



## **Injuries in High School Sports**

By Donald A. Chu Ph.D., PT, ATC, CSCS  
Athercare Fitness and Rehabilitation

The word “Epidemiology” refers to the study of the cause, frequency and incidence of injuries and illness. High School sports have been closely analyzed as well Collegiate, Professional and Olympics sports. Injuries are a part of sports; in fact, they are basically a risk factor that everyone who participates accepts and deals with. We are never expecting an injury but when one does occur it may seem like a complete accident and take the athlete and their parents by complete surprise. This article will summarize some of the more common injuries that occur and what you can do to prevent, treat or seek help about.

Practices provide most of the opportunity to get hurt while participating in sport. The “exposure time” is greater in practice than it is in games or contests. However, because the intensity and desire to compete at a high level, as well as occasional mismatches leads to plenty of chances to get hurt.

When it comes to the prevention of injuries there are also a multitude of factors to be considered here as well. One way to look at these factors is to look at those that are most in the control of the athlete. The first is **CONDITIONING!** Sport demands and places a number of stresses on the human body that can be minimized if the athlete is in good physical condition. To be physically prepared for high school sports the athlete must be in the best physical condition they can be regardless of sport, age and gender. Getting in “shape” for a sport like football or basketball requires more than simply playing the sport. Athletes need to develop the muscles and prepare the ligaments and tendons to withstand all-out sprinting, quick stops and starts and change of direction. Not to mention taking a blow in contact sports like football, basketball, soccer, lacrosse, field hockey, water polo and wrestling. In special situations where physical education staff/faculty is in place at the school and has the background; many conditioning programs could be conducted for the benefit of the athletes. However, with so many schools depending on part-time “rent a coach” situations, things have changed dramatically and not for the good. High school athletes deserve better and steps should be taken by parents to prepare their sons and daughters for competitive play in athletics. Without adequate physical preparation athletes increase their chances and exposure to injury dramatically.

Many of the problems we see in shoulders, low backs, knees and thigh injuries are due to a lack of proper physical conditioning. How many steps does an athlete take when participating in a cross country practice, how many jumps occur during a game of volleyball, how many throws are involved in a baseball players practice before they injure themselves. If you total all of the foot contacts (times your foot hits the ground) in cross country or volleyball and how many all out throws in baseball an athlete can perform you will find they are all due to the level of conditioning of the athlete as they begin their particular season. All human tissue is capable of withstanding only so much stress before it reaches a ‘fail’ point. Once the fail point is reached the tissue may be a ligament, tendon or muscle and when it fails, it is now injured.

Again, the importance of preparation cannot be overlooked. With so many youth participating in year-round programs this is a factor which cannot go unattended. Running sprints, agility drills, strengthening the body and practicing skills related to your sport are not a form of punishment; they are an insurance plan against having to visit a medical facility for care and lost playing time.

With the conditioning issue placed aside for a bit. Accidents do happen. You run around and expose yourself to collisions, missteps and trips and falls and at some point the odds are going to catch up and you will traumatize some sort of soft tissue. Injury studies have shown that the ankle is the most often injured joint. Ligament injuries to the ankle are the most commonly reported injury. It is usually the ligaments on the outside (lateral side) of the ankle that are subject to injury. In fact, if you injure the outside of the ankle you are likely to have “sprained” the ligaments 80% of the time. If you injure the inside of the ankle you are more likely to have sustained a fracture of the bone on the inside of the ankle 80% of the time. So, an injury to the inside of the ankle is likely to require an x-ray to determine the true extent of the injury. Sprains come in various grades (I, II and III) and their seriousness rises as the number gets bigger because more damage is caused to the ligament. If there is swelling, tenderness and loss of function (ability to run, jump or even walk) the athlete should follow the following procedure:

1. Compress the area (get an elastic wrap on as soon as possible)
2. Place cold over the joint over the area in the form of ice or even put the foot in a bucket of cold water. You will need to keep the cold over the area for at least 20 minutes.
3. Elevate the joint way up in the air. The joint needs to be at least 45 degrees up in the air and keep it the air for a full 20-30 minutes.
4. When you are done with ice and elevation; compress the joint once again.
5. Repeat this process for 2-3 times per day.
6. Weight bearing (getting back on the foot) is dependent on the reduction in pain, tenderness and swelling.
7. Rehabilitation in some form or another is a vital component of complete return to play.

The Anterior Cruciate Ligament (ACL) of the knee is probably the most important injury for females. ACL injuries are epidemic in the female sports. The reasons have been largely tied to the fact that females use their hamstrings differently when participating in sports. There are studies that show a delay in the hamstring contraction with jumping and ‘cutting’ in the female athlete. This issue can be solved through training programs which teach proper jumping technique and more importantly, the mechanics of landing. So called plyometric training is very valuable in preventing ACL injuries which can run as much as ten thousand dollars for surgery and rehabilitation. An awful lot of money for an injury that is largely preventable. Football, soccer and basketball are the sports with the highest risk of injury to the ACL. Early diagnosis and getting into the hands of an experienced orthopedic specialist are a must if there is to be a playing career after this injury. Acute injuries to the knee are usually treated in the same manner as the ankle when it comes to acute injury.

The Shoulder is a very complex joint and is subject to many different types of injuries. To start, many shoulder pains can be traced back to a lack of the athlete's ability to stabilize the shoulder blade (scapula). The shoulder blade can cause the shoulder to work very inefficiently when it is surrounded by weak musculature. Sports such as tennis, volleyball, softball and baseball are prime activities to create problems if this condition exists. It is always related to the number of repetitions taken before pain arises. A shoulder joint that is weak and has no support from the scapula will develop pain in short order and one that is strong and has been properly prepared will be able to perform a lot more repetitions before it gets into trouble, if it does. Other popular injuries to the shoulder include 'dislocations'. These are injuries in which the ligaments that hold the arm (humerus) in place with the shoulder blade (scapula) get torn so badly that the joint truly separates and cannot function due to the pain and loss of function. Football and wrestling are two sports where this injury occurs in fairly high numbers. This injury is going to result in some time in the emergency room or doctor's office to replace the joint. Then after it is replaced it will need to be rehabilitated and protected for the rest of the season if not longer. Wrestling, water polo and football see their share of this type of injury.

Shoulder separations are an injury to the collar bone (clavicle) and it's attachment to the scapula. They can be caused by falling on an outstretched arm in any sport and by being directly hit on the top of the shoulder. It is important in football that shoulder pads be properly fitted. In the majority of injuries of this type that we see at Athercare, the football pads are too small and incorrectly fitted. It is not uncommon to see a slight deformity in the shoulder that looks like a 'bump' at the end of the collar bone. The injury should be treated with ice and a medical consult is necessary since the forms of treatment are varied with some physicians favoring surgery and some believing the joint is capable of healing adequately in the form of a severe sprain. You can count on being out of activity for 4-6 weeks, regardless.

In conclusion, there are many different types of sports and each has a certain type of injury that is specific to it. Some are more devastating than others; however, most of the exposure to injury can be reduced by proper preparation for participation in sport, proper equipment fitting and teaching of proper technique. Unfortunately, today's educational institutions tend to shy away from full time staff/faculty so that off and pre-season conditioning programs are almost non-existent. With the rise of "Club Sports" and the year round program injury exposure increases even more and overuse and muscle fatigue are the biggest causes of injury. The most common approach to an acute injury such as an ankle sprain is the acronym R.I.C.E (Rest, Ice, Compression and Elevation). However, recent evidence has shown that the most effective action is to place the injured joint in compression to provide the most immediate relief of swelling, then Ice, then elevation (much higher than most people initially think) and finally rest, which the injury itself is going to impose.