

Heat Illness

By Jennifer Stromberg, MD

As temperatures continue to rise this summer it's important for our summer and fall athletes and coaches to be aware of the increased risk of heat illness. When we exercise body temperature rises, causing us to sweat, which is one of the ways the body works to prevent overheating. When we exercise in warmer climates it is harder for the body to cool itself naturally and this can lead to dangerously high body temperatures and heat illness. Symptoms of heat illness can range from mild to severe, as outlined below.

Mild Symptoms

- Swollen hands and feet
- Cramps, muscle tightness, muscle spasm
- Lightheadedness

Severe Symptoms

- Mental status changes such as confusion, agitation, irritability and lack of coordination
- Rectal temperature >104° F (40.5° C)
- Excessive sweating or flushing (when very severe sweating may stop but skin remains hot)
- Fatigue
- Headaches
- Nausea and/or vomiting
- Chills or "goose bumps"
- Seizures

Who is at risk of developing heat illness?

Everyone! In hot and humid conditions anyone can develop heat illness, although the risk is higher in those who



are unaccustomed to conditions or use heavy uniforms or equipment. Extremes of age, both older and younger, also make heat illness more likely.

How can I prevent heat illness?

When exercising in warm climates wear lightweight, light-colored clothing to protect yourself from the sun. Consider exercising early or late in the day when temperatures are usually cooler, or moving to a shaded area. Make sure that you have fluids available to hydrate before, during and after activities — use your thirst level to guide how much fluid to take in. Athletes competing in warm or humid environments should gradually become acclimated by practicing in similar conditions at least 10-14 days prior to competition.

What should I do if I start to develop symptoms?

If you start to develop early symptoms of heat illness try and rest in a cool, shaded area and take in plenty of fluids. For more severe symptoms athletes should be immersed in cold water as soon as possible. Athletes with mental status changes should be urgently evaluated by a medical professional. All athletes with heat illness should consult their physician before attempting to return to full physical activity.

Source: AMSSM Sports Medicine Topics: Heat Illness. Available at <http://www.sportsmedtoday.com/>

Fluid Guidelines for Summer Workouts

Prior to workout: Drink 20 oz of water or sports drink 1-2 hours before and may add another 10 oz 15 minutes prior to activity. Athletes who cramp often may need to augment electrolytes by adding an electrolyte packet. Some athletes will also use "pickle juice mixtures, soy sauce, etc. which all have higher concentrations of sodium and other electrolytes. These are generally regarded as safe.

During workout: Drink 10 oz every 15 minutes or so based on thirst. Athletes should be drinking to thirst as even minimal dehydration may affect performance. One caveat would be long endurance runs in which drinking too much fluid may decrease sodium levels to cause mental status changes. Sports drinks should contain less than 8% carbohydrate (18g per 8 oz) and should also be cooled to under 60 degrees if possible.



What not to drink during workouts: Caffeinated beverages including sodas, alcohol and fruit juices.

Post-Workout Hydration: Athletes should weigh themselves before and after activity if possible during summer workouts. It is recommended for every pound lost to drink 20 oz of water or sports drink. This may be done over many hours. Urine color is another good indicator of hydration. Darker urine color is indicative of dehydration.

IN THIS ISSUE

Heat Illness
5 Questions To Ask About Ankle Sprains
Coach's Corner: FIFA 11+
Choosing Wisely: Knee Arthroscopy

5 Questions To Ask About Ankle Sprains

by Jeremy D. Johnson MD, MPH

Ankle sprains are very common. In fact, approximately 2-million ankle injuries occur in the United States every year⁽¹⁾. Unfortunately, over 70% of ankle sprains occur among individuals with previous ankle sprains, many of which were not completely rehabilitated⁽⁴⁾. “Ankle Sprains” are defined as an injury to the ligaments that surround the ankle joint. Ligaments are composed of strong elastic fibers. The severity of the sprain depends on whether or not the ligament was stretched or completely torn. Sprains can be associated with fractures, but these injuries differ in their severity.

1 When should I see a physician? The first reason to see a physician is to be evaluated for a fracture. Signs of a fracture include the inability to bear weight for at least four steps following the injury or if there is tenderness over the bony protrusions of the ankle or foot. In these situations X-rays should be performed to assess for a fracture. Another reason to seek medical advice is to reduce the risk of recurrent or chronic ankle problems. The most important risk factor for ankle sprains is a previous ankle sprain. Therefore, individuals should seek medical guidance and possibly formal rehabilitation to prevent recurrent and chronic ankle issues⁽⁴⁾.

2 How long does it usually take to get back to my activity? Most ankle sprains require two to six weeks to recover, but the length of time required is dependent on the severity of the injury and the activities required of the individual⁽²⁾. Treatment involves three phases. Initially controlling inflammation, next regaining full range of motion and strength and finally regaining the muscular control and endurance required for one’s activities.

3 What is involved in controlling inflammation?

Initially controlling inflammation will decrease pain and swelling, and involves the following:

- Icing (usually 10- 20 min, with at least 30 minutes in between sessions to avoid frostbite)
- Compression (using an elastic bandage)
- Elevation
- Relative rest.



Depending on the severity of the injury, rest may involve a short term use of crutches or walking boot. However, it is important to note that early mobilization improves time to recovery, long-term stability and decreases swelling⁽²⁾. Therefore one should begin protected and full weight bearing activities as soon as tolerated⁽²⁾.

Completing all phases of rehabilitation allows one to confidently return to sport and lessens the likelihood of chronic ankle issues⁽⁴⁾. In particular, rehabilitation should involve exercises to improve strength, balance and functional rehab exercises to guide one back to sport and exercise^(3,4).

4 Does wearing braces help prevent sprains? Wearing braces, specifically an air stirrup brace or lace-up support can be used to aid in early mobilization and to protect against re-injury following return to sport⁽⁴⁾. Unfortunately, braces must be worn during all high risk activities for at least one year to

have this benefit. In addition, braces do not stimulate healing or retrain one’s muscles, ligaments and reflexes to react to the stresses placed on them⁽⁴⁾. To fully recover, one will need to complete all phases of rehabilitation as described above.

5 How do I know when I am ready to play again? In general, once the individual has full movement and strength, in addition to being able to perform all sports specific activities required without pain they can return to play. One rule of thumb is the “rule of 20s” where the athlete is able to run 20 yards, cut 20 times, hop on the leg 20 times, and balance with eyes closed for 20 seconds on the effected ankle without problems. However, it’s important to note that the risk of re-injury persists for up to 12 months, even after full rehabilitation. External ankle support and neuromuscular training can reduce this risk and are an important aspect of returning to play safely^(4,5,6).

1. Waterman BR1, Owens BD, Davey S, Zacchilli MA, Belmont PJ Jr. J Bone Joint Surg Am.

The epidemiology of ankle sprains in the United States. 2010 Oct 6;92(13):2279-84. doi: 10.2106/JBJS.I.01537.

2. Tiemstra, J. Update on Acute Ankle Sprains. Am Fam Physician. 2012 Jun 15;85(12):1170-1176

3. Hübscher M, Zech A, Pfeifer K, Hänsel F, Vogt L, Banzer W. Neuromuscular training for sports injury prevention: a systematic review. Med Sci Sports Exerc. 2010;42(3):413-421.

4. Brukner, PD and Khan, K et al: Brukner and Khan’s Clinical Sports Medicine 4th edition McGraw Hill, Sydney 2012

5. Lephart, S. Conley, K. The role of proprioception in chronic ankle instability. In: Schmidt, R., Benesch, S., Lipke, K., eds. Chronic ankle instability: manuscript of the International Ankle Symposium. 2000: 254-67

6. Hupperetts, MD, Verhagen, EA, Van Mechelen, W. Effect of unsupervised home-based proprioceptive training on recurrence of ankle sprains: randomised controlled trial. BMJ 2009; 339:b2684

COACH'S CORNER

By Julia Bruene MD

What is FIFA 11+?

- 1** The FIFA "11+" is an injury prevention program developed by a comprehensive group of international experts, and is targeted for soccer players aged 14 or older.
- 2** Scientific studies have shown that youth soccer teams who adopted the 11+ program had lower rates of injury as compared to teams who warmed up as usual. Therefore, FIFA recommends that youth soccer teams should implement the 11+ as their sole warm-up routine.
- 3** The 11+ program is broken down into three parts:
 - a. Part 1: Slow-speed running exercises coupled with active and partner stretching
 - b. Part 2: Core and leg strength exercises, along with balance, plyometrics, and agility exercises.
 - c. Part 3: Moderate/high speed running exercises integrated with cutting and pivoting movements.
- 4** Maintaining proper technique while performing the exercises is crucial. Ensure that athletes are using good posture and body control, focusing on soft landings, straight leg alignment, and knee-over-toe position.
- 5** It's important to express the importance of injury prevention to athletes. When teaching the 11+ program, focus on demonstrating one exercise at a time, observe the athletes performing the exercise, provide feedback, and re-demonstrate the exercises as needed until the athletes feel comfortable performing them.
- 6** While the aim of the 11+ program is to prevent athletes from potentially painful and debilitating injuries, more healthy athletes means more choices for coaches, and hopefully more goals. When coaches and athletes understand the utility of injury prevention strategies, we all win!

[Click here to learn more about how to implement the FIFA 11+ program.](#)



Choosing Wisely:

Avoid recommending knee arthroscopy as initial management for patients with degenerative meniscal tears and no mechanical symptoms.

By Joshua Blomgren, DO

Arthroscopic partial meniscectomy of the knee is the most commonly performed orthopedic surgery in the United States, with about 700,000 such procedures occurring annually. This is a minimally invasive surgery performed to address tears of the medial or lateral meniscus of the knee. The meniscus is a half-moon shaped piece of cartilage in the knee that distributes compressive forces through the knee, functioning as a shock absorber. Tears can occur in the medial meniscus, over the middle portion of the knee and the lateral meniscus, over the outer portion of the knee. Surgically, the torn portion of the meniscus is cut or removed to restore a stable rim or edge to the meniscus. Removing a portion of the meniscus compromises the ability of the meniscus to absorb the compressive forces of activities.

There are two mechanisms by which tears of the meniscus can occur. Acute tears occur when there is a forceful twist of a bent knee, most often during weight-bearing activity. Degenerative tears are typically seen in older individuals and occur due to loss of elasticity of meniscus as a person ages. Degenerative tears also are often seen in the setting of osteoarthritic degeneration of the joint, as degeneration of the joint changes the compressive forces across the meniscus and thus contributing to meniscal injury.

Meniscal tears are typically diagnosed through a history and physical examination in combination with magnetic resonance imaging (MRI). Individuals with a meniscus tear will present with pain in the knee, often exacerbated by activities such as walking. They may also report symptoms of swelling, locking/"catching", or buckling/"giving way". In research

continued on next page...

CONTINUED FROM PAGE 3

studies, pain and quality-of-life measures are often used to quantify a person's level of dysfunction, but are also used to document a person's response to treatment.

Degenerative-type meniscal tears are exceedingly common in the aging population. Some population based studies have recorded a prevalence of tears or damage to the meniscus between 20-30% in 50 to 59 year-olds. The prevalence increases to as high as 60% of individuals older than 70, clearly demonstrating a higher incidence as one ages. Osteoarthritis is also more commonly seen as a person ages and we also see an increase in the incidence of meniscal tears and damage when there is underlying osteoarthritis. Ninety-five percent of individuals with severe joint degeneration had MRI evidence of damage to the meniscus. Interestingly, 60% of individuals in the same study were found to have damage or tearing of the meniscus on MRI and reported no symptoms in the previous month.

Greater than 50% of arthroscopic surgery for tears of the meniscus are performed on individuals over the age of 45. Risks of an arthroscopic partial meniscectomy include bleeding and

infection, but also includes an increased risk of osteoarthritis. With 20-30% of the population between 50 and 60 showing signs of meniscus tear in the absence of symptoms, it is important that the appropriate treatment be recommended. The severity of a person's pain and their level of dysfunction should be considered in any treatment regimen. Pain is a prevalent complaint when someone has a degenerative tear of the meniscus. Because so many patients with degenerative tears of the meniscus have some level of underlying degenerative osteoarthritis, an arthroscopic surgery is not a guarantee of pain relief. If a person is having mechanical symptoms such as locking and buckling, an arthroscopic surgery may be helpful in alleviating these symptoms.

Multiple studies have shown conservative treatment measures to be just as beneficial, if not more beneficial than arthroscopy for degenerative meniscal tears. Patients who received conservative treatment often reported a reduction in pain, improved function, and increased quality of life regarding their knee. Conservative treatment includes pain relief measures such as non-steroidal anti-inflammatory drugs (NSAIDs), acetaminophen (Tylenol) and/

Choosing Wisely®

An initiative of the ABIM Foundation

or corticosteroid injections. Improved overall function can often be achieved through a supervised exercise program in the form of physical therapy. Exercise programs lead to enhanced strength of musculature around the knee and of stabilizing musculature to help balance forces across the knee. A period of conservative treatment typically lasts six to eight weeks. This should also be followed by a maintenance home exercise program for the best overall outcome.

In individuals with a degenerative meniscal tear, surgery should be reserved for those with painful clicking, locking, buckling, or recurrent swelling or for those who do not have improved pain or function following a course of conservative treatment. It is important to note, however, that an arthroscopic surgery for a degenerative meniscus tear is not a guarantee of symptom resolution and improved functioning.

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.

Check Out AMSSM's New, Patient-Focused Resource Center On-Line, [SportsMedToday.com!](http://SportsMedToday.com)

SportsMedToday.com provides an easy-to-navigate, patient-centered resource center for parents, medical professionals and youth organizations interested in prevention and treatment of sports-related injuries.

Visitors to SportsMedToday.com will find a searchable database with a variety of sports medicine topics arranged by sport, medical condition (injury/illness) and body part, with topics being added and updated continually throughout the year. In addition, healthcare professionals can download tip sheets to share with their patients and partners.

