Tips for Prevention of treatment of injuries for High School Athletes

1. Medial Tibial Stress Syndrome (MTSS) or “Shin Splints” (as they are often called) refers to pain and tenderness along the front and inner side of the bone in the lower leg. Shin splints are frequently encountered in athletes and can cause significant pain that limits the ability to compete.

The exact cause of shin splints remains unknown. It has been attributed to inflammation of the muscles, tendons, and lining of the bone (“periosteum”) in this location that causes pain after repetitive activities. Most of the the posterior tibialis muscle is involved. Sometimes the bone is involved as well in more severe cases. Shin splints may result from an imbalance and relative weakness of the anterior compared to posterior compartment musculature of the lower leg. Others believe that forceful, repetitive downward flexion of the foot (“plantar-flexion”) may stretch the anterior muscles of the lower leg and increase risk for shin splints.

Shin splints are a diagnosis of exclusion in athletes, and other conditions such as stress fractures and compartment syndrome (among others) must be considered and ruled out to assure the right treatment program is initiated. Imaging studies can be helpful in supporting a suspected diagnosis of shin splints. A bone scan may demonstrate increased tracer uptake in the muscle or bone lining (“periosteum”) of the lower leg. MRI may similarly demonstrate some inflammation and fluid (“edema”) in this location. More importantly, however, the MRI will help to exclude a stress fracture or adjacent muscle/tendon injury in these athletes.

Taping for Prevention: To aid the posterior tibialis muscle with forceful dorsiflexion, applying a strip of two inch tape from the inside of the lower leg, below the knee, to the top of the foot, may help with the elastic recoil properties of the tape. Be sure to have the foot pointed and apply a light tension to the tape as it is run from proximal to distal.

Taping after symptoms occur: Applying a strip of tape in the same manner as for prevention (foot to below the knee along the inside of the tibia) with no stretch (stabilization strip) and then applying a decompression strip with 50% stretch on top of the site of pain can be beneficial for pain relief.

1. Back Strain - The muscles along the spine, especially in the lower back are very susceptible to injury in athletes. A back strain is common in athletes and the general population with a great deal of research being spent on how to better understand the mechanics of lifting for the purpose of preventing these injuries. The back muscles are placed at risk for strain when an individual starts in any combined positions of flexion, lateral flexion, and rotation and then extends and rotates the spine back into a neutral position. Sports that involve repetitive hyperextension, jumping (compressive loading from the landing), and twisting can place athletes at risk for back strain.

Taping for treatment – I like using a “H” formation. I start with the athlete bending over the back of a chair to put stretch on the tissue. I then take a piece of 2” tape from the Posterior Superior Iliac Spine, along the side of the spine, to about T11/T12 on both sides. I then apply a decompression strip with 50% stretch over the site of pain. This taping maneuver is magic for many types of lower back pain, but especially mechanical lower back pain.

1. Jumpers’ Knee or Patellar Tendonitis - Patellar tendonitis is defined by inflammation in the patellar tendon, and most commonly occurs at its origin just below the kneecap. The most common cause is overuse or repetitive injury, and it has been reported to occur in athletes of virtually every sport. However, jumping activities place particularly high strains on the tendon and the condition is therefore more common in basketball players, tennis players, volleyball players, track and field athletes, as well as soccer players.

Taping for the injury: This taping is really effective for patellar tendonitis. With the athlete in a sitting position and the knee bent, I take a 2” strip and run it diagonal from lateral to medical thru the tibial tuberosity and along the patella then straight up the quadriceps. I then take a strip from medial to lateral (will “x” at tibial tuberosity) along the patella and up along the quadriceps. I then take a decompression strip over the patellar tendon (50% stretch) and attach the ends on skin.

1. Ankle Sprain - A sprained ankle is an injury to one or more ligaments in the ankle, usually on the outside of the ankle. Ligaments are bands of tissue that connect one bone to another and bind the joints together. In the ankle joint, ligaments provide stability by limiting side-to-side movement. The severity of a sprained ankle depends on whether the ligament is stretched, partially torn, or completely torn, as well as on the number of ligaments involved. Physicians generally classify a sprained ankle based on their severity as a grade one, two, or three.

Other signs of a more extensive injury include tenderness along the bone, either on the inside or outside, as well as swelling and bruising along the inside of the ankle. A high ankle sprain, also known as a syndesmotic ankle sprain, is a sprain of the syndesmotic ligaments that connect the tibia and fibula on the lower leg. Syndesmotic ankle sprains are known as high because their location on the lower leg is above the ankle. Unlike common ankle sprains when ligaments around the ankle are torn or receive injury through an inward twisting, high ankle sprains are caused when the lower leg and foot twist out. The biggest difference between the two injuries is that whereas athletes can predictably return to sport in 4-6 weeks after a standard sprained ankle, it can take much longer to return after high ankle sprains-as long as 6 months.. Additionally, in cases of unstable high ankle sprains, surgery is usually needed. In order to rule out a high ankle sprain and/or an associated fracture your physician may order a series of tests including an xray, CT scan, or MRI.

Taping for treatment – in the early phases of an ankle sprain, I like to use an edema taping method. This method helps channel the fluid or edema and spread the swelling out so that it can be absorbed by the body easier. This type of taping usually involves cutting the tape into “tenticles” with a 1” base. I usually start with a 6-12 strip of 2” tape to accomplish this. I then criss-cross another piece cut the exact same way at about 60-90 degree angles to the first piece. This creates areas of high pressure and low pressure (lower pressure under the tape) which we hope the fluid will follow.

After most of the swelling goes away, I will tape for support. This starts with a 2” piece distal and 1” to the lateral malleolus and going oblique from medial to lateral around the outside of the leg and around the medial side to the front of the shin. I apply this piece with about a 50% stretch around the lateral malleolus. Medical professionals will find if they push the distal aspect of the fibula while they apply the tape on top of the lateral malleolus, it will provide more support. This is a simple tape job for support without having to restrict the joint with a lot of white athletic tape.

5. Shoulder Separation – Acromioclavicular Separations or AC separations, is when the joint between the collarbone (“clavicle”) and shoulder blade (“scapula”) is injured. The ligaments and capsule connecting the bones can be injured to variable degrees depending upon the severity of the injury. It is commonly caused by a fall directly on the "point" of the shoulder or a direct blow. Disruption of the AC joint results in significant pain and tenderness at the front of the shoulder joint. The pain is most severe when an athlete attempts overhead movements or throwing, and is even sensitive to the pressure of protective padding or pressure in the area. Since the AC joint is relatively superficial, separation injuries are usually accompanied by a “bump” from the prominence of the collarbone at this location, and can be clearly seen as asymmetric from the uninjured side. Point tenderness to this location usually confirms the diagnosis clinically. Radiographs are helpful in ruling out associated fractures and in grading the severity of the separation.

The severity of an AC joint separation depends on how severely the ligaments and capsule that stabilize this joint are damaged. Low grade injuries disrupt the ligaments connecting the clavicle to the acromion. “Higher grade” injuries, however, also tear ligaments connecting the clavicle to other portions of the shoulder blade (the “coracoid” process), and are more serious because the render the arm and shoulder more unstable.

Most AC injuries can be treated without surgery, but it depends on the severity of the injury. Grade I and II injuries will typically heal with rest and rehabilitation, but may be accompanied by the slight cosmetic deformity of a bump at the location of separation. Grades III - VI injuries, however, often do often require surgery to reduce the joint and normalize the kinematics between the shoulder and arm. The outcomes are generally good, and most athletes recover with full function of the shoulder.

I have found great success using RockTape for grade I – III separations to relieve pain and allow for early pain free range of motion. Similar to a posture tape, I have the athlete elevate their arm to the normal position. I will then use a “Big Daddy” strip and cut it into a “y”. I start the base on top of the shoulder and surround the deltoid with the split edge and they cross at the insertion of the deltoid on the proximal humerus. I then use a decompression strip over the AC joint with 50% stretch in the middle and zero tension on the tails. This taping tends to support the arm in the joint, create centration, and relieve pain. Rehabilitation can then start a little earlier compared to the, “sling and wait” approach.