

## Concussions- Getting Your Head Out of the Game

Matt Gammons, MD

Concussions, sometimes referred to as mild traumatic brain injuries, are one of the most commonly encountered sports injuries. Studies vary but rates are estimated at two million sport related concussions per year in the United States. It is also commonly believed that these are underreported injuries due to lack of recognition of the concussion and the desire of athletes to not miss time from their activity. Research has led to change in our approach to treatment of the injuries. New guidelines do not use a set time away from activity and emphasize a gradual return to play.

While concussions often occur from direct contact to the head or face, they may also occur from rotational forces without contact such as a tumbling fall. Although research continues to help understand what happens to the brain in a concussion, it appears that the neurons (brain cells) sustain a small injury that creates an "energy crisis". This generally lasts 7-10 days and physical or cognitive activity during this time period may worsen symptoms and prolong recovery. This is why rest is so important in the initial stages of treatment.

Collision sports (football, hockey, etc.) generally have the highest overall rates of concussion; however, they can be seen in all sporting activity. Fortunately, the



overall rates of concussions are relatively low even in collision sports. Certain risk factors are associated with an increased risk of concussion or prolonged recovery. Genetics, gender, playing position, migraines, history of multiple concussions and mental disorders (depression, anxiety and ADHD) all may play a role in how an athlete is affected by a concussive injury. However it is still unclear how much influence each of these factors has on an individual athlete's risk.

The diagnosis of a concussion can be complex as the signs and symptoms of concussions can be found in many other conditions and there is not a singular test we can use to determine if a concussion has occurred. Sometimes the diagnosis is very straight forward, for example when there has been a brief loss of consciousness, but many times the changes seen in the athlete are very subtle. The diagnosis of a concussion is mainly based on the history and physical examination. Symptoms of a concussion may include headache, dizziness, nausea/vomiting, amnesia, brief loss of consciousness and inability to concentrate. These symptoms may last for several days to a few weeks. Imaging, CT scan or MRI, rarely indicate concussions, unless there is a finding on examination that suggests a structural

injury (e.g. bleeding or swelling). Newer computerized tests may add value in some cases, but these tests are not used to diagnose concussions and it is unclear if using these tests improve the outcomes of concussed athletes.

Previous grading scales used symptoms at the time of the concussion to determine the severity of the concussion. New guidelines now suggest that we not grade concussions at all and that we only determine that a concussion has occurred. The reasoning for this lies in newer research that shows symptoms at the time of the initial injury do not correlate with the severity of the injury and recovery time. Additionally, grading does not change our treatments as resting until symptoms have resolved is the initial treatment regardless of the injury.

### Treatment

When an athlete is suspected of having a concussion, they should be removed immediately from competition. Symptoms should be monitored and the athlete should not be returned to competition until they are evaluated by a qualified medical professional. This evaluation should occur as soon as possible.

*continued on next page...*

### IN THIS ISSUE

**Concussions- Getting Your Head Out of the Game**

**5 Questions To Ask Your Doctor About Knee Arthritis**

**Choosing Wisely: Imaging Recommendations for Concussions.**

**Coach's Corner: Building a Sports Program**

## CONTINUED FROM PAGE 1

The athlete should be monitored closely for several hours after a concussion. It is important to stress that both physical and mental rest speed the recovery of concussions. It is okay for the athlete to sleep and should avoid over stimulation such as video games or loud crowded activities. Athletes may need to stay out of school or have modified class schedules. Ask your health care provider for more specific recommendations.

Returning the athlete to play starts when the athlete is symptom free. It will take 3-7 days for full return to sports (depending on the sport) with an athlete gradually increasing their activity level every 24 hrs. Returning to class can occur over the same timeframe and athletes should be monitored as well for any increase or recurrence of symptoms. Activity can surface underlying concussion symptoms and athletes should be instructed to notify their coach, trainer or physician if they redevelop any symptoms during the recovery period. This process allows faster and safer return to sporting activity. Computerized neuropsychological testing is sometimes used to help monitor an athlete's progress but is never used on its own to determine a diagnosis or an athlete's readiness to return to play.

There are many common misconceptions about concussive injuries. **The following are several myths about concussion:**

### **Every athlete who sustains a hard hit must have a concussion.**

Although our knowledge about the forces involved in concussion is improving we still have not found a level of force that definitely causes a concussion. At times high forces do not cause an injury and relatively lower ones may. This means that we should not overact to every head impact but also need to listen to athletes who complain of concussive like symptoms after any head contact. Because there is no known force level for concussion in –helmet devices that are marketed to consumers as “concussion alarms” are not recommended as they will likely lead to both over and under diagnosis of concussive injuries.

### **Better helmets and mouthguards will prevent concussions.**

Unfortunately there is no good scien-



tific evidence that helmets of any type (hard shells, soft-padded or head bands) or mouthguards can prevent or reduce the risk of concussions. Hard helmets can reduce the risk of more serious head injuries (bleeding, skull fractures etc.) and should be worn in high risk sports. Mouthguards can prevent dental injuries and should be worn for sports with a high risk of these injuries. Helmet-add ons additionally are not effective in concussion prevention and using these will generally void any warranties associated with the helmet.

Risk reduction may be possible in some settings with rule changes (e.g. no hitting from behind in hockey) and behavior changes (e.g. tackling technique in football).

### **Once you have a concussion you will always be more susceptible to having another one.**

While there appears to be an increased risk of recurrence in the first few weeks after a concussive injury it is unclear what factors may influence the risk of another injury in the future. Despite being a commonly held belief there is no evidence to suggest that athletes develop a decreasing force threshold after each injury. A few small studies have found the opposite. The largest risk to any athlete for a recurrent concussion is exposure (playing a sport) and since most athletes who have a concussion plan on continued participation this likely is the leading cause. Other risk factors discussed before may play a role but this is not yet defined.

Management of concussion will continue to evolve as more research develops. Removal from competition and early intervention with a healthcare professional knowledgeable about concussions will help protect our athletes and allow the fastest and safest return to play.

## 5 Questions To Ask Your Doctor About Knee Arthritis

David Frankel, MD

### **1 Do I need a knee replacement if I have knee arthritis?**

A diagnosis of knee arthritis does not mean that you are going to need a knee replacement. Doctors should treat a patient's symptoms and not the severity of knee arthritis on x-ray images. While some patients may go on to have a knee replacement, surgery should be reserved for those knee arthritis patients who have failed conservative management due to pain that is not controlled and that interferes with activities of daily living.

### **2 What are some basic things that I can do to help my knees?**

Weight loss is very important. Any weight that you lose can make a difference, as you will be putting less pressure on your knee joints. With weight loss, your pain related to knee arthritis can be decreased, you can delay the progression of your knee arthritis, and knee replacement surgery may be prevented.

Exercise is good for patients with knee arthritis, often leading to decreased symptoms. When considering exercise activities, focus on those that are not painful. Lower impact activities will put less stress on your knees. If walking bothers your knees, you may consider aquatic exercise such as water aerobics or deep-water running or riding an exercise bicycle. Resistance training can improve knee arthritis symptoms, as well as your strength and physical function.

Although it may take some trial and error to determine which works best for you, heat and cold therapy can be beneficial in treating your knee arthritis symptoms by decreasing pain, swelling, inflammation and stiffness.

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### 3 Is Physical Therapy helpful for knee arthritis?

Supervised rehabilitation in physical therapy can be very effective in treating the symptoms of knee arthritis. Physical Therapy may include muscle strengthening, joint mobility, flexibility training and manual therapy techniques. Your physical therapist should provide a home exercise program that you can perform on the days that you are not having supervised rehabilitation and you can incorporate this program into your regular exercise activities once you are released from therapy for ongoing benefit.

### 4 Are there any oral or topical medications that I can use to help my symptoms?

Acetaminophen is a pain reliever, but it does not affect inflammation. Regular use of acetaminophen can provide pain relief caused by mild to moderate knee arthritis. Because it is relatively safe and has less serious side effects, acetaminophen should be considered first when it comes to oral pain medications.

Nonsteroidal anti-inflammatory drugs (NSAIDs) treat pain and inflammation related to knee arthritis. Although oral NSAIDs may be more effective than acetaminophen, they have higher risks and their use should be limited in duration.

Stronger oral medications such as opioids or narcotics may be considered for breakthrough pain due to knee arthritis; however, their use should be limited.

Topical NSAIDs may be effective in treating the symptoms of knee arthritis. Topical capsaicin cream is also effective, although local irritation can occur at the site of application.

Glucosamine and chondroitin supplements may provide relief for patients with moderate to severe pain related to knee arthritis. For patients with mild pain, glucosamine and chondroitin together or alone may not be beneficial for pain relief.

### 5 Are cortisone injections or viscosupplementation injections helpful?

Cortisone injections may help the inflammation related to the arthritis in your knee joint and thereby reduce the pain. Cortisone injections usually include a corticosteroid medication and a local anesthetic medication. The injections may provide immediate benefit due to the local anesthetic medication, while the effect of the corticosteroid medication may take several days before onset. On average, the pain relief may last for weeks to months. Due to potential side effects, the number of injections per year per joint is typically limited to no more than three injections per year.

Viscosupplementation, also known as 'rooster comb' injections, can be helpful for patients with mild to moderate knee arthritis. Hyaluronic acid is a naturally occurring substance found in knee joint fluid, acting as a lubricant and shock absorber. People with knee arthritis may have lower levels of hyaluronic acid in their knee joint. With viscosupplementation, a gel-like substance containing hyaluronic acid is injected into the knee joint. The injections may be performed in one injection or some are dosed weekly for three to five weeks. Viscosupplementation does not have an immediate pain-relieving effect, but the benefit can last for several months. If effective, viscosupplementation may be repeated after six months.

## Choosing Wisely: Imaging Recommendations for Concussions

Caitlyn C. Mooney, MD

Choosing Wisely is an initiative of the American Board of Internal Medicine and supported by multiple medical societies, including the American Medical Society for Sports Medicine. Each society was asked to contribute five diagnostic tests or treatments that both physicians and patients should question. The highlight for this quarter is the AMSSM's "number one" recommendation:

**Avoid ordering a brain CT or brain MRI to evaluate an acute concussion unless there are progressive neurologic symptoms, focal neurological findings on exam or there is concern for a skull fracture.**

The impact that results in a concussion does not cause large structural changes, but rather results in a chemical change in the brain resulting in widespread change of functioning. Thus, a concussion is a clinical diagnosis meaning that there is no current imaging or blood test to diagnose a concussion. Even the most sensitive MRI and CT scanners that are currently available are not able to pick up on the small changes that occur in the brain in concussions. For these reasons imaging is not routinely performed during the assessment. The diagnosis of a concussion should be made by a qualified healthcare professional who is knowledgeable in diagnosing and treating concussions. The diagnosis is based on the athletes reported symptoms as well as a thorough physical exam. Physical exams can be normal following a concussion.

A health care provider may order a CT scan of the brain if they are worried about a more severe head injury including a brain bleed or a skull fracture. Immediately following an injury a CT scan is the scan of choice as it is fast, readily available and children do not require sedation to have it done. It can quickly assess for a more serious injury that may need prompt treatment. CT scans are

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## CONTINUED FROM PAGE 3

not routinely done for concussions as they are typically normal, are expensive and expose the patient to a large amount of radiation. Some symptoms that may increase concerns for a more serious injury include worsening headache, seizures, multiple episodes of vomiting, trouble walking, weakness or a neurological exam that points to a disruption of a certain part of the brain.

After the initial post injury period if symptoms continue to occur or worsen a MRI may be performed. MRIs can pick up on smaller injuries such as small bleeds, scarring, bruising, structural abnormalities, or pre-existing conditions in the brain that could be affecting the athlete and his/her recovery. Thus the most important thing to do in the case of a concussion is to be evaluated by a healthcare professional familiar with concussions. A professional of this kind will evaluate and manage the care of the athlete to progress him/her towards a safe return to their sport.

## Choosing Wisely®

*An initiative of the ABIM Foundation*

Visit <http://www.sportsmedtoday.com/concussion-va-2.htm> for more information about the symptoms, prevention, and management of this common condition.

Visit [https://www.amssm.org/Content/pdf%20files/Choosing\\_Wisely.pdf](https://www.amssm.org/Content/pdf%20files/Choosing_Wisely.pdf) for more information on this campaign.

### Editor-in-Chief: Jeffrey Bytowski, DO

AMSSM is a multi-disciplinary organization of 2,700 sports medicine physicians dedicated to education, research, advocacy and the care of athletes of all ages. The majority of AMSSM members are primary care physicians with fellowship training and added qualification in sports medicine who then combine their practice of sports medicine with their primary specialty. AMSSM includes members who specialize solely in non-surgical sports medicine and serve as team physicians at the youth level, NCAA, NFL, MLB, NBA, WNBA, MLS and NHL, as well as with Olympic teams. By nature of their training and experience, sports medicine physicians are ideally suited to provide comprehensive medical care for athletes, sports teams or active individuals who are simply looking to maintain a healthy lifestyle. Find a sports medicine physician in your area at [www.amssm.org](http://www.amssm.org).

# COACH'S CORNER

## Building a Sports Program

Building a sports program can be a daunting task. You could be taking over a faltering program or starting one from the ground up. It can be overwhelming at times to get everyone connected to the same goal. Here are five strategies to help you get your program where you want it go.



1

**A BURNING PASSION.** As *Credibility* author Jim Kouzes said, "You can't lead others to a place you don't want to go yourself." Taking over a program in disarray can be tough as there will be a lot of negativity to fight through to get your program to a higher level. Being passionate and positive about your vision for the program must become a contagious enthusiasm for everyone involved in your program.

2

**A STRATEGIC PLAN.** You must create a plan for all aspects of your program including recruiting, staff, facilities, academics, marketing, etc. You must involve all stakeholders including any administration and understand the history and politics of the program.

3

**PROGRAM CORE VALUES.** You also need to establish a clear set of core values for your program. You must determine what your program will be about and what it will stand for both on and off the playing field. These core values will serve as your guiding principles in developing your team. Establishing a strong but realistic level of discipline, responsibility and accountability is a critical part of building a successful program. Details and discipline do matter. The little things are often the big things. You must get your players to understand, accept, live and embrace your team's core values.

4

**MAINTAIN PERSISTENCE.** As part of the process, you will run into numerous obstacles and adversities in building your program. You must have the persistence to see yourself and your team through the tough times. You must stick with your plan, adjust when necessary and believe in the long-term viability of your vision.

5

**PATIENCE AND PERSPECTIVE.** Understand the big picture and realize that like Rome, your program will not be built in a day. Envision each step you are taking as an investment and another brick in the foundation of your program's long-term success. With time and the right people, processes, and culture in place, you too will eventually take your program to a higher level.

Building a program is grueling work. However, the payoff and pride in successfully building a program is also extremely gratifying. Use the five strategies outlined above and you too will power through the dip and soon position your program to breakthrough to the elite level.

<http://www.JanssenSportsLeadership.com>.