

HEAT GUIDELINES for NCHSAA

The fundamentals of a Heat Acclimatization Program are as follows:

- 1) A Certified Athletic Trainer or 1st Responder **MUST** be in attendance at all football practices and games.
- 2) 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 (helmets only, no shoulder 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.
- 3) Keep each athlete's individual level of conditioning and medical status in mind and adjust activity according. These factors directly affect exertional heat illness risk. 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.
- 4) 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.
- 5) Athletes must begin practices and training activities adequately hydrated.
- 6) Recognize early signs of distress and developing exertional heat illness, and promptly adjust activity and treat appropriately. First aid should not be delayed.
- 7) 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.
- 8) An Emergency Action Plan (EAP) with clearly defined written and practiced protocols should be developed and in place ahead of time.
- 9) Prior to season all coaches, athletic training personnel and first responders working with team should review signs and symptoms of heat illness and the emergency action plan for their school.

Precautions must be taken to prevent heat-related problems. Please pay particular attention to the following:

- A Heat Index chart should be available at practices and contests
- A copy of the Emergency Action Plan that outlines steps to take in case of severe environmental conditions, should be on-site.
- Supplies for rapid cooling should be on-site. These should include a simple "toddler swimming pool" or tank for rapid immersion.

Management and Prevention Guidelines and Recommendations

1. Measure WBGT reading if this can be done accurately onsite. If not, determine this from weather station or reliable airport site within 5 to 10 miles of practice site. If WBGT is not available, determine temperature in F/C and Relative Humidity and refer to the following Heat Index Chart :

Heat Index and Physical Exercise Chart		
WBGT Index (F)	Color Code	Athletic Activity Guideline
Less than 80	White	Unlimited activity with primary cautions for new or unconditioned athletes or extreme exertion; schedule mandatory rest / water breaks (5 min water / rest break every 30 min)
80-84.9	Green	Normal practice for athletes; closely monitor new or unconditioned athletes and all athletes during extreme exertion. Schedule mandatory rest / water breaks. (5 min water / rest break every 25 min)
85-87.9	Yellow(Amber)	New or unconditioned athletes should not practice. Well conditioned athletes should have more frequent rest breaks and hydration as well as cautious monitoring for symptoms of heat illness. Schedule frequent mandatory rest / water breaks. (5 min water / rest break every 20 min) Have immersion pool on site for practice.
88-89.9	Red	All athletes must be under constant observation and supervision. Remove pads and equipment. Schedule frequent mandatory rest / water breaks. (5 min water / rest break every 15 min) Have immersion pool on site for practice.
90 or Above	Black	SUSPEND PRACTICE

(Color codes are for your use if desired)

1. As temperatures increase, minimize clothing and equipment.
2. Provide unlimited drinking opportunities during hotter practices. NEVER withhold water from athletes.
3. If and when possible, pre and post-practice weigh-ins should be conducted. (NOTE: an athlete who is not within 3% of the previous pre-practice weight should be withheld from practice. These athletes should be counseled on the importance of re-hydrating.)

NOAA's National Weather Service

Heat Index

Temperature (°F)

	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
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

Bright Yellow Zone – **CAUTION**: Normal practice for athletes, closely monitor new or unconditioned athletes or all athletes during extreme exertion. Schedule mandatory rest / water breaks. (5 min water / rest break every 25 min)

Gold Zone – **EXTREME CAUTION**: New or unconditioned athletes should not practice. Well-conditioned athletes should have more frequent rest breaks and hydration as well as cautious monitoring for symptoms of heat illness. Schedule frequent mandatory rest / water breaks. (5 min water / rest break every 20 min) Have immersion pool on site for practice.

Orange Zone – **DANGER**: All athletes must be under constant observation and supervision. Remove pads and equipment. Schedule frequent mandatory rest / water breaks. (5 min water / rest break every 15 min) Have immersion pool on site for practice.

Dark Red Zone – **EXTREME DANGER: SUSPEND PRACTICE**

Management of suspected or possible Heat Stroke

Activate emergency medical system immediately; if appropriate medical staff is on-site, cool first and transport second whenever possible.

Remove all equipment and excess clothing.

Immerse the athlete in a tub of cold water (the colder the better); water temperature should be between 35 to 60°F (2 to 15°C); ice water is ideal but even tepid water is helpful; maintain an appropriately cool water temperature; stir the water vigorously during cooling.

Monitor vital signs (rectal temperature, heart rate, respiratory rate, blood pressure) and mental status continually. Maintain patient safety.

Cease cooling when rectal temperature reaches 101 to 102°F (38.3 to 38.9°C).

NOTE: Since rectal temperature measurement is essential for diagnosis and management of a heat stroke, when possible a Rectal Thermometer should be accessible on-site.

Alternative cooling

- When immersion is not available follow all other steps above and do the following:
- Place icepacks at head, neck, axillae and groin
- Bathe face and trunk with iced or tepid water
- Fan athlete to help the cooling process
- Move to shaded or air conditioned area if available near the practice site.

HEAT EXHAUSTION

The clinical criteria for heat exhaustion generally include the following:

- Athlete has obvious difficulty continuing with exercise
- Body temperature is usually 101 to 104°F (38.3 to 40.0°C) at the time of collapse
- No significant dysfunction of the central nervous system is present (e.g, seizure, altered consciousness, persistent delirium)

If any central nervous system dysfunction develops, such as mild confusion, it resolves quickly with rest and cooling.

Patients with heat exhaustion may also manifest:

- Tachycardia and hypotension
- Extreme weakness
- Dehydration and electrolyte losses
- Ataxia and coordination problems, syncope, light-headedness
- Profuse sweating, pallor, “prickly heat” sensations
- Headache
- Abdominal cramps, nausea, vomiting, diarrhea
- Persistent muscle cramps

SIGNS AND SYMPTOMS OF HEAT STROKE

The two main criteria for diagnosing exertional heat stroke:

Rectal temperature above 104°F (40°C), measured immediately following collapse during strenuous activity

CNS dysfunction: possible symptoms and signs: disorientation, headache, irrational behavior, irritability, emotional instability, confusion, altered consciousness, coma, or seizure.

CLINICAL FINDINGS:

Most patients are tachycardic and hypotensive.

Hyperventilation, dizziness, nausea, vomiting, diarrhea, weakness, profuse sweating

Dehydration, dry mouth, thirst, muscle cramps, loss of muscle function, and ataxia.

Absence of sweating with heat stroke is not typical and usually indicates additional medical issues.

Ref. Oconor and Casa UpToDate 2012