SAFETY TRAINING

HONOR CHARTER ATHLETICS LEAGUE

www.teamsideline.com/hcal

OVERVIEW OF TOPICS

First Aid, CPR, AED – *American Heart Red Cross*

Sudden Cardiac Arrest – *Mayo Clinic*

Managing Concussions and Minimizing Impact – *NFHS*

Heat Acclimatization, Heat Illness Prevention, and Hydration Guidelines – *NFHS*

Asthma In Athletes – *National Athletic Trainers Association (NATA)*

Performance Enhancing Drugs and Supplementation – *NFHS*

Skin Infections and Communicable Diseases – *NFHS*

American Red Cross

Adult First Aid/CPR/AED

READY REFERENCE

CHECKING AN INJURED OR ILL ADULT

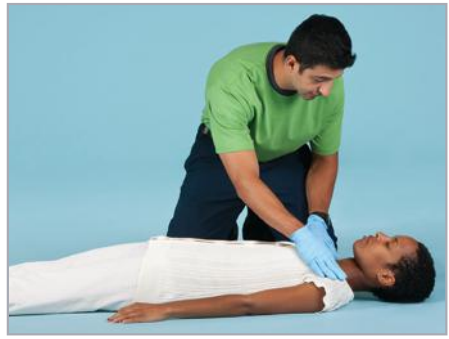
APPEARS TO BE UNCONSCIOUS

TIP: *Use disposable gloves and other personal protective equipment and obtain consent whenever giving care.*

AFTER CHECKING THE SCENE FOR SAFETY, CHECK THE PERSON:

1 CHECK FOR RESPONSIVENESS

Tap the shoulder and shout, "Are you OK?"



2 CALL 9-1-1

If **no** response, **CALL** 9-1-1 or the local emergency number.

- If an unconscious person is face-down, roll face-up, supporting the head, neck and back in a straight line.

If the person responds, obtain consent and **CALL** 9-1-1 or the local emergency number for any life-threatening conditions.

CHECK the person from head to toe and ask questions to find out what happened.

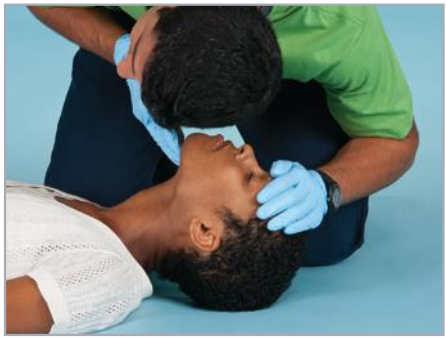
3 OPEN THE AIRWAY

Tilt head, lift chin.

4 CHECK FOR BREATHING

CHECK quickly for breathing for no more than **10** seconds.

- Occasional gasps are not breathing.



5 QUICKLY SCAN FOR SEVERE BLEEDING

WHAT TO DO NEXT

- Give **CARE** based on conditions found.
- IF NO BREATHING—Go to PANEL 6 or PANEL 7 (if an AED is immediately available).
- IF BREATHING—Maintain an open airway and monitor for any changes in condition.

CONSCIOUS CHOKING

CANNOT COUGH, SPEAK OR BREATHE

AFTER CHECKING THE SCENE AND THE INJURED OR ILL PERSON, HAVE SOMEONE CALL 9-1-1 AND GET CONSENT.

1 GIVE 5 BACK BLOWS

Give **5** back blows.

- Bend the person forward at the waist and give **5** back blows between the shoulder blades with the heel of one hand.

2 GIVE 5 ABDOMINAL THRUSTS

- Place a fist with the thumb side against the middle of the person's abdomen, just above the navel.
- Cover your fist with your other hand.
- Give **5** quick, upward abdominal thrusts.

3 CONTINUE CARE

Continue sets of **5** back blows and **5** abdominal thrusts until the:

- Object is forced out.
- Person can cough forcefully or breathe.
- Person becomes unconscious.

WHAT TO DO NEXT

- IF THE PERSON BECOMES UNCONSCIOUS—**CALL** 9-1-1, if not already done, and give care for an unconscious choking adult, beginning with looking for an object (PANEL 5, Step 3).

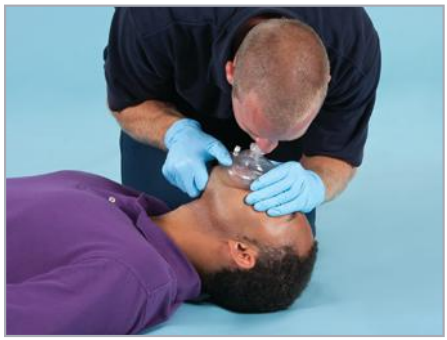
UNCONSCIOUS CHOKING

CHEST DOES NOT RISE WITH RESCUE BREATHS

AFTER CHECKING THE SCENE AND THE INJURED OR ILL PERSON:

1 GIVE RESCUE BREATHS

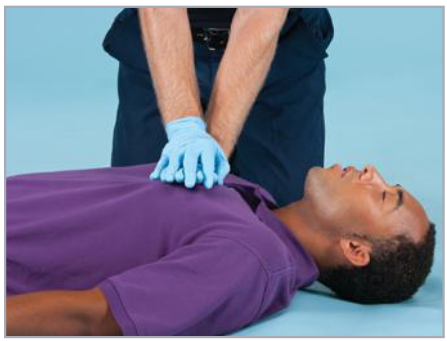
Retilt the head and give another rescue breath.



2 GIVE 30 CHEST COMPRESSIONS

If the chest still does not rise, give **30** chest compressions.

TIP: *Person must be on firm, flat surface. Remove CPR breathing barrier when giving chest compressions.*



3 LOOK FOR AND REMOVE OBJECT IF SEEN

4 GIVE 2 RESCUE BREATHS

WHAT TO DO NEXT

- IF BREATHS DO NOT MAKE THE CHEST RISE—Repeat steps 2 through 4.
- IF THE CHEST CLEARLY RISES—**CHECK** for breathing. Give **CARE** based on conditions found.

CPR

NO BREATHING

AFTER CHECKING THE SCENE AND THE INJURED OR ILL PERSON:

1 GIVE 30 CHEST COMPRESSIONS

Push hard, push fast in the middle of the chest at least 2 inches deep and at least 100 compressions per minute

TIP: *Person must be on firm, flat surface.*

2 GIVE 2 RESCUE BREATHS

- Tilt the head back and lift the chin up.
- Pinch the nose shut then make a complete seal over the person's mouth.
- Blow in for about 1 second to make the chest clearly rise.
- Give rescue breaths, one after the other.

Note: *If chest does not rise with rescue breaths, retilt the head and give another rescue breath.*

3 DO NOT STOP

Continue cycles of CPR. Do not stop CPR except in one of these situations:

- You find an obvious sign of life, such as breathing.
- An AED is ready to use.
- Another trained responder or EMS personnel take over.
- You are too exhausted to continue.
- The scene becomes unsafe.

WHAT TO DO NEXT

- IF AN AED BECOMES AVAILABLE—Go to AED, PANEL 7.
- IF BREATHS DO NOT MAKE THE CHEST RISE— AFTER RETILTING HEAD—Go to Unconscious choking, PANEL 5.

TIP: *If at any time you notice an obvious sign of life, stop CPR and monitor breathing and for any changes in condition.*

AED—ADULT OR CHILD OLDER THAN 8 YEARS OR WEIGHING MORE THAN 55 POUNDS

NO BREATHING

AFTER CHECKING THE SCENE AND THE INJURED OR ILL PERSON:

> **TIP:** *Do not use pediatric AED pads or equipment on an adult or child older than 8 years or weighing more than 55 pounds.*

1 TURN ON AED

Follow the voice and/or visual prompts.

2 WIPE BARE CHEST DRY

> **TIP:** *Remove any medication patches with a gloved hand.*

3 ATTACH PADS

4 PLUG IN CONNECTOR, IF NECESSARY

5 STAND CLEAR

Make sure no one, including you, is touching the person.

- **Say, "EVERYONE, STAND CLEAR."**

6 ANALYZE HEART RHYTHM

Push the "analyze" button, if necessary. Let AED analyze the heart rhythm.

7 DELIVER SHOCK

If SHOCK IS ADVISED:

- **Make sure no one, including you, is touching the person.**
- **Say, "EVERYONE, STAND CLEAR."**
- **Push the "shock" button, if necessary.**

8 PERFORM CPR

After delivering the shock, or if no shock is advised:

- **Perform about 2 minutes (or 5 cycles) of CPR.**
- **Continue to follow the prompts of the AED.**

TIPS:

- *If at any time you notice an obvious sign of life, stop CPR and monitor breathing and for any changes in condition.*
- *If two trained responders are present, one should perform CPR while the second responder operates the AED.*

CONTROLLING EXTERNAL BLEEDING

AFTER CHECKING THE SCENE AND THE INJURED OR ILL PERSON:

1 COVER THE WOUND

Cover the wound with a sterile dressing.

2 APPLY DIRECT PRESSURE UNTIL BLEEDING STOPS

3 COVER THE DRESSING WITH BANDAGE

Check for circulation beyond the injury (check for feeling, warmth and color).

4 APPLY MORE PRESSURE AND CALL 9-1-1

If the bleeding does not stop:

- Apply more dressings and bandages.
- Continue to apply additional pressure.
- Take steps to minimize shock.
- **CALL** 9-1-1 or the local emergency number if not already done.

TIP: *Wash hands with soap and water after giving care.*

BURNS

AFTER CHECKING THE SCENE AND THE INJURED OR ILL PERSON:

1 REMOVE FROM SOURCE OF BURN

2 COOL THE BURN

Cool the burn with cold running water at least until pain is relieved.

3 COVER LOOSELY WITH STERILE DRESSING

4 CALL 9-1-1

CALL 9-1-1 or the local emergency number if the burn is severe or other life-threatening conditions are found.

5 CARE FOR SHOCK

POISONING

AFTER CHECKING THE SCENE AND THE INJURED OR ILL PERSON:

1 CALL 9-1-1 OR POISON CONTROL HOTLINE

For life-threatening conditions (such as if the person is unconscious or is not breathing, or if a change in the level of consciousness occurs), **CALL** 9-1-1 or the local emergency number.

OR

If the person is conscious and alert, **CALL** the National Poison Control Center (PCC) hotline at **1-800-222-1222** and follow the advice given.

2 PROVIDE CARE

Give **CARE** based on the conditions found.

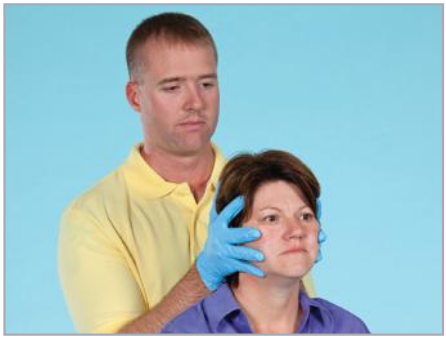
HEAD, NECK OR SPINAL INJURIES

AFTER CHECKING THE SCENE AND THE INJURED OR ILL PERSON:

1 CALL 9-1-1 OR THE LOCAL EMERGENCY NUMBER

2 MINIMIZE MOVEMENT

Minimize movement of the head, neck and spine.



3 STABILIZE HEAD

Manually stabilize the head in the position in which it was found.

- Provide support by placing your hands on both sides of the person's head.
- If head is sharply turned to one side, **DO NOT** move it.

STROKE

FOR A STROKE, THINK F.A.S.T.

AFTER CHECKING THE SCENE AND THE INJURED OR ILL PERSON:

1 THINK F.A.S.T.

Face— Ask the person to smile. Does one side of face droop?

Arm— Ask the person to raise both arms. Does one arm drift downward?

Speech— Ask the person to repeat a simple sentence (such as, "The sky is blue."). Is the speech slurred? Can the person repeat the sentence correctly?

Time— **CALL 9-1-1** immediately if you see any signals of a stroke. Try to determine the time when signals first appeared. Note the time of onset of signals and report it to the call taker or EMS personnel when they arrive.

2 PROVIDE CARE

Give **CARE** based on the conditions found.

MAYO CLINIC

Sudden cardiac arrest

Overview

Sudden cardiac arrest is the abrupt loss of heart function, breathing and consciousness. The condition usually results from an electrical disturbance in your heart that disrupts its pumping action, stopping blood flow to your body.

Sudden cardiac arrest differs from a heart attack, when blood flow to a part of the heart is blocked. However, a heart attack can sometimes trigger an electrical disturbance that leads to sudden cardiac arrest.

If not treated immediately, sudden cardiac arrest can lead to death. With fast, appropriate medical care, survival is possible. Giving cardiopulmonary resuscitation (CPR), using a defibrillator — or even just giving compressions to the chest — can improve the chances of survival until emergency workers arrive.

Sudden cardiac arrest care at Mayo Clinic

Symptoms

Sudden cardiac arrest signs and symptoms are immediate and drastic and include:

- Sudden collapse
- No pulse
- No breathing
- Loss of consciousness

Sometimes other signs and symptoms occur before sudden cardiac arrest. These might include:

- Chest discomfort
- Shortness of breath
- Weakness
- Palpitations

But sudden cardiac arrest often occurs with no warning.

When to see a doctor

See your doctor promptly if you have episodes of:

- Chest pain or discomfort
- Heart palpitations
- Rapid or irregular heartbeats
- Unexplained wheezing
- Shortness of breath
- Fainting or near fainting
- Lightheadedness or dizziness

If you're currently having these symptoms, call 911 or emergency medical help.

When the heart stops, the lack of oxygenated blood can cause death or permanent brain damage in minutes. Time is critical when you're helping an unconscious person who isn't breathing.

If you see someone who's unconscious and not breathing normally, do the following:

- **Call 911** or the emergency number in your area. If you have immediate access to a telephone, call before beginning CPR.
- **Perform CPR.** Quickly check the breathing. If the person isn't breathing normally, begin CPR. Push hard and fast on the person's chest — at the rate of 100 to 120 compressions a minute. If you've been trained in CPR, check the person's airway and deliver rescue breaths after every 30 compressions.

  If you haven't been trained, just continue chest compressions. Allow the chest to rise completely between compressions. Keep doing this until a portable defibrillator is available or emergency workers arrive.

- **Use a portable defibrillator,** if one is available. It will give you step-by-step voice instructions. Continue chest compressions while the defibrillator is charging. Deliver one shock if advised by the device and then immediately resume CPR, starting with chest compressions, or give chest compressions only, for about two minutes.

  Using the defibrillator, check the person's heart rhythm. If necessary, the defibrillator will give another shock. Repeat this cycle until the person recovers consciousness or emergency workers take over.

Portable automated external defibrillators (AEDs) are available in many places, including airports, casinos and shopping malls. You can also purchase one for your home. AEDs come with built-in instructions for their use. They're programmed to allow a shock only when appropriate.

Causes

A problem in your heart rhythm (arrhythmia) — the result of a problem with your heart's electrical system — is the usual cause of sudden cardiac arrest.

The heart's electrical system controls the rate and rhythm of your heartbeat. If something goes wrong, your heart can beat too fast, too slowly or irregularly (arrhythmia). Often these arrhythmias are brief and harmless, but some types can lead to sudden cardiac arrest.

The most common heart rhythm at the time of cardiac arrest is an arrhythmia in a lower chamber of your heart (ventricle). Rapid, erratic electrical impulses cause your ventricles to quiver uselessly instead of pumping blood (ventricle fibrillation).

Heart conditions that can lead to sudden cardiac arrest

Sudden cardiac arrest can happen in people who have no known heart diease. However, a life-threatening arrhythmia usually develops in a person with a pre-existing, possibly undiagnosed heart condition. Conditions include:

- **Coronary artery disease.** Most cases of sudden cardiac arrest occur in people who have coronary artery disease, in which your arteries become clogged with cholesterol and other deposits, reducing blood flow to your heart.
- **Heart attack.** If a heart attack occurs, often as a result of severe coronary artery disease, it can trigger ventricular fibrillation and sudden cardiac arrest. Also, a heart attack can leave scar tissue in your heart. Electrical short circuits around the scar tissue can lead to abnormalities in your heart rhythm.
- **Enlarged heart (cardiomyopathy).** This occurs primarily when your heart's muscular walls stretch and enlarge or thicken. Then your heart's muscle is abnormal, a condition that often leads to arrhythmias.

- **Valvular heart disease.** Leaking or narrowing of your heart valves can lead to stretching or thickening of your heart muscle. When the chambers become enlarged or weakened because of stress caused by a tight or leaking valve, there's an increased risk of developing arrhythmia.
- **Congenital heart disease.** When sudden cardiac arrest occurs in children or adolescents, it can be due to a heart defect that was present at birth (congenital heart disease). Adults who've had corrective surgery for a congenital heart defect still have a higher risk of sudden cardiac arrest.
- **Electrical problems in the heart.** In some people, the problem is in the heart's electrical system itself instead of a problem with the heart muscle or valves. These are called primary heart rhythm abnormalities and include conditions such as Brugada's syndrome and long QT syndrome.

Risk factors

Because sudden cardiac arrest is so often linked with coronary artery disease, the same factors that put you at risk of coronary artery disease can also put you at risk of sudden cardiac arrest. These include:

- A family history of coronary artery disease
- Smoking
- High blood pressure
- High blood cholesterol
- Obesity
- Diabetes
- A sedentary lifestyle

Other factors that might increase your risk of sudden cardiac arrest include:

- A previous episode of cardiac arrest or a family history of cardiac arrest
- A previous heart attack
- A personal or family history of other forms of heart disease, such as heart rhythm disorders, congenital heart defects, heart failure and cardiomyopathy
- Age — the incidence of sudden cardiac arrest increases with age
- Being male

- Using illegal drugs, such as cocaine or amphetamines
- Nutritional imbalance, such as low potassium or magnesium levels
- Obstructive sleep apnea
- Chronic kidney disease

Complications

When sudden cardiac arrest occurs, reduced blood flow to your brain causes unconsciousness. If your heart rhythm doesn't rapidly return to normal, brain damage occurs and death results. Survivors of cardiac arrest might show signs of brain damage.

Prevention

Reduce your risk of sudden cardiac arrest by getting regular checkups, being screened for heart disease and living a heart-healthy lifestyle.

By Mayo Clinic Staff

National Federation of State
High School Associations

SUGGESTED GUIDELINES FOR MANAGEMENT OF CONCUSSION IN SPORTS

National Federation of State High School Associations (NFHS)
Sports Medicine Advisory Committee (SMAC)

Introduction

A concussion is a type of traumatic brain injury that impairs normal function of the brain. It occurs when the brain moves within the skull as a result of a blow to the head or body. What may appear to be only a mild jolt or blow to the head or body can result in a concussion.

The understanding of sports-related concussion continues to evolve. We now know that young athletes are particularly vulnerable to the effects of a concussion. Once considered little more than a “ding” on the head, it is now understood that a concussion has the potential to result in a variety of short- or long-term changes in brain function or, rarely, death.

What is a concussion?

You’ve probably heard the terms “ding” and “bell-ringer.” These terms were previously used to refer to "minor" head injuries and thought to be a normal part of collision sports. Research has shown that a concussion is a brain injury and by no means minor. Any suspected concussion must be taken seriously. The athlete does not have to be hit directly in the head to injure the brain. Any force that is transmitted to the head may cause the brain to bounce or twist within the skull, resulting in a concussion.

It was once believed that a person had to lose consciousness or be “knocked-out” to have a concussion. This is not true, as the vast majority of concussions do not involve a loss of consciousness. In fact, less than 5% of athletes actually lose consciousness with a concussion.

What happens to the brain during a concussion is not completely understood. It is a very complex process, primarily affecting the function of the brain. The sudden movement of the brain causes stretching and tearing of brain cells, damaging the cells and creating chemical changes in the brain. Once this injury occurs, the brain is vulnerable to further injury and very sensitive to any increased stress until it fully recovers.

Common sports injuries such as torn ligaments and broken bones are structural injuries that can be detected during an examination and seen on x-rays or MRI. A concussion, however, is an

injury that interferes with how the brain works and cannot be diagnosed by MRI or CT scans. Therefore, the brain looks normal on these tests, even though it has been injured.

Recognition and Management

If an athlete exhibits any signs, symptoms or behaviors that make you suspicious of a concussion, the athlete **must** be removed from play and closely observed. Sustaining another head injury after a concussion can lead to worsening concussion symptoms, increased risk for further injury and, rarely, death.

Parents/guardians and coaches are not expected to "diagnose" a concussion. That is the role of an appropriate health-care professional. However, everyone involved in athletics must be aware of the signs, symptoms and behaviors associated with a concussion. If you suspect that an athlete may have a concussion, then the athlete must be **immediately removed** from all physical activity.

Signs Observed by Coaching Staff

- *Loss of consciousness (even if brief)
- *Seizure
- *Increasing sleepiness
- *Worsening headache
- *Persistent vomiting
- Dazed or stunned appearance
- Confusion about assignment or position
- Forgetful, for example, doesn't follow instructions
- Uncertainty of game, score or opponent
- Clumsy movements
- Slow response to questions
- Mood, behavior or personality changes
- Inability to recall events *prior* to hit or fall
- Inability to recall events *after* hit or fall

***RED FLAGS**

Symptoms Reported by Athlete

- Headaches or "pressure" in head
- Nausea or vomiting
- Balance problems or dizziness
- Double or blurry vision
- Sensitivity to light
- Sensitivity to noise
- Feeling sluggish, hazy, foggy or groggy
- Concentration or memory problems
- Confusion

- Emotions of "not feeling right" or "feeling down"

When in doubt, sit them out!

When you suspect that a player has a concussion, follow the "Heads Up" 4-step Action Plan.

1. Remove the athlete from play.
2. Ensure the athlete is evaluated by an appropriate health-care professional. (RED FLAGS: If any red flag present, the athlete should go to the emergency department)
3. Inform the athlete's parents/guardians about the possible concussion and give them information on concussion.
4. Keep the athlete out of play the day of the injury, and until an appropriate health-care professional says the athlete is symptom-free and gives the okay to return to activity.

The signs, symptoms and behaviors associated with a concussion are not always apparent immediately after a bump, blow or jolt to the head or body and may develop over a few hours or longer. An athlete should be closely watched following a suspected concussion and should never be left alone.

Athletes should never try to "tough out" a concussion. Teammates, parents/guardians and coaches should never encourage an athlete to "play through" the symptoms of a concussion. In addition, there should never be an attribution of bravery or courage to athletes who play despite having concussion signs and/or symptoms. The risks of such behavior must be emphasized to all members of the team, as well as coaches and parents.

If an athlete returns to activity before being fully healed from an initial concussion, the athlete is at greater risk for a repeat concussion. A repeat concussion that occurs before the brain has a chance to recover from the first can slow recovery or increase the chance for long-term problems. In rare cases, a repeat concussion can result in severe swelling and bleeding in the brain that can be fatal.

What to do in an Emergency

Although rare, there are some situations where you will need to call 911 and activate the Emergency Medical System (EMS). The following circumstances are medical emergencies:

1. Any time an athlete has a loss of consciousness of any duration. While loss of consciousness is not required for a concussion to occur, it may indicate more serious brain injury.
2. If an athlete exhibits any of the following:

- Seizure
- Increasing sleepiness
- Worsening headache
- Persistent vomiting

Rest

The first step in recovering from a concussion is rest. Rest is essential to help the brain heal. Athletes with a concussion need rest from physical and mental activities that require concentration and attention as these activities may worsen symptoms and delay recovery. Exposure to loud noises, bright lights, computers, video games, television and phones (including texting) all may worsen the symptoms of concussion. Athletes typically require 24-48 hours of rest, though some may require longer.

Return to Learn

Following a concussion, many athletes will have difficulty in school. These problems may last from days to weeks and often involve difficulties with short- and long-term memory, concentration and organization. In many cases, it is best to lessen the student's class load early on after the injury. This may include staying home from school during the short period of rest, followed by a lightened schedule for a few days, or longer, if necessary. Decreasing the stress to the brain in the early phase after a concussion may lessen symptoms and shorten the recovery time. Additional academic adjustments may include decreasing homework, allowing extra time for assignments/tests, and taking breaks during class. Such academic adjustments are best made in collaboration with teachers, counselors and school nurses.

Return to Play

After suffering a concussion, **no athlete should return to play or practice on that same day**. **An athlete should *never* be allowed to resume play following a concussion until symptom free and given the approval to resume physical activity by an appropriate health-care professional.**

Once an athlete no longer has signs or symptoms of a concussion **and is cleared to return to activity by an appropriate health-care professional**, he/she should proceed in a step-wise fashion to allow the brain to re-adjust to exercise. In most cases, the athlete should progress no more than one step each day, and at times each step may take more than one day. **Below is an example of a return to physical activity program**:

Progressive Physical Activity Program (ideally under supervision)

- *Step 1*: Light aerobic exercise- 5 to 10 minutes on an exercise bike or light jog; no weight lifting, resistance training or any other exercises.
- *Step 2*: Moderate aerobic exercise- 15 to 20 minutes of running at moderate intensity in the gym or on the field without equipment.
- *Step 3*: Non-contact training drills in full uniform. May begin weightlifting, resistance training and other exercises.
- *Step 4*: Full contact practice or training.
- *Step 5*: Full game play.

If symptoms of a concussion recur, or if concussion signs and/or behaviors are observed at any time during the return-to-activity program, the athlete must discontinue all activity immediately. Depending on previous instructions, the athlete may need to be re-evaluated by the health-care provider, or may have to return to the previous step of the return-to-activity program.

Summary of Suggested Concussion Management

1. **No athlete should return to play (RTP) or practice on the same day of a concussion.**
2. **Any athlete suspected of having a concussion should be evaluated by an appropriate health-care professional.**
3. **Any athlete with a concussion should be medically cleared by an appropriate health-care professional prior to resuming participation in any practice or competition.**
4. **After medical clearance, RTP should follow a step-wise protocol with provisions for delayed RTP based upon return of any signs or symptoms.**

References:

American Medical Society for Sports Medicine position statement: concussion in sport. Harmon KG, Drezner J, Gammons M, Guskiewicz K, Halstead M, Herring S, Kutcher J, Pana A, Putukian M, Roberts W; American Medical Society for Sports Medicine.
Clin J Sport Med. 2013 Jan;23(1):1-18.

McCrory P, Meeuwisse WH, Aubry M, et al. Consensus statement on concussion in sport: the 4th International Conference on Concussion in Sport held in Zurich, November 2012 J Athl Train. 2013 Jul-Aug;48(4):554-75.

Returning to Learning Following a Concussion. Halstead M, McAvoy K, Devore C, Carl R, Lee M, Logan K and Council on Sports Medicine and Fitness, and Council on School Health. *Pediatrics,* October 2013. American Academy of Pediatrics.

Additional Resources:

Brain 101 – The Concussion Playbook.
http://brain101.orcasinc.com/5000/

Concussion in Sports- What you need to know.
http://www.nfhslearn.com/electiveDetail.aspx?courseID=15000

Heads Up: Concussion in High School Sports
http://www.cdc.gov/concussion/headsup/high_school.html

NFHS Sports Medicine Handbook, 4th Ed, 2011.

REAP Concussion Management Program.
http://www.rockymountainhospitalforchildren.com/sports-medicine/concussion-management/reap-guidelines.htm

Sport Concussion Library
http://www.sportconcussionlibrary.com/content/concussions-101-primer-kids-and-parents

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April 2009
October 2008
October 2005

National Federation of State High School Associations

Heat Acclimatization and Heat Illness Prevention Position Statement

National Federation of State High School Associations (NFHS)
Sports Medicine Advisory Committee (SMAC)

Exertional Heatstroke (EHS) is the leading cause of preventable death in high school athletics. Students participating in high-intensity, long-duration or repeated same-day sports practices and training activities during the summer months or other hot-weather days are at greatest risk. Football has received the most attention because of the number and severity of exertional heat illnesses. Notably, the National Center for Catastrophic Sport Injury Research (NCCSIR) reports that **42 high school football players died of EHS between 1995 and 2014.** EHS also results in thousands of emergency room visits and hospitalizations throughout the nation each year.

This NFHS Sports Medicine Advisory Committee (SMAC) position statement is the companion piece to the NFHSLearn.com online course "Heat Illness Prevention." **This position statement provides an outline of "Fundamentals" and should be used as a guiding document by member state associations.** Further and more detailed information can be found within the NFHSLearn.com online course, the NFHS Sports Medicine Handbook, the NFHS SMAC "Position Statement and Recommendations for Maintaining Hydration to Optimize Performance and Minimize the Risk for Exertional Heat Illness" and the resources listed below.

Following the recommended guidelines in this position statement and "Heat Illness Prevention" can reduce the risk and incidence of EHS and the resulting deaths and injuries in high school athletics. The NFHS recognizes that various states and regions of the country have unique climates and variable resources, and that there is no "one-size-fits-all" optimal acclimatization plan. However, the NFHS and the NFHS SMAC strongly encourage member state associations to incorporate all of the "Fundamentals" into any heat acclimatization plan to improve athlete safety. In addition, the online course **"Heat Illness Prevention" should be required viewing for all coaches.**

Heat Acclimatization and Safety Priorities:

- Recognize that EHS is the leading preventable cause of death among high school athletes.
- Know the importance of a formal pre-season heat acclimatization plan.
- Know the importance of having and implementing a specific hydration plan, keeping your athletes well-hydrated, and encouraging and providing ample opportunities for regular fluid replacement.
- Know the importance of appropriately modifying activities in relation to the environmental heat stress and contributing individual risk factors (e.g., illness, obesity) to keep your athletes safe and performing well.
- Know the importance for all members of the coaching staff to closely monitor all athletes during practice and training in the heat, and recognize the signs and symptoms of developing heat illnesses.
- Know the importance of, and resources for, establishing an emergency action plan and promptly implementing it in case of suspected EHS or other medical emergency.

- Energy drinks are NOT appropriate hydration fluids. Refer to NFHS SMAC "Position Statement and Recommendations for the Use of Energy Drinks by Young Athletes".

Fundamentals of a Heat Acclimatization Program:

1. Physical exertion and training activities should begin slowly and continue progressively. An athlete cannot be "conditioned" in a period of only two to three weeks.

A. Begin with shorter, less intense practices and training activities, with longer recovery intervals between bouts of activity.
B. Minimize protective gear (such as helmets and pads) during first several practices, and introduce additional uniform and protective gear progressively over successive days.
C. Emphasize instruction over conditioning during the first several practices.

Rationale: The majority of heat-related deaths happen during the first few days of practice**,** usually prompted by doing too much, too soon, and in some cases with too much protective gear on too early in the season (wearing helmet, shoulder pads, pants and other protective gear). Players must be allowed the time to adapt safely to the environment, intensity, duration, and uniform/equipment.

2. Keep each athlete's individual level of conditioning and medical status in mind and adjust activity accordingly. These factors directly affect exertional heat illness risk.

Rationale: Athletes begin each season's practices and training activities at varying levels of physical fitness and varying levels of risk for exertional heat illness. For example, there is an increased risk if the athlete is obese, unfit**,** has been recently ill, has a previous history of exertional heat illness, or has Sickle Cell Trait.

3. Adjust intensity (lower) and rest breaks (increase frequency/duration), and consider reducing uniform and protective equipment, while being sure to monitor all players more closely as conditions are increasingly warm/humid, especially if there is a change in weather from the previous few days.

Rationale: Coaches must be prepared to immediately adjust for changing weather conditions, while recognizing that tolerance to physical activity decreases and exertional heat illness risk increases, as the heat and/or humidity rise. Accordingly, it is imperative to adjust practices and/or competitions to maintain safety and performance. Coaches can monitor the athletes' weights pre and post practice to ensure adequate fluid replacement, and can follow guidelines for hot and humid weather including using Wet Bulb Globe Temperature (WBGT) readings.

4. Athletes must begin practices and training activities adequately hydrated.

Rationale: While proper hydration alone will not necessarily prevent exertional heat illness, it will decrease risk. Athletes can observe the color of their urine, which should be straw yellow or the color of lemonade, when adequately hydrated.

5. *Recognize early signs of distress and developing exertional heat illness, and promptly adjust activity and treat appropriately. First aid should not be delayed!*

Rationale: An athlete will often show early signs and/or symptoms of developing exertional heat illness. If these signs and symptoms are promptly recognized and the athlete is appropriately treated, serious injury can be averted and the athlete can often be treated, rested and returned to activity when the signs and symptoms have resolved.

6. *Recognize more serious signs of exertional heat illness (clumsiness, stumbling, collapse, obvious behavioral changes and/or other central nervous system problems), immediately stop activity and promptly seek medical attention by activating the Emergency Medical System. On-site rapid cooling should begin immediately.*

Rationale: Immediate medical treatment and prompt rapid cooling can prevent death or minimize further injury in the athlete with EHS. Ideally, pools or tubs of ice water to be used for rapid cooling of athletes should be available on-site and personnel should be trained and practiced in using these facilities for rapid cooling. Ice water baths are the preferred method for rapid cooling, however, if ice water pools or tubs are not available, then applying ice packs to the neck, axillae, and groin and rotating ice-water soaked towels to all other areas of the body can be effective in cooling an affected athlete. **Remember, cool first, transport later.**

7. An Emergency Action Plan (EAP) with clearly defined written and practiced protocols should be developed and in place ahead of time.

Rationale: An EAP should be in place in case of any emergency, as a prompt and appropriate response in any emergency situation can save a life. The EAP should be designed and practiced to address all teams (freshman, junior varsity, and varsity) and all practice and game sites.

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National Federation of State High School Associations

POSITION STATEMENT AND RECOMMENDATIONS FOR MAINTAINING HYDRATION TO OPTIMIZE PERFORMANCE AND MINIMIZE THE RISK FOR EXERTIONAL HEAT ILLNESS

National Federation of State High School Associations (NFHS)
Sports Medicine Advisory Committee (SMAC)

DEHYDRATION – ITS EFFECTS ON PERFORMANCE AND ITS RELATIONSHIP TO EXERTIONAL HEAT ILLNESS RISK:

- Appropriate hydration before, during, and after physical activity is integral to healthy, safe and successful sports participation.

- Weight loss during exercise and other physical activity represents primarily a loss of body water. A loss of just 1 to 2% of body weight (1.5 to 3 pounds for a 150-pound athlete) can negatively impact performance. A loss of 3% or more of body weight during vigorous exercise can also significantly increase the risk for exertional heat-related illness. If an athlete is already dehydrated prior to beginning activity, these effects will occur even sooner.

- Athletes should be weighed (in shorts and T-shirt) before and after warm or hot weather practice sessions and contests to assess their estimated change in hydration status.

- Athletes with high body fat percentages can become significantly dehydrated and over-heat faster than athletes with lower body fat percentages, while working out under the same environmental conditions at the same or similar workload.

- Athletes have different sweating rates and some lose much more water and salt through their sweat than others. “Salty sweaters” will often have noticeable salt stains on their clothing and skin after workouts, and they often have a higher risk of developing exertional muscle cramps.

- Poor heat acclimatization/fitness levels can greatly contribute to an athlete’s heat intolerance and exertional heat illness risk.

- Certain medications or current/recent illness, especially for illnesses involving gastrointestinal distress (e.g., vomiting, diarrhea) and/or fever, can negatively affect an athlete’s hydration status and temperature regulation, increasing the risk for exertional heat illness.

- Environmental temperature and humidity each independently contribute to dehydration and exertional heat illness risk.

- Clothing that is dark or bulky, as well as protective equipment (such as helmets, shoulder pads and other padding and coverings), can increase body temperature, sweat loss and subsequent dehydration and exertional heat illness risk.

- Even naturally dry climates can have high humidity on the field if irrigation systems are run prior to early morning practices start. This temporary increase in humidity will continue until the water completely soaks into the ground or evaporates.

- A heat index chart should be followed to help determine if practices/contests should be modified or canceled. The NOAA National Weather Service's heat index chart can be found at: http://www.weather.gov/om/heat/index.shtml
  - On-site wet-bulb temperature should be measured 10-15 minutes before practices or contests. The results should be used with a heat index to determine if practices or contests should be started, modified, or stopped.
  - If wet-bulb temperature measurement is not available, the heat index for your approximate location can be determined by entering your postal zip code: http://www.osaa.org/heatindex/

The interplay of relative humidity and temperature on sweating and the risk for exertional heat illness:

- A combined relative humidity of 40 percent and a temperature of 95 degrees Fahrenheit are associated with a *likely risk* of incurring significant sweat loss and exertional heat illness during strenuous physical activity. However, even with a *lower air temperature* of only 85 degrees Fahrenheit, for example, the risk for extensive sweating and exertional heat illness would likely be the *same or greater with a higher relative humidity* of 70 percent or more.

WHAT TO DRINK DURING EXERCISE AND OTHER PHYSICAL ACTIVITY:

- For most exercising athletes in most scenarios, water is appropriate and sufficient for pre-hydration and rehydration. Water is quickly absorbed, well-tolerated, an excellent thirst quencher and cost-effective.

- Traditional sports drinks with an appropriate carbohydrate and sodium formulation may provide additional benefit in the following general situations:
  - Prolonged continuous or intermittent activity of greater than 60 minutes
  - Multiple, same-day bouts of intense, continuous or repeated exertion
  - Warm-to-hot and humid conditions

- Traditional sports drinks with an appropriate carbohydrate and sodium formulation may provide additional benefit for the following individual conditions:
  - Poor hydration prior to participation
  - A high sweat rate and/or "salty sweater"
  - Poor caloric intake prior to participation
  - Poor acclimatization to heat and humidity

- A 6 to 8% carbohydrate formulation is the maximum that should be utilized in a sports drink. Any greater concentration will slow stomach emptying and potentially cause the athlete to

feel bloated. An appropriate sodium concentration (0.4–1.2 grams per liter) will help with fluid retention and distribution and decrease the risk of exertional muscle cramping.

WHAT NOT TO DRINK DURING EXERCISE AND OTHER PHYSICAL ACTIVITY:

- Fruit juices with greater than 8 percent carbohydrate content and carbonated soda can both result in a bloated feeling and abdominal cramping.

- Athletes should be aware that nutritional supplements are not limited to pills and powders as many of the new “energy” drinks contain stimulants such as caffeine and/or ephedrine.
  - These stimulants may increase the risk of heat illness and/or heart problems with exercise. They can also cause anxiety, jitteriness, nausea, and upset stomach or diarrhea.
  - Many of these drinks are being produced by traditional water, soft drink and sports drink companies which can cause confusion in the sports community. As is true with other forms of supplements, these "power drinks”, “energy drinks”, or “fluid supplements" are not regulated by the FDA. Thus, the purity and accuracy of contents on the label is not guaranteed.
  - Many of these beverages which claim to increase power, energy, and endurance, among other claims, may have additional ingredients that are not listed. Such ingredients may be harmful and may be banned by governing bodies like the NCAA, USOC, or individual state athletic associations.
  - See the **NFHS Position Statement and Recommendations for the use of Energy Drinks by Young Athletes** for further information.

HYDRATION AND FLUID INTAKE TIPS AND GUIDELINES:

- Many athletes do not voluntarily drink enough water to prevent significant dehydration during physical activity.

- Drink regularly throughout all physical activities. An athlete cannot always rely on his or her sense of thirst to sufficiently maintain proper hydration.

- Drink before, during, and after practices and games. For example:
  - Drink 16 ounces of fluid 2 hours before physical activity.
  - Drink another 8 to 16 ounces 15 minutes before physical activity.
  - During physical activity, drink 4 to 8 ounces of fluid every 15 to 20 minutes (some athletes who sweat considerably can safely and comfortably tolerate up to 48 ounces per hour).
  - After physical activity, drink 16 to 20 ounces of fluid for every pound lost during physical activity to achieve normal hydration status before the next practice or competition (if there is sufficient time to do this safely and comfortably). Importantly, excessive fluid intake in a short period of time can be dangerous to one’s health (see below on hyponatremia).

- The volume and color of your urine is an excellent way of determining if you're well hydrated. Small amounts of dark urine mean that you need to drink more, while a "regular" amount of light-colored or nearly clear urine generally means you are well hydrated. A Urine Color Chart can be accessed at: http://at.uwa.edu/admin/UM/urinecolorchart.doc

- Hyponatremia is a rare, but potentially deadly disorder resulting from the over-consumption of water or other low-sodium fluid (including most sports drinks). It is most commonly seen during endurance events, such as marathons, when participants consume large amounts of water or other beverages over several hours, far exceeding fluid lost through sweating. The opposite of dehydration, hyponatremia is a condition where there is an excessive amount of water in the blood and the sodium content of the blood is consequently diluted to dangerous levels. Affected individuals may exhibit disorientation, altered mental status, headache, lethargy and seizures. A confirmed diagnosis can only be made by testing blood sodium levels. Suspected hyponatremia is a medical emergency and EMS (Emergency Medical Services) must be activated. It is treated by administering intravenous fluids containing high levels of sodium.

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NATIONAL ATHLETIC TRAINERS' ASSOCIATION

HEALTH CARE FOR LIFE & SPORT

Asthma in Athletes

Taken From:

National Athletic Trainers' Association Position Statement: Management of Asthma in Athletes

Asthma

- A chronic inflammatory disorder of the airways characterized by variable airway obstruction.
- Can lead to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing; particularly at night or early morning.
- Airflow limitations are often reversible, but as asthma symptoms continue, patients may develop “airway remodeling” that leads to chronic irreversible airway obstruction.
- Severe attacks of asthma can also cause irreversible airflow obstruction that can lead to death.

Asthma Triggers

- Asthma can be triggered by many stimuli, including:
  - Allergens (pollen, dust mites, animal dander)
  - Pollutants (carbon dioxide, smoke, ozone)
  - Respiratory Infections
  - Aspirin
  - NSAIDS
  - Inhaled Irritants (cigarette smoke, household cleaning fumes, chlorine)
  - Particulate Exposure (ambient air pollutants)
  - Exposure to Cold
  - Exposure to Exercise

Asthma Considerations

- All athletes with asthma should have a rescue inhaler available during games and practices.
- Athletic trainers should also have an extra rescue inhaler for each athlete to administer during emergencies.
- Athletes with asthma should have asthma management examinations at regular intervals, as determined by the PCP or specialist; to monitor and possibly alter therapy.
- Proper warm-up before exercise may lead to a refractory period of as long as 2 hours, which may results in decreased reliance on medications by some athletes with asthma.

Exercise Induced Asthma (EIA)

- A temporary narrowing of the airways induced by exercise in which the patient has asthma symptoms.
- EIA is commonly seen in athletes in all levels of athletic competition.
- EIA can occur in patients who do not otherwise have asthma.
- EIA can be a significant disability for an athlete. This is especially true in regards to endurance athletes.
- EIA is believed to be present in 12-15% of the general populations and as high as 23% in athletes.
  - Can be more common in urban environments than in rural areas.

National Asthma Education and Prevention Program II Treatment of Exercise Induced Asthma

- One goal of management is to enable patients to participate in any activity they choose without experiencing asthma symptoms. Exercise-induced bronchospasm (EIB) should not limit either participation or success in vigorous activities

- Recommended Treatments for EIB include:
  - $Beta_2$-agonists will limit EIB in more than 80 percent of patients. Short acting inhaled beta2-agonists used shortly before exercise (or as close to exercise as possible) may be helpful for 2 to 3 hours. Other medications may be considered as well. Contact your asthma specialist.
  - A lengthy warm-up period before exercise may benefit patients who can tolerate continuous exercise with minimal symptoms. The warm-up may preclude a need for repeated medications.

Institutional Policies on Asthma Management

- Insert specific institutional policy on identification and specific asthma management methods (include medication use recommendations) and information for coaches

Resources

Management of Asthma in Athletes

http://www.nata.org/sites/default/files/MgmtOfAsthmaInAthletes.pdf

National Federation of State High School Associations

POSITION STATEMENT ON APPEARANCE AND PERFORMANCE ENHANCING DRUGS AND SUBSTANCES

National Federation of State High School Associations (NFHS)
Sports Medicine Advisory Committee (SMAC)

BACKGROUND

Appearance and performance enhancing drugs and substances, or APEDS, refer to products that can be either naturally or synthetically produced and used with the intention of enhancing appearance or improving athletic performance. This use of APEDS is often referred to as "doping," and has unfortunately been a part of competitive sport since ancient Roman times. In 1999, the World Anti-Doping Agency (WADA) was formed, with the mission of creating a doping-free sporting environment. In the United States, the U.S. Anti-Doping Agency (USADA) is the national anti-doping organization. WADA publishes the World Anti-Doping Code, which is followed by most sporting organizations, including the International Olympic Committee.

WHAT ARE APEDS?

The spectrum of APEDS is very broad, encompassing many different substances and methods of improving physical performance. There are multiple substances and drugs that fall under the heading of APEDS, from caffeine, found in numerous beverages, to illegal and dangerous anabolic steroids. All APEDS have the potential for dangerous complications and side effects, if used improperly. However, to more reasonably discuss use and abuse, we can divide them into two broad categories:

1. Legal, not banned for competition, and may have some positive effects upon athletic performance:

a. Caffeine (limit set by WADA and NCAA)
b. Creatine
c. Protein powders and amino acids

An interesting distinction concerning APEDS is that except for prescription medications, none of the other products are regulated or routinely tested by the U.S. Food and Drug Administration (FDA). A dangerous side of this lack of regulation is the potential for the presence of contaminants in dietary supplements. Some studies have shown that 8-20% of tested protein supplements are contaminated with significant amounts of heavy metals, such as lead and mercury. In addition, 25% were found to be contaminated with anabolic androgenic steroids, and 11% were found to be contaminated with stimulants. Such "contamination" may be no accident as the manufacturer obviously benefits from a product that is effective, despite significant safety concerns for the consumer.

Caffeine has been shown to improve performance in endurance events. Its use is restricted, but not banned, by the NCAA and WADA. Caffeine can also have multiple side effects, some potentially dangerous, including headaches, increased blood pressure and increased heart rate. In 2011, almost 1,500 12- to 17-year-old

children went to the emergency department due to caffeine toxicity. Caffeine is treated differently than other supplements by the FDA. While the FDA regulates the amount of caffeine allowed in foods and soft drinks, it does not regulate the amount allowed in energy drinks and supplements. This explains why the ingestion of multiple energy drinks can lead to dangerous levels of caffeine.

Creatine is a naturally occurring substance stored in fast-twitch muscle fibers, and serves as an energy source for muscle contraction. It works to increase strength, peak force and peak power when performing multiple sets of maximal-effort muscle contractions. Therefore, it is likely more effective for off-season weight training than for any specific sport or event. Creatine use is relatively safe, but there are risks of dehydration, muscle cramps and blood clots associated with its use.

Amino acids and protein powders are very popular and marketed as "muscle building" products. While there may be some benefits to the use of these products, amino acids and proteins are present in a variety of meats and other foods for much less cost.

2. Legal only when prescribed by a physician, illegal to possess without prescription, can have a positive effect upon athletic performance, banned for competition by NCAA, USADA and WADA.

a. Anabolic Androgenic Steroids (AAS)
b. AAS prohormones
c. Human Growth Hormone (hGH)
d. Stimulants (examples: Ritalin, Adderal)

The most commonly known category of APEDS is anabolic-androgenic steroids (AAS). The anabolic effect is what causes an increase in muscle tissue, whereas the androgenic effect leads to masculinization, the secondary sex characteristics that males experience during puberty. These steroids are very different from corticosteroids, which are used to treat inflammation in a joint, such as with a cortisone injection, or to treat illnesses like asthma. A prohormone is a precursor to the active hormone, and becomes converted to its active form once taken into the body. Prohormones are also included in the anabolic-androgenic category. AAS and AAS prohormones work by enhancing protein synthesis and decreasing the breakdown of muscle. The net result is an increase in muscle size, muscle strength and lean muscle mass along with a decrease in body fat.

Muscle-building steroids do work, but their use comes at a high cost. First, it is illegal to possess and use these drugs without a prescription. From a side effect standpoint, AAS use during adolescence can cause premature closure of the bones' growth plates, leading to decreased final adult height. Acne, male pattern baldness, hypogonadism (shrinking of the testicles), gynecomastia (male breast overdevelopment) and violent behavior changes are all common side effects. There are also life-threatening side effects including cardiovascular disease, arrhythmias, blood clots, stroke, cancer and increased risk of suicide.

For more than a decade, the use of human growth hormone (hGH) by professional athletes has been in the spotlight. hGH promotes growth throughout childhood and adolescence, and is also involved in the regulation of multiple other hormones, such as insulin. Studies have shown that the use of hGH can decrease fat mass and increase lean body mass. However, there is limited evidence that its use improves athletic performance. Because it is normally a very important hormone in the regulation of other hormones and multiple body processes, the use of hGH can lead to multiple side effects, including altered fluid balance in the body, cardiovascular disease, diabetes and cancer.

Stimulants are a category of APEDS that have been used for centuries as a performance enhancer. We have already discussed caffeine, the most commonly used stimulant. Stimulants may enhance performance by improving reaction time and increasing alertness, decreasing fatigue, and improving concentration and memory. Side effects from the use of stimulants range from relatively mild effects to the dangerous, including inability to sleep, anxiety, tremors, panic attacks, tachycardia (a rapid heart rate > 100), hypertension, psychosis, heart attacks and stroke. Some stimulants can also predispose an athlete to heat illness and death. Ephedrine was banned by the FDA in 2004 for use as a diet aid because of the increased risk of stroke and heart attack.

WHO IS USING APEDS?

The use of APEDS in high school students ranges from 3% admitting the use of AAS, to almost 40% reporting a history of protein supplement use. Eighteen percent of APEDS users in high school do not participate in sports, so it is considered that this group uses APEDS for appearance enhancement (weight loss or gain, body building). Girls report a higher use of nonprescription diet pills (considered stimulants) than boys, and a lower use of substances associated with gains in muscle mass and strength, such as AAS, prohormones, and creatine.

WHY IS THE USE OF APEDS AN ISSUE?

The use of illegal or banned APEDS by high school students is unfair, unethical and is considered a form of cheating. In addition, many of the products used as APEDS are not tested or regulated, and have been found to contain significant contamination with heavy metals, AAS and/or stimulants. Their use undermines the values of fair play, and can be a threat to the overall health and well-being of high school students.

The use of caffeine, creatine and amino acids/protein powders should not be taken lightly, but these substances are not dangerous if the athlete has first discussed their proper use with a knowledgeable health-care provider and they are used as directed. As discussed earlier, the true purity of the product and potential for contamination must also be a consideration when deciding to use this category of APEDS.

PREVENTING STUDENTS FROM USING ILLEGAL OR BANNED APEDS

Education about APEDS and their use is the hallmark to any prevention program. Despite advances in APEDS detection, random testing does not appear to be an effective deterrent to the use of APEDS. The following are key educational points to prevent the use of APEDS:

- School personnel, coaches, parents and other family members can reduce APEDS abuse by educating students and speaking out against such use.
- Talk with your students about their concerns and frustrations related to how they look or how they are performing in their sport. Help them establish and reinforce healthy and realistic expectations of their bodies and athletic performance.
- Have your athletes focus on proper nutrition and hydration. If possible, have your athletes work with a registered dietician to develop a plan for appropriate weight gain and/or weight loss.
- Help your athletes understand that using illegal and banned APEDS is unfair, unethical and likely dangerous.
- Emphasize to your students that they should not trust internet marketing messages about quick fixes and enticing gains in athletic appearance or performance. Explain that the photos in these sites and in muscle magazines depict unrealistic pictures of male and female bodies.
- Discourage your athletes' access to environments where APEDS use might occur and to people who are involved with APEDS.

- Consider initiating a formal APEDS education program to educate your students and athletes and to deter APEDS use, such as the ATLAS and ATHENA programs.

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National Federation of State
High School Associations

POSITION STATEMENT AND RECOMMENDATIONS FOR THE USE OF ENERGY DRINKS BY YOUNG ATHLETES

National Federation of State High School Associations (NFHS)
Sports Medicine Advisory Committee (SMAC)

Background: Energy drinks continue to be popular among adolescents and young adults. These beverages are specifically marketed to young athletes who look to energy drinks as a quick and easy way to maximize athletic and academic performance. The energy drink market also includes energy shots (a more concentrated form with high caffeine content) and energy drink powder mixes that can be combined with water or juice. The marketing of these beverages to adolescents and young adults through social media and other advertisements has significantly increased in recent years. In 2016, about $2.8 billion was spent on energy drinks.

The NFHS SMAC strongly recommends that:

1. Water and appropriate sports drinks should be used for rehydration as outlined in the NFHS "**Position Statement and Recommendations for Maintaining Hydration to Optimize Performance and Minimize the Risk for Exertional Heat Illness**."
2. Energy drinks SHOULD NOT be used for hydration prior to, during, or after physical activity.
3. Information about the absence of benefit and the presence of potential risk associated with energy drinks should be widely shared among all individuals who interact with young athletes.
4. Athletes taking over the counter or prescription medications should not consume energy drinks without the approval of their physician.
5. Energy drinks ARE NOT sports drinks and should not be used by athletes in training or competition.

WARNING: The exact content and purity of energy drinks cannot be ensured, as there are no regulatory controls over these products. Thus, there is the risk for negative side effects (see below), potentially harmful interactions with prescription medications (particularly stimulant medications used to treat Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD)), or resultant positive drug tests due to impurities with banned substances.

Frequently Asked Questions

What is an energy drink?

- An energy drink is a beverage marketed to both athletes and the general public as a quick and easy means of relieving fatigue and improving performance. In addition to water, nearly all energy drinks contain carbohydrates and caffeine as their main ingredients. The carbohydrates provide nutrient energy while the caffeine acts as a stimulant to the central nervous system.

What are the differences between an energy drink and a sports drink?

- Sports drinks are designed to provide rehydration during or after athletic activity. While contents vary, most sports drinks contain a 6 to 8% carbohydrate solution and a mixture of electrolytes. The carbohydrate and electrolyte concentrations are formulated to allow maximal absorption of the fluid by the gastrointestinal tract. Energy drinks often contain a higher concentration of carbohydrate (usually 8 to 11%), and thus a larger number of calories than sports drinks. They also contain high amounts of caffeine and, in some cases, other nutritional supplements. Other ingredients with caffeine-like effects may be present; yet, typically their caffeine content is not noted. **Energy drinks are not appropriate for hydrating or re-hydrating athletes during physical activity and should not be used in such circumstances**.

What ingredients are found in energy drinks?

- *Carbohydrates*- Most energy drinks have from 18g to 25g of carbohydrate per 8 ounces. The high carbohydrate concentration can delay gastric emptying and impede absorption of fluid in the gastrointestinal tract.
- *Caffeine*- Nearly all energy drinks contain some quantity of "natural" or synthetic caffeine. The caffeine concentration may range from the equivalent to an 8 ounce cup of coffee (85mg) to more than three times that amount.
- *Herbs*- Many energy drinks include herbal forms of caffeine such as guarana seeds, kola nuts, green tea extract, and Yerba mate leaves, in addition to synthetic caffeine. The "performance enhancing" effects, safety, and health benefits of other herbs like Astragalus, Echinacea, Ginko biloba, ginseng, and countless others have not been well established by scientific studies.
- *Vitamins*- Athletes with reasonably good diets should be assured that they are at low risk for vitamin deficiency and typically do not need supplementation. There is no evidence to suggest that vitamin supplementation improves athletic performance. Female athletes may benefit from iron and calcium supplements, but those are more easily and inexpensively obtained in supplement form rather than from energy drinks. Some individuals may benefit from Vitamin D supplementation and should discuss it with their primary care provider.
- *Proteins and amino acids*- Only a small amount of protein is used as fuel for exercise. Carbohydrates are utilized as the primary fuel source. To date, there is no definitive evidence that amino acid supplementation enhances athletic performance.
- Other ingredients- With the hundreds of energy drink brands that are available, the potential ingredients which they may contain are virtually unlimited. Possible additions include pyruvate, creatine, carnitine, medium-chain triglycerides, taurine and even oxygen.
- Recent manufacturer trends to mix energy drinks in alcoholic beverages is specifically concerning for the potential abuse of alcohol and the resultant higher amounts of alcohol consumption.

What are the possible negative effects of using energy drinks?

- *Central nervous system*- Caffeine often has the effect of making a person feel "energized." Studies have shown some performance-enhancing benefits from caffeine at doses of 6mg/kg of body weight. However, these and higher doses of caffeine may produce light headedness, tremors, impaired sleep, suppression of appetite, and difficulty with fine motor control.
- *Gastrointestinal system*- The high concentrations of carbohydrates often found in energy drinks may delay gastric emptying, resulting in a feeling of being bloated. Abdominal cramping may also occur. Both carbohydrates and caffeine in the high concentrations found in most energy drinks may cause diarrhea.

- *Dehydration*- Energy drinks should not be used for pre- or rehydration. The high carbohydrate concentration can delay gastric emptying and slow absorption from the gastrointestinal tract, and, may cause diarrhea. Caffeine can act as a diuretic and, therefore, may result in increased fluid loss.
- *Positive drug tests*- Like all nutritional supplements, there is little or no regulatory oversight of energy drinks. The purity of the products cannot be assured and it is possible that they may contain substances banned by some sports organizations.
- Consumption of energy drinks by adolescents and young adults has been linked to heart arrhythmia (irregular and/or rapid heart rate), other cardiovascular events such as high blood pressure and heart attacks, and liver problems.
- Sales of certain energy drinks have been banned in Denmark, Turkey, Uruguay, Germany, and Austria. Some states in the U.S. have introduced legislation to restrict sales of energy drinks to adolescents and children. Recently, healthcare providers have voiced increasing concerns about the consumption of energy drinks in association with alcohol because of the interaction of the stimulant effects of energy drinks and the depressant effects of alcohol.

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National Federation of State High School Associations

Sports-Related Skin Infections
Position Statement and Guidelines

National Federation of State High School Associations (NFHS)
Sports Medicine Advisory Committee (SMAC)

Skin-related infections in both the community setting and the sports environment have increased considerably over the past several years. While the majority of these infections are transmitted through skin-to-skin contact, a significant number are due to shared equipment, towels or poor hygiene in general. The NFHS Sports Medicine Advisory Committee (SMAC) has put forth general guidelines for the prevention of the spread of these infectious diseases (See NFHS General Guidelines for Sports Hygiene, Skin Infections and Communicable Diseases).

The NFHS SMAC recognizes that even with strict adherence to these guidelines, given the nature of certain sports, skin infections will continue to occur. For example, the risk of transmission is much higher in sports with a great deal of direct skin-to-skin contact such as wrestling and football. Therefore, the NFHS SMAC has developed specific guidelines for the skin infections most commonly encountered in sports. The guidelines set forth follow the principles of Universal Precautions and err in favor of protecting participants in situations where skin-to-skin contact may occur. Consideration may be given to the particular sport regarding risk of transmission, but these guidelines must be strictly adhered to in sports where skin-to-skin contact is frequent and unavoidable.

Ringworm, Tinea Corporis

These fungal lesions are due to dermatophytes. As they are easily transmissible, the student should be treated with an oral or topical antifungal medication for a minimum of 72 hours prior to participation. Once the lesion is considered to be no longer contagious, it may be covered with a bio-occlusive dressing. For scalp involvement, the infection is more difficult to treat and requires 14 days of oral antifungal medication before return to practice and competition. With scalp involvement, shedding of fungal spores can persist well beyond 2 weeks. Consider washing scalp before practice with ketoconazole 1% shampoo to reduce transmission of spores. Continue with treatment until scalp lesions are gone.

Impetigo, Folliculitis, Carbuncle and Furuncle

While these infections may be secondary to a variety of bacteria, methicillin-resistant Staphylococcus aureus (MRSA) infections are of greatest concern. The athlete should be treated and removed from practice and competition. Treatment may consist of incision and drainage with or without oral antibiotics. For non-MRSA infections, return to contact practices and competition may occur after 72 hours of treatment, provided the infection is not actively draining. At this time the involved site may be covered with a bio-occlusive dressing. If there is spontaneous drainage or incision and drainage, then may return to practice and competition after 72 hours of treatment. If MRSA is present, abscess incision and drainage is recommended for return to practice

National Federation of State High School Associations

GENERAL GUIDELINES FOR SPORTS HYGIENE, SKIN INFECTIONS AND COMMUNICABLE DISEASES

National Federation of State High School Associations (NFHS)
Sports Medicine Advisory Committee (SMAC)

Proper precautions are needed to minimize the potential risk of the spread of communicable disease and skin infections during athletic competition. These conditions include skin infections that occur due to skin contact with competitors and equipment. The transmission of infections such as Methicillin-Resistant Staphylococcus aureus (MRSA) and Herpes Gladiatorum, blood-borne pathogens such as HIV and Hepatitis B, and other infectious diseases such as Influenza can often be greatly reduced through proper hygiene. The NFHS SMAC has outlined and listed below some general guidelines for the prevention of the spread of these diseases.

Universal Hygiene Protocol for All Sports:

• Shower immediately after every competition and practice, using liquid soap and not a shared bar soap.

• Wash all workout clothing after each practice, washing in hot water and drying on a high heat setting.

• Clean and/or wash all personal gear (knee pads, head gear, braces, etc.) and gym bags at least weekly.

• Do not share towels or personal hygiene products (razors) with others.

• Refrain from full body and/or cosmetic shaving of head, chest, arms, legs, abdomen, and groin.

• Students should clean hands with an alcohol-based gel or soap and water before and after every practice and contest to decrease bacterial load on the hands.

Infectious Skin Diseases

Strategies for reducing the potential exposure to these infectious agents include:

• Students must notify a parent/guardian and coach of any skin lesion prior to any competition or practice. An appropriate health-care professional must evaluate all concerning skin lesions before returning to practices or competition.

• If an outbreak occurs on a team, especially in a contact sport, all team members should be evaluated to help prevent the potential spread of the infection. All shared equipment shall be properly cleaned/disinfected prior to use.

• Coaches, officials, and appropriate health-care professionals must follow NFHS or state/local guidelines on "time until return to competition." Participation with a covered lesion may be considered if in accordance with NFHS, state or local guidelines and the lesion is no longer contagious.

Blood-borne Infectious Diseases
Strategies for reducing the potential exposure to these agents include following Universal Precautions such as:

• A student who is bleeding, has an open wound, has any amount of blood on a uniform, or has blood on their body, shall be directed to leave the activity (game or practice) until the bleeding is stopped, the wound is covered, the uniform and/or body is appropriately cleaned, and/or the uniform is changed before returning to activity.

• Athletic trainers or other caregivers must wear gloves and use Universal Precautions to prevent blood or body fluid-splash from contaminating themselves or others.

• In the event of a blood or body fluid-splash, immediately wash contaminated skin or mucous membranes with soap and water.

• Clean all contaminated surfaces and equipment with disinfectant before returning to competition. Be sure to use gloves when cleaning.

• Any blood exposure or bites to the skin that break the surface must be reported and immediately evaluated by an appropriate health-care professional.

Other Communicable Diseases
Means of reducing the potential exposure to these agents include:

- Make certain that students, coaching staff, and medical staff are current on all required vaccinations (MMR, Hepatitis B, Chickenpox, etc) and strongly encourage yearly influenza vaccinations.

- During times of outbreaks, follow the guidelines set forth by the CDC as well as State and local Health Departments.

For more detailed information, refer to the "Blood-Borne Pathogens," "Infectious Mononucleosis" and "Skin Conditions and Infections" sections contained in the NFHS Sports Medicine Handbook.

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and competition may be considered after 72 hours of treatment, provided there is no further drainage or new abscess formation. All lesions should be considered infectious until each one has a well-adherent scab without any drainage or weeping fluids. Once a lesion is no longer considered infectious, it should be covered with a bio-occlusive dressing until complete resolution.

During the time when a student has been identified with any of these infections, increased screening should occur. At this time, all team members should be carefully screened for similar infections on a daily basis by a knowledgeable coach or appropriate health-care professional. If multiple students are infected, consideration should be given to contacting the local or state health department for further guidance.

Shingles, Cold Sores

These are viral infections, which are transmitted by skin-to-skin contact. Lesions on exposed areas of skin that are not covered by clothing, uniform or equipment require the player to be withdrawn from any activity that may result in direct skin-to-skin contact with another participant. Covering infectious lesions with an occlusive dressing is not adequate, sufficient, or acceptable. Prior to returning to participation, primary outbreaks of shingles and cold sores require 10-14 days of oral antiviral medications, while recurrent outbreaks require 120 hours of treatment as a minimum treatment time. For a student to be considered "non-contagious," all lesions must be scabbed over with no oozing or discharge, and no new lesions should have occurred in the preceding 72 hours.

Herpes Gladiatorum

This skin infection, primarily seen among wrestlers, is caused by herpes simplex virus Type 1 (HSV-1). The spreading of this virus is strictly skin-to-skin. The majority of the outbreaks develop on the head, face and neck, reflecting the typical wrestling lock-up position. The initial outbreak is characterized by a raised rash with groupings of 6-10 vesicles (blisters). For head, face and neck involvement, symptoms include sore throat, fever, malaise and swollen cervical lymph nodes. For a primary infection (first episode of Herpes Gladiatorum), wrestlers should be treated and not allowed to practice or compete for a minimum of 10 days. If general body signs and symptoms like fever and swollen lymph nodes are present, that minimum period of treatment should be extended to 14 days. If antivirals are not used, the infected participant may return to full contact wrestling only after all lesions are well-healed with well-adhered scabs, there has been no new vesicle formation in the preceding 72 hours, and there are no swollen lymph nodes near the affected area. The infected individual must be immediately removed from contact (practices and contests) and seek appropriate care and treatment. Return to contact is permissible only after all lesions are healed with well-adherent scabs, no new vesicles have formed, and no swollen lymph nodes remain near the affected area. Oral antiviral medications should be started and can expedite the clearing of an outbreak. Careful consideration should be given to prophylactic oral antivirals for the remainder of the season and each subsequent season.

Recurrent outbreaks usually involve a smaller area of skin, milder systemic illness and a shorter duration of symptoms. Treatment should include oral antivirals. If antiviral therapy is initiated, the participant must be held from contact sports for a minimum of 120 hours. Even greater consideration should be given to prophylactic antivirals for the remainder of the season. As the herpes virus may spread prior to vesicle formation, anyone in contact with the infected individual during the three days prior to the outbreak **must** be isolated from any contact activity for eight days and be examined daily by a knowledgeable coach or appropriate health-care professional for suspicious skin lesions.

Miscellaneous Viral Infections

Verrucae (warts) are skin infections that are also caused by viruses but are not considered highly contagious. Therefore, these lesions require no treatment or restrictions, but should be covered if prone to bleeding when abraded. Molluscum contagiosum is considered contagious and transmits via direct skin-to-skin contact. Treatment consists of expressing the material from each vesicle and lightly treating with a hyfrecator, usually performed by an appropriate health-care professional. Participation can ensue immediately after treatment, provided sites are covered with a bio-occlusive dressing.

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HONOR CHARTER ATHLETICS LEAGUE
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HCAL SAFETY TRAINING VERIFICATION FORM

In signing this form, I verify that I have completed and reviewed in detail the *HCAL Safety Training* and will adhere to the practices instructed to ensure the safest environment possible for all student-athletes.

_____	_____	
Campus	Title	
_____	_____	_____
Print Name	Signature	Date