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PHYSICAL FITNESS AND GOLF?

BY BRAD MCALISTER, PT, OCS



Western Kentucky Orthopaedic and Neurosurgical Associates already provides some of the best rehabilitation services in Bowling Green as well as providing Athletic Training to all the high schools and physical therapy to student athletes at Western Kentucky University. The newest service we have to offer the public is golf fitness instruction by Brad McAlister, PT, OCS. In addition to being a Board Certified Orthopaedic Clinical Specialist he has recently been certified by the Titleist Performance Institute as a Certified Golf Fitness Instructor.

For over a decade the Titleist Performance Institute has been the leader in golf fitness. They have used the most sophisticated technology and research available to identify the physical keys to power and accuracy in the golf swing. With that knowledge they have developed a physical

evaluation that identifies an individual's physical limitations that may be contributing to faults in their golf swing or causes of pain during or after playing golf. After identifying these faults our Certified Golf Fitness Instructor can personally design a fitness program to improve strength, mobility and balance to improve power and accuracy as well as reduce the pain many golfers suffer during or after a round of golf.

Being both a medical professional and avid golfer, Brad McAlister has a true passion for providing fitness programs for the healthy golfer looking to maximize their body's ability to become a better golfer and assist those whose pain prevents them from playing golf as often or as well as they would like. As a Titleist Performance Institute Certified Golf Fitness Instructor and a physical therapist, Brad is specifically

trained to treat all of these client populations.

A client's initial visit includes a Titleist Performance Institute fitness evaluation, fitness program development and fitness session. Included in a basic package is a follow up re-evaluation with a fitness program update. Additional individual or group fitness sessions are also available.

Please contact Western Kentucky Orthopaedic and Neurosurgical Associates at (270) 796-4698 for more information or to make an appointment. You may learn more about the Titleist Performance Institute at www.mytpi.com or by contacting Brad McAlister PT, OCS at kbmcalister@insightbb.com

THE INVISIBLE INJURY

BY SUSIE BELL, MS, ATC

The brain, which has the consistency of gelatin, is surrounded by cerebral spinal fluid within the skull. One function of this fluid is to protect the brain from everyday jolts and bumps. A violent blow to the head can cause the brain to slide forcefully against the inner wall of the skull resulting in a concussion. Sudden acceleration or deceleration of the head – resulting from events such as a car crash, or in babies, being violently shaken – can also cause a concussion.

There are an estimated 7.3 million high school students participating in organized interscholastic athletics in the United States each year. Approximately 3.8 million sport-

related concussions are sustained every year, with an average of more than 20% occurring in high school athletes. More than 5% of all high school athletes who participate in contact sports such as football, lacrosse, and hockey sustain a concussion each year. Anyone who has sustained a concussion is at a higher risk of having concussions in the future. But every concussion, no matter how mild, involves the brain. This injury needs time to rest and heal properly. Luckily, most concussions are mild and people usually recover fully.

The term “concussion” is actually a type of mild traumatic brain injury, or mTBI. There is no single definition

that is widely accepted among healthcare professionals. The most common definition is a “clinical syndrome characterized by immediate and transient impairment of neural functions (i.e. alteration of consciousness, visual disturbances, equilibrium) related to the agitation of impact.” Concussions are a functional syndrome like migraines, not a structural injury, like that of an ankle sprain or a torn ligament. Neuroimaging normally shows no gross structural changes.

Ranging in severity from mild to catastrophic, all mTBI share one thing in common— they all temporarily interfere with the way the brain works. At the cel-

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Cont. from page 1 LITTLE LEAGUER'S ELBOW

A diagnosis of Leaguer's Elbow is made by your health care provider through a thorough examination of the child's arm and elbow. The physician will palpate the medial epicondyle looking for pain and tenderness. He will assess if there is any numbness and tingling of the ring and small finger because the ulnar nerve can often be secondarily irritated in this condition. X-rays are commonly obtained to assess the bony anatomy and to see if any separation or avulsion at the growth plate has occurred. MRI's may also be used in assessing this condition, as they can more closely look at the growth plates and also evaluate any ligament or other soft tissue damage that may be occurring.

The most important treatment for Little Leaguer's Elbow is to stop throwing and allow the arm rest. The typical time frame for resting the arm is 4-6 weeks, to allow healing. Icing should be incorporated during the initial 3-5 days of symptoms to reduce inflammation. Your health care provider may also recommend an anti-inflammatory medicine to further reduce the pain and inflammation associated with this condition.

Following the initial 4 to 6 weeks of rest, if your child is

pain free, your health care provider can determine if a structured throwing program should be initiated. During this time, the young athlete may also be evaluated by a physical or occupational therapist. Therapeutic interventions to treat this condition include:

- Correcting any throwing mechanic issues that may be creating excessive stress on their elbow
- A strength and flexibility program will be developed to restore the functional performance of the arm and help prevent re-occurrence of the condition
- Myofascial Release Techniques may be used to reduce the tension and stress being placed on the elbow by the muscles
- Kinesio-Tapeing may be applied to enhance proper biomechanics and muscle function of the arm

Any pain during the rehab period should cause the athlete to temporarily pause their program for a short time until they can throw without symptoms. It typically takes around 10-12 weeks of rest and rehab before the young athlete is safe to

return to competitive throwing. In severe cases of Little Leaguer's Elbow, where there is a break in the bone, surgery may be required to correct the problem.

When dealing with Little Leaguer's Elbow and young athletes, prevention of developing this condition is critical. This is a very serious problem, especially in youth sports, where over-ambitious parents and coaches may be allowing young athletes to overuse their arms. Pitch counts are one of the most effective ways to monitor and protect against too much stress being placed on a pitcher's arm. Little League pitch count regulations are available at <http://www.littleleague.org/> and clicking the rules tab.

Sports such as baseball are meant to be a recreational pastime for the youth of our community. Encouraging healthy competition is important in youth sports; however, this should not be at the cost of a child's long term health. Remember throwing through pain is never appropriate for Little League athletes.

“Little Leaguer's Elbow is most commonly seen in adolescent-aged athletes, typically between the ages of 9 and 14 whose bones are still growing.”



Cont. from page 2 THE INVISIBLE INJURY

lular level, mTBI cause a cascade of events including a decrease in blood flow, changes in intracranial pressure, and changes in neurological synapse function. The full spectrum of changes that occur at

the cellular level are not fully understood, but it is thought the brain recruits pathways that bypass the injured areas to perform basic tasks and functions. Thus, reaction times may be slowed because the new

pathway is simply longer or less efficient than the original. It's sort of like highway traffic being diverted to country roads after an accident.

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“Concussion remains one of the most difficult and complex challenges faced by sports medicine personnel.”

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Functionally, concussions can cause a variety of physical, cognitive, and emotional signs and symptoms, which may differ by gender. The signs and symptoms, which may be subtle and not be immediately apparent can last for days, weeks, or longer. Common signs and symptoms (ref 1) include dizziness, headache, fatigue, ringing in the ears, sensitivity to light and sound, nausea/vomiting, and memory problems. Usually caused by a blow to the head, concussions don't always involve a loss of consciousness. In fact, most people who have a concussion never black out. Some people have had a concussion and not even realized it, stating instead they “had their bell rung.”

Diagnosing and classifying concussions is one of the most elusive tasks of medical clinicians. There are as many ways to classify the severity of concussion as there are definitions. Currently there are approximately 41 methods of classification and there is little agreement among professionals as to which one is the best. The two most common ways are the grading scale and classifying the symptoms as simple or complex. But even with the 3 grades (ref 2), there are differences between the three most commonly used scales: Cantu, Colorado Medical Society (CMS) and the American Academy of Neurology (AAN).

There are also a variety of neurocognitive tests that can be used as an aid in determine severity as well as recovery. Some of the more common computer based tests include ImPACT, Cogstate, and Headminder. There are also paper/pen tests available to the clinician. These tests are specifically designed tasks used to measure a psychological function known to be linked to a particular brain structure or pathway. The person's post-concussive score is then compared to their baseline score (if available), or to a comparable population to the person being

examined.

During the recovery process, physical healing within the brain eventually allows normal pathways to be restored – after a while the highway is cleared, and traffic can resume its usual pattern. Recovery time varies based on severity of the injury and individual factors such as brain chemistry. If the athlete returns to activity before fully healing, a second concussion can lead to second-impact syndrome (ref 3), uncontrolled cerebral swelling, and permanent brain damage or even death approximately 50% of the time.

Because the brain is still developing until about 19 years old, those athletes participating in high school or youth sports are at a higher risk of concussions. The best treatment is rest. However, most people forget that the brain is still very active, even at rest. It is highly encouraged to inform and involve the school in the student-athlete's concussive rehabilitation.

The concept of resting the brain is relatively new to concussion management, so there is less data available and fewer evidence-based recommendations to rely on. The basic idea is that the cognitive demands of school work, reading, and other mentally taxing activities (those requiring attention and problem solving) pull metabolic resources away from the brain's ion restoration process.

Usually an athlete with a concussion is held from practice and competition until symptoms resolve. Many may treat this time away from sports to catch up or get ahead in school work. Anecdotally, these athletes often report difficulty concentrating, trouble staying awake, headaches, and other symptoms that get worse throughout the day. This all appears to result from working an injured body part – the brain – without accounting for the healing that must occur.

There are no established “return to cognitive activity” guidelines for the post-concussive period. In a perfect world, you would have

an athlete completely eliminate cognitive work until they are asymptomatic, but this is obviously not realistic.

A reasonable compromise is to reduce the academic load as much as possible in the first few days after the injury, with an emphasis on eliminating especially demanding tasks, such as test taking, difficult reading, and mathematical problem solving. As the first week progresses, the athlete can slowly return to normal coursework. For instance, they might be limited to one or two hours of school work the first couple of days, with an additional hour added each day until their workload is back to normal.

Just like with physical recovery, the recurrence of symptoms is the best guide for whether an athlete is returning too quickly. In other words, if headaches, sleepiness, or other symptoms emerge prior to the end of the day's mental work, the activity should be scaled back.

Once an athlete recovers and is no longer experiencing symptoms they can slowly progress back to their sport. For as many classifications there are just as many return to play guidelines. These guidelines (ref 4) are also based on the number and severity of previous concussions and the severity of the current concussion.

Concussion remains one of the most difficult and complex challenges faced by sports medicine personnel. Injury to the brain doesn't produce easily visible or tangible symptoms, and relying only on athletes' own assessment of their readiness to return is not acceptable.

Ultimately, each concussed athlete must be managed individually, and it's impossible to predict how long recovery will take. With knowledge and a comprehensive plan that focuses on both physical and mental rest and provides for a gradual return to activity, the concussed athlete should be able to return to their sport safely and ready to perform at their best.

Concussion Grading System

(ref 2)

	Grade I	Grade II	Grade III
Cantu	Post-traumatic amnesia <30 min, no loss of consciousness	Loss of consciousness <5 min or amnesia lasting 30min-24 hrs	Loss of consciousness >5 min or amnesia >24 hrs
Colorado Medical Society	Confusion, no loss of consciousness	Confusion, post-traumatic amnesia, no loss of consciousness	Any loss of consciousness
American Academy of Neurology	Confusion, symptoms last >15 min, no loss of consciousness	Symptoms last >15 min, no loss of consciousness	Loss of consciousness (IIIA: coma last seconds, IIIB: minutes)

(ref 3)

Second-impact syndrome

Second-impact syndrome, in which the brain swells dangerously after a minor blow, may occur in very rare cases. The condition may develop in people who receive a second blow days or weeks after an initial concussion, before its symptoms have gone away. No one is certain of the cause of this often fatal complication, but it is commonly thought that the swelling occurs because the brain's arterioles lose the ability to regulate their diameter, causing a loss of control over cerebral blood flow. As the brain swells, intracranial pressure rapidly rises. The brain can herniate, and the brain stem can fail within five minutes. Except in boxing, all cases have occurred in athletes under age 20. Due to the very small number of documented cases, the diagnosis is controversial, and doubt exists about its validity.

Post-concussion syndrome

In post-concussion syndrome, symptoms do not resolve for weeks, months, or years after a concussion, and may occasionally be permanent. Symptoms may include headaches, dizziness, fatigue, anxiety, memory and attention problems, sleep problems, and irritability. There is no scientifically established treatment. Rest has limited effectiveness even though it is a highly recommended recovery technique. Symptoms usually go away on their own within months. The question of whether the syndrome is due to structural damage or other factors such as psychological ones, or a combination of these, has long been the subject of debate.

(ref 1)

Signs and Symptoms of Concussion

Severe Headache (deep throbbing)

Dizziness

Loss of Consciousness

Loss of coordination (stumbling, unable to walk in a straight line)

Temporary loss of memory (repeatedly asks same question, unable to recall events before or after the injury)

Mental confusion (easily distracted, disorientation)

Delayed verbal and/or motor response (slow to answer questions or follow directions)

Ringing in the ears (tinnitus)

Blurred or double vision

Vacant star / Glassy eyed

Unequal pupil size and/or no pupil reaction to light

Sensitivity to Light and/or Sound

Nausea and/or vomiting

Slurred speech

Convulsions/tremors

Emotions out of proportion (inappropriate emotions)

Sadness

Nervousness

Personality Change

Sleepiness or grogginess (unusually tired, sleeps more than usual, drowsiness)

Fatigue and difficulty being aroused

Clear fluid from nose and/or ears

Numbness or paralysis (partial or complete)

Feel "in a fog"

Feel "slowed down"

Irritability

(ref 4)

Return to Play Guidelines

Colorado Medical Society

Guidelines

Grade I

First Concussion Subsequent

15 min 1 week

Grade II

First Concussion Subsequent

1 week 2 weeks

(w/MD approval)

Grade IIIa

First Concussion Subsequent

1 month 6 months

(w/MD approval)

Grade IIIb

First Concussion Subsequent

6 months 1 year

(w/MD approval)