



# A Guide to Sports Injuries for Coaches and Parents



# **A Coach and Parent Guide to Sport Injuries**

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## Sprains and Strains

Muscle strains and sprains are some of the most common sports injuries. A strain is defined as trauma to the muscle fibers due to a strong contraction or overstretching, while a sprain involves an overstretched ligament. Remember, a ligament is a connective tissue attaching bone to bone, whereas tendons connect muscle to bone.

Grades of Sprains and Strains	
<b>Grade I</b>	Mild - tissue is stretched. May have slight swelling, a mild loss in range of motion, However, there is NO decrease in loss of function.
<b>Grade II</b>	Moderate. Partial tearing of some tissue. Moderate amount of swelling may be present along with bruising or discoloration. There is a moderate loss of range of motion and strength to the joint. There is some decrease in loss of function.
<b>Grade III</b>	Severe. Complete tearing of one or more structures. Significant swelling is almost always present. Discoloration may be seen. Near complete loss of range of motion and strength. There is a marked decrease in loss of function.

P.R.I.C.E.: Treatment of acute strain or sprain	
<b>P</b>	<b>Protect</b> the injured area from further damage. This can be a splint or brace or to use crutches if it is a lower extremity injury
<b>R</b>	<b>Rest</b> the area until evaluated by a physician or athletic trainer.
<b>I</b>	<b>Ice</b> the area to decrease pain and swelling. Ice should be applied no longer than 15-20 minutes at a time. Always ice and ice only for the first 2-3 days after injury and <b>NEVER</b> sleep with ice on an injury.
<b>C</b>	<b>Compress</b> the area. Use an elastic wrap (ace bandage) to control swelling leaving the fingers/toes exposed. The wrap should be applied distal to proximal (example: start at toes or fingers and wrap towards the heart).
<b>E</b>	<b>Elevate</b> the area above the heart to use gravity to diminish swelling.

To ensure a safe and timely return to activity, athletes sustaining these types of injuries should be referred to a licensed athletic trainer or physician soon after the onset of injury in order to initiate the proper treatment.

(Arnheim, Prentice. *Principles of Athletic Training*. 2000)



## Fractures and Dislocations

While all fractures are painful and debilitating, many can be difficult to diagnose. Often, a dislocation or forceful disruption of a joint can emulate the bone fracture. A subluxation, defined as a dislocation that naturally realigns itself, can be equally painful.

### Signs and Symptoms:

- Obvious deformity or abnormality present
- Swelling to the injured area
- Point tenderness directly over the specific area of bone
- Possible numbness sensation
- Loss of function to the area

### Special tests for an acute fracture/dislocation:

- Crepitus – is an abnormal crunching or grinding sensation over a body part. Place your hand over the injured area and ask the athlete to move the injured part to feel for crepitus.
- Compression – works on long bones of the body. Place hands on either side of the leg/arm away from point tender spot and apply firm pressure. Repeat this maneuver moving hands down toward injury site. If pain is elicited at any point or increases as you move toward tender area, fracture should be suspected.
- Tap Test – if a fracture is not obvious, stabilize the injured area with one hand and tap the end of the bone with the other hand. If this test elicits pain at any point, fracture should be suspected

### Treatment if fracture/dislocation/subluxation is suspected:

- Splint the joints above and below the injured area in a comfortable position.
- Apply an elastic wrap to support the splint and apply pressure to the area for compression and stability.
- Use ice to control pain and swelling
- Have the athlete transported immediately for further evaluation by a physician
- NEVER attempt to reduce (relocate a dislocated joint) yourself. This should only be done by a physician or by emergency care personnel.

### Returning to sport with a cast:

- Athlete must have clearance letter from a licensed medical physician stating that the he or she is permitted to play with upper extremity cast. (This letter should be presented to coaches as well as officials at each sporting event)
- The Ohio High School Athletic Association states that casts over the elbow, hand, wrist or forearm, must be covered. Use a high density, closed-cell foam, or an alternate material of no less than ½ inch thick. The entire cast must be covered to protect the injury and other athletes. **This may only be done with written approval from the treating physician.**

(Arnheim, Prentice. *Principles of Athletic Training*. 2000)

## Neck and Spine Injuries

Neck and spine injuries are common in high contact sports like football, soccer, or lacrosse. These injuries can include fractured bones, herniated discs, and/or nerve pathology.

### Signs and Symptoms:

- Point tenderness and/or pain over any bony prominence in back of the neck
- Numbness/tingling in arms, legs, or down the spine.
- Inability to feel or move face or limbs
- Muscle spasm
- Deformity

### Treatment for neck/spine injuries:

- **Remain calm.**
- **DO NOT** move the athlete. Stabilize the head and neck in the position it is in.
- **DO NOT** let the athlete move.
- If any of the above symptoms persist, **call 9-1-1** and have the athlete transported immediately.
- Serious neck injury should be suspected for **ALL UNCONSCIOUS** athletes until proven otherwise. Stabilize the athlete (do not let them move) and **call 9-1-1** to have the athlete transported for further medical evaluation.

(NATA Position Statement: Acute Management of Cervical Spine Injured Athlete. *Journal of Athletic Training*; 44{3}: 2009)



## Concussions

A concussion may be caused by a blow, bump, or jolt to the head or by any fall or hit that jars the brain. This “invisible” injury disrupts the brain’s normal physiology which can affect mental stamina and function, causing the brain to work longer and harder to complete even simple tasks. A concussion may involve loss of consciousness, but the majority do not. A concussion is normally a temporary condition from which most kids make a full recovery if handled properly. **Ultimately, ALL concussions are serious because they are brain injuries!**

### *Common Concussion Symptoms*

Physical	Cognitive	Emotional	Sleep
Headache	Feeling mentally foggy	Irritability	Trouble falling asleep
Dizziness	Feeling slowed down	Sadness	Sleeping more than usual
Balance problems	Difficulty concentrating	Nervousness	Sleeping less than usual
Nausea/Vomiting	Difficulty remembering	More emotional than usual	
Fatigue	Difficulty focusing		
Sensitivity to light			
Sensitivity to noise			

### Off the field management

As required by both Ohio law and OHSAA, any athlete with symptoms of a concussion is automatically held out for the remainder of the practice or game. Any athlete that has a suspected concussion should be evaluated by a physician. In rare cases, when repeated concussions occur over a brief interval, athletes may suffer from **Second Impact Syndrome**, a potentially life-threatening response in the brain. Parents should seek careful evaluation and management of any sports-related concussion. **Athletes must have a physician note to return to play. Any athlete returning from a concussion should do so using a supervised, slow, step-by-step progression.**

For more information visit [www.nationwidechildrens.org/concussions](http://www.nationwidechildrens.org/concussions)

(NATA Position Statement: Management of Sport Related Concussion. *Journal of Athletic Training*; 39(3):2004)



## Pulmonary and Breathing Problems

### Asthma

Asthma is a condition involving a restricted airway, making breathing difficult. Asthma attacks can be triggered by strenuous exercise (exercise induced), cold or dry air, infection, smoke, or allergen particles in the air. Symptoms of asthma include wheezing, coughing, extreme fatigue, and shortness of breath. These symptoms can be alleviated by using an inhaler that has been **prescribed** and in the manner prescribed to the athlete. If the athlete does not have an inhaler present, he/she must refrain from practicing. **If athlete does not have inhaler and has an attack, call 9-1-1.**

### Pneumothorax

Pneumothorax, or a collapsed lung, results from a ruptured air sac in the lung caused by a rib fracture or blunt trauma to the chest (tension pneumothorax). Symptoms include chest pain and shortness of breath. In a tension pneumothorax, symptoms progress rapidly and the trachea is visibly shifted to the right or left (the opposite side of injury). **This can be life threatening. The athlete must be transported immediately to the hospital. Call 9-1-1.**

(NATA Position Statement: Management of Asthma in Athletes. *Journal of Athletic Training*; 40(3): 2005)



## Mouthguards and Dental Injuries

The National Youth Sports Foundation for Safety reports an athlete is 60 times more likely to sustain damage to the teeth when not wearing a protective mouthguard. Dental injuries are easily preventable through the use of a properly fitted custom mouthguard. There are **three types** of mouthguards currently available: ready-made or stock, “boil and bites”, and custom-made (made by a dentist). The most effective mouth guards should be: comfortable, resistant to tearing, fitted properly, easily cleaned, and should not restrict speech or breathing.

Types of Dental Injuries	
Avulsion	The entire tooth is knocked out.
Fracture	The tooth is broken.
Luxation	The tooth is in the socket, but in the wrong position.

### In any dental/tooth injury it is important to:

- **NOT** handle the tooth by the root (the part that comes out of the gums)
- **NOT** scrub or brush the tooth
- **NOT** attempt to sterilize the tooth

### Treatment for tooth injury:

- Gently rinse off any dirt with water
- If tooth is avulsed (the entire tooth is out) reposition the tooth in the socket. Have the athlete stabilize the tooth by gently biting down on some gauze, and transport immediately to a dentist. **DO NOT** reposition the tooth if it looks “too short” (pushed up into gum)
- If unable to re-implant the tooth place in:
  - Tooth preserving kit
  - Cold milk
  - Saline soaked gauze
  - Under a conscious athlete’s tongue
  - Cup of water.
- The athlete needs to be transported to the dentist immediately. The tooth needs to be treated **within 30 minutes** to have a better chance of tooth survival.

(American Dental Association, Statement on Orofacial Protectors. Transactions, 1995.)





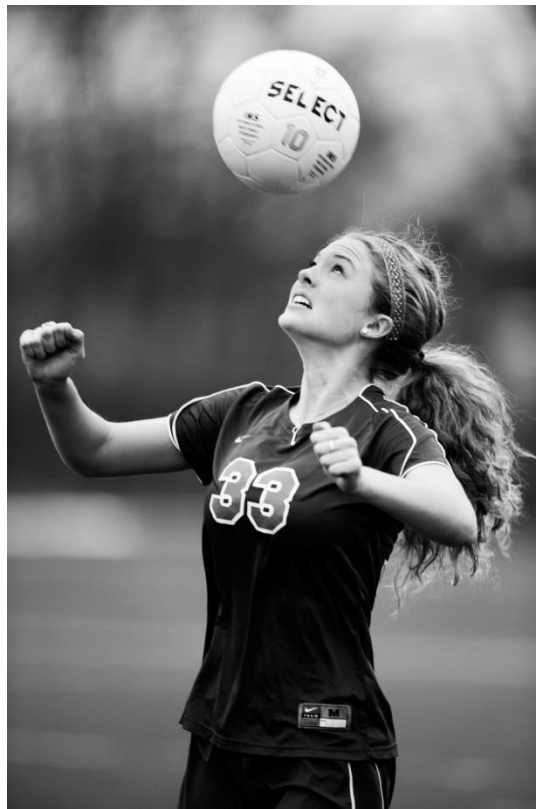
## Cardiac Problems

If any athlete experiences any warning signs (see table) or has a history of any of the following conditions such as cardiac diseases or sudden cardiac death of a family member before the age of 50, they should be evaluated and cleared by a physician before being permitted to participate in sports.

Warning Signs of Cardiac Problems	
Chest pain or light-headedness with exertion	Irregular heartbeat
Rapid heart rate (tachycardia)	Fainting during exercise (syncope)
Irregular/difficulty breathing	Dizziness
Excessive/unexplained shortness of breath or fatigue with exercise	High blood pressure

***IF AN ATHLETE EXHIBITS ANY OF THE ABOVE SYMPTOMS DURING EXERCISE, THEY SHOULD PROMPTLY BE SENT TO A PHYSICIAN FOR A THROUGH MEDICAL EVALUATION.***

(NATA Position Statement: Preventing Sudden Death in Athletes. *Journal of Athletic Training*; 47{1}: 2012)



## Heat Illness

**Heat Cramps** are caused by excessive sweating or an electrolyte imbalance. Treatment for heat cramps includes:

- Proper fluid replacement.
- Rest.
- Stretching the affected muscles.

**Heat Exhaustion** is caused by excessive fluid loss that has been inadequately replaced.

### Treatment:

- Cool athlete with cold water and ice.
- Fluid replacement (either water or IV fluids, cool athlete with water or ice)
- Move athlete to cool location (shade, air conditioning, etc.

**Heat stroke** is the failure of the body's heat-control mechanism and can cause other organ systems to shut down. **Heat stroke is the most dangerous heat illness and is a life threatening medical emergency. Call 9-1-1.** Treatment consists of

- Cooling the body as quickly as possible
- Remove the athlete from sun/warm environment
- Remove most of athlete's clothing and quickly cool athlete with liberal quantities of cold towels and ice primarily around the neck, armpits and groin.

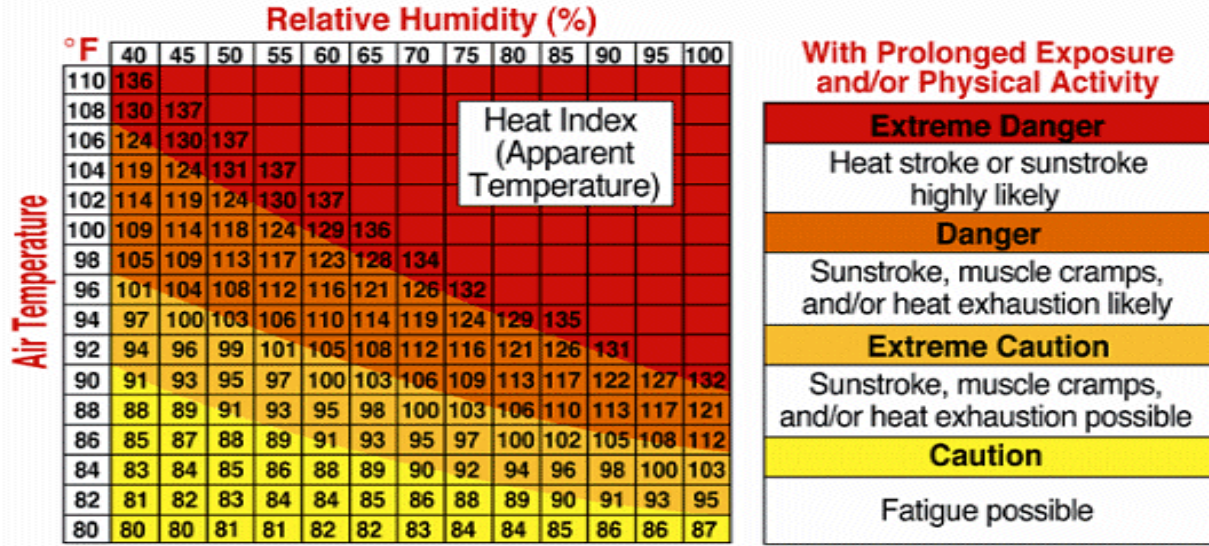
Symptoms of Heat Illness		
Heat Cramps	Heat Exhaustion	Heat Stroke
Sweating	Headache	Incoherent speech
Muscle Cramps	Nausea	Disorientation
	Chills	Unconsciousness
	Unsteadiness	Rapid or irregular pulse
	Fatigue	Very warm and dry skin
	Dizziness	Sweating stops
	Rapid pulse	
	Cool and pale skin	
	Sweating is usually present	

### Tips for prevention:

- Slowly acclimatize athlete to practicing in warm climate.
- Clothing should be light in color and weight.
- Identify athletes more at risk (i.e. overweight, out of shape, heavily muscled, and those who seem to sweat less)
- Water breaks should be given **AT LEAST** every 15-30 minutes (10-15 in warmer, more humid weather) and athletes should be encouraged to drink more water before and after practices.

(NATA Position Statement: Exertional Heat Illness. *Journal of Athletic Training*; 37{3}: 2002)

## Weather Guide for Activities in the Heat



- **Caution:** Water breaks every 15 minutes
- **Extreme Caution:** Modify practice intensity. Keep a close eye on kids who are deconditioned and/or have a history of heat illness
- **Danger:** Consider changing practice times to a less humid part of the day. Eliminate need for additional equipment/layers. Have a 10 minute rest break every 60 minutes.
- **Extreme Danger:** Cancel practice.

### Hydration

The human body contains 60% water and a fluid loss of as little as 2 - 3% of a person's body weight can impair athletic performance. In a 50-pound child, that's only a loss of one pound due to exercise. Fluid losses of 7 - 10% can lead to heat stroke and even death. Thus, dehydration and fluid replacement is of special concern for children involved in athletic activities.

### Suggested Guidelines for Energy And Fluid Replacement:

- Pre-competition meals should be eaten one to four hours prior to the athletic event
- The only "fuel" that should be consumed right before competition is cool fluid
- Include high-water content foods in the diet
- Drink 16 oz. of cool water about two hours before the athletic event (training, practice or competition)
- Drink another 8 – 16 oz. of fluid 15 minutes before the event
- Drink 4 – 6 oz. of cool water, diluted fruit juice or sports drink every 10-15 minutes during the event
- Weigh athlete before and after activity. For every pound of weight lost, replace with 16 oz. of plain water.
- Avoid caffeine-containing beverages as they act as diuretics, causing increased urination and fluid loss

## Diabetes

Diabetes is the body's inability to produce or use insulin properly. Insulin is a hormone to convert sugar, starches, and other foods into energy the body uses for everyday living. Type I diabetes results from the body's failure to produce insulin, and requires multiple insulin injections daily to help the body convert food to energy. Type II diabetes results from the body's failure to properly use insulin, combined with relative insulin deficiency. If an athlete's blood sugar dips too low, he/she may go into hypoglycemic or diabetic shock. Diabetes often goes undiagnosed because many of its symptoms appear to be harmless.

Diabetic Shock Signs and Symptoms	
Clammy skin	Slurred speech
Poor balance	Tremors
Extreme irritability	Blurry vision
Convulsions	Other neurological effects

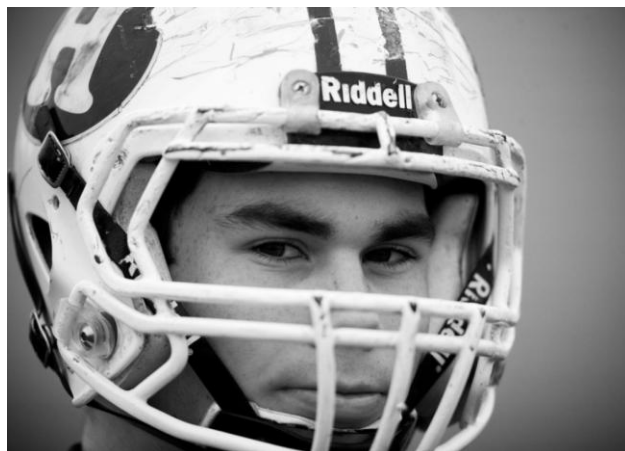
### Treatment for Hypoglycemic / Diabetic Shock:

- Remove athlete from play
- Ingesting a quick acting source of carbohydrate such as glucose tablets or orange juice, followed by a long acting carbohydrate source such as cheese and crackers.
- Continue to monitor athlete's condition after diabetic episode for at least 15 minutes.
  - **If symptoms resolve**, contact guardian and follow the "return to play action plan" put in place by the treating physician.
  - **If symptoms worsen**, contact guardian and transport to the hospital.
- NEVER attempt to have an athlete ingest anything while convulsing or unconscious.

### Ongoing Treatment:

- Eating a consistent well balanced diet that is high in fiber, low in saturated fat, and low in concentrated sweets.
- Correct dose of medication throughout the day
- Regular exercise

(NATA Position Statement: Management of the Athlete with Diabetes Mellitus. *Journal of Athletic Training*; 42(4): 2007)



## Allergies

Anaphylaxis is a severe allergic reaction to venom, food, or medication. These severe reactions are most typically caused by an insect sting or ingesting foods the athlete may be allergic to. Common food allergies include milk, peanuts, or tree nuts. Anaphylaxis can be deadly, therefore **IMMEDIATE** treatment is a must! If any athlete has a known severe allergy to any substance, he or she **must carry an EpiPen** with them to all events and venues.

### Signs and Symptoms of Anaphylaxis:

- Pale skin
- Rash
- Facial, throat, or mouth swelling
- Weak rapid pulse
- Rapid shallow breathing or difficulty breathing

#### Treatment for Unknown Allergy

- Remove athlete from play
- Allow athlete to sit down
- Inspect bite or sting
- Remove stinger if able and apply ice
- Monitor athlete for 15 minutes
- If symptoms resolve allow athlete to return to play
- If symptoms have not resolved **Call 9-1-1**

#### Treatment for Known allergy

- Remove athlete from play
- **Call 9-1-1**
- Lay athlete on their back and keep calm
- Elevate legs and cover with blanket
- Remove stinger if able

NOTE: A stinger can be removed by pinching the skin slightly below the sting and scraping upward with a credit card.

\*In the event an athlete suffers a sting or anaphylactic shock, all coaches **must** be trained to use an **EpiPen**. To use, pull off the top protector on the device and push the black head into the athlete's thigh and hold.

## Lightning and Thunderstorms

A good reminder during lightning and thunderstorms is to use the phrase: If you **see it (lightning), flee it, if you hear it (thunder) clear it.**

- All persons should be seeking or already safe inside, a safe structure or location. Safe shelter includes inside a building or in a car or bus. Taking shelter under the bleachers or in the dugout is **NOT** safe.
- It is important to wait at least 30 minutes after the last lightning flash or sound of thunder before resuming any activity or returning outdoors.

(NATA Position Statement: Lightning Safety for Athletics and Recreation. *Journal of Athletic Training*; 35(4): 2000)

## Shock

Shock is a medical emergency, typically due to trauma, occurring when the organs and tissues of the body are not receiving an adequate blood flow. This deprives the organs and tissues of oxygen (carried in the blood) and allows the buildup of waste products. Shock can result in serious damage or even **death**.

### Signs and symptoms:

- Moist, pale, cool, clammy (often ashen looking) skin
- Weak rapid pulse
- Respiration is increased but shallow
- Decreased blood pressure
- Urinary retention
- Fecal incontinence
- Irritability
- Restlessness
- Excitement

### Treatment:

- **Call 9-1-1.**
- Maintain body temperature as close to normal as possible.
- Elevate feet and legs 8-12 inches above heart.
- Loosen clothing
- Nothing should be given by mouth.

(Arnheim, Prentice. *Principles of Athletic Training*. 2000)

