HEAT & HYDRATION

Across the country, football season begins with hot August practices and demanding work in equipment. Weather, equipment, and exercise intensity can put athletes at risk for heat illness. These conditions develop from heat stress, which has several causes but usually comes from the environment or heat produced within the body. Heat illnesses vary from mild to severe; ***exertional heat stroke is a life-threatening emergency***. Athletes may fail to recognize their limits and keep pushing themselves during practice.
As a coach, you need to adjust practices to lower the risk and learn how to identify and manage heat illnesses.

Before your team takes the field, be confident that you have taken every possible step to protect your athletes from heat illness.



1

How does the body manage heat?

An elevated body temperature reduces exercise performance and greatly increases the risk of heat illness. Active muscles generate heat during exercise, and the body stores it until it can release it into the surroundings. Hot air and radiant energy from the sun can add more heat. The body must therefore prevent excessive heat buildup while activity continues. Evaporation of sweat is its most effective cooling method: as sweat leaves the skin, heat moves from the body to the environment. When relative humidity rises, sweat evaporates less readily. More heat remains in the body, increasing heat strain and the risk of exertional heat illnesses.

2

How can I keep my athletes safe?

Protect athletes by changing the risk factors that contribute to heat illness. These fall into two groups: extrinsic factors, which are outside the athlete's control, and intrinsic factors, which are specific to the individual. Change extrinsic risks by adjusting practice times, removing equipment, or adding breaks. Athletes can reduce intrinsic risks by avoiding participation while ill, staying properly hydrated, and becoming acclimatized to the heat.

3

What is heat acclimatization, and how can we achieve it?

Heat illness occurs most often in the first 5 days of practice. Heat acclimatization is a straightforward way to protect athletes during this period. Full benefits take an average of 10-14 days, though protection starts developing during the process. Acclimatization involves adaptations that prepare the body to exercise in heat. These changes help lower body temperature and heart rate, improve sweating, and increase water retention. With a lower heart rate and temperature, athletes can exercise longer and at greater intensity while reducing their risk of heat illness.



Building heat acclimatization.

Use the model below to guide heat acclimatization.

Keep these points in mind when using the table:

- Practice includes all time on the football field: warm-up, stretching, breaks, cool down, and conditioning. It must never last more than 3 hours.
- Limit each practice to 2 hours during the first 5 days.
- A walkthrough reviews plays and field positions; it must last no longer than 1 hour.
- Schedule consecutive heat acclimatization days whenever possible, with few days off. If your team practices only a few days each week, remember that days without practice do not count toward acclimatization. In that situation, the acclimatization process takes longer.

PRACTICE ADJUSTMENT AREA	PRACTICES 1-5		PRACTICES 6-14
	Days 1-2	Days 3-5	
Practices Allowed Each Day	1		2, on alternate days only
Equipment	Helmets only	Helmets and Shoulder Pads	Full Equipment
Longest Single Practice Session	2 hours	3 hours	3 hours (up to 5 hours total on double-session days)
Allowed Walkthrough Time (separate from practice)	1 hour (allow 3 continuous hours between practice and the walkthrough)		
Contact	No Contact	Contact with blocking sleds/dummies only	Full, 100% live-contact drills

4

How should I adjust practice to environmental conditions?

Environmental conditions indicate how much strain practice may place on the body. In stressful conditions, protect athletes by adjusting practice length and intensity along with the number and duration of breaks. Wet bulb globe temperature (WBGT) is the best measure of environmental heat stress. It accounts for air temperature, humidity, and radiant heat from the sun. If WBGT is unavailable, heat index, which combines temperature and humidity, is the next best option. The guidelines below illustrate how practices can be modified for environmental conditions.

WBGT	ACTIVITY GUIDANCE	REST BREAK GUIDANCE
Below 82.0°F	Usual Activities	Schedule at least three separate rest breaks every hour, lasting at least 3 minutes each during the workout.
82.0-86.9°F	Use caution with intense or lengthy exercise; closely monitor at-risk players.	Schedule at least three separate rest breaks every hour, each lasting at least 4 minutes.
87.0-89.9°F	Limit practice to 2 hours. Players may wear only helmets, shoulder pads, and shorts for practice. Remove all protective equipment for conditioning activities. If the WBGT reaches this range after practice begins, players may keep exercising in football pants instead of changing into shorts.	Schedule at least four separate rest breaks every hour, each lasting at least 4 minutes.
90.0 - 92.0°F	Limit practice to 1 hour. Players must not wear protective equipment, and conditioning activities are not allowed.	Spread 20 minutes of rest breaks throughout the hour of practice.
Above 92.1°F	Stop outdoor workouts. Postpone practice until the WBGT drops to a cooler level.	

ABOUT THIS TABLE

These guidelines were developed in Georgia with several assumptions:
athletes follow or have completed a heat acclimatization protocol; adequate fluids and rest breaks are available during exercise; and Georgia athletes are accustomed to higher temperatures. Adjust these activity guidelines to suit the region of the country where your team plays.

5 Which fluids should athletes use to hydrate?

Water is the most affordable and readily available drink for exercise. Sports drinks supply water, sugar, and electrolytes, providing nutrients that athletes need during activity. Water suits every type of exercise. Sports drinks are recommended for intense activity lasting more than 60 minutes or intense exercise in hot conditions. Their taste may also encourage children to drink more than they would if only water were offered.



6 When do athletes need fluids?

Before Activity

- Drink 16-24 oz. of water or a sports drink.

During Activity

- Provide unrestricted water access throughout activity.
- Let athletes drink as much as they choose.
- Allow drinking throughout the whole break if desired.
- Offer sports drinks for exercise lasting more than 60 minutes or for intense activity in the heat.

Support this by planning breaks about every 15 minutes in all exercise sessions. Set the timing and length of breaks according to environmental conditions. Although athletes may be encouraged or required to bring drinks, coaches should always keep extra fluids available for anyone who forgets a drink or needs to refill a water bottle.

7

How can I identify exertional heat illnesses and provide care for my athletes as a coach?

	HEAT SYNCOPE	HEAT CRAMPS	HEAT EXHAUSTION
SIGNS	An episode of fainting or lightheadedness	Painful cramps in a specific muscle that may seem to move throughout that muscle Often visible, with the muscle feeling firm	Weakness or exhaustion prevents continued exercise in the heat May feel hot, tired, weak, dizzy, and unable to continue, with heavy sweating
CAUSES	Poor fitness and insufficient heat acclimatization Blood collects in the lower limbs, limiting the heart's ability to maintain adequate circulation	Fatigue combined with dehydration and electrolytes lost in sweat Poor fitness and insufficient heat acclimatization	Excessive loss of fluids or electrolytes Dehydration leaves less blood available to working muscles and the skin for heat release
CARE	Have the athlete lie on the ground with legs raised about 12 inches This returns blood to the heart and helps restore normal blood pressure	Replace fluids with water and sports drinks Gently stretch or use ice to massage the cramping muscle.	Stop the athlete's activity and move them to a cool or shaded area Have the athlete lie on the ground with legs raised about 12 inches Replace lost fluids Use moderate cooling, such as ice towels, misting fans, or cold-water immersion
PREVENTION	Acclimatize to heat	Start practice well hydrated, after including some salt in the most recent meal Limit fluid losses during activity and replace lost fluids afterward Acclimatize to heat	Acclimatize to heat Begin practice or competition well hydrated Limit fluid losses during activity and replace them after exercise
RETURN TO PLAY	Improvement should begin within a few minutes; full recovery is usually rapid, within hours Resume activity when the athlete feels better and is adequately hydrated	After cramps subside Further cramps are likely if lost fluids are not replaced	Do not resume activity that day Full recovery generally takes 24-48 hours, with emphasis on rest and rehydration

Important: If an athlete needs hospital care, cool them first and transport them second. When medical staff are absent, rapid cooling on-site while awaiting transport is essential to surviving exertional heat stroke.

EXERTIONAL HEAT STROKE (EHS)

1 What happens in exertional heat stroke?

Exertional heat stroke develops when body temperature rises above 104°F with clear central nervous system (CNS) dysfunction. Signs of CNS dysfunction may include dizziness, collapse, confusion, irrational behavior, hysteria, aggression, combativeness, disorientation, seizures, or coma. **This is a medical emergency.**

2 What leads to EHS?

If the body cannot release heat quickly enough, heat accumulates and core body temperature keeps rising.

3 What care is needed when EHS is suspected?

Suspected EHS in an athlete requires immediate action to give them the best chance of survival.

Call EMS (9-1-1) immediately. Begin aggressive whole-body cooling to lower the athlete's core temperature as quickly as possible. Full-body immersion in cold water is the preferred EHS treatment because it cools fastest. If immersion is unavailable, continuously soak the body with water, using a shower or a hose over the entire body while covering it with iced towels. Begin these cooling efforts before EMS arrives to transport the athlete to the hospital.

4 4. How can I help prevent EHS?

Several measures can help prevent EHS:

- Give athletes time to become acclimatized to the heat.
- Encourage athletes to start practice well hydrated.
- Provide unrestricted access to fluids throughout activity.
- Adjust practice in extreme environmental conditions: add rest and hydration breaks, lower the intensity, shorten the session, and reduce the equipment athletes wear.
- Match practice intensity to the athletes' fitness levels.
- Encourage athletes to report feeling unwell, and build a culture that recognizes speaking up as a smart choice.

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