

Prevention

The first line of defense in the treatment of athletic injuries is to prevent them. A well-planned program accomplishes this; competition among equal ability groups, proper warm-up and adherence to the Laws of the Game. Other factor that can lead to the prevention of injuries:

- ✓ Proper use of equipment(shin guards, no jewelry, uniforms designed for climate).
- ✓ Proper fitting shoes, proper type of shoe for surface.
- ✓ Ample water supply and breaks to give players rest.
- ✓ Avoid scheduling training during the hottest periods of the day and when there is intense humidity.
- ✓ Full rehabilitation of an injury prior to return to play, determined by physician.
- ✓ Recommendation of a physical exam by qualified personnel prior to participation.

The coach or assistant should be responsible for assisting with injuires, which should include attending a certified Red Cross First Aid course and knowledge of state and local ordinances. Rhoda@Red Cross 612-872-3265. Ask for Sport Safety Training with adult CPR.

It is recommended that the coach should follow-up with a phone call about a player's injury to the parents whether or not the parents were in attendance at the game or practice.

1. EMERGENCY PLAN

Objectives

At the end of this module, you will be able to:

1. Develop and activate an emergency plan for various types of facilities/locations.
2. Effectively manage an injury scene.
3. State the guidelines for lightning safety.
4. Appropriately stock a first aid kit.

Content Outline

- I. Overview
- II. Purpose
- III. Development of an Emergency Plan
- IV. Emergency Plan Components
- V. Away Games
- VI. Emergency Plan Check List
- VII. Summary

- The emergency plan is an important part of the total sports program and is the component that is most often neglected.
- Prior to each season and game, those individuals responsible for the program and athletes should survey the area of participation (including the spectator areas) to make sure the area is safe and clear of all items that may cause an injury.
- The emergency plan involves many areas including communication, first aid kits, emergency training, scene management and more.
- It is essential that all facility staff, all coaches and even parents of players are aware of the emergency plan and its components.

Purpose

The purpose of an emergency plan is to outline in writing the actions that will occur should an emergency arise and indicate specific responsibilities for certain individuals in order to obtain advanced medical care for an injured athlete or spectator.

An emergency plan should be:

1. *Written and delivered* to all coaches, staff, etc.
2. *Communicated* to the appropriate individuals, rehearsed and reviewed frequently. (The Emergency Plan should be reviewed a minimum of once a year.)
3. *Communicated* to all parents during a pre-season meeting.

Emergency Plan Components

There are several components of an emergency plan that need to be taken into consideration. Your plan should address responsibilities, phone availability, communication, emergency training, scene management, first aid supplies, weather and more.

Responsibilities

The emergency plan should clearly indicate the responsibilities of each individual involved in the plan. Areas to address may include:

- Who will make the call to 911?
- Who will stay with the athlete?
- Who will contact the parents?
- Who will call absent parents if a child needs to go to the hospital?
- Who will meet the ambulance?
- Who will unlock the gate/door?
- Who will get the medical records of the athlete?
- Who will control the scene?

Also, consider designating a person as the *weather watcher*.

Phone Availability

- Will a mobile phone be used? Where is the nearest land phone located?
- Program emergency phone numbers into mobile phones. Use 911 if available.

- If you need to use a pay phone, place enough change in the first aid kit to make three or more calls.
- Emergency phone numbers should be posted by the phone or readily available in the first aid kit.
- There should be an alternative phone plan in case the primary plan fails.

Communication

- To authorize emergency care, medical release forms for each player should be signed and kept on file.
- Treatment policy is vital when the health of minors is at risk.
- When the call is made to EMS, the caller must be able to give the following information:
 - Name, address of current location and phone number of caller
 - Type of emergency situation
 - Number of victims
 - Suspected injury/symptoms
 - Condition of athlete
 - Current assistance being given
 - Specific venue
 - Entrance of choice
 - Other information as requested by the 911 operator. (Be prepared to stay on the line with the 911 operator.)

Emergency Training

- Each person responsible for the health and welfare of the athletes should be able to recognize life-threatening situations and be prepared to administer cardiopulmonary resuscitation to provide proper care for the injured athlete. It is also recommended that these individuals be trained in automated external defibrillators (AEDs).
- The primary concern is to **maintain airway, breathing and circulation** until professional help arrives.

Scene Management

Sometimes in an emergency situation, too many individuals surround the scene, assign extra people to direct EMS. Someone must be assigned to control the area, so only those individuals who are needed are working with the injury/situation.

First Aid Kit/Supplies/Equipment

- See [Appendix A](#) for items that should be included in a first aid kit.
- The proper individuals should know the exact location of the equipment or keep it with them at all times.
- The necessary supplies such as pocket mask, cutters (tools that are used to cut off face masks), bandage scissors, splints, bandages, plastic bags for ice, etc. should be kept on the field and readily available when needed.
- Medical history/information and medical release forms for all players should be immediately available for use in an emergency situation, especially to provide information to 911 (ex: if a child has asthma).
- These should be checked on a regular basis to make sure all supplies and equipment are available and in working order. Accurate health information on each athlete should be updated yearly.

Appendix A - First Aid Kit Supplies

- non-powdered barrier gloves
- resuscitation mask/face shield
- ice bags
- chemical ice
- bandage strips
- patch bandage
- 4" elastic wrap
- 6" elastic wrap
- 2" kling roller gauze
- eye dressing kit (eye patch and clear medical tape)
- eyewash
- contact solution
- adhesive tape
- antibiotic ointment
- anti-septic wipes
- alcohol wipes
- triangular bandage for sling
- insect sting ointment
- hydrocortisone cream
- sun block (SPF 30)
- insect repellent
- scissors
- tape cutter
- single use plastic tweezers
- anti-septic wound cleaner
- emergency information cards
- 3" x 3" sterile gauze pads
- telfa non-stick pads

- Q-tip swabs

Weather

- Someone should always be in charge of monitoring the weather with a weather radio, as weather conditions change rapidly, especially during the summer months.
- In the event of a tornado, or severe thunderstorm, suitable accommodation must be identified to house players and spectators. Your local emergency management services should be able to help you with this part of the plan.
- Officials must decide how they will communicate the evacuation procedure to the spectators.
- **Do not** wait until the last minute to seek cover. Monitor the weather conditions and act early.
- The governing organization has the responsibility to address temperature and humidity. Specifically, it must define: (1) the person(s) responsible for collecting the data, (2) the collection method and, (3) the manner in which the data is communicated.
- Precautions due to high temperature and humidity must be agreed upon, written, and communicated. Examples include shorter practices, additional breaks, increasing the availability of fluids, practicing in less equipment, etc.
- See [Appendix B](#) for lightning precautions.
- **Prior to any practice or game session, you should always agree upon which individual will be responsible to make the ultimate decision as to whether or not environmental conditions are safe to play in.**

Appendix B - Lightning¹

Overview

1. Establish a chain of command that identifies who is to make the call to remove individuals from the field.
2. Name a designated weather watcher. (A person who actively looks for the signs of threatening weather and notifies the chain of command if severe weather becomes dangerous.)
3. Have a means of monitoring local weather forecasts and warnings, before and during practices and games.

4. Designate a safe shelter for each sports arena.
5. Use the flash-to-bang count to determine when to go to safety. By the time the flash-to-bang count approaches thirty seconds all individuals should already be inside a safe structure.
6. Once activities have been suspended, wait at least thirty minutes following the last flash or bang before resuming activity or returning outdoors.
7. Avoid being the highest point in an open field, in contact with or in proximity to the highest point, or on or near water. Do not take shelter under or near trees, flagpoles, or light poles.
8. For those who feel their hair standing on end, skin tingling, or hear crackling noises, DO NOT lie flat on the ground. Instead, assume the lightening safe position: Crouch on the ground with weight on the balls of the feet and the feet together, head lowered and ears covered.

Flash-to-Bang

- This is the easiest and most convenient means for determining the distance to lightning flash.
- To use this method begin counting on the lightning flash, and stop counting when the associated clap of thunder is heard.
- Divide the time to thunder (in seconds) by 5 to determine the distance (in miles) to the lightning flash.
- For example, an obtained count of 30 seconds, divided by 5, equals 6 miles from where the count was obtained.

Management

Observe the following basic first aid procedures in managing victims of a lightning strike:

- Survey the scene for safety.
- Activate local EMS.
- Touch a lightening victim to see if he responds. The person will not "carry a charge".
- Move the victim with care to a safer location, if necessary.
- Evaluate airway, breathing, and circulation, and begin CPR if necessary.

Know Your Resources

Survey your parents to know if someone is a physician, nurse, athletic trainer, first responder or EMS. These individuals can be of assistance in an emergency situation.

Contamination

- Federal Law requires the proper disposal of items contaminated with blood or body fluids.
- Gauze and gloves that have been used to treat a bleeding athlete should be placed in a **red/bio hazard bag** and taken to a hospital or healthcare facility that disposes of this type of waste. These items **should not** be placed in regular trash.
- An athlete's uniform that has become soiled with blood should be placed in a plastic bag until it can be washed.
- These precautions are taken to protect anyone who may unexpectedly come in contact with these items and is not prepared to handle them.
- Arrangements should be made not only to provide the personal protective equipment (see Module 4), but also for its proper disposal. Consider checking with your local hospital, health department or emergency medical services regarding how this might be accomplished.

Away Games

When you travel to other arenas or facilities, ***never assume*** that they will have a prepared emergency plan.

If no emergency plan exists, obtain the necessary emergency telephone numbers, secure a mobile phone or identify a working and accessible alternate telephone.

Emergency Plan Check List

[Appendix C](#) is an Emergency Plan Checklist. You may need to elaborate or modify this check list for your organization.

It can be used as a memory aid to make sure all equipment and supplies are available and in good working order. You can also use it to make sure everyone is aware of their assignments **before** any practice or game. This is a great foundation for a first aid kit, your organization may choose to add additional items.

Appendix C - Emergency Plan Checklist

These questions will help you establish an emergency plan for your organization.

Important issues addressed in the emergency plan should include:

Questions concerning the injured athlete:

- Who will stay with the athlete?
- Who will contact the parents/guardians?
- Who will get the athlete's medical records?
- Who will check the injured athlete's level of consciousness, airway, breathing and circulation?
- Who will perform CPR, if necessary?

Communication Questions:

- Do we have a physician or athletic trainer on hand?
- Do I have a mobile phone?
 - Is the battery charged?
 - Do I have a back-up battery?
 - Are the emergency numbers programmed in or do I need them written down?
- If a mobile phone is not available...
- Which phone will I use?
 - Where is it located?
 - Does it work?
 - How accessible is it? Is it behind a door that could be locked?
 - Are emergency numbers posted by it or do I need them written down?
- Is there a pay phone?
 - Does it work?
 - Do I have the correct change to make 3 or more calls?
 - Are emergency numbers posted by it or do I need them written down?
- Chain of command - who will make the decisions during an emergency?

- Who will make the call to activate EMS?
- Who will meet the ambulance?
- Who will communicate with EMS as to where the injured athlete will be taken?
- Who will be in charge of controlling the scene, players, spectators and parents?

Facility Questions: This information should apply for both home and away games.

- What is the address for the facility?
- What gates will EMS enter through, who will unlock the gate, if necessary?
- Where are the first aid kit and AED located?

Equipment Questions:

- Is the first aid kit properly stocked with all needed items?
- Is the battery in the AED fully charged?
- Is the AED kit properly stocked with a towel, razors and scissors?
- Do we have an adequate amount of fluids for the players?

Weather Emergency Questions:

- Who is the "weather watcher"?
- Is the weather radio working? Are there extra batteries?
- In case of bad weather, where do the players go? What is the "safe place"?
- Is the safe place easily accessible or is a key needed to get in? If so, who has the key?
- How many people will the safe place accommodate?
- Is there room for spectators in this same area?

Important parts of the implementation of an emergency plan include:

- Communicate to each member of the staff their specific responsibilities during an emergency.
- Make sure all staff members are currently certified in CPR, AED training and the NCSS P.R.E.P.A.R.E. course.

Summary

- The emergency plan is a *crucial part* of the total sports program.
- Prior to each season and game, those individuals responsible for the program and athletes should *survey the area* of participation (including the spectator areas) to make sure the area is safe and clear of all items that may cause an injury.
- Make sure your emergency plan is *thorough and comprehensive*. It should include instruction on communication, first aid kits, emergency training, scene management, and more.
- It is essential that all facility staff, all coaches and even parents of players are *aware of the emergency plan and its components*.

2. HEAT AND COLD ILLNESS

Purpose

The purpose of this module is to cover the prevention, recognition and treatment of common illnesses from exposure to hot and cold weather and/or conditions.

Objectives

At the end of this module, you will be able to:

1. Identify the signs and symptoms of heat and cold related illnesses.
2. Apply several ways to help prevent heat and cold related illnesses.
3. Appropriately manage an athlete with a suspected heat or cold related illness.

Content Outline

- I. Environmental Conditions
- II. Heat Illness
 - o Prevention
 - o Fluid Replacement
 - o Four Heat Conditions
- III. Summary

Introduction

In sports we cannot control environmental conditions. However, most environmental illnesses, injuries, and fatalities are preventable if certain guidelines are followed.

The best way to prevent the problems associated with heat related illnesses is to *properly educate* coaches, athletes, and parents; *follow the guidelines* for fluid consumption and replacement; and *take precautions* when exercising in extreme environmental conditions. The same holds true for cold exposures. Appropriate prevention can offset the majority of cold-related injuries.

Adjustment to the Heat

Adjusting to the heat should occur *gradually* over 10-14 days in the environment in which athletes will play. This can be accomplished by increasing the intensity and duration of exercise in the heat over the first set of days.

For example:

Practice on **Day 1** - light activity for 30 minutes

Practice on **Day 2** - light activity for 45 minutes

Practice on **Day 3** - light activity for 30 minutes, moderate activity for 15 minutes
Practice on **Day 4** - light activity for 15 minutes, moderate activity for 30 minutes
Practice on **Day 5** - moderate activity for 45 minutes

Heat acclimation will be more successful if athletes engage in their own workout program before practice officially begins.

Temperature and Humidity

The body controls its temperature during exercise by sweating and the evaporation of sweat from the skin. As temperature and humidity increase, the body's ability to lose heat decreases.

Temperature and humidity should be monitored before and during practice and games. Most commonly, a sling psychrometer is used to measure the temperature and humidity at the site. Alternatively, you may simply watch the local weather forecast for the temperature and heat index. You must be familiar with your organization's policy regarding the monitoring of environmental conditions (see Module 1).

Previous Illness

- An athlete may be dehydrated if he has experienced fever, chills, vomiting, or diarrhea.
- Parents should be told to inform you of any sickness that has stricken an athlete.
- Previous illness or sickness can affect one's body temperature, body fluid retention, and performance, all in an adverse way.

Athletes experiencing vomiting, diarrhea, or fever should not engage in physical activity until cleared in writing by a medical professional. Extra caution should be taken even if cleared when participating in the heat and humidity.

Introduction

In addition to the steps on the previous page, adequate fluid replacement before, during, and after physical activity is the most effective means in preventing heat related problems.

Dehydration Facts - It can happen faster than you think!

In less than one hour of physical activity, an athlete may become dehydrated and performance and health will surely suffer.

Dehydration of just 1-2% of body weight (only 0.6-1.2 lbs. for a 60 lb. athlete) can negatively influence performance. This equates to 2.4 – 4.8 lbs. for a 240 lb. athlete, not uncommon to see.

Dehydration of greater than 3% of body weight substantially increases an athlete's risk of heat illness (heat cramps, heat exhaustion, or heat stroke).

During physical activity, most athletes only drink enough fluid to replace 50% of what was lost.

Thirst should not be used as a guideline. Once an athlete is thirsty, he has already started to become dehydrated.

Dehydration Warning Signs

Basic signs of dehydration are:²

- Thirst
- Irritability
- Headache
- Weakness
- Dizziness
- Cramps
- Nausea
- Decreased performance

Risk Factors

The following are risk factors for heat illness. An athlete experiencing one or more of these should be closely monitored while engaged in physical activity in high heat and humidity.

- Dehydration or previous heat problems
- Physical barriers to evaporation - *(includes athletic equipment or wearing excessive or dark colored clothing)*
- History of Illness - *(Sickness involving sweating, vomiting, and diarrhea increases susceptibility to heat related illnesses.)*
- Overweight
- Poor physical conditioning
- Lack of acclimatization to heat
- Medications and drugs - *(Some medications result in a dehydrating effect. Also, alcohol and caffeine can cause an increased loss of body fluids.)*
- Fluid imbalance - *(This can result from not replacing fluids from a previous exercise session or from vomiting or diarrhea.)*
- Increased temperature and humidity during participation
- Not fully hydrated when returning to the next practice session (two-a-days)

What to Drink During Exercise

Water is adequate for 45-50 minutes of physical activity. However, if activity lasts longer or is particularly intense, sports drinks are more effective in replacing fluids and nutrients. Through

sweat, the body loses essential nutrients that must be replaced to ensure peak athletic performance.² The body loses important nutrients, through sweat, that need to be replaced in order to not affect an athlete's health and performance.

If exercise lasts longer than 45-50 minutes and you are unable to provide a sports drink, cold water (50-55 degrees F) should be provided in order to replace the fluid that has been lost.

The carbohydrate concentration in the ideal fluid replacement solution should be in the range of 6-8%.²

Fluids with salt are beneficial to increase thirst and voluntary fluid intake as well as offsetting the amount of salt lost in sweat.

What NOT to Drink During Exercise²

Fruit juices, carbohydrate gels, sodas energy drinks and those sports drinks that have carbohydrate levels greater than 8% are not recommended as the sole beverage during exercise. Drinks with a carbohydrate level this high can take away from muscle performance and instead require the body to work harder to digest the drink contents.

The use of beverages comprising caffeine, alcohol, and carbonation is discouraged because they may cause dehydration by stimulating urine production and decreasing voluntary fluid intake.

Hydration Tips²

- Drink according to a schedule based on individual fluid needs. By the time you become thirsty, you're already dehydrated.
- Drink before, during and after practices and games (follow the fluid guidelines listed to maintain hydration and maximize performance).
- Avoid soft drinks, energy drinks, and juices during play. Drinks with high carbohydrate content may cause stomach problems.

Fluid Replacement Guidelines²

Before Exercise

- Drink 17-20 oz. of water or a sports drink 2-3 hours before exercise.
- Drink an additional 7-10 oz. of water or sports drink 10-20 minutes before exercise.

During Exercise

- Begin drinking early during the sporting event - even minimal dehydration compromises performance.
- In general, drink at least 7-10 oz. of water or a sports drink every 10-20 minutes. Remember to drink beyond your thirst to maintain hydration. Optimally, drink fluids based on the amount of sweat and urine loss.
- **Athletes should be given unlimited access to fluids.**
- Weight, before and after practice, should be monitored to determine proper hydration levels. Parents may be given this responsibility.

After Exercise

- Within two hours, drink enough to replace weight loss from exercise.

Signs of Adequate Hydration

- Body weight is within 2% from previous exercise session.
- Lighter urine. (Darker urine indicates dehydration.)
- Thirst is satisfied or lightened. However, remember, if you wait until you are thirsty, you are already dehydrated!

Four Heat Conditions

Introduction

- Steps can be taken to help prevent one of the following four heat related conditions, but they may still occur. Early recognition and appropriate treatment are essential.
- These four conditions do not necessarily occur in the order listed below. An athlete can experience heat stroke without ever showing the signs and symptoms of the other three conditions.
- An athlete who experiences a heat stroke will be more likely to have another heat related event in the future.

Never leave alone an athlete with a suspected heat related illness unless you must call 911. Return immediately if this is the case.

Heat Cramps

Cause

Excessive loss of bodily fluids from sweating.

Signs & Symptoms

Involuntary muscle contractions or cramping, usually in the calf but may occur elsewhere. In severe cases, cramping will occur in multiple places due to excessive loss of fluid and sodium.

Treatment

- Replacement of fluids
- Stretching of the involved muscle
- Application of ice over cramping muscle(s) in conjunction with stretching
- Replace sodium

Heat Collapse (Syncope)

Cause

Rapid fatigue when exercising in high temperatures.

Signs & Symptoms

Weakness, faintness, especially after exercising or standing in the heat.

Treatment

- Activate the emergency plan
- Place athlete in a cool and shaded area
- Elevate the legs above the head
- Monitor vital signs (see Module 3)
- Replenish athlete's fluids if the athlete is conscious and coherent

Heat Exhaustion

Cause

Inadequate replacement of fluids.

Signs & Symptoms

An athlete will have these symptoms:

- Headache
- Weakness
- Confusion/disorientation
- Profuse sweating
- Nausea
- Pale skin
- Cool, clammy skin
- Dizziness
- Rapid weak pulse
- Core body temperature of 98-104 degrees F

Treatment

- **Activate emergency plan.**
- Remove excess clothing from athlete
- Move athlete to a cool and shaded area and reduce body temperature by fanning and placing ice or ice bags in contact with her body
- Replace the fluid in the athlete if they are able to drink
- Monitor core temperature

Heat Stroke

Cause

Severe rise in temperature caused by failure of the body's cooling mechanisms. **THIS IS A LIFE THREATENING CONDITION!**

Signs & Symptoms

- **Altered mental function with possible collapse and loss of consciousness**
- **Hot red skin**
- **Not sweating or no longer sweating**
- **Rapid strong pulse**
- **Shallow breathing**
- **Core body temperature approximately 104 degrees F**

Treatment

- **Activate emergency plan**
- Lower body temperature as quickly as possible by fanning and placing ice towels or ice bags in the groin, neck, and armpit—areas where major blood vessels are located
- Move athlete to a cool and shaded area, remove equipment and clothing, ensure proper breathing
- Immerse athlete in ice water, a particularly effective means to lower body temperature and save lives
- Monitor vital signs

4. MEDICAL CONSIDERATIONS

Purpose

The purpose of this module is to...

- Prepare you to react appropriately to an athlete suffering a seizure
- Help you recognize symptoms of an asthma attack
- Identify signs and symptoms of an allergic reaction
- Differentiate between diabetic coma and insulin shock for athletes with diabetes
- Provide guidelines regarding when an athlete may return to play after an illness or injury

Objectives

At the end of this module, you will be able to:

- Identify and take appropriate action for an allergic reaction, an asthmatic reaction or a seizure (convulsions)
- Identify and manage a diabetic emergency
- Identify criteria indicating that an athlete should not return to play

Content Outline

- I. Special Medical Considerations
- II. Return to Play Guidelines
- III. Summary

Introduction

This section contains four common special medical conditions that can result in life threatening situations. These conditions are:

- Seizures (convulsions)
- Asthma
- Allergic reactions
- Diabetes

Many times the athlete will be aware of these conditions. This is one reason it is important to have a medical history card for each athlete. Sometimes these conditions are found in a [Pre-Participation Physical Examination](#) (PPPE).

Medical conditions of certain athletes must be identified and properly managed. However, in many instances, these athletes and their parents are the most effective managers of known conditions.

Seizures (Convulsions)

The most common type of seizure in athletes results from epilepsy, a neurological disorder that has no known cause.

Depending upon the frequency and severity of seizures, people with epilepsy can and do participate in sports. Seizures may be controlled with medication, but not eliminated.

Signs and Symptoms

Seizures include unconsciousness and uncontrolled severe muscle contractions lasting several seconds to a few minutes for major episodes. Seizures are likely to occur 15 minutes to 3 hours following activity.

Seizures may occur 15 minutes to 3 hours following activity. Always monitor an athlete who has had a concussion and/or is prone to having seizures.

Management

- Activate the emergency plan
- Protect the athlete from a self inflicted injury

To protect an athlete from injury during a seizure, the following steps should be taken:

- Help the athlete to the ground if they feel a seizure coming on
- Remove objects that may cause harm to the athlete and ask people to stand away
- Protect the athlete's arms and legs but do not restrain them
- Loosen clothing
- Respect the modesty of the athlete
- **Do not put anything in the athlete's mouth**
- Record the length of the seizure
- Allow the athlete to awaken normally after the seizure
- Assess the athlete's airway, breathing, and circulation (ABCs)

- Transport the athlete by EMS to a medical facility or refer them immediately to their physician or other responsible party

Asthma

Asthma is a condition in which the air passages in the lungs get smaller, thus interfering with normal breathing. An asthma attack can be brought on by an allergy, respiratory infection, exercise, irritants such as smoke, smog, etc., heightened emotions, and rapid weather changes.

A medical release form or pre-participation physical will allow you to document athletes with known asthma who should have a treatment plan that helps them manage their asthma and have readily available their appropriate treatment should they have an attack.

Inhaler Usage

All inhalers are not the same. The athlete(s) should **ONLY** use their own prescribed inhaler.

The athlete must self-administer the inhaler since each requires a specific technique. Only use inhalers as prescribed.

Signs and Symptoms

An athlete having an asthma attack will have difficulty breathing, chest tightness, sweating, paleness, anxious appearance, bent over body appearance, coughing and wheezing.

Management

Athletes with asthma have prescribed inhalers that normally provide immediate relief. Insist that these be brought to all practices and games.

Additional ways to manage an asthma attack include:

- Reassure the athlete
- Encouraging the athlete to breath slowly and deeply
- Removing known environmental causes of the asthma attack or removing the athlete from the area
- **Activating the emergency plan if other procedures are unsuccessful**

A medical emergency must be declared when a known asthmatic experiences an attack and (1) does not have an inhaler or (2) uses an ineffective inhaler. The emergency plan should then be activated.

Exercise Induced Asthma (EIA)

EIA is an asthma attack triggered by physical exercise.

EIA is most likely to occur:

- When the weather changes (especially when the air turns cold and dry)
- When the pollen count is high (especially for those with a pollen allergy)
- In highly polluted areas or when there is smoke present
- When the athlete has a viral infection (such as a cold)

When these conditions are present, certain activities should be curtailed if necessary. The signs, symptoms, and management for EIA are the same as for asthma.

As exercise becomes more strenuous, the likelihood of an asthma attack increases for athletes with EIA. Evidence suggests, however, that athletes may decrease the likelihood of an attack by using an inhaler and warming up before exercise.

Allergic Reactions

The most common allergic reactions in athletes are caused by insect bites or stings. Chemicals used to treat the playing field may also cause a reaction.

Allergic reactions range from minor skin irritation to wheals on the skin to difficulty breathing. In serious cases the airway swells shut, requiring immediate medical attention.

Hopefully, most athletes will know what causes them to have allergic reactions and what they need to do about it. Appropriate treatment should be readily available such as an epinephrine (epi) pen. An epi pen should always be administered by someone trained to do so or by a parent or other person designated by the parent or guardian.

Signs and Symptoms

The severity of the signs and symptoms depend upon the extent of the reaction to the allergen. General characteristics are...

- Itching and burning
- Hives
- Swelling of the lips, tongue and airway
- Chest tightness
- Difficulty breathing
- Occasionally, respiratory failure

Management

Activate your emergency plan for an athlete having an allergic reaction.

Diabetes

Knowledge of diabetic athletes is essential since an attack may lead to unconsciousness. Most athletes will hopefully know of their diabetes and have appropriate treatment readily available.

There are two types of diabetic conditions. Management is different for each.

Condition: Diabetic Coma

Cause: Too little insulin **Result:** High blood sugar

Signs and Symptoms (not all may be present):

- Deep forceful breathing (puffing and blowing)
- Fruity-smelling breath
- Nausea and vomiting
- Thirst
- Dry mouth
- Flushed skin
- Mental confusion or unconsciousness followed by coma

Management*

Insulin should be given at the onset of symptoms. Injection must be performed by the athlete themselves or by a parent or guardian.

Activate emergency plan.

When in doubt, give sugar. If the athlete does not respond to treatment, call 911 and **activate your emergency plan.*

Condition: Insulin Shock

Cause: Low blood sugar

Signs and Symptoms (not all may be present):

- Tingling in mouth, hands or other body parts
- Physical weakness
- Headaches
- Abdominal pain
- Abnormal or shallow breathing
- Rapid heartbeat
- Confusion and dizziness

Management*

Give candy, orange juice, or sugar at the onset of symptoms.

**When in doubt, give sugar. If the athlete does not respond to treatment, call 911 and*

Activate your emergency plan.

Additionally, the athlete should be allowed to check his blood sugar if the means are available.

RETURN TO PLAY GUIDELINES

Introduction

Just as there are signs that indicate injury or illness, there are signs that enable you to determine if and when an athlete may safely return to play following an injury.

Do Not Return To Play

An athlete with any of these symptoms, followed by an injury or not, should not return to play until examined and cleared by a physician.

- Any recent history of an emergency
- Any loss of function
- A concussion at any level
- Back or neck stiffness
- Blurred or loss of vision
- Deep cut
- Headache
- Inability to perform weight-bearing hops or jumps
- Loss of consciousness for any amount of time
- Loss of hearing
- Loss of motion
- Loss of strength
- Memory loss
- Nausea or vomiting
- Neck pain
- Numbness
- Parental objection
- Ringing in the ears
- Severe bleeding
- Swelling
- Swelling of the testicles

*This list is not all-inclusive and is no substitute for sound judgment. An athlete in questionable health should be suspended from play until examined and released by a physician.

SUMMARY-

Special Medical Considerations

- Coaches should be aware of athletes with known medical conditions such as seizures, asthma, allergies, or diabetes.
- Coaches should have medical history cards for each athlete readily available at every practice or game.
- It is important to have the appropriate treatment readily available for athletes with special medical conditions.

Seizures (Convulsions)

- Although controllable by medication, seizures may still occur in athletes with epilepsy.
- Seizures may last a few seconds or a few minutes for major episodes.
- The most important action to take in response to an athlete suffering a seizure is to protect the athlete from a self inflicted injury.

Asthma

- Asthma is a condition in which the air passages in the lungs get smaller, thus interfering with normal breathing.
- An athlete should only use his own prescribed inhaler.
- Athletes with asthma should bring their inhalers to all practices and games.
- As exercise becomes more strenuous, the likelihood of an asthma attack increases for athletes with exercise induced asthma (EIA).

Allergic Reactions

- The most common allergic reactions in athletes are caused by insect bites or stings.
- Allergic reactions range from minor skin irritation to breathing problems.

Diabetes

- Two types of diabetic conditions exist and management is different for each.
- A diabetic coma is caused by too little insulin, or high blood sugar.
- Insulin shock can be caused by low blood sugar.
- Give sugar to a diabetic athlete when in doubt of his condition.
- Call 911 and activate your emergency plan if there is no response.

Returning to Play

- Specific signs and symptoms exist that enable you to determine if an athlete should be seen by a physician before returning to play.

5. PRINCIPLES OF FIRST AID

Purpose

The purpose of this module is to explain universal precautions and why they are important. It will also address the recognition and immediate management of wounds, fractures and dislocations, acute and chronic injuries and give you guidelines for when to apply ice or heat. Additionally, this module will tell you how to remove soiled gloves and how to correctly apply ice and heat.

Objectives

At the end of this module, you will be able to:

1. Follow universal precautions for caring for an athlete.
2. Distinguish between different types of wounds and how to treat them.
3. Identify the signs and symptoms of a wound infection.
4. Provide appropriate care for wounds and blisters.
5. State the guidelines for when a wound needs to be seen by a physician.
6. Identify the signs and symptoms of a fracture and dislocation.
7. Differentiate between acute and chronic injury.
8. Identify when ice or heat are indicated for an injury and learn the appropriate application for each.

Content Outline

- I. Universal Precautions
- II. Wound Care
- III. Fracture / Dislocations
- IV. Acute vs. Chronic
- V. Application of Ice and Heat
- VI. Summary

Precautions that must be taken include...

1. Before participation, athletes must cover open skin wounds with fixed bandages. Transmission of body fluids from one athlete to another must not be allowed.
2. An athlete must be immediately removed from play to manage bleeding. Furthermore, all blood on a uniform must be removed before the athlete returns to play. Appropriate protective equipment must be worn while caring for bleeding athletes and their uniforms (see sidebar).
3. When you are working with a bleeding athlete, you must wear gloves at all times. Hands should be washed after each procedure, with soap and water or other germicidal agent.

Personal protective equipment is used to protect you from another person's blood and body fluids. In sports, gloves are the most common personal protective equipment used.

4. Sports programs should provide proper supplies for clean up, and have proper receptacles for blood stained equipment and uniforms.
5. Tables should be cleaned immediately with one part bleach to 10 parts of water. Towels or other linens that are contaminated must be bagged and washed separate from other laundry.
6. Sports programs should provide annual updating of policies and ensure that personnel follow regulations.

Universal Precautions

In 1991, the Occupational Safety and Health Administration (OSHA) developed steps for addressing the dangers of exposure to blood and body fluids. These steps are referred to as Universal Precautions.

The purpose of Universal Precautions is to protect yourself and others from diseases when there is a possibility of being exposed to blood or body fluid.

Always carry multiple sets of gloves in your first aid kit to practices and to games.

Glove removal

Gloves that have come into contact with blood or body fluids should be removed in a specific manner.

1. One hand pinches the top of the glove at the wrist on the other hand, being careful not to touch your skin.
2. Pull the glove off so that it is now inside-out.
3. Hold the removed glove in the remaining gloved hand.

4. Use your thumb on the non-gloved hand to grasp the undersurface of the glove at the wrist and pull down.
5. The first glove that was removed should now be inside the second glove, which is inside-out.
6. Discard the gloves in an appropriate container (see Module 1, Emergency Plan regarding appropriate containers).
7. Wash your hands thoroughly.

By following this procedure, you will be able to remove your gloves safely without coming into contact with any blood or body fluids that may be on the gloves.

WOUND CARE

Wound Types

Skin wounds are caused when the protective skin layer is damaged resulting in a break in the skin. Once the skin surface is broken there is an increased chance for contamination of the wound and infection.

Open wounds fall into one of the following categories:

- Abrasion
- Laceration
- Avulsion
- Puncture
- Embedded foreign objects

Abrasion

Characteristics:

Loss of the surface of the outer skin caused by the skin being rubbed or scraped on a rough or hard object (turf burns, carpet burns, etc.).

Management:

1. Clean with soap and water and brush.
2. Clean the abrasion with hydrogen peroxide.
3. Apply ointment and a dressing.
4. Change dressing daily.
5. Look for infection.

Laceration

Characteristics:

Jagged edge cut that penetrates the outer skin and underlying tissue, sometimes deep enough to injure underlying muscle, nerves, or blood vessels.

Lacerations to the face or lacerations large enough that the skin edges are open should be seen by a physician as soon as possible to determine if stitches are needed.

Management:

1. Clean around the edges of the wound.
2. Apply compression dressing to control bleeding.
3. Send to a physician.
4. Change dressing as directed by the physician.
5. Look for infection.

Avulsion

Characteristics:

Skin is torn completely from its attachment.

Management:

1. Clean around wound.
2. Save avulsed tissue.
3. Apply compression dressing to control bleeding.
4. Send to a physician.
5. Change dressing as directed by the physician.
6. Look for infection.

Puncture

Characteristics:

Penetration of the skin by a sharp object.

Should the object remain in the skin, this would be an *embedded foreign object*.

This type of wound needs to be seen by a physician in case a tetanus shot is needed.

Management:

1. Clean around the edges of the wound.
2. Apply compression dressing.
3. Send to a physician.
4. Change dressing as directed by the physician.
5. Look for infection.

Embedded Foreign Object

Characteristics:

Penetration of the skin by a sharp object which remains embedded.

Management:

1. **Do not remove the object, but stabilize it.**
2. Send the athlete to a physician or activate the emergency plan.

NOTE: Internal bleeding may be severe even if external bleeding is minimal

Signs of Infection

Any wound should be checked daily for signs of infection which include:

- Tender to the touch
- Swelling
- Redness
- Heat
- Body fever
- Oozing of bloody fluid that may contain a whitish or yellowish color

A physician should examine immediately a wound displaying any of these signs.

Staph Infections

Definition:

- Bacteria that can be found on the skin or in the nose
- People who have staph but are not sick are said to be “colonized”
- Colonized people may not become ill, but can still pass it to others

Signs/Symptoms:

- Infections usually manifest as small red bumps that resemble pimples, boils, or insect/spider bites and can be red, swollen, painful, or have pus or other drainage.

MRSA (methicillin-resistant staphylococcus aureus): Type of bacteria that has become resistant to many antibiotics

Risk Factors:

- Person-to-person contact, like contact sports

Types of Bleeding

Bleeding occurs when the vessels that transport the blood are damaged.

Bleeding is classified as either...

External bleeding ...

when there is a break in the skin and blood is visible (also defined as an open wound).

Internal bleeding ...

occurs inside the body, not visible, considered life threatening because of the possibility of shock, necessitates activation of the emergency plan.

Three Types of Bleeding

1. Arterial Bleeding

Characteristics:

Bright red, spurting under pressure in time with heartbeat, uncommon in sports yet life threatening and demanding activation of the emergency plan.

2. Venous Bleeding

Characteristics:

Dark red, flowing steadily without spurting, controlled with direct pressure, occurring most often with lacerations.

3. Capillary Bleeding

Characteristics:

Continuous slow and steady ooze, most common type of bleeding, controlled with direct pressure, generally occurs with abrasions.

Managing External Bleeding

External bleeding can be controlled by following these five steps:

Step 1 - Glove

Action:

Supply gauze pad to athlete while you put on medical exam gloves.

Step 2 - Direct Pressure

Action:

Apply firm pressure directly over bleeding area using gloved hand and sterile gauze pad, new gauze pads should be placed over blood soaked pads and pressure increased.

Step 3 - Elevation

Action:

Elevate the injured body part above the heart.

Step 4 - Compression

Action:

Once the bleeding has been controlled using direct pressure, compression can be maintained by applying pressure with a bandage or gauze wrap.

If there is excessive bleeding and these steps do not stop it after two or three minutes, activate your emergency plan and perform Step 5.

Step 5 - Pressure Points**Action:**

Used to control severe bleeding when direct pressure and elevation are ineffective, most commonly in the arm and groin area.

Excessive, uncontrollable bleeding and imbedded foreign objects are medical emergencies requiring the activation of your emergency plan (see Module 1, Emergency Plan).

Cause of Blisters

Blisters are usually formed by friction, such as a shoe rubbing on an area of the foot. The friction causes the outer skin layers to separate and fluid accumulates between the two skin layers.

Hot Spot

A hot spot is red colored skin, warm to the touch, an early indication of blister formation that requires treatment.

Treatment of a hot spot includes application of a protective pad such as a Band-Aid type bandage, or the application of petroleum jelly on the hot spot under the bandage. Reducing the amount of friction between the skin and the sock, or skin and surface will assist in preventing blisters from developing.

Blister Treatment

Blister treatment is based on whether or not the outer skin is still intact or if the skin has been broken, creating an open wound.

If the outer skin is intact, the body will eventually absorb the fluid if the blister is treated appropriately.

Puncturing the outer skin to drain the fluid will not aid in healing, but rather creates an open wound susceptible to infection. Only a physician or certified athletic trainer should drain a blister if required.

Management if Outer Skin is Intact

1. Clean with antiseptic soap.

2. Over the blister, place a foam pad having a hole cut in the center of the pad larger than the blister (a donut pad). A Band-Aid type bandage may be used if such a pad is not available.
3. Apply an antibiotic ointment on the surface of the blister.
4. Cover with a sterile gauze pad.
5. Secure in place with athletic tape.
6. Change bandage daily.

Management if Outer Skin is Not Intact

If the outer skin of a blister is no longer intact, treat it like an open wound.

1. If the skin covering of the blister is intact, leave the skin in place for several days. This will act as a protective covering over the blister.
2. Clean the area with antiseptic soap.
3. Apply an antibiotic ointment to the blister under the skin.
4. Apply a donut pad for protection.
5. Cover the blister with a sterile gauze pad.
6. Secure with athletic tape.
7. Change the bandage daily.
8. Monitor for signs of infection.

You should not drain fluid from a blister because it can cause infection

Prevention

Blisters are easily preventable by taking the following actions:

- Wearing appropriately fitting shoes and socks.
- Breaking in new footwear gradually.
- Applying friction reducing ointment to susceptible areas.
- Stopping the activity and treating the hot spot before it becomes a blister.

Is it a Fracture or a Dislocation?

Fracture

Any break in the continuity of a bone.

Dislocation

Total disruption of a joint causing misalignment of bones.

A coach or parent should never attempt to “reset” a dislocated joint. Only professionally trained persons are qualified to perform this procedure

Is it a Fracture or a Broken Bone?

Some people believe that a fracture is different than a broken bone, the latter being a more severe injury. However, there is no difference between the two.

Classifying Fractures

Closed

The bone has not penetrated the skin and no wound exists at the fracture site.

Open

The overlying skin has been broken and a piece of the bone is protruded through the skin.

Signs and Symptoms

Fracture

- Possible deformity
- Pain
- Loss of function
- Swelling
- Bruising
- Heard or felt a “pop” or “snap” at time of injury
- Grinding or grating sound, like two bones rubbing together
- Possible false motion (movement where there should not be)

Signs and Symptoms

Dislocation

- Obvious deformity
- Swelling

- Pain
- Loss of movement
- Marked loss of normal joint movement (locked joint)

A dislocation generally results in stretching or tearing of the ligaments around the joint and can result in an unstable joint.

Management

If...	Then...
You suspect a fracture or dislocation	<ol style="list-style-type: none"> 1. Activate emergency plan (see Module 1). 2. Do not move body part!
There is obvious deformity	<ol style="list-style-type: none"> 1. Activate emergency plan. 2. Do Not move the body part!
There is an open fracture	<ol style="list-style-type: none"> 1. Activate emergency plan. 2. Do not move body part! 3. Take blood and body fluid precautions. 4. Control bleeding with direct pressure or pressure points if necessary.

Only move a person if you are absolutely sure the current location and position that he or she is in is immediately life-threatening.

Difference in Acute and Chronic injuries

Acute Injuries

Description:

Characterized by a rapid onset and is of short duration.

Examples:

An ankle sprain that just occurred and has never happened before.

Chronic/Overuse Injuries

Description:

Characterized by a slow onset or when the injury is caused from gradual development.

Examples:

Stress fracture, tennis elbow

Signs and Symptoms of an Acute Injury

The general signs and symptoms that are present after an acute injury include:

- Swelling
- Redness
- Heat
- Pain
- Possible loss of function

Caused by the body's response to injury, these signs and symptoms are normal and necessary to localize, protect, and prepare the body for healing. The magnitude of these signs and symptoms will increase as the severity of injury increases.

Degrees of Acute Injury

Acute injuries can range from mild to moderate to severe. The extent of the injury is determined by the amount of tissue that is damaged.

The more tissue that is affected...

- the greater presence of heat, pain, swelling, and loss of function
- the longer the recovery time

Management of Acute Injuries

1. Apply ice and elevate the injured extremity.
2. **Do not** allow bearing weight or movement if it increases the pain.
3. An acute injury may result in ...
 - a large amount of swelling
 - pain that does not get better in 20-30 minutes,

- inability to bear weight or move the injured body part without increasing the pain, and/or
- Numbness or tingling sensation in a body part.

An athlete with an acute injury with the above symptoms should be **sent immediately** to a physician.

Prevention of Acute Injuries

Acute injuries are difficult to prevent, particularly in contact and collision sports. However, by improving muscular strength and flexibility, improving cardiovascular conditioning and wearing appropriate correctly fitted equipment, athletes may aid in preventing acute injuries.

Signs and Symptoms of a Chronic Injury

The general signs and symptoms of an overuse injury are:

- Swelling
- Pain
- Muscle spasm
- Some loss of function
- Possible grating or grinding can be heard or felt with movement of the injured body part

The symptoms of an overuse injury could possibly last for months or even years.

Overuse injuries are usually caused by constant and repetitive stresses, from forcing the joint into extreme range of motions, or prolonged strenuous activity.

Management of Chronic Injuries

A chronic injury is an injury in which ...

- The pain does not go away or improve
- Pain increases with activity
- Numbness or tingling exists in the injured body part

Athletes with chronic injuries should be sent to a physician as soon as possible.

Many acute injuries can become chronic if they are not treated appropriately as an acute injury.

Prevention of Chronic Injuries

Chronic injuries can be difficult to treat, but the following suggestions can help prevent them:

- Appropriate treatment of acute injuries
- Improving muscular strength and flexibility
- Wearing correctly fitted equipment
- Gradually increasing activity over time (increasing the distance run, number of pitches thrown, sets played, etc.)

USE OF HEAT AND ICE

Introduction

When to apply ice to an injury and when to apply heat is confusing for some people. Since the application of heat in the early stages of injury can actually cause more swelling, it is important to know the appropriate time to use heat and ice to help recovery. The purpose of this section is to explain when and how to apply ice and heat.

In order to help control the initial swelling and bleeding, **administer protection, rest, ice, compression and elevation** (remember this by P.R.I.C.E.) should be applied immediately after the injury.

How Ice and Heat Work

Ice

- Causes blood vessels to constrict, reducing swelling in an acute injury thus increasing pain and speeding up the healing process
- Reduces the sensation of pain
- Reduces muscle spasm

Application of ice directly to the skin can be uncomfortable at first. The person will experience the following sensations:

cold
burning
aching
numbness

The area becomes numb and pain is reduced after about seven minutes.

How Ice and Heat Works

Heat

- Causes blood vessels to enlarge, increasing swelling in an acute injury thus increasing pain and lengthening the healing process.
- Best treatment for injuries without swelling, redness, warmth, and acute pain. This could be as long as a few days to several weeks after injury, depending on injury severity.
- Reduces muscle spasm.
- May aid healing process in chronic injuries by increasing the amount of blood to the area.

Benefits of Rest

- Encourages the body to heal itself (returning prematurely to activity impairs the healing process).
- Injury severity determines rest time.

Application of Ice

1. Fill a freezer bag (or something similar) with ice.
2. Apply directly to the skin or over a wet towel if too cold.
3. Use an elastic wrap to hold the ice bag in place if you have one.
4. Elevate the injured body part above the heart.
5. Leave ice in place for 20 minutes.
6. Apply compression wrap between treatments to control swelling.
7. Repeat application of ice every one and a half to two hours for the first couple of days following injury or as long as swelling, redness or heat/warmth are present around the injured area.
8. In order for the ice bag to have a "good fit" around the injured body part all of the air should be out of the ice bag before closing.

When using frozen gel packs, place over a wet elastic wrap or wet towel. Never apply directly to the skin which may be damaged due to the extremely low temperature of the packs.

Do not use ice for people with sensitive skin or those with known skin allergies

Compression

- Assists in reducing swelling by decreasing amount of space for swelling to accumulate
- Most commonly achieved by using elastic wraps beginning below the injured area and spiraling upwards, overlapping the wrap as you go
- Start elastic wrap at the toes and go upward for an injury to the lower extremity
- Start elastic wrap at the hand and go upward for an injury to the upper extremity
- Periodically check skin color, skin temperature, and sensation to make sure the wrap is not too tight
- Compression should be applied for several days following an acute injury
- Compression should be applied until all swelling has gone for chronic overuse injuries
- **DO NOT** apply compression to injuries resulting from a direct blow to the front of the lower leg

Elevation

Elevation of the injured body part, particularly an extremity, helps reduce swelling by using gravity to assist in draining blood and other fluids from the injured area.

The general rule is to elevate the body part *above the heart*.

SUMMARY

Wound Care

- Personal protective equipment should be worn as a safeguard against blood and body fluids.
- Signs of wound infection are: tenderness, swelling, redness, heat and oozing fluid from the wound that may be whitish or yellowish in color.
- The inability to control bleeding through direct pressure and elevation is a medical emergency.
- **Do not** remove embedded foreign objects.
- **Do not** puncture a blister to drain the fluid.

Fractures and Dislocations

- Fractures and dislocations can be medical emergencies, particularly if there is obvious deformity, loss of feeling, the skin is cold to the touch or bluish, or it is an open

fracture.

- There is no difference between a fracture and a broken bone. Fractures can range from a simple crack in the bone to multiple broken pieces of a bone.
- An x-ray is required to determine if a bone is fractured and the extent of damage.

Acute and Chronic Injuries

- Injuries can be classified as either acute or chronic.
 - *Acute injuries* have a rapid onset and short duration.
 - *Chronic injuries* develop slowly over a period of time. Poorly treated acute injuries can become chronic.
- The severity of an acute injury is determined by the amount of tissue damaged from the injury. The more tissue damaged, the longer the recovery time.
- Chronic injuries can be more difficult to treat because of the gradual nature of their development.

Use of Ice and Heat

- Ice should be used on all acute injuries until there is no swelling present.
- Heat can be used on chronic injuries when there is *no swelling* present.
- The application of ice should be used in conjunction with rest, compression, and elevation.
- You should apply ice directly to the skin. When using frozen gel packs, a wet elastic wrap or towel should be placed between the skin and the gel pack.

6. HEAD NECK AND FACE INJURIES

Purpose

The purpose of this module is to help you recognize and manage two of the *most complex and potentially devastating injuries* that can occur in sports, injuries to the head and neck. You will also learn what not to do when these types of injuries are suspected.

Although head and neck injuries both have the potential to be life threatening, early recognition and correct management can have a huge impact on the ultimate outcome. Additionally, recognition and management of the more common injuries to the face will be addressed.

Objectives

At the end of this module, you will be able to:

1. Take the appropriate action for an athlete with a suspected head, neck or facial injury.
2. Recognize the signs and symptoms of a possible neck injury.
3. Recognize the signs and symptoms of a concussion.
4. Appropriately manage an athlete with a concussion.
5. Employ several interventions to prevent head and neck injuries.
6. Employ several ways to help prevent facial injuries.
7. Appropriately identify and manage facial injuries such as a foreign body in the eye, a nose bleed, a nose fracture, the loss of a tooth or a broken tooth, or a facial laceration.

Content Outline

- I. Head Injuries
- II. Neck Injuries
- III. Facial Injuries
- IV. Summary

HEAD INJURIES

Introduction

Generally, head injuries are a result of a direct or indirect blow to the head. A direct blow can also result in cuts, bruises or fractures to the head. An indirect blow is a result of the head stopping suddenly; this is often referred to as whiplash. Both direct and indirect blows can

cause a concussion or bruising of the brain. Concussions can range in severity from dizziness to loss of consciousness.

Signs and Symptoms

- Dizziness
- Headache
- Ringing in the ears
- Nausea
- Confusion/disorientation
- Loss of memory
- Decreasing level of consciousness
- Loss of consciousness
- Blurred vision
- Draining of blood or clear fluid from athlete's nose, mouth, or ears
- Bump or deformity and/or bleeding at site of blow
- Pupils not responsive to light
- Seizure
- Slurred speech
- Breathing and pulse irregularities
- Repetition of a specific statement

An athlete with any of the signs or symptoms listed above needs to be seen immediately by a physician.

Management

Conscious Athlete

- Question the athlete about time, place, person, and purpose to determine if there is any memory loss
- Ask the athlete if he has neck pain and if he is able to move his extremities
- Ask the athlete if he is dizzy, feels nauseous, has a headache, and if his ears are ringing
- Look for any of the signs listed on the previous page
- A sign not initially present may become noticeable some minutes later
- An athlete suffering a concussion should be monitored for worsening conditions

Questions to Ask:

What is today's month/date?

What day of the week is it?

Who are you playing?

What is my name?

What is your coach's name?

What position do you play?

Unconscious Athlete

- **Activate emergency plan**
- Maintain and monitor ABCs (See ABCs in Module 3)
- Stabilize neck (see section on neck injuries in this module)
- Treat any other life threatening injuries, such as major bleeding
- Treat an unconscious athlete as if he has a neck injury

Prevention

Prevention of head injuries includes ...

- Using properly fitted head gear
- Using properly maintained head gear
- Using head gear approved by the National Operating Committee on Standards for Athletic Equipment (NOCSAE), an organization that tests equipment for safety (see their website at www.nocsae.org)
- Teaching correct techniques that do not use the head as a point of contact
- Using the appropriate head gear for the sport
- Enforcing the rules of the game
- Using face shields on helmets when appropriate

NECK INJURIES

Introduction

Most neck injuries are a result from a blow to the top of the head and may be associated with a head injury as well.

Neck injuries range from sprains and strains that heal on their own to permanent loss of the use of extremities, and even death. Although rare, severe neck injuries do occur in sports. Mild injuries are more common and create quite a scare in athletes.

Signs and Symptoms

- Inability to move arms, legs, fingers or toes
- Inability to feel your touch
- Possibility of breathing difficulties
- Hand grip strength is significantly unequal
- Neck pain
- Numbness and/or tingling in the arms, legs, fingers or toes

Nine Rules for Suspected Neck Injury

Rule 1:

Do not move the athlete.

Rule 2:

Without removing any equipment, assess ABCs in the position in which the athlete is found.

Rule 3:

Activate emergency plan if a problem with the ABCs exists, if the athlete is unconscious, or if a neck injury is suspected based upon the signs and symptoms listed above.

Rule 4:

An unconscious athlete with properly functioning ABCs should be left in the position found and closely monitored until the arrival of EMS.

Rule 5:

An athlete who is face down and not breathing must be rolled onto their back with the neck and spine in alignment. The airway must then be opened and rescue breathing begun.

During the rehearsal of the emergency plan, rolling an athlete must be practiced. It should be noted that rolling an athlete wearing equipment is quite different than rolling an athlete without equipment. This maneuver should be supervised by a trained professional.

Rule 6:

A head or neck injury is always suspected when there is unconsciousness. It is necessary, then, to always stabilize the head and neck of an unconscious athlete.

Rule 7:

Helmet or shoulder pads should **never** be removed unless proper care cannot be administered with them in place. The airway can be maintained and rescue breathing and CPR can be performed without removing any equipment.

Rule 8:

A tool to remove the face mask should be included in the first aid kit and you should be familiar with how to use it.

Rule 9:

Maintain the airway by using modified jaw thrust, a method that protects the neck. Remove the face mask to perform rescue breathing (a technique learned in a CPR class or from a local EMS or physician).

Neck Injuries

Management

1. **Activate emergency plan**
2. Do not move the athlete
3. Monitor and maintain ABCs
4. Monitor vital signs
5. Reassure athlete
6. Leave the athlete in the position found if ABCs are satisfactory

An unconscious athlete must be treated as if he has a head or neck injury.

Equipment

The helmet should never be removed from an injured athlete until a neck injury has been ruled out by a physician.

If the athlete is wearing a helmet and shoulder pads, the helmet actually helps keep the neck in alignment with the rest of the spine. When the helmet is removed, the neck will drop lower than the rest of the spine.

Although the face mask must be removed, ABCs can be maintained with the helmet and shoulder pads on.

Facemask

Face masks on helmets are removable. If the airway needs to be maintained or monitored, the face mask must be removed to keep the athlete's head and neck stable.

There are numerous types of tools on the market that will cut the plastic attachments holding the face mask to the helmet. These attachments are difficult to cut without a special tool.

Before an emergency situation arises, removing a face mask should be practiced many times under the supervision of EMS, a physician, or other trained professional.

Prevention

Measures to help prevent neck injuries include ...

- Proper strengthening exercises for the neck
- Using correct techniques
For example, in football the head should *not* be the initial contact point and the tackle should be made with the *shoulder*
- Wearing properly fitted equipment

FACIAL INJURIES

Introduction

Caused by a direct blow, most serious injuries to the face are uncommon. However, serious injuries can occur and may well result in a concussion.

Eye - Foreign Body

A foreign body may be defined as dirt, grass, or other particle.

Signs and Symptoms

- Red, watery eye
- Blurred vision
- Possible sensitivity to light
- Eye pain
- Burning sensation

Management of Foreign Body in the Eye

- Do not allow athlete to rub the eye
- Have athlete remove contact lenses if applicable
- Wash eye out with water

- Use the corner of a sterile gauze pad to remove a foreign body that can be seen
- Cover the eye with a patch if symptoms persist and refer athlete immediately to a physician

In some instances, the foreign body can become lodged under the upper or lower eyelid. To inspect, pull the lower lid out and away from the eye and invert the upper lid.

Eye Abrasion

A foreign body can scratch the eye. Prohibit the rubbing of an eye that has in it a foreign body.

Signs and Symptoms

- Red, watery eye
- Blurred vision
- Sensitivity to light
- Intense eye pain
- Burning sensation

Management of Eye Abrasions

1. Do not allow athlete to rub the eye.
2. Cover with a patch a painful eye that is sensitive to light and send the athlete directly to a physician.

Facial Laceration

Characterized by profuse bleeding, a facial laceration is usually caused by a direct blow (getting hit by another athlete or with a piece of equipment). This type of injury should be seen immediately by a physician to determine if stitches are needed to reduce the severity of scarring.

Signs and Symptoms

- Visible laceration of the skin
- Profuse bleeding
- Pain

Management of a Facial Laceration

- Direct pressure
- Cover with sterile bandage
- Refer to a physician

Nose Bleed

Usually caused by a direct blow, a nose bleed may also result from a dry nasal cavity or high blood pressure, particularly if occurrence is spontaneous.

Signs and Symptoms

- Bleeding from nostril(s)
- Possible deformity
- Pain

Management of a Nose Bleed

1. Have athlete sit with head forward
2. Pinch upper portion of the nose to apply direct pressure
3. Apply ice to nose area
4. Refer to a physician if bleeding does not stop
5. Prohibit nose blowing which may cause further bleeding

Broken Nose

Caused by a direct blow to the nose.

Signs and Symptoms

- Swelling
- Possible deformity
- Bleeding
- Difficulty breathing through nasal passages
- Pain

Management of a Broken Nose

1. Have athlete sit with head forward
2. Pinch upper portion of nose to apply direct pressure
3. Apply ice to nasal area
4. Prohibit nose blowing
5. Refer to physician

Chipped Tooth

This is characterized by a crack or break in part of a tooth, generally the result of a direct blow.

Signs and Symptoms

- Part of tooth missing or cracked
- Possible bleeding depending on depth and gum involvement
- Possible pain depending on depth
- Sensitive to heat, cold, and pressure depending on depth
- Possible cut and bleeding to lips

Management of a Chipped Tooth

1. Have athlete sit with head forward to allow blood to drain from mouth
2. Apply pressure with sterile gauze to areas of bleeding
3. Refer to a dentist as quickly as possible

Dislodged Tooth

Characterized by the tooth being dislodged from its socket usually from a direct blow.

Signs and Symptoms

- Bleeding
- Tooth dislodged
- Gum swelling
- Pain

Management of a Dislodged Tooth

1. Immediately place tooth in milk or saline solution
If neither is available, cold water can be used as a substitute or have the athlete hold the tooth in his mouth
2. Place wet gauze over the empty space where the tooth was
3. Have athlete lean forward to allow blood to drain from the mouth
4. Send athlete immediately to dentist (tooth may be saved if a dentist treats the athlete within an hour of injury)

Prevention of Facial Injuries

Wearing an appropriate face mask or eye goggles will prevent most facial and eye injuries. *Mouthpieces* and *mouth guards* will prevent most dental injuries.

SUMMARY

Head Injury

An athlete with any of the following signs needs to be seen **immediately** by a physician.

- Confusion/disorientation
- Loss of memory
- Decreasing level of consciousness
- Loss of consciousness
- Blood or clear fluid flowing from the nose, mouth, or ears
- Blurred vision
- Bump or deformity and/or bleeding at site of blow
- Pupils not responsive to light
- Seizure
- Slurred speech
- Breathing and pulse irregularities

An unconscious athlete is **assumed** to have a head and neck injury and should be treated as such until determined otherwise.

Neck Injury

Signs of a neck injury include:

- Inability to move arms, legs, fingers or toes
- Loss of feeling
- Possible breathing difficulties
- Hand grip strength is significantly unequal

- Motionless

Nine Rules for Suspected Neck Injury

Rule 1:

Do not move the athlete.

Rule 2:

Without removing equipment, assess ABCs in the position in which the athlete is found.

Rule 3:

Activate emergency plan if a problem with the ABCs exists, if the athlete is unconscious, or if a neck injury is suspected based upon the signs and symptoms listed above.

Rule 4:

An unconscious athlete **with properly functioning ABCs** should be left in the position found and closely monitored until the arrival of EMS.

Rule 5:

An athlete who is face down and **not breathing** must be rolled onto her back with the neck and spine in alignment. The airway must then be opened and rescue breathing begun.

During the rehearsal of the emergency plan, rolling an athlete must be practiced. It should be noted that rolling an athlete wearing equipment is quite different than rolling an athlete without equipment. This maneuver should be supervised by a trained professional.

Rule 6:

A head or neck injury is **always** suspected when there is unconsciousness. It is necessary, then, to always stabilize the head and neck of an unconscious athlete.

Rule 7:

Helmet or shoulder pads should **never** be removed unless proper care cannot be administered with them in place. The airway can be maintained and rescue breathing and CPR can be performed without removing any equipment.

Rule 8:

A **tool to remove the face mask** should be included in the first aid kit and you should be familiar with how to use it.

Rule 9:

Maintain the airway by using **modified jaw thrust**, a method that protects the neck. Remove the face mask to perform rescue breathing (a technique learned in a CPR class or from a local EMS or physician).

Facial Injury

- Prohibit the rubbing of an eye that has in it a foreign body
- Most facial lacerations should be seen immediately by a physician to determine if stitches are needed to reduce the severity of scarring
- Nose bleeds are managed by having the athlete lean forward, pinching shut the upper portion of the nose
- A chipped tooth should be seen by a dentist as soon as possible
- A dislodged tooth should be seen immediately by a dentist (tooth may be saved if a dentist treats the athlete within an hour of injury)
- Place a dislodged tooth in milk or saline solution (if unavailable, use cold water or have the athlete hold the tooth in his mouth)

7. WARM UP AND COOL DOWN

Purpose

The purpose of this module is to explain why warming-up before exercise and cooling-down afterwards is important to **prevent injuries**. The module will also present examples of **proper warm-up** and **cool-down** exercises.

Objectives

At the end of this module, you will be able to:

1. Explain the rationale for an adequate warm-up before exercise and cool-down period after exercise.
2. Choose exercises for the warm-up and cool-down periods.

Content Outline

- I. Warm-up
- II. Cool-down
- III. Exercises
- IV. Summary

WARM UP

Introduction

Used to prepare the body for an upcoming event, the warm-up period helps improve performance and prevent injury.

The warm-up period should last approximately 10 to 15 minutes. In hot and humid conditions, this may need to be reduced; in cold conditions, this time might need to be increased.

During the warm-up period the heart rate rises, increasing blood flow to muscles which, in turn, causes muscle temperature to escalate.

Benefits

- Reduces the risk of injury
- Prepares the body for physical activity

- Prepares the heart for physical activity
- Rehearses the movement and skills needed in the sport
- Mentally prepares the athlete for the event

Four Stages of Warm-Up

Warm-up normally consists of four stages ...

STAGE 1: Gentle Loosening Exercises

Guidelines

- Begin at moderate pace progressing to a faster walk with increased arm movement (as in swinging the arms to increase movement)
- Proceed to Stage 2 after about 2 to 3 minutes, or when the body feels loose and relaxed

STAGE 2: Jogging

Guidelines

- Jog for 2 to 3 minutes
- Distance runners should jog for 10 to 20 minutes
- Proceed to Stage 3 when a light sweat is produced, indicating increased body core temperature

STAGE 3: Stretching

Guidelines

- Upper and lower muscle groups should be stretched
- Three (3) stretches per muscle group is most beneficial
- Hold each stretch for 10 seconds
- Do not bounce while stretching, as this may cause muscle injury
- Stretch to produce comfortable tension in muscles
- Stop stretching if it hurts, as this too may cause muscle injury
- Proceed to Stage 4 when general stretching is complete

STAGE 4: Event-Specific Exercises

Guidelines

- Perform sport-specific activities
- Shoot jump shots, execute layups, dribble
- Throw passes and pitches
- Hit forehands, backhands, serves
- Practice your swing, etc.

COOL DOWN

Purpose

Cool-down after exercise allows the body to return to a resting state. Unfortunately, athletes often ignore this activity.

Cool-down involves gently stretching major muscles, or any muscles that feel tight, and may consist of the same stretching exercises used in the warm-up.

Stretching during cool-down will help flush out waste products that have accumulated in the muscles during exercise. The cool-down period should last 5 to 10 minutes and each stretch held 10-20 seconds with no bouncing. Athletes who perform cool-down stretching report fewer sore muscles after exercise.

Aerobic activity, such as a light jog, during a cool-down time will help flush out waste products that have accumulated in the muscles during exercise. The cool-down period should last 5 to 10 minutes and each stretch held for 10 seconds.

Stretching Exercises

These are examples of stretching exercises for the lower and upper extremities. This list is far from all-inclusive. There are many books on stretching that can give you ideas on other stretching exercises. Also, consult your physician or sports medicine professional for more advanced stretches specific to your sport.

Neck Flexibility

From a standing position perform the following:

1. Look to the right as far as possible.
2. Look to the left as far as possible.
3. Look up as far as possible.

4. Look down as far as possible.
5. Move the head around in a circular motion in both directions.

Perform several repetitions of each stretch.

Shoulder Flexibility

1. In a standing position with the arms straight out to the sides, move the arms in a circular motion.
2. Start with small circles and work up to large circles.
3. Perform the exercise in a clockwise and counter clockwise manner.
4. A stretch should be felt in the shoulder region

Lower Back Flexibility

1. While lying on your back, bend the knees and place feet flat on the ground.
2. Alternate pulling one knee at a time to the chest.
3. Stretch should be felt in the lower back region.
4. After alternating knees several times, pull both knees to the chest at the same time for a few repetitions.

Hip and Groin Flexibility

1. From a seated "Sitting Bull" position, place the elbows on the knees and grasp the ankles.
2. Lean forward and press the elbows against the knees.
3. Stretch should be felt in the groin area

Hamstring Flexibility

1. Sit with the legs straight.
2. Keep the knees extended and reach forward.
3. Bend at the waist maintaining an upright upper body.
4. Stretch may be done with both legs or one leg at a time.
5. The stretch should be felt in the back of the thigh in the hamstring region.

Quadriceps Flexibility

1. From a standing position, bend the left knee.
2. Grasp the left foot with the left hand and pull the lower leg toward the buttocks.
3. Perform the stretch on the opposite leg.
4. Stretch should be felt in the anterior thigh at the quadriceps region.

Calf Flexibility

1. From a standing position, lean against a wall with one leg positioned further back than the other.
2. Maintain heel contact with the ground.
3. Lean forward until a stretch is felt in the calf region.
4. Maintain extension of the knee to stretch the calf muscle.
5. Bend the knee in order to stretch the smaller muscle under the calf muscle.
6. Perform the stretch on the opposite leg

SUMMARY

Warm-Up

- The warm-up period should last approximately 10 to 15 minutes. In hot and humid conditions, this time may need to be reduced. In cold conditions, this time may need to be increased.
- The benefits of a warm-up include reducing the risk of injury, preparing the body for physical activity, preparing the heart for physical exercise, rehearsal of sport-specific movement and skills, and mental preparation for the event.
- The four stages of a warm-up are gentle loosening exercises, jogging, stretching, and event-specific exercises.

Cool-Down

- The cool-down period allows the body to return to a resting state.
- The cool-down period should last 5 to 10 minutes and each stretch should be held 10 seconds with no bouncing.
- Stretching during the cool-down period will help “flush-out” the waste products that have accumulated in the muscles during exercise.

Exercises

The following muscle groups should be targeted during the warm-up and cool-down periods:

- Neck
- Shoulder
- Lower back
- Hip and groin
- Hamstring
- Quadriceps
- Calf