



Sports Medicine from an Orthopedic Perspective

by Bill Duncan, MD

The orthopedist assumes many roles in the world of sports: participant, team physician, surgeon, and quiet (or not so quiet) spectator.



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Introduction

Many of us can recall the nerves we had to overcome during our interviews for residency. Much time was spent going over the playbook of all possible questions we may be asked and the “correct” answers for those questions. Looking back, I’m convinced that as physicians we all have the weakness of being a perfectionist, we are all work-a-holics and all just a little crazy. However, when asked the simple question, why choose orthopedics as a career, I had a simple answer...fun. There are few professions in which you get to walk the sidelines, attend basketball games, and other sporting events, and work with young, motivated athletes (not to mention power tools) and get to call it work.

Orthopedic surgery and sports go hand-in-hand and the role of the orthopedic surgeon in sports is multifaceted. Participant, team physician, surgeon, and quiet (or not so quiet) spectator are a few of the many roles an orthopedist assumes in the world of sports.

Many orthopedic surgeons have backgrounds in athletics. For those of you who watched the 2010 Winter Olympics, you may have learned that the current IOC President, Dr. Jacques Rogge, is an

orthopedic surgeon by profession. He also competed in the Olympics in the 1970s. Dr. Eric Heiden, gold medal Olympian, and who some consider the greatest speed skater ever, is now an orthopedic surgeon in Utah. Dr. Mark Adickes, my friend and residency-mate at Mayo, spent six years as an NFL lineman, four of those with the Kansas City Chiefs and two with the Redskins. He has a Super Bowl ring to show for it, and needless to say, was the “golden boy” of our class. As for me, I’m convinced I’ll be ready for the PGA Senior Tour...if I could just break 80.

Orthopedic surgery is, indeed, very physical. Strength, agility, and stamina are some of the attributes that can help the orthopedic surgeon to overcome the worst of trauma calls and joint reconstructive cases, many of which can take hours to complete. However, these are not the only traits carried over from sports into this profession. Focus, determination, teamwork, and planning are also critical to successfully treating an injured patient and getting them back on the field.

This effort to get injured athletes back on the field requires a quarterback to coordinate their care. Many orthopedic surgeons

assume this role of quarterback as the team physician. For many it is a means of giving back to sports all it has provided them. The team physician is a demanding role on many levels. It is a commitment that requires much time dedicated to the teams and athletes these physicians cover. Providing on-field care, training room visits, clinic visits, surgical care in the operating room, and educational and administrative duties are among the many services provided by the team physician. With these duties come pressures from many directions from the athletes and coaches to the parents, boosters, and school officials. At times, these pressures can make decision-making difficult and controversial. Often, the team physician will find himself/herself acting more as a mediator amongst these pressures and questioning his/her decisions. However, it still remains the duty of the team physician to keep the interest of the patient first, and first, do no harm.

Orthopedic surgeons treating athletes young and old will encounter many maladies of the musculoskeletal system. From head to toe, the athlete is exposed to the risk of injury. Most injuries requiring surgical attention involve the extremities. Some of the more common shoulder injuries include acromioclavicular (AC) separations, Superior Labrum from Anterior to Posterior (SLAP) tears, Bankart tears, and rotator cuff tears.

AC separations are injuries that involve injury to the ligaments stabilizing the clavicle to the scapula. Most can be treated conservatively with time, therapy, and gradual return to play. However, when there is complete separation of the clavicle from the acromion, those injuries

are best evaluated by the orthopedic surgeon as some may require surgical stabilization.

Superior labrum anterior-posterior (SLAP) tears are tears of the superior portion of the labrum anterior and posterior to the insertion of the biceps tendon onto the labrum. These are most often seen in overhead throwing athletes but can also be seen in swimming and volleyball players. Symptoms can be vague, and if a trial of rest, therapy, and, perhaps, an intraarticular injection fails, the diagnosis can often be supported with an MR Arthrogram. Arthroscopic surgery may be considered in those cases where conservative management has failed.

Bankart tears are also labral injuries but involve the anterior and inferior portion of the labral attachment to the glenoid, or socket. These are usually the result of shoulder instability or dislocation. Many of these can also be treated with conservative management initially with a period of immobilization followed by therapy. However, for cases of recurrent instability or failed conservative management, surgery to repair the lesion can often result in less pain and better function.

Partial-thickness rotator cuff tears can be found in any sport. Most of these can be diagnosed by MRI or other special imaging studies. Most of these can also be treated, at least initially, with conservative management including anti-inflammatories, therapy and injections. However, should conservative measures fail and symptoms persist, surgery again is an option. Complete rotator cuff tears in the young athlete are relatively rare. However, people

are remaining active in sports later in their years, and we are seeing a greater number of these cases. Although somewhat controversial, treatment for complete rotator cuff tears in younger or more active patients tends to be more aggressive with surgical repair considered at an earlier time from injury.

Elbow injuries are slightly less common than those of the shoulder or knee. Many of these problems are related to overuse injuries. Overuse leads to repetitive microtrauma that can lead to attenuation and loss of integrity of the ligaments and tendons within the elbow. This eventually will manifest as damage of these tissues, with pain and loss of strength. The ligament most commonly injured in the elbow is on the medial side. Some orthopedists refer to it as the medial collateral ligament (MCL), some call it the ulnar collateral ligament (UCL), and still some call it the medial ulnar collateral ligament (MUCL). Take your pick; it is an injury that has affected many amateur and professional athletes. One notable St. Louis Cardinal, Chris Carpenter, required surgery for this problem in 2007, and has made a remarkable comeback. Fortunately, most that undergo UCL reconstruction, commonly known as “Tommy John” surgery, enjoy successful recoveries as Carpenter has.

Elbow epicondylitis is another example of an overuse injury. Mostly seen in club and racquet sports, when it occurs on the lateral side, it is commonly referred to as “tennis elbow,” whereas, on the medial side it is called “golfer’s elbow.” Treatment for elbow epicondylitis is somewhat controversial; however, the vast majority of these cases can be

successfully treated with conservative management using any combination of rest, anti-inflammatories, counterforce braces, therapy and occasionally injections. Surgery can be offered to those more difficult, recalcitrant cases.

Identifying and preventing overuse is the key to avoiding injury. Much of this involves education and training in addition to strength and conditioning. From the coaches and athletic trainers to the physicians and athletes, themselves, measures can, and should be taken to avoid injury. Research in baseball pitching has been successful in curbing the number of injuries by showing how the pitch count, type of pitch, number of appearances and other factors can correlate with injury to these athlete (See Table 1). Another program, the PEP (Prevent injury Enhance Performance) program was designed to target and prevent ACL injuries in female soccer athletes. The program emphasizes and teaches technique on how to land appropriately from a jump among other important skills that can help to avoid injury. Injury prevention and rehabilitation should center on optimizing body mechanics according to the sport, core strength, range of motion and neuromuscular training.

Knee injuries are very common in any sport. Injury to the anterior cruciate ligament (ACL) is most often sustained with a non-contact mechanism and results in pain, significant swelling, and instability. This injury has gained some notoriety in the press over

Table 1
Recommended Maximum Number of Pitches¹

<u>Age in Years</u>	<u>Max Pitches per Game</u>	<u>Max Games per Week</u>
8-10	50	2
11-12	65	2
13-14	75	2
15-16	90	2
17-18	105	2

Table 2
Treatment Options for Cartilage Injuries

- Lube it
- Make it
- Remove it
- Shrink it
- Pick it
- Wedge it
- Plug it
- Transplant it
- Implant it
- Leave it
- Replace it

the last couple of years. Tiger Woods and Tom Brady were both treated successfully with ACL reconstruction. Although some patients with this injury can be treated with conservative management, for active patients who wish to return to high-demand sports, most will likely require reconstruction. Anywhere from 100,000 to more than 200,000 ACL reconstructions are performed each year with a high rate of success.

Meniscal injuries of the knee are also very common and can manifest clinically as simply pain over the joint line or with mechanical symptoms, such as locking, catching, buckling, and popping. If the pain coincides with mechanical symptoms, arthroscopic surgery may be considered to evaluate and treat the pathology with repair or partial excision of the damaged tissue.

An area of rapid growth in

research and development has been in treatment of cartilage injuries. There is a large menu of treatment options for cartilage injuries. From simple injections and supplements to more complex procedures,

such as tissue transplants and joint replacements, many cartilage injuries can successfully be treated getting athletes and patients back to competition (See Table 2).

It is the spirit of competition that makes sports fun. It is the fun that nurtures the other rewards of sports: health, friendship, and confidence among others, too many to list. One of the best roles a person can have in sports is being the spectator. Who can't look forward to the giving and receiving of jabs among partners in the office when teams compete? Watching a child play in the dirt and pick flowers on the soccer field, or seeing a child hit their first home run are moments locked away forever. There is nothing better to remove one's self from the stresses of a medical practice than a daily prescription of sports.

Reviewing the playbook, watching film in preparation for the game, spending hours to perfect the game and being just a little crazy are the makings of an athlete. However, they are also the seeds of an orthopedic practice that continue to grow throughout the physician's career. In the words of our physician colleague, Dr. James Naismith, the inventor of basketball, "be strong in body, clean in mind, lofty in ideals." But most of all, I would add, "have fun."

References

1. Adapted from the USA Baseball Medical and Safety Advisory Committee.

