

Anne Arundel County Public Schools

# Heat Acclimatization Guidelines for AACPS Athletics

AACPS  
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# **AACPS Heat Acclimatization Guidelines**

## **Introduction**

The intent of these guidelines is to minimize injury and heat related illnesses while enhancing the player's health, performance and well-being. Coaches, athletes and parents are reminded to always err on the side of caution. Schools are encouraged to educate athletes and parents regarding the risks of dehydration on health and physical performance. Schools should work with individual athletes to develop fluid-replacement strategies that optimize hydration status before, during and after competition /practice. For more information, please refer to <http://www.nfhslearn.com/electiveDetail.aspx?courseID=34000>.

Each year high school athletes experience serious injury and even death as a result of heat-related illnesses. It has become a major concern in that the number of deaths over the last 15 years has remained constant. That statistic becomes more alarming given that heat-related illness and death are almost entirely preventable. The need to dramatically increase awareness of the issue, recognize the symptoms of heat illness and treatment of suspected cases has become a primary consideration for early season practice routines.

The Maryland General Assembly recognized the potential for ameliorating risk and has provided legislation to address the problem. This document is offered to Maryland schools to assist in the formation of local guidelines to address heat acclimatization. It was formatted through a collaborative effort of representatives from the Maryland State Department of Education (MSDE), Department of Health and Mental Hygiene (DHMH), Local School Systems, Maryland Public Secondary Schools Athletic Association (MPSSAA), Maryland Athletic Trainers Association (MATA) and Licensed Physicians who treat student-athletes.

This packet includes information for coaches, parents, athletic administrators and student-athletes regarding important definitions; hydration awareness; environmental and non-environmental risk factors; heat acclimatization timeline; and a basic emergency plan. The guidelines attempt to strike a safe balance between a gradual introduction and assimilation into athletic competition with the need to properly teach safe playing techniques. The mitigation of other serious injuries must also be considered in any pre-season practice format.

These guidelines are recommended for fall practice where the greatest risks of heat related illnesses occur. However, athletes practicing indoors, in non-air conditioned or poorly ventilated gyms are also susceptible as are students practicing for spring sports. The guidelines are also recommended for winter and spring sports regarding the duration and intensity of practices. AACPS will evaluate whether equipment restrictions are necessary for winter and spring sports.

AACPS has carefully considered the specific guidelines created by MPSSAA for acclimatization of athletes to warm weather conditions. Resources may be found on the Health and Safety page of MPSSAA.org.

## Education

Coaches, parents and students play a critical role in understanding the dynamics associated with heat related illnesses. For many, the concept of heat acclimatization is a vague term. Likewise, the awareness of hydration and/or heat related emergency procedures are also limited among the general population. Raising the awareness level of the components of heat related illness should be a priority of each school athletic department.

Educational initiatives on multiple fronts should be undertaken to reach the greatest level of saturation. The National Federation of State High School Associations (NFHS) online course entitled, “A Guide to Heat Acclimatization and Heat Illness and Prevention” ([www.nfhslearn.com](http://www.nfhslearn.com)) provides a highly recommended guide to understanding the issue. The course is free and requires less than a half hour of time to complete. A certificate can be printed on completion of the course. In addition, the Center for Disease Control (CDC) provides information in a document entitled, “Extreme Heat - A Prevention Guide to Promote Your Personal Health & Safety.”

## **Important Definitions**

For the purpose of this document the following definitions will be used to provide meaning and further interpretations of the guidelines. Definitions for heat acclimatization, practice, and recovery period were derived directly from Maryland House Bill 1080 (2012) while the definition of a walk-through comes from the National Athletic Trainers Association Preseason Heat-Acclimatization Guidelines for Secondary School Athletics.

**Controlled Scrimmage (football)** – An instructional practice involving one or more teams during which athletes practice the skills, techniques, and plays of the sport in a controlled situation. This takes place on practice Day 6 or 7 of heat acclimatization timeline. An example of this would be each team running a set number of plays against their opponent. This typically does not include live special teams. Players should be rotated in and out so all can benefit from the practice opportunity and continue to acclimatize to the conditions.

**Scrimmages** – All scrimmages must follow practice time guidelines. A student may participate in a scrimmage only after he/she has completed 5 full days of practice.

**Heat Acclimatization** – Enhancing an individual’s exercise heat tolerance and ability to exercise safely and effectively in warm to hot conditions.

**Practice** – A period of time a student-athlete engages in physical activity during a coach-supervised, school-approved sports- or conditioning-related activity, including warm-up, stretching, weight training, and cool-down periods.

**Walk-Through** – A teaching opportunity when an athlete is not wearing protective equipment, including helmets, shoulder pads, catcher’s gear, or shin guards, or using other sports-related equipment (e.g. footballs, lacrosse sticks, blocking sleds, pitching machines, soccer balls, marker cones).

**Recovery Period** – the time between the end of one practice or walk-through and the beginning of the next practice or walk-through. A cool indoor (air-conditioned preferred) environment must be provided if the student athletes remain under school personnel’s supervision. Film study or chalk talks sessions may take place during any recovery period provided the overall allotted time does not exceed AACPS time restrictions (6 hours on non-school day; 3 hours on school day). Lunch is encouraged.

**Hydration** – The process of drinking fluid to restore fluid levels in the body to avoid poor performance, muscle cramps, dizziness, fatigue, and other heat related illness.

## General Guidelines

- On single-practice days, one walk-through is permitted.
- Double practice days (beginning no earlier than practice day 6) must be followed by a single-practice day or rest day. When a double-practice day is followed by a rest day, another double-practice day is permitted after the rest day.
- All practices and walk-through sessions must be separated by at least three hours of continuous rest.
- If a practice is interrupted by inclement weather or heat restrictions, the practice should recommence once conditions are deemed safe, but total practice time should not exceed its limitations.
- The heat-acclimatization period is designed for students on an individual basis. Days in which athletes do not practice due to a scheduled rest day, injury, illness or other reasons do not count towards the heat-acclimatization period.

## Heat Acclimatization Days 1 through 5

- **Day 1 and 2** – On these days, conditioning and proper hydration should be the focus. There should be no contact of any kind in any sport. Coaches should provide unlimited water access and planned water breaks at least every 20 – 30 minutes. Teams are limited to one practice per day not to exceed three hours in length. Practice options A or B are permissible.

### Equipment Restrictions

- Football- helmets, mouth pieces, shorts, t-shirts and appropriate footwear
  - Field Hockey- Goalies in helmet and goalie kickers, athletes may wear shin guards, goggles and mouth pieces.
  - Soccer – Shin guards and goalie gloves can be worn beginning day 1.
  - Volleyball- Knee pads may be worn beginning day 1.
- **Day 3, 4 and 5** – On these days, conditioning and proper hydration should still be the focus. During these days limited contact is allowed. Practice options A or B are permissible.

## Equipment Restrictions

- Football - helmets and shoulder pads only. Contact with blocking sleds and tackling dummies may be initiated. Find non-contact examples at <http://www.piaa.org/news/details.aspx?ID=2065>
- Field Hockey – Goalies in helmet, chest protection and goalie kickers.

## Heat Acclimatization Days 6 through 14

- Full protective equipment and gear are permitted.
- Body to body contact is permitted
- Double-Practice Days are permitted.
- On a double-practice day, no practice should exceed 3 hours in duration and no student athlete should participate in more than 5 total hours of **active** practice. Warm-up, stretching, cool-down, walk-through, conditioning and weight room activities are included as part of the **active** practice time. Film sessions, classroom work, chalk talks and other indoor non-active coaching opportunities are not considered part of the 5 hour **active** practice restriction.
- The two practices must be separated by at least 3 continuous hours of recovery period.

## Practice Options:

**Option A** - One, 3 hour practice

**Option B** - One, 3-hour practice, followed by a mandatory 3-hour recovery period, followed by a 1 hour walk-through or vice versa.

**Option C** - (Double Practice) One three hour practice, followed by a mandatory 3-hour recovery period, followed by a 2 hour practice. (Note: A **1-hour** film session, chalk talk, or similar activity is permitted during the recovery period).

**Option D** - (Double Practice) One 2-hour practice, followed by a mandatory 3-hour recovery period, followed by a 3-hour practice. (Note: A **1-hour** film session, chalk talk, or similar activity is permitted during the recovery period).

## Practice Schedule 2012:

- August 11 through August 16 - Option A or B only
- August 17 through August 25 – Option A, B, C or D
- August 18 – First day for scrimmages
- School days after August 27 – Practice Option A only
- Non-school days after August 27 – Resume standard AACPS time restriction guidelines.

## Sample Practice Calendar

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						Day 1
Rest Day	Day 2	Day 3	Day 4	Day 5	Day 6 Full Contact 1 <sup>st</sup> two-a-day	Day 7
Rest Day	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13
Rest Day	Day 14	Day 15	Day 16	Day 17	First Play Date	



## Hydration Awareness

The purpose of proper hydration in regard to the overall safety and conditioning to a student-athlete is a key part of a successful high school athletic program and one of the most preventable ways to combat heat illnesses. The responsibility to prevent injury and to successfully hydrate student-athletes is shared among the student-athlete, coaching staff, and athletic trainers.

Many student-athletes are not educated on the need and do not voluntarily drink enough water to prevent significant dehydration during physical activity. National recommendations suggest student-athletes drink regularly throughout all physical activities. An athlete cannot always rely on his or her sense of thirst to sufficiently maintain proper hydration.

### **Suggested guidelines for local consideration:**

- Readily available and unlimited amounts of water during practice and designated breaks.
- Drink before, during, and after practice 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 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.
- Student-athletes who do not properly rehydrate their bodies between practices run the risk of cumulative dehydration. Cumulative dehydration develops insidiously over several days and raises the risk for heat illness, especially in the first few days of acclimatization. (See NATA position statement on Fluid Replacement for Athletes).
- Student-athletes should be encouraged to monitor their hydration level by the color and volume of urine. Small amounts of dark urine indicate the need to drink more, while a “regular” amount of light colored urine is normal and indicates the student-athlete is well hydrated. A urine chart, such as [www.urinecolors.com/dehydration%20chart.pdf](http://www.urinecolors.com/dehydration%20chart.pdf) should be posted at the school site, and encouraged to be posted at home so that student-athletes can assess their individual hydration.
- Athletes should be encouraged to maintain individual weight charts to monitor personal weight loss and hydration status. Weights should be taken prior to and after practice.
- Athletic trainers, if available, should assist in the monitoring of student-athletes during times where athletes are becoming acclimated to a new sports season and when temperatures are high.



N A T A

# National Athletic Trainers' Association Position Statement: Fluid Replacement for Athletes\*

A Summary Of Practical Applications

**Background:** Dehydration can compromise athletic performance and increase the risk of exertional heat injury.

**Recommendations:** Educate athletes regarding the risks of dehydration and overhydration on health and physical performance. Work with individual athletes to develop fluid-replacement strategies that optimize hydration status before, during and after competition.

*Consult the Position Statement for a complete description of the following subject areas or to gain a better understanding of the scientific literature which supports these recommendations.*

## Effects of Dehydration

- ✓ Dehydration can affect an athlete's performance in less than an hour of exercise—sooner if the athlete begins the session dehydrated.
- ✓ Dehydration of just 1% – 2% of body weight (only 1.5 – 3 lbs. for a 150 lb. athlete) can negatively influence performance.
- ✓ Dehydration of greater than 3% of body weight increases an athlete's risk of heat illness (heat cramps, heat exhaustion, heat stroke).

## Warning Signs of Dehydration

Recognize the basic signs of dehydration:

- thirst
- irritability
- headache
- weakness
- dizziness
- cramps
- nausea
- decreased performance

## What to Drink During Exercise

- ✓ Athletes benefit in many situations from drinking a sports drink containing carbohydrate.
- ✓ If exercise lasts more than 45-50 minutes or is intense, a sports drink should be provided during the session.
- ✓ The carbohydrate concentration in the ideal fluid replacement solution should be in the range of 6% to 8% (g/100mL).
- ✓ An ingestion rate of about 1g carbohydrate (CHO)/minute during exercise maintains optimal carbohydrate metabolism. For example: 1 L of a 6% carbohydrate (14g CHO/8 oz) sports drink per hour of exercise.
- ✓ During events when a high rate of fluid intake is necessary to sustain hydration, sports drinks with less than 7% carbohydrate should be used to optimize fluid delivery.
- ✓ Fluids with salt (sodium chloride) are beneficial to increasing thirst and voluntary fluid intake as well as offsetting the amount lost in sweat.
- ✓ Cool beverages at temperatures of 50° to 59° F are recommended.

### What NOT to Drink During Exercise

- ✓ Fruit juices, carbohydrate gels, sodas and those sports drinks that have CHO levels greater than 8% are not recommended during exercise as the sole beverage.
- ✓ 8% CHO is a warning sign. Replacing fluids with a beverage that has less than 8% carbohydrate would be optimal to assure the fastest rate of fluid absorption.
- ✓ Beverages containing caffeine, alcohol and carbonation are discouraged during activity because they can dehydrate the body by stimulating excess urine production, or decrease voluntary fluid intake.

### Hydration Tips

- ✓ 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 below to maintain hydration and maximize performance).
- ✓ Avoid soft drinks and juice during play. The high carbs may cause stomach problems.

### Fluid Guidelines

#### Before Exercise

- ✓ 2 - 3 hours before exercise drink 17 - 20 oz of water or a sports drink.
- ✓ 10 - 20 minutes before exercise drink another 7 - 10 oz of water or a sports drink.

#### During Exercise

- ✓ Drink Early—Even minimal dehydration compromises performance.
- ✓ In general, every 10 - 20 minutes drink at least 7 - 10 oz of water or a sports drink.  
To maintain hydration, remember to drink beyond your thirst. Optimally, drink fluids based on amount of sweat and urine loss.

#### After Exercise

- ✓ Within 2 hours drink enough to replace any weight loss from exercise.  
Drink approximately 20-24 oz of a sports drink per pound of weight loss.





# AM I HYDRATED?

## Urine Color Chart

<b>1</b>		
<b>2</b>		If your urine matches the colors 1, 2, or 3, you are properly hydrated.
<b>3</b>		Continue to consume fluids at the recommended amounts.
<b>4</b>		If your urine color is below the <b>RED</b> line, you are
<b>5</b>		<b><u>DEHYDRATED</u></b> and at risk for cramping and/or a heat illness!!
<b>6</b>		<b><u>YOU NEED TO DRINK MORE WATER!</u></b>
<b>7</b>		
<b>8</b>		

## **Environmental and Non-Environmental Risk Factors**

Enacting guidelines to fit every situation is problematic when individual and local differences often render unique circumstances. Local school systems should be prepared to make interpretations and err on the side of caution when dealing with unique circumstances.

The guidelines recommended for local consideration are minimum requirements designed to acclimatize student-athletes so they can participate effectively in warm and hot conditions and reduce the risk of heat related illnesses. However, environmental and non-environmental risk factors can increase the risk of heat illness per individual participant and per individual school. Local school systems are recommended to be educated, aware, and enact policy when needed to address environmental and non-environmental risk factors.

### **Environmental Risk Factors**

School systems are encouraged to assess the environmental conditions for each day of practice and have policies in place depending on the assessment of the conditions. The more humid and hot conditions are on any given day of practice, the higher the risk is for heat illness and appropriate modifications to the practice schedule may be necessary.

Air temperature, combined with humidity, wind speed, and the amount of radiant heat are all contributing environmental factors that can increase the risk of heat illness.

### **Non-Environmental Risk Factors**

The inter-association task force on exertional heat illnesses consensus statement details factors that may increase the risk associated with participation in the heat for individual students. During moderate exercise, 70 to 90 percent of the energy produced by the body is released as heat. There are a number of factors that can hamper heat dissipation and put an athlete at increased risk for heat illness. The NFHS Sports Medicine Advisory Committee (SMAC) lists the following non-environmental risk factors.

#### **Risk Factors:**

- **Clothing and Equipment.** Clothing and equipment inhibit heat loss from the body and increase the risk for heat illness. Dry clothing and equipment absorb sweat and prevent evaporative heat loss. Dark clothing or equipment produces radiant heat gain. Clothing and equipment decrease convective heat loss by interfering with air contact with the body. During periods of high WBGT or Heat Index, the risk of heat illnesses increases when clothing and equipment are worn. Thus, risk may be minimized through removing equipment and participating in drills wearing shirts and shorts only. Given that a great deal of heat is radiated from the head, helmets should be removed early on in hot and humid conditions.

- **Age** — Children acclimatize to heat more slowly and are less effective in regulating body heat than adults.
- **Dehydration** — It has been shown that moderate levels of dehydration (3-5% of body weight) can cause a significant decrease in performance and predispose an athlete to exertional heat illness. Lack of sufficient water to be released by the sweat glands makes it very difficult for the body to dissipate heat through evaporation. Thirst is a poor indication of hydration. (See more in the Hydration Section)
- **Pre-activity Hydration Status** — Athletes who begin activity in an already dehydrated state are at increased risk for exertional heat illness. Pre-activity hydration status may be compromised by inadequate rehydration following previous session, alcohol consumption, rapid weight loss regimes (i.e., wrestling), and febrile or gastrointestinal illness (vomiting or diarrhea).
- **High Body Fat** — Athletes with a high percentage of body fat are at increased risk for heat illness, as fat acts to insulate the body and decreases the body's ability to dissipate heat.
- **Poor Acclimatization/Fitness Level** — Those not yet acclimatized to the heat or inadequately conditioned are at increased risk.
- **Febrile Illness** — A fever increases core temperature and decreases the ability of the body to compensate. It is dangerous to exercise with a fever, especially when Wet Bulb Globe Test (WBGT) is high. Athletes with a fever, respiratory illness, vomiting or diarrhea should not exercise, especially in a hot environment.
- **Medications** — Amphetamines (including ADHD medications), ephedrine, synephrine, ma huang and other stimulants increase heat production. Some medications have anti-cholinergic actions (amitriptyline, Atrovent) resulting in decreased sweat production. Diuretics can produce dehydration. Athletes taking medication for ADHD should be monitored closely for signs and symptoms of heat illness.
- **Sickle Cell Trait** — Athletes with sickle cell trait (SCT) are at increased risk for a sickling crisis with exercise during hot weather. Special precautions should be taken in hot and humid conditions for athletes with SCT.
- **Prior Heat Illness History** – The risk factor for individuals with a prior history of heat related illnesses is higher. Decreased heat tolerance may affect 15 percent of athletes with a history of previous heat illness.

Additional non-environmental risk factors can be found in the consensus statement by the inter-association task force. Education and understanding of these considerations is recommended for school systems.

## EMERGENCY ACTION PLAN

The following pages constitute AACPS Emergency Plan for heat emergencies. Local schools are encouraged to pre-assign responsibilities, which include:

- Person to call 911 first then parent.
- Person(s) to prepare soaking tub or pool, or application of ice bags for topical application.
- Person(s) to assist with moving and attending injured player.
- Person to meet and escort emergency vehicle to victim.
- Person to supervise rest of team.

Coaches will be required to take NFHS course regarding heat related illness, “*A Guide to Heat Acclimatization & Heat Illness Prevention.*”

<http://www.nfhslearn.com/electiveDetail.aspx?courseID=34000>

# HEAT STROKE/HEAT EXHAUSTION

Heat emergencies can be life-threatening situations.

Strenuous activity in the heat may cause heat-related illness.

Symptoms may include:

- Red, hot, dry skin
- Weakness and fatigue
- Cool, clammy hands
- Vomiting
- Loss of consciousness
- Profuse sweating
- Headache
- Nausea
- Confusion
- Muscle cramping

Quickly remove person from heat to a cooler place.

Is the person:  
 • Unconscious or losing consciousness? **OR**  
 • Hot, dry, have red skin? **OR**  
 • Vomiting? **OR**  
 • Confused?

NO

Have the person lie down. Elevate legs 8 – 12 inches.

Give cool, clear fluids such as water, or commercial electrolyte drink frequently in small amounts if person is fully awake and alert. Sponge person with cool wet cloths on head, face, and trunk. Fan person, loosen clothing.

Notify responsible school authority and parent/guardian.

YES

CALL EMS.



Put person on his/her side to protect the airway. Look, listen, feel for breathing. If person is not breathing, See "CPR."

Cool rapidly by completely wetting clothing with cool water and fan person. **DO NOT USE ICE WATER.** Place ice packs on neck, armpits, and groin. Give nothing by mouth.

May 2005





## Parents' and Coaches' Guide to Dehydration and Other Heat Illnesses in Children

These guidelines were developed to help parents and coaches increase the safety and performance of children who play sports in hot weather. Children who play sports or are physically active in hot weather can be at risk for heat illnesses. The good news is heat illnesses can be prevented and successfully treated.

Children sweat less than adults. This makes it harder for children to cool off. Parents and coaches must make sure that children take it slow to be sure they can get used to the heat and humidity gradually.

There are other reasons why a child may become ill from a heat illness. Those who have a low level of fitness, who are sick, or who have suffered from dehydration or heat illness in the past should be closely watched. A medical professional such as a certified athletic trainer (ATC) should be on site to monitor the health and safety of all participants during games and practice, especially when it is very hot and humid.

### Dehydration

Children get dehydrated if they do not replace body fluids lost by sweating. Being even a little dehydrated can make a child feel bad and play less effectively. Dehydration also puts children at risk for more dangerous heat illnesses.

#### Signs and Symptoms

- ◆ Dry mouth
- ◆ Thirst
- ◆ Being irritable or cranky
- ◆ Headache
- ◆ Seeming bored or disinterested
- ◆ Dizziness
- ◆ Cramps
- ◆ Excessive fatigue
- ◆ Child not able to run as fast or play as well as usual

#### Treatment

- ◆ Move child to a shaded or air-conditioned area.
- ◆ Give him or her fluids to drink.

#### "When can I play again?"

A child may be active again as soon as he or she is symptom-free. However, it's important to continue to watch the child.

National  
**SAFE  
KIDS**  
\*\*\*\*\*  
Campaign.

 National  
Athletic Trainers'  
Association  
*Health Care for Life & Sports*

## Heat Cramps

Heat cramps are a mild heat illness that can be easily treated. These intense muscle spasms usually develop after a child has been exercising for a while and has lost large amounts of fluid and salt from sweating. While heat cramps are more common in children who perform in the heat, they can also occur when it's not hot (for example, during ice hockey or swimming).

Children who sweat a lot or have a high concentration of salt in their sweat may be more likely to get heat cramps. Heat cramps can largely be avoided by being adequately conditioned, getting used to the heat and humidity slowly, and being sure a child eats and drinks properly.

### Signs and Symptoms

- ◆ Intense pain (not associated with pulling or straining a muscle)
- ◆ Persistent muscle contractions that continue during and after exercise

### Treatment

- ◆ The child should be given a sports drink to help replace fluid and sodium losses.
- ◆ Light stretching, relaxation and massage of the cramped muscles may help.

### "When can I play again?"

A child may be active again when the cramp has gone away and he or she feels and acts ready to participate. You can help decrease the risk of recurring heat cramps by checking whether the child needs to change eating and drinking habits, become more fit, or get better adjusted to the heat.

## Heat Exhaustion

Heat exhaustion is a moderate heat illness that occurs when a child continues to be physically active even after he or she starts suffering from ill effects of the heat, like dehydration. The child's body struggles to keep up with the demands, leading to heat exhaustion.

### Signs and Symptoms

- ◆ Child finds it hard or impossible to keep playing
- ◆ Loss of coordination, dizziness or fainting
- ◆ Dehydration
- ◆ Profuse sweating or pale skin
- ◆ Headache, nausea, vomiting or diarrhea
- ◆ Stomach/intestinal cramps or persistent muscle cramps

### Treatment

- ◆ Move child to a shaded or air-conditioned area.
- ◆ Remove any extra clothing and equipment.
- ◆ Cool the child with cold water, fans or cold towels (replace towels frequently).
- ◆ Have child lie comfortably with legs raised above heart level.
- ◆ If the child is not nauseated or vomiting, have him or her drink chilled water or sports drink.
- ◆ The child's condition should improve rapidly, but if there is little or no improvement, take the child for emergency medical treatment.

### "When can I play again?"

A child should not be allowed to return to play until all symptoms of heat exhaustion and dehydration are gone. Avoid intense practice in heat until at least the next day, and if heat exhaustion was severe, wait longer. If the child received emergency medical treatment, he or she should not be allowed to return until his or her doctor approves and gives specific return-to-play instructions.

Parents and coaches should rule out any other conditions or illnesses that may predispose the child for continued problems with heat exhaustion. Correct these problems before the child returns to full participation in the heat, especially for sports with equipment.

## Exertional Heat Stroke

Heat stroke is a severe heat illness that occurs when a child's body creates more heat than it can release, due to the strain of exercising in the heat. This results in a rapid increase in core body temperature, which can lead to permanent disability or even death if left untreated.

### Signs and Symptoms

- ◆ Increase in core body temperature, usually above 104°F/40°C (rectal temperature) when the child falls ill
- ◆ Central nervous system dysfunction, such as altered consciousness, seizures, confusion, emotional instability, irrational behavior or decreased mental acuity

### Other possible indicators include:

- ◆ Nausea, vomiting or diarrhea
- ◆ Headache, dizziness or weakness
- ◆ Hot and wet or dry skin
- ◆ Increased heart rate, decreased blood pressure or fast breathing
- ◆ Dehydration
- ◆ Combativeness

### Treatment

If there are no on-site medical personnel:

- ◆ Call emergency medical services for immediate transport to the nearest emergency medical facility. Begin cooling the child while waiting for and during transport to the emergency facility.

If there are on-site medical personnel:

- ◆ Locate medical personnel immediately. Remove extra clothing or equipment. Begin aggressive whole-body cooling by immersing the child in a tub of cold water. If a tub is not available, use alternative cooling methods such as cold water, fans, ice or cold towels (replaced frequently), placed over as much of the body as possible.
- ◆ Call emergency medical services for transport to the nearest emergency medical facility.

### "When can I play again?"

No child who has suffered heat stroke should be allowed to return until his or her doctor approves and gives specific return-to-play instructions. Parents should work with the child's doctor to rule out or treat any other conditions or illnesses that may cause continued problems with heat stroke. The child should return to physical activity slowly, under the supervision of an ATC or other qualified health care professional, especially for sports with equipment.

## Parents: How Much Should Your Child Drink When Active?

- ◆ Before activity in the heat, record your child's body weight. (Remember if your child has already been exercising in the heat, he or she may already be dehydrated.)
- ◆ Weigh your child again, after the activity is over.
- ◆ Compare your child's pre-activity body weight to his or her post-activity body weight.

If post-activity weight is less than pre-activity weight, your child is not drinking enough fluids while active. A loss of as little as 1 percent of body weight can cause a decrease in performance. Because scientists have proven that children replace less of their fluid losses when drinking water, you may want to offer a flavored sports drink to increase the amount of fluid your child consumes.



## Tips for Parents

- ◆ Before your child starts playing a sport, he or she should have a physical examination that includes specific questions about any history of heat illness.
- ◆ Tell your child's coach about any history of heat illness.
- ◆ Make sure your child is properly hydrated before he or she heads out the door to practice or a game. Give your children their own water bottles.
- ◆ Make sure your child's coach has your emergency contact numbers.
- ◆ Check that your child's league/team has an emergency action plan.

## Tips for Coaches

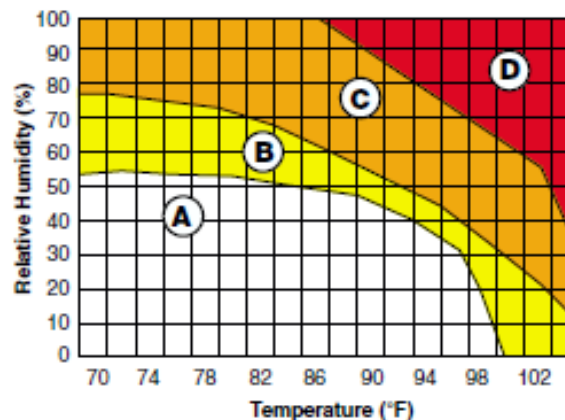
- ◆ Be aware of temperature and humidity levels. Change practice length, intensity and equipment use as the levels rise.
- ◆ It should be easy for children to drink fluids during practice, and you should remind them to drink regularly. Fluid breaks should be scheduled for all practices and become more frequent as the heat and humidity levels rise.
- ◆ Every athletic organization should have an emergency action plan for obtaining emergency medical services if needed.
- ◆ Always have contact information for parents available.

## Activity Guidelines

Fluid breaks should be scheduled for all practices and become more frequent as the heat and humidity levels rise.

Add 5°F to the temperature between 10:00 a.m. and 4:00 p.m. from mid-May to mid-September on bright, sunny days.

- A. Children should receive a 5-10 minute rest and fluid break after every 25 to 30 minutes of activity.
- B. Children should receive a 5-10 minute rest and fluid break after every 20 to 25 minutes of activity. Children should be in shorts and t-shirts (with helmet and shoulder pads only, not full equipment, if worn for activity).



- C. Children should receive a 5-10 minute rest and fluid break after every 15 to 20 minutes of activity. Children should be in shorts and t-shirts only (with all protective equipment removed, if worn for activity).
- D. Cancel or postpone all outdoor practices/games. Practice may be held in an air-conditioned space.

This document was adapted from: *Inter-Association task force on exertional heat illnesses consensus statement*, June 2003. National Athletic Trainers' Association. The full document can be obtained at [www.nata.org/industryresources/heatillnessconsensusstatement.pdf](http://www.nata.org/industryresources/heatillnessconsensusstatement.pdf).

## Practice Restrictions Due to Relative Heat Index

<b>Temperature</b>	<b>Humidity</b>	<b>Air Quality</b>	<b>Restrictions</b>
<b>Mid 70s – Low 80s F.</b>		<b>Code Green 0-50 Good Air Quality</b>	<b>Allow students to drink water whenever they feel the need.</b>
<b>Upper 70s – Mid 80s F.</b>	<b>Less than 70%</b>	<b>Code Yellow 51-100 Moderate Air Quality</b>	<b>Watch carefully. Allow students to drink when they feel the need, and require them to drink every 15 - 20 minutes.</b>
<b>Upper 70s – Mid 80s F.</b>	<b>More than 70%</b>	<b>Code Yellow 51-100 Moderate Air Quality</b>	<b>Watch carefully. Allow students to drink when they feel the need, and require them to drink every 15 -20 minutes. Provide a 10-minute rest period each hour</b>
<b>Upper 80s – Low 90s F.</b>	<b>Any</b>	<b>Code Orange 101-150 Unhealthy for Sensitive Groups</b>	<b>Observe carefully (especially at risk individuals). Allow students to drink when they feel the need, and require them to drink every 15 minutes or more frequently. Provide a 10-minute rest period each hour</b>
<b>Mid 90s – 100 F.</b>	<b>Any</b>	<b>Code Red 151-200 Unhealthy Air Quality</b>	<b>Hold morning or late evening practices while cooler. Only short practices lasting no more than 1 hour. Observe carefully (especially at risk individuals). Allow students to drink when they feel the need, and require them to drink every 15 minutes. Additional practice time may be scheduled in an air-conditioned facility. Games cancelled.</b>
<b>Mid 90s - 100+ F.</b>	<b>Any</b>	<b>Code Purple 201-300 Very Unhealthy Air Quality</b>	<b>All practices outside cancelled. Move activities indoors to air-conditioned areas.</b>

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