



Heat Acclimatization and Heat Illness Prevention Position Statement

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

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

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

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

Heat Acclimatization and Safety Priorities:

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

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

Fundamentals of a Heat Acclimatization Program:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

References:

American Academy of Pediatrics. Policy Statement—Climatic Heat Stress and Exercising Children and Adolescents. *Pediatrics*. 2011;128(3):e741-7.

Andersen JC, Courson RW, Kleiner DM, McLoda TA. National Athletic Trainers' Association Position Statement: Emergency Planning in Athletics. *Journal of Athletic Training*. 2002;37:99-104.

Casa DJ, et al. National Athletic Trainers' Association Position Statement: Preventing Sudden Death in Sports. *Journal of Athletic Training* 2012;47(1):96-118.

Casa DJ, Csillan D. Inter-Association Task Force for Preseason Secondary School Athletics. Preseason Heat-acclimatization Guidelines for Secondary School Athletics. *Journal of Athletic Training*. 2009;44:332-3.

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