



**Policy & Guidelines**

**Preseason Heat Acclimatization**

**&**

**Heat & Humidity Procedures**

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## **Heat Acclimatization Guidelines Introduction**

Each year high school athletes experience serious injury and even death resulting from heat-related illnesses. It is 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 risk and has provided legislation to address the problem. This document provides Maryland schools with assistance in the formation of heat acclimatization guidelines. The guidelines were developed 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.

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

Each school system is encouraged to carefully consider this model policy when formulating specific guidelines for acclimatization of athletes to warm weather conditions. Resources for all sections of this document may be found on the Health and Safety page of [MPSSAA.org](http://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 amongst the general population. Raising the awareness of heat related illness should be a priority of each school's athletic department. As a school system, the athletic Director, coach and athletic trainer have a legal responsibility to ensure the safety of your student athletes.

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, "Heat Illness and Prevention" ([www.nfhslearn.com](http://www.nfhslearn.com)) provides a highly recommended guide to understanding the issue. This free course became operational on July 15, 2012. The CDC, Maryland Athletic Trainers Association (MATA) and National Athletic Trainers Association (NATA) also offer other courses and provide downloadable heat related information. Any opportunity to educate coaches, parents and students to heat related illness should be taken. In-service education, team meetings, student/parent orientation meetings, coach/parent pre-season meeting, expert consultants, public reminders and the distribution of literature are delivery methods to elevate public awareness.

A proper heat-acclimatization plan in secondary school athletic programs is essential to minimize the risk of exertional heat illness during the preseason practice period. Gradually increasing athletes' exposure to the duration and intensity of physical activity and to the environment minimizes exertional heat-illness risk while improving athletic performance.

Progressive acclimatization is especially important during the initial 3 to 5 days of summer practices. When an athlete undergoes a proper heat-acclimatization program, physiologic function, exercise heat tolerance, and exercise performance are all enhanced. In contrast, athletes who are not exposed to a proper heat-acclimatization program face measurable increased risks for exertional heat illness.

### KEY POINTS

- Heat acclimatization (or acclimation) confers biological adaptations that reduce physiological strain (e.g., heart rate and body temperature), improve comfort, improve exercise capacity, and reduce the risks of serious heat illness during exposure to heat stress.
- The biological adaptations include integrated thermoregulatory, cardiovascular, fluid-electrolyte, metabolic and molecular responses.
- Heat acclimatization occurs when repeated exercise-heat exposures are sufficiently stressful to invoke profuse sweating and elevate whole-body temperatures.

- About 2 weeks of ~90 min daily heat exposures are required
- Heat acclimatization is specific to the climatic heat stress (desert or tropic) and physical exercise intensities the athletes are exposed to, which should simulate the expected competitive environment
- Create an Emergency Action Plan (EAP) for your school/coaches. Practice the EAP
- Make sure that your emergency equipment works, know where your emergency equipment is stored and how it is used.

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

- Require completion of NFHS Course for coaches or provide continuing education to coaching staff.
- Provide handout materials formulated by CDC/MATA/NATA to parents at pre-season meetings. (See Resources Below)
- Agenda item at team meeting for each fall sport.
- Topic at PTSA meeting.
- Placement of pertinent material on MPSSAA website and links to related sites.
- Public Service announcement at games and on playoff radio and TV broadcast.
- Ads in Championship Programs.

### **Resources on Education**

- NFHS Education Course “Heat Illness and Prevention” – [www.nfhslearn.com](http://www.nfhslearn.com)  
Center for Disease Control (CDC) “Extreme Heat - A Prevention Guide to Promote Your Personal Health & Safety”
  - “Extreme Heat - A Prevention Guide to Promote Your Personal Health & Safety”  
- [http://www.cdc.gov/nceh/hsb/extreme/Heat\\_Illness/index.html](http://www.cdc.gov/nceh/hsb/extreme/Heat_Illness/index.html)
  - <https://wonder.cdc.gov/wonder/prevguid/p0000449/p0000449.asp#head00200800000000>

- [NFHS Position Statement: Hydration to Minimize the Risk for Dehydration and Heat Illness](#)
- [NFHS Heat Acclimatization and Heat Illness Prevention Position Statement](#)
- [NATA Position State: Fluid Replacement for Athletes](#)
- [NATA Position Statement: Exertional Heat Illnesses](#)
- [NATA Consensus Statement on Heat-Acclimatization Guidelines](#)
- KSI Comparison of NCAA and High School Heat Acclimatization
  - Policies <https://ksi.uconn.edu/wpcontent/uploads/sites/1222/2015/03/Comparison-of-NCAA-and-High-School-HA-Policies.pdf>
- Gatorade Sports Science Institute
  - HYDRATION SCIENCE AND STRATEGIES IN FOOTBALL
  - <https://www.gssiweb.org/en/sports-science-exchange/article/sse-128-hydration-science-and-strategies-in-football>
- Gatorade Sports Science
  - REHYDRATION AFTER EXERCISE IN THE HEAT: A COMPARISON OF 4 COMMONLY USED DRINKS.
  - <https://www.gssiweb.org/en/research/article/rehydration-after-exercise-in-the-heat-a-comparison-of-4-commonly-used-drinks->

#### Coaches, Students and Parents Infographics

- YLM SPORT SCIENCE Information Flyer
  - <https://ylmsportscience.com/2019/05/08/heat-acclimation-for-competition-in-the-heat/>
- NFHS & NATA signs of Heat Illness
  - <https://www.nfhs.org/media/1015650/2015-nata-heat-illness-handout.pdf>
- USA Football and KSI
  - Tools for better Practice & Heat and Hydration
  - <https://usafootball.com/resources-tools/coach/practice-guidelines>
  - <https://ksi.uconn.edu/wp-content/uploads/sites/1222/2015/03/Heat-and-Hydration-HUF.pdf>
- National Weather Service Heat Exhaustion vs. Heat Stroke
  - [https://www.weather.gov/wrn/heat\\_infographics](https://www.weather.gov/wrn/heat_infographics)

## **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 Code, Education § 7-434 while the definition of a walk-through comes from the National Athletic Trainers Association Preseason Heat-Acclimatization Guidelines for Secondary School Athletics.

**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 (eg, 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.

**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.

## Hydration Awareness

The purpose of proper hydration in regards to the overall safety and conditioning of 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 for hydration 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 for 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 can 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 the one used by the University of Maryland, should be posted so that student-athletes can access their individual hydration.
- Student-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.



- 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.
- 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 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 diluted to dangerously low levels. Affected individuals may exhibit disorientation, altered mental status, headache, lethargy and seizures. A confirmed diagnosis can be made by measuring blood sodium levels. Suspected hyponatremia is a medical emergency and the Emergency Medical System must be activated (or Call 9-1-1). Hyponatremia is treated by administering intravenous fluids containing high levels of sodium (hypertonic solutions).

### **Resources on Hydration**

- [NFHS Position Statement and Recommendations for Maintaining Hydration to Optimize Performance and Minimize the Risk for Exertional Heat Illness](#)
- [NFHS Heat Acclimatization and Heat Illness Prevention Position Statement](#)
- [NATA Position State: Fluid Replacement for Athletes](#)
- [NATA Position Statement: Exertional Heat Illnesses](#)
- [Hydration Color Chart](#)

## **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 error 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 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.

### **Resources for Environmental Risk Factors**

- [NATA Position Statement: Exertional Heat Illness](#)
- The NOAA national Weather Service's Heat Index Chart:  
<http://www.nws.noaa.gov/om/heat/index.shtml>

### **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. The NFHS Sports Medicine Advisory Committee (SMAC) lists the following non-environmental risk factors that can hamper heat dissipation and put an athlete at increased risk for heat illness.

#### **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 is minimized through the removal of equipment and participating in drills wearing shirts and shorts only. Given that a great deal of heat radiates 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 release 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 the 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 anticholinergic 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 are found in the consensus statement by the inter-association task force. Education and understanding of these considerations is recommended for school systems.

#### **Resources for Non-Environmental Risk Factors**

- [NATA Position Statement: Exertional Heat Illness](#)
- [NFHS SMAC Heat Related Illness](#)

## Heat Acclimatization Period

The implementation of any heat acclimatization guidelines should take into account an acclimatization period that defines the duration, intensity and number of required practices to acclimatize each individual student-athlete. The duration and intensity for practices are suggested to gradually increase the student-athlete's heat tolerance, enhance their ability to participate safely in warm and hot conditions and minimize their risk for heat related illnesses.

The body of evidence supporting heat acclimatization guidelines is extensive and led to the National Athletic Trainers Association (NATA) and an inter-association task force comprised of the American College of Sports Medicine, Gatorade Sports Science Institute, National Strength and Conditioning Association, United States Army Research Institute of Environmental Medicine, American Orthopaedic Society for Sports Medicine, American Medical Society for Sports Medicine and American Academy of Pediatrics to develop *Preseason Heat-Acclimatization Guidelines for Secondary School Athletics*.

These national guidelines serve as a basis in forming a model policy to acclimatize student-athletes to their respective environment for the safe training and participation during the preseason practice period.

Suggested guidelines for local consideration take into account the need for instructional and repetition during the preseason practice period to reduce the risk of other sport related injuries. However, no research or sound reasoning was found to deviate from the minimum requirements of the inter-association task force's policy relating to the duration, intensity and number of practices during the first five days of acclimatization. Therefore, it is in the best interest to reduce the risk of heat related illnesses by not compromising a student-athlete's acclimatization period while encouraging athletic administrators and coaches to find the most effective methods to increase and use instructional time.

Furthermore, these guidelines are recommended for fall practice where the greatest risks for 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 and local school systems should evaluate whether equipment restrictions are necessary.

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

These suggested guidelines for local consideration are intended to provide direction to school teams for the suggested acclimatization of student-athletes during preseason practice period required prior to the first play date.

- **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 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.
- Equipment Restrictions
  - Football
    - Practice days 1 and 2 – helmets only, and shorts/t-shirts
    - Practice days 3 through 5 – helmets and shoulder pads only. Contact with blocking sleds and tackling dummies may be initiated.
    - Beginning practice day 6 – full protective equipment and full contact may begin.
  - Field Hockey
    - Practice days 1 and 2 – Goalies in helmet and goalie kickers, athletes may wear shin guards, goggles and mouth pieces.
    - Practice days 3 through 5 – Goalies in helmet, chest protection and goalie kickers.
    - Beginning practice day 6 – full protective equipment may be worn.
  - Soccer – Shin guards and goalie gloves can be worn beginning day 1
  - Volleyball- Knee pads may be worn beginning day 1
- 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.

- **Practice Days 1-5**

- School teams shall conduct all practices within the general guidelines above as well as the following guidelines for practice days 1-5.
- School teams are limited to one practice per day not to exceed three hours in length.
- One walk-through session is permitted per day no longer than 1 hour in duration.

- **Practice Days 6-14**

- School teams shall conduct all practices within the general guidelines above as well as the following guidelines for practice days 6-14.
- Total practice and walk-through time per day should be limited to five hours with no single session longer than three hours in duration.
- School teams may participate in full contact practices with all protective equipment worn.

### 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	

**Note:** Shaded days reflect Heat Acclimatization Period

#### Resources for Heat Acclimatization Guidelines

- [NATA “Preseason Heat-Acclimatization Guidelines For Secondary School Athletics”](#)
- [NATA Consensus Statement on Heat-Acclimatization Guidelines](#)

# Modifications based on Heat Index or WBGT

## Heat Index Chart and Recommendations

### Code Gold - Heat Index Under 95°

Provide ample water. Water is always and athletes should have unrestricted access.

**Optional** water breaks every 30 minutes for 10 minute time frames. Ice-down tub and towels are available. Athletes should be monitored carefully. Re-check heat index every 30 minutes.

### Code Orange - Heat Index from 95° to 104°

Provide ample water. Water is always and athletes should have unrestricted access.

**Mandatory** water breaks every 30 minutes for 10 minute time frames. Ice-down tub and towels are available.

Reduce time outside or move indoors to air conditioning if possible. Athletes should be monitored carefully. Re-check heat index every 30 minutes.

### Code Red - Heat Index from 105° and Above

**Stop all outside activity including practice or play.** Stop all indoor activity if air conditioning is not available and the heat index indoors is 105° or greater. Re-check heat index every 30 minutes.

**\*Athletic Directors and Athletic Trainers should use best judgement when making the call. The Athletic Director with consultation from the Athletic Trainer will make the call regarding the heat code based on the Wet Bulb Globe Thermometer (WBGT) reading at the hottest field. In lieu of the Athletic Director being present, the Athletic Trainer has the final say on the field. The Office of Athletics may determine the code for the system.\***



## Heat Index and Recommendations for FCPS Athletics

NWS Heat Index		Temperature (°F)														
		80	82	84	86	88	90	92	94	96	98	100	102	104	106	108
Relative Humidity (%)	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137	
	55	81	84	86	89	93	97	101	106	112	117	124	130	137		
	60	82	84	88	91	95	100	105	110	116	123	129	137			
	65	82	85	89	93	98	103	108	114	121	128	136				
	70	83	86	90	95	100	105	112	119	126	134					
	75	84	88	92	97	103	109	116	124	132						
	80	84	89	94	100	106	113	121	129							
	85	85	90	96	102	110	117	126	135							
	90	86	91	98	105	113	122	131								
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

**Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity**

- Caution     
  Extreme Caution     
  Danger     
  Extreme Danger

Code Gold - Heat Index Under 95°

Provide ample water. Water is always and athletes should have unrestricted access. *Optional* water breaks every 30 minutes for 10 minute time frames. Ice-down tub and towels are available. Athletes should be monitored carefully. Re-check heat index every 30 minutes.

Code Orange - Heat Index from 95° to 104°

Provide ample water. Water is always and athletes should have unrestricted access. *Mandatory* water breaks every 30 minutes for 10 minute time frames. Ice-down tub and towels are available. Reduce time outside or move indoors to air conditioning if possible. Athletes should be monitored carefully. Re-check heat index every 30 minutes.

Code Red - Heat Index from 105° and Above

**Stop all outside activity including practice or play.** Stop all indoor activity if air conditioning is not available and the heat index indoors is 105° or greater. Re-check heat index every 30 minutes.

**\*Athletic Directors and Athletic Trainers should use best judgement when making the call. The Athletic Director with consultation from the Athletic Trainer will make the call regarding the heat code based on the WBGT reading at the hottest field. In lieu of the Athletic Director being present, the Athletic Trainer has the final say on the field. The Office of Athletics may determine the code for the system.\***

# WBGT Practice Modifications

A Wet Bulb Globe Temperature (WBGT) device is a measurement tool that uses ambient temperature, relative humidity, wind, and solar radiation from the sun to get a measure to monitor environmental conditions during exercise.

- $< 82^{\circ}\text{F}$ (WBGT) = Regular practices with full practice gear can be conducted. A rest to work ratio of 5 minutes rest and fluid replenishment for every 20 to 25 minutes of exertion is recommended.
- $82.1^{\circ}\text{F}$ -  $86.9^{\circ}\text{F}$ = Use discretion for intense or prolonged exercise; watch at-risk players carefully. Provide at least three separate rest breaks each hour with a minimum duration of 4 min each.
- $87.1^{\circ}\text{F}$ -  $90^{\circ}\text{F}$ = Maximum practice time is 2 h. For Football: players are restricted to helmet, shoulder pads, and shorts during practice. If the WBGT rises to this level during practice, players may continue to work out wearing football pants without changing to shorts. For All Sports: Provide at least four separate rest breaks each hour with a minimum duration of 4 min each.
- $90.1^{\circ}\text{F}$ –  $92^{\circ}\text{F}$ = Maximum practice time is 1 h. For All Sports: There must be 20 min of rest breaks distributed throughout the hour of practice. For Football: no protective equipment may be worn during practice, and there may be no conditioning activities.
- $92.1^{\circ+}\text{F}$ = No outdoor workouts. Delay practice until a cooler WBGT level is reached.

\*Recommendations from Category 3 heat safety zones adapted from the Korey Stringer Institute

## Emergency Plan

Emergency action plans (EAPs) are concrete written plans that outline what to do in the event of a catastrophic injury during any athletic event (practice, conditioning, strength training or competition). Practicing a comprehensive hydration and acclimatization plan minimizes but does not eliminate the risk of heat illness or exertional heat stroke (EHS). Developing, distributing and practicing an effective EAP provides the best chance of survival in the event of a catastrophic event. Therefore, it is critical that each school have in place specific preparedness measures should they encounter a heat emergency. Knowing what to do and reviewing specific protocols can minimize potentially catastrophic injuries and death.

As local conditions render each school setting unique, any emergency plan needs to be tailored to suit individual school needs and should be specific to each venue within the school

grounds. There are however common factors that should comprise every school's emergency plans. In light of the fact that a qualified medical person might not be on hand at every game or practice, it is recommended that a simple plan be prescribed. An uncomplicated plan provides the best opportunity to be remembered and then employed in time of crises.

A simple plan with assigned specific delegated duties could prove to be most helpful in:

- Remembering what to do
- Covering important tasks
- Offering the best chance for survival

Any single heat emergency plan should incorporate three basic components; recognition of heat illness, immediate cooling and transport via ambulance to a hospital.

Each school shall have venue specific emergency action plan(s). The emergency action plans are reviewed and rehearsed each year or sooner if needed. The review shall include pertinent school staff and the local EMS provider. Regular practice of the EAP including all medical and coaching staff that may participate ensures the best outcomes. Every school's EAP shall:

- Be distributed to all athletics staff members as well as healthcare professionals who will provide medical coverage during games, practices, conditioning sessions or other events
- Be posted on site at each athletic venue where it is readily visible to all coaches and participants
- Be specific to each venue where practices, conditioning sessions and competitions take place
- List & location of all emergency equipment that may be needed in an emergency situation
  - Equipment to perform whole-body cold-water immersion (100-gallon stock tank, plastic children's pool, tarp for "taco method", etc.)
  - Cold water immersion is recommended for all suspected Heat Stroke events. Defined as a change in mental status with Core Body temperature > 104 °F
  - Access to adequate supply of water and ice
  - 3-4 towels and adequate shade
  - Ability to adequately assess core body temperature. Rectal Thermometry is the gold standard for body temperature assessment. Removal from cold water immersion prior to returning the body to the appropriate core temperature can render the treatment ineffective and lead to death or permanent disability. Maryland State EMS protocol supports cooling the EHS victim prior to transporting to a hospital. Athlete is safe to transport when core body temperature is between 101 °F and 102 °F
  - Automated External Defibrillator (AED)
  - All equipment should be on site and readily accessible at all times. Athletic practices and events often occur outside of the normal school operating day and equipment must be available in order to be effective.

- Identify personnel and their responsibilities to carry out the plan of action with a designated chain of command
  - Contact 911/EMS, contact athlete's parent/guardian
  - Consider gates that may need to be unlocked for ambulance access
  - Person(s) to prepare soaking tub or pool with water and ice
  - Person(s) to assist with moving and attending injured player
  - Person to meet and escort emergency vehicle to victim
- Include appropriate contact information for EMS and facility/venue address and access points
- Identify a place of shelter in the event of severe weather for outdoor venues
- Specify documentation actions that need to be taken post emergency

Below is a link to a template Emergency Action Plan. This can be used to guide a school in its development of venue specific EAPs:

<http://www.anyonecansavealife.org/>

[http://www.anyonecansavealife.org/wcm/groups/mdtcom\\_sg/mdt/documents/documents/acsal\\_eap\\_guide.pdf](http://www.anyonecansavealife.org/wcm/groups/mdtcom_sg/mdt/documents/documents/acsal_eap_guide.pdf)

<http://www.anyonecansavealife.org/resources/index.htm>

<https://ksi.uconn.edu/wp-content/uploads/sites/1222/2015/03/KSI-EAP-Template.docx>

# HOUSE BILL 836

F1

(2lr1746)

## ENROLLED BILL

— Ways and Means/Education, Health, and Environmental Affairs —

Introduced by **Delegate Lierman**

Read and Examined by Proofreaders:

\_\_\_\_\_  
Proofreader.

\_\_\_\_\_  
Proofreader.

Sealed with the Great Seal and presented to the Governor, for his approval this

\_\_\_\_\_ day of \_\_\_\_\_ at \_\_\_\_\_ o'clock, \_\_\_\_\_ M.

\_\_\_\_\_  
Speaker.

### CHAPTER \_\_\_\_\_

1 AN ACT concerning

2 **Public Schools – Student Athletics – Requirements and ~~Reports~~ Emergency**  
3 **Action Plans**  
4 **(Elijah Gorham Act)**

5 FOR the purpose of ~~requiring each county superintendent of schools to submit a certain~~  
6 ~~report on public high school sports teams in the county to the State Department of~~  
7 ~~Education on or before a certain date each year;~~ altering the requirements for an  
8 automated external defibrillator program in public middle and high schools; altering  
9 the requirements for actions to be taken by county boards of education regarding  
10 heat acclimatization for student athletes; ~~requiring the State Board of Education to~~  
11 ~~develop and implement a certain educational program for student athletes;~~ requiring  
12 middle schools and high schools to develop venue-specific emergency action plans  
13 for the operation and use of automatic external defibrillators, heat acclimatization,  
14 and coordination of care for other emergent injuries and severe weather for outdoor  
15 facilities; and generally relating to student athletics in public schools in the State.

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#### EXPLANATION: CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.

[Brackets] indicate matter deleted from existing law.

Underlining indicates amendments to bill.

~~Strike out~~ indicates matter stricken from the bill by amendment or deleted from the law by amendment.

*Italics indicate opposite chamber / conference committee amendments.*

# **\*hb0836\***

1 ~~BY adding to~~  
 2 ~~Article – Education~~  
 3 ~~Section 7-129~~  
 4 ~~Annotated Code of Maryland~~  
 5 ~~(2018 Replacement Volume and 2021 Supplement)~~

6 BY repealing and reenacting, with amendments,  
 7 Article – Education  
 8 Section 7-425 and 7-434  
 9 Annotated Code of Maryland  
 10 (2018 Replacement Volume and 2021 Supplement)

11 BY adding to  
 12 Article – Education  
 13 Section 7-450  
 14 Annotated Code of Maryland  
 15 (2018 Replacement Volume and 2021 Supplement)

16 SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND,  
 17 That the Laws of Maryland read as follows:

18 **Article – Education**

19 ~~7-129.~~

20 ~~(A) ON OR BEFORE DECEMBER 1, 2023, AND EACH DECEMBER 1~~  
 21 ~~THEREAFTER, EACH COUNTY SUPERINTENDENT SHALL SUBMIT TO THE~~  
 22 ~~DEPARTMENT A REPORT ON PUBLIC HIGH SCHOOL SPORTS TEAMS IN THE COUNTY.~~

23 ~~(B) THE REPORT REQUIRED UNDER THIS SECTION SHALL INCLUDE:~~

24 ~~(1) THE NUMBER OF SPORTS TEAMS AFFILIATED WITH EACH PUBLIC~~  
 25 ~~HIGH SCHOOL IN THE COUNTY;~~

26 ~~(2) THE TYPE OF SPORT EACH TEAM PLAYS;~~

27 ~~(3) THE CERTIFICATIONS, IF ANY, HELD BY A COACH OF EACH SPORTS~~  
 28 ~~TEAM;~~

29 ~~(4) THE TYPE OF AFFILIATION BETWEEN THE SPORTS TEAM AND A~~  
 30 ~~HIGH SCHOOL, INCLUDING:~~

31 ~~(i) THE NUMBER OF STUDENT ATHLETES ON EACH SPORTS~~  
 32 ~~TEAM;~~

~~(II) THE NAME OF THE HIGH SCHOOL EACH STUDENT ATHLETE ATTENDS;~~

~~(III) WHETHER THE SPORTS TEAM USES THE FACILITIES AND PROPERTY OF THE AFFILIATED HIGH SCHOOL; AND~~

~~(IV) WHETHER THE SPORTS TEAM USES THE AFFILIATED HIGH SCHOOL'S LOGO AND NAME;~~

~~(5) WHETHER THE SPORTS TEAM HAS A BOARD OF DIRECTORS AND, IF SO, WHAT CERTIFICATIONS THE DIRECTORS HOLD; AND~~

~~(6) ANY OTHER RELEVANT INFORMATION AS DETERMINED BY THE DEPARTMENT.~~

7-425.

~~(A) IN THIS SECTION, "PRACTICE" HAS THE MEANING STATED IN § 7-434 OF THIS SUBTITLE.~~

~~(B) (1) Each county board shall develop and implement an automated external defibrillator program that meets the requirements of § 13-517 of this article for each high school and middle school in the county.~~

~~(2) The program required under paragraph (1) of this subsection shall include provisions that:~~

~~(i) Ensure that an automated external defibrillator is provided on site AND IS LOCATED IN CLOSE PROXIMITY TO EACH SCHOOL-SPONSORED ATHLETIC PRACTICE AND EVENT; [and]~~

~~(ii) An individual trained in the operation and use of an automated external defibrillator is present at all school-sponsored athletic PRACTICES AND events;~~

~~(III) REQUIRE THE DEVELOPMENT OF AN EMERGENCY PLAN AT EACH SCHOOL; AND~~

~~(IV) REQUIRE THE EMERGENCY PLAN DEVELOPED UNDER ITEM (III) OF THIS PARAGRAPH TO BE DISTRIBUTED TO EACH STUDENT ATHLETE'S PARENT OR GUARDIAN AT THE BEGINNING OF EACH SCHOOL YEAR.~~

~~(3) EACH COUNTY BOARD SHALL REPORT THE FOLLOWING INFORMATION TO THE DEPARTMENT EACH YEAR:~~

~~(I) THE NUMBER AND LOCATION OF EACH AUTOMATIC EXTERNAL DEFIBRILLATOR AT EACH SCHOOL IN THE COUNTY; AND~~

~~(II) A LIST OF EACH INDIVIDUAL AT EACH SCHOOL IN THE COUNTY WHO HAS COMPLETED INITIAL AND REFRESHER TRAINING ON THE OPERATION AND USE OF AUTOMATED EXTERNAL DEFIBRILLATORS AND THE DATE EACH TRAINING WAS COMPLETED.~~

~~(b)~~(C) The Department, in consultation with the Maryland Department of Health, the Maryland State School Health Council, and the Maryland Institute for Emergency Medical Services Systems, shall adopt regulations that:

(1) Establish guidelines for periodic inspections and annual maintenance of the automated external defibrillators; and

(2) Assist county boards in carrying out the provisions of this section.

**(C) EACH MIDDLE SCHOOL AND HIGH SCHOOL SHALL DEVELOP A VENUE-SPECIFIC EMERGENCY ACTION PLAN FOR THE OPERATION AND USE OF AUTOMATIC EXTERNAL DEFIBRILLATORS THAT MEETS THE REQUIREMENTS OF § 7-450 OF THIS SUBTITLE.**

7-434.

(a) (1) In this section the following words have the meanings indicated.

(2) “Heat acclimatization” means enhancing an individual’s exercise heat tolerance and ability to exercise safely and effectively in warm to hot conditions.

(3) “Practice” means 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.

(4) “Preseason practice” means the initial 14 days of practice for a student athlete.

(5) “Recovery period” means the time between the end of one practice or walk-through and the beginning of the next practice or walk-through.

(6) “Student athlete” means a student who participates in an athletic program for high school students in a State secondary school that is a member of the Maryland Public Secondary Schools Athletic Association.

(7) (i) “Walk-through” means 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.



1 (ii) “Walk-through” does not include any part of a practice period.

2 (b) (1) The Department, in collaboration with the Maryland Department of  
3 Health, each county board, the Maryland Public Secondary Schools Athletic Association,  
4 the Maryland Athletic Trainers’ Association, and representatives of licensed health care  
5 providers who treat student athletes, shall develop a model policy for preseason–practice  
6 heat acclimatization guidelines for student athletes.

7 (2) Each local board shall adopt preseason–practice heat acclimatization  
8 guidelines for student athletes CONSISTENT WITH THE MODEL POLICY FOR  
9 PRESEASON–PRACTICE HEAT ACCLIMATIZATION GUIDELINES FOR STUDENT  
10 ATHLETES ESTABLISHED UNDER PARAGRAPH (1) OF THIS SUBSECTION.

11 (c) The preseason–practice heat acclimatization guidelines shall include  
12 requirements for the duration of a practice time, a walk-through, and a recovery period  
13 during preseason practice.

14 ~~(d) EACH COUNTY BOARD SHALL:~~

15 ~~(1) ENSURE THAT A STOCK TANK OR INFLATABLE POOL IS AVAILABLE~~  
16 ~~TO STUDENT ATHLETES AT ALL SCHOOL SPONSORED ATHLETIC PRACTICES AND~~  
17 ~~EVENTS;~~

18 ~~(2) ENSURE THAT AN INDIVIDUAL TRAINED IN HEAT~~  
19 ~~ACCLIMATIZATION SAFETY IS PRESENT AT ALL SCHOOL SPONSORED ATHLETIC~~  
20 ~~PRACTICES AND EVENTS;~~

21 ~~(3) REPORT TO THE DEPARTMENT THE NAMES OF EACH INDIVIDUAL~~  
22 ~~AT EACH SCHOOL IN THE COUNTY WHO COMPLETED INITIAL AND ANY REFRESHER~~  
23 ~~TRAINING IN THE HEAT ACCLIMATIZATION SAFETY STANDARDS AND PROCEDURES~~  
24 ~~IN ACCORDANCE WITH ITEM (2) OF THIS SUBSECTION AND THE DATE EACH TRAINING~~  
25 ~~WAS COMPLETED;~~

26 ~~(4) DEVELOP AN EMERGENCY PLAN CONSISTENT WITH THE MODEL~~  
27 ~~POLICY FOR PRESEASON–PRACTICE HEAT ACCLIMATIZATION GUIDELINES FOR~~  
28 ~~STUDENT ATHLETES ESTABLISHED UNDER SUBSECTION (B)(1) OF THIS SECTION;~~  
29 ~~AND~~

30 ~~(5) DISTRIBUTE THE EMERGENCY PLAN DEVELOPED UNDER ITEM (4)~~  
31 ~~OF THIS SUBSECTION TO THE PARENT OR GUARDIAN OF EACH STUDENT ATHLETE AT~~  
32 ~~THE BEGINNING OF EACH SCHOOL YEAR.~~

1 (D) EACH MIDDLE SCHOOL AND HIGH SCHOOL SHALL DEVELOP A  
2 VENUE-SPECIFIC EMERGENCY ACTION PLAN FOR HEAT ACCLIMATIZATION THAT  
3 MEETS THE REQUIREMENTS OF § 7-450 OF THIS SUBTITLE.

4 7-450.

5 (A) (1) EACH MIDDLE SCHOOL AND HIGH SCHOOL SHALL DEVELOP A  
6 VENUE-SPECIFIC EMERGENCY ACTION PLAN FOR ALL ATHLETIC FACILITIES.

7 (2) A VENUE-SPECIFIC EMERGENCY ACTION PLAN INCLUDES:

8 (I) THE OPERATION AND USE OF AUTOMATIC EXTERNAL  
9 DEFIBRILLATORS IN ACCORDANCE WITH § 7-425 OF THIS SUBTITLE;

10 (II) HEAT ACCLIMATIZATION IN ACCORDANCE WITH § 7-434 OF  
11 THIS SUBTITLE; AND

12 (III) COORDINATION OF CARE FOR OTHER EMERGENT INJURIES,  
13 INCLUDING CERVICAL SPINAL INJURY, CONCUSSION AND CLOSED HEAD INJURY,  
14 MAJOR ORTHOPEDIC INJURIES, AND SEVERE WEATHER FOR OUTDOOR FACILITIES.

15 (B) A VENUE-SPECIFIC EMERGENCY ACTION PLAN DEVELOPED UNDER  
16 THIS SECTION SHALL BE:

17 (1) POSTED AT EACH ATHLETIC FACILITY AT THE SCHOOL;

18 (2) AVAILABLE ON THE SCHOOL'S WEBSITE FOR VIEWING BY A  
19 STUDENT ATHLETE'S PARENT OR GUARDIAN AT THE BEGINNING OF EACH SCHOOL  
20 YEAR;

21 (3) DISTRIBUTED TO EACH MEMBER OF THE COACHING STAFF; AND

22 (4) REHEARSED IN PERSON AND INTERACTIVELY BY ALL OF THE  
23 COACHING STAFF OF EACH SPORT BEFORE EACH OF THEIR RESPECTIVE SEASONS.

24 (C) THE PROVISIONS OF A VENUE-SPECIFIC EMERGENCY ACTION PLAN FOR  
25 THE OPERATION AND USE OF AUTOMATIC EXTERNAL DEFIBRILLATORS SHALL  
26 ENSURE THAT:

27 (1) AN AUTOMATED EXTERNAL DEFIBRILLATOR IS PROVIDED  
28 ON-SITE AND IS LOCATED AT OR WITHIN A BRIEF WALK FROM AN ATHLETIC  
29 PRACTICE OR EVENT ON SCHOOL PROPERTY;

1           **(2) AN AUTOMATED EXTERNAL DEFIBRILLATOR IS FREELY**  
2 **ACCESSIBLE DURING ALL SCHOOL FUNCTIONS;**

3           **(3) ALL MEMBERS OF THE COACHING STAFF ARE TRAINED IN THE**  
4 **OPERATION AND USE OF AN AUTOMATED EXTERNAL DEFIBRILLATOR; AND**

5           **(4) A TRAINED MEMBER OF THE COACHING STAFF IS PRESENT AT ALL**  
6 **ATHLETIC PRACTICES AND EVENTS ON SCHOOL PROPERTY.**

7           **(D) THE PROVISIONS OF A VENUE-SPECIFIC EMERGENCY ACTION PLAN FOR**  
8 **HEAT ACCLIMATIZATION SHALL:**

9           **(1) INCLUDE GUIDELINES FOR STUDENT ATHLETES CONSISTENT**  
10 **WITH THE MODEL POLICY FOR PRESEASON-PRACTICE HEAT ACCLIMATIZATION**  
11 **GUIDELINES FOR STUDENT ATHLETES ESTABLISHED UNDER § 7-434 OF THIS**  
12 **SUBTITLE;**

13           **(2) ENSURE THAT EACH SCHOOL IS PROPERLY PREPARED AND**  
14 **EQUIPPED TO INITIATE COLD WATER IMMERSION FOR THE TREATMENT OF**  
15 **EXERTIONAL HEAT STROKE;**

16           **(3) ENSURE THAT THE COOLING MODALITY IS READILY AVAILABLE**  
17 **TO STUDENT ATHLETES AT ALL ATHLETIC PRACTICES AND EVENTS ON SCHOOL**  
18 **PROPERTY;**

19           **(4) ENSURE THAT ALL MEMBERS OF THE COACHING STAFF ARE**  
20 **TRAINED IN COLD WATER IMMERSION; AND**

21           **(5) ENSURE THAT A TRAINED MEMBER OF THE COACHING STAFF IS**  
22 **PRESENT AT ALL ATHLETIC PRACTICES AND EVENTS ON SCHOOL PROPERTY.**

23 SECTION 2. AND BE IT FURTHER ENACTED, That this Act shall take effect July 24  
1, 2022.

## References

Binkley HM, Beckett J, Douglass JC, Kleiner DM, Plummer PE et al. National Athletic Trainers' Association position statement: Exertional Heat Illnesses. *Journal of Athletic Training* 2002;37(3):329-343

Casa DJ, Armstrong LE, Hillman SK, et al. National Athletic Trainers' Association Preseason Heat-Acclimatization Guidelines for Secondary School Athletics Consensus Statement. *Journal of Athletic Training* 2009;44(3):332-333

Casa DJ, Csillan D, et al. National Athletic Trainers' Association position statement: Fluid replacement for athletes. *Journal of Athletic Training* 2000;35:221-224

Education – Student Athletes –Heat Acclimatization Guidelines, Md. EDUCATION Code Ann. § 7-434 (2012)

National Federation of State High School Associations. Environmental Issues: Heat-related illness. May 2011 *Sports Medicine Handbook* (4<sup>th</sup> edition).

National Federation of State High School Associations (NFHS) Sports Medicine Advisory Committee. Heat Acclimatization and Heat Illness Prevention Position Statement. April 2012. <http://www.nfhs.org>.

National Federation of State High School Associations (NFHS) Sports Medicine Advisory Committee. Position Statement and Recommendations for Hydration to Minimize the Risk for Dehydration and Heat Illness. October 2011. <http://www.nfhs.org>.