



# DES MOINES ORTHOPAEDIC SURGEONS, P.C.

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Heat Injury  
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Now that temperatures are soaring, and football practice is right around the corner, preventing heat injury should be on the minds of all athletes, coaches, and parents.

Heat injury is a spectrum from simple heat cramps, to heat exhaustion and heat stroke. Prevention and treatment of heat injuries may be intuitive; however there continue to be fatalities from this each year.

Normally, the body cools itself by the evaporation of sweat from the skin. As the water evaporates, the heat energy from the body is released to the environment. There are individual and environmental factors that may predispose one to overheating.

## **Table 1.**

Factors predisposing one to heat injury

Overweight and large athletes

Age over 40

Poor fitness

Prior recent heat exposure

Dark clothing

Thick padding and helmets

Recent alcohol use

Caffeine

Over the counter and prescription medicine use (TCAs, diuretics, beta blockers, antihistamines and decongestants)

Dehydration prior to activity

Of course, environmental factors play the largest role in injury, and high heat, humidity greater than 60%, and direct sun exposure should alert one to the risk of heat injury.

Heat cramps commonly occur in the legs, stomach and arms, and are treated with rest in the shade, hydration with water and sports drinks, and stretching. Sports drinks contain carbohydrates and sodium, which are needed to replace the losses from prolonged exercise.

Heat syncope (fainting) and heat exhaustion are also from extreme water and/or salt loss during prolonged exercise. This is more common early in training season before athletes become acclimated. Signs may be altered mental status, core body temperature up to 104 degrees F (normal 98.6 degrees F), nausea, vomiting, cramping. Treatment should include rest in a shaded area, fans, ice towels, ice baths, and plenty of rest and water/sports drinks.

Heat stroke is defined as a body temperature greater than 104 degrees F and is an emergency. Nausea and vomiting, confusion, and seizures may occur. One should call 911 and institute the same treatment measures as for heat exhaustion. An IV will be started and ice packs should be placed around the groin, armpits, and hand and neck. Immediate transport to the hospital is indicated. Of course, prevention is the most important part to avoid heat illness, and most coaches and trainers are familiar with these strategies.

**Table 2. Prevention of Heat Injury**

Consume 24-26 oz water before exercise. Take 8 oz water right before practice and then every 20 minutes

Practice in the coolest part of the day, early mornings and evenings

Athletes should begin exercise in the heat for 7-14 days prior to practice to acclimate to the heat

Use light colored clothing, and avoid full pads on hot days

Avoid caffeine and alcohol, and check with your doctor about prescription drug use

Monitor urine color – it should be nearly clear

Use sunscreen

References: James York MD, Talk entitled, “ Heat Injury – Prevention and Management”. American Academy of Orthopedic Surgeons, “Heat Injury and Heat Exhaustion”

Dr. Bremner’s practice encompasses all areas of orthopaedics. He has special interests in sports medicine, joint replacement, arthroscopic surgery, and trauma.

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