HEAT & HYDRATION INFORMATION

Heat illness in athletes is a serious situation, and if not handled properly can have catastrophic consequences. Every school should have a written policy in place for handling athletic participation in extreme heat/humidity environmental conditions. **This includes all athletes exposed to these environmental conditions – not just football!** Incorporating the guidelines below into your policy will help ensure your athletes have an opportunity to train safely and effectively in situations of extreme heat/humidity.

Use the chart below to assess the potential severity of heat stress. **The chart should be used as a *guideline only* - individual reactions to the heat will vary among your athletes!**

How to use the Heat Index Chart:

1. Across the top of the chart, locate the **ENVIRONMENTAL TEMPERATURE** i.e., the air temperature
2. Down the left side of the chart, locate the **RELATIVE HUMIDITY**.
3. Follow across and down to find the **APPARENT TEMPERATURE (HEAT INDEX)**. The apparent temperature is the combined index of heat and humidity. It is an index of the body's sensation of heat caused by the temperature and humidity (the reverse of the "wind chill factor")

HEAT INDEX											
ENVIRONMENTAL TEMPERATURE (F°)											
	70°	**75°**	**80°**	**85°**	**90°**	**95°**	**100°**	**105°**	**110°**	**115°**	**120°**
Relative Humidity	**Apparent Temperature ***										
0%	64°	69°	73°	78°	83°	87°	91°	95°	99°	103°	107°
10%	65°	70°	75°	80°	85°	90°	95°	100°	105°	111°	116°
20%	66°	72°	77°	82°	87°	93°	99°	105°	112°	120°	
30%	67°	73°	78°	84°	90°	96°	104°	113°	123°		
40%	68°	74°	79°	86°	93°	101°	110°	123°			
50%	69°	75°	81°	88°	96°	107°	120°				
60%	70°	76°	82°	90°	100°	114°					
70%	70°	77°	85°	93°	106°	124°					
80%	71°	78°	86°	97°	113°						
90%	71°	79°	88°	102°	122°						
100%	72°	80°	91°	108°							

* Combined index of heat and humidity… what it "feels like" to the body. Source: National Oceanic and Atmospheric Administration

RECOMMENDED MODIFICATIONS TO ATHLETIC PARTICIPATION BASED ON THE HEAT INDEX

APPARENT TEMPERATURE	HEAT STRESS RISK WITH PHYSICAL ACTIVITY AND/OR PROLONGED EXPOSURE
90°- 104°	Heat cramps or heat exhaustion possible ***Modify practice; take water breaks every 15 to 20 minutes.***
105°- 124°	Heat cramps or heat exhaustion likely, Heatstroke possible ***Modify practice, NO HELMET OR SHOULDER PADS, t-shirt and shorts only; frequent (every 15 minutes) water and rest breaks.***
>125°	Heat stroke highly likely ***Recommend NO PRACTICE!***
Note: This Heat Index chart is designed to provide general guidelines for assessing the potential severity of heat stress. Individual reactions to heat will vary. It should be remembered that heat illness can occur at lower temperatures than indicated on the chart. In addition, studies indicate that susceptibility to heat disorders tends to increase with age.	

Contact your local weather line, the National Weather Service, or weather.com for current temperature and humidity.

HOW CAN I PREVENT HEAT ILLNESS IN MY ATHLETES?

Proper **HYDRATION** and **ACCLIMATIZATION** practices stand out as the two primary prevention methods for decreasing the risk of heat illness. The following are some basic principles to follow:

HYDRATION RECOMMENDATIONS & CONSIDERATIONS

Appropriate hydration before, during and after exercise is important for maintaining peak athletic performance. Fluid losses of as little as 2% of body weight (less than 4 pounds in a 200-pound athlete) can impair performance by increasing fatigue. This is important because it's common for some athletes to lose between 5-8 pounds of sweat during a game or intense practice. So it's easy for athletes to become dehydrated if they don't drink enough to replace what is lost in sweat.

- Recognize and respond to early warning signs of dehydration.
- **DRINK EARLY** and **DRINK OFTEN** during activity. Do not let athletes rely on thirst. Schedule frequent fluid breaks for re-hydrating. If athletes wait until they are thirsty it may be too late.
- Athletes should be weighed before and after warm weather practices. They need to drink appropriate amounts of fluid for the amount of weight lost. Also, use a urine color chart (see back page) to determine hydration levels before activity.
- Encourage GOOD hydration choices: **water, sport drinks with low sodium and carbohydrates**, *AVOID: soda, fruit juices, carbonated beverages, and caffeine*.
- Encourage drinking fluids, not pouring them. Dumping fluid over the head won't help restore body fluids or lower body temperature.
- Provide easily accessible fluids.

Before Exercise	Drink 16 oz of fluid before activity/exercise (2 hours) Drink another 7-10 oz of fluid 10-15 minutes before exercise
During Exercise	Drink 4 -16 oz of fluid every 15-20 minutes
After Exercise	Drink 24 oz of fluid for every (one) pound lost during exercise within 6 hours of stopping the activity. This is to achieve normal fluid state and not begin the next practice dehydrated.
Fluid counter	 24 oz of fluid = 1 ½ of water bottle 16 oz of fluid = 1 full water bottle 7 oz of fluid = ½ full water bottle or 10 BIG gulps of water 4 ox of fluid – ¼ full water bottle or 5 BIG gulps of water

ACCLIMATIZATION RECOMMENDATIONS & CONSIDERATIONS

- The goal of the acclimatization period is to enhance the body's ability to exercise safely and effectively in warm to hot conditions.
- The heat acclimatization period is defined as the initial 14 consecutive days of preseason practice.
- Slowly increase practice intensity and duration over this time. Schedule practice in the morning or evening when the weather is coolest.
- Each individual practice should last no more than 3 hours. Any time spent warming-up, stretching, conditioning, weight lifting, and performing cool down activities are all considered part of the 3 hours.
- A walk-through does not need to be included as part of the 3 hours, provided no conditioning or weight lifting takes place. A walk-through should not last longer than 1 hour. A 3 hour recovery period should exist between a practice and a walk-through.
- Double practices in a single day should not begin until the 6th day of the acclimatization period.

HEAT ILLNESS SIGNS/SYMPTOMS & MANAGEMENT

Heat illness is a general term used to describe many different conditions that can result from physical activity in an environment of extreme heat and/or humidity. These conditions are a result of the body becoming dehydrated and/or losing the ability to cool itself. **The signs and symptoms of heat illness do NOT necessarily run on a continuum. This means that a person could suffer from heat stroke without showing less severe heat illness conditions such as heat cramps**. Please keep this in mind when evaluating the signs and symptoms of your athletes.

Heat Cramps – Signs and Symptoms

- ◊ Cramping that occurs in active muscles
- ◊ Cramping in the abdominals and legs most common

Heat Cramps – Management

- ◊ Rest in a cool place
- ◊ Gentle stretching and massage muscle
- ◊ Drink **WATER**
- ◊

Heat Syncope – Signs and Symptoms

- ◊ Weakness
- ◊ Fatigue
- ◊ Fainting

Heat Syncope -*Management:*

- ◊ Lay athlete down in cool place
- ◊ Drink WATER
- ◊ Athlete is NOT allowed back to activity
- ◊ Should be seen by a physician

Heat Exhaustion – *Signs and Symptoms*

- ◊ Rapid weight loss (water)
- ◊ Muscle cramps
- ◊ Nausea /vomiting
- ◊ Headache
- ◊ Reduced sweating (clammy skin)
- ◊ Dizziness / Fainting
- ◊ Fatigue or weakness

Heat Exhaustion -*Management:*

- ◊ Treat heat exhaustion as an ***emergency***.
- ◊ **Call** for *emergency medical assistance* & move patient to shade/cool building.
- ◊ Remove clothing and immerse torso in ice/cold water.
- ◊ Place *ice bags* over pulse points (armpits, groin and neck)
- ◊ If conscious give WATER slowly

Heat Stroke – *Signs and Symptoms*

- ◊ No sweating
- ◊ Hot, dry skin
- ◊ Nausea /vomiting
- ◊ Seizures
- ◊ Disorientation
- ◊ Loss of consciousness

Heat Stroke -*Management:*

- ◊ Heat stroke is ***life-threatening***!
- ◊ **Call** for *emergency medical assistance* & move patient to shade/cool building.
- ◊ Remove clothing and immerse torso in ice/cold water.
- ◊ Place *ice bags* over pulse points (armpits, groin and neck)
- ◊ Do **NOT** give *WATER (fluids)*!

REFERENCES

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National Federation of State High School Assocations. Fluid replacement for athletes. *Sports Medicine Handbook, 3rd Edition*. 2008; 43-46.

The information in this document is provided by the Kansas State High School Activities Association with content contribution from the Kansas Athletic Trainer's Society. The information is meant to provide general information and guidelines for schools to consider when creating or updating their school's heat/hydration policy.

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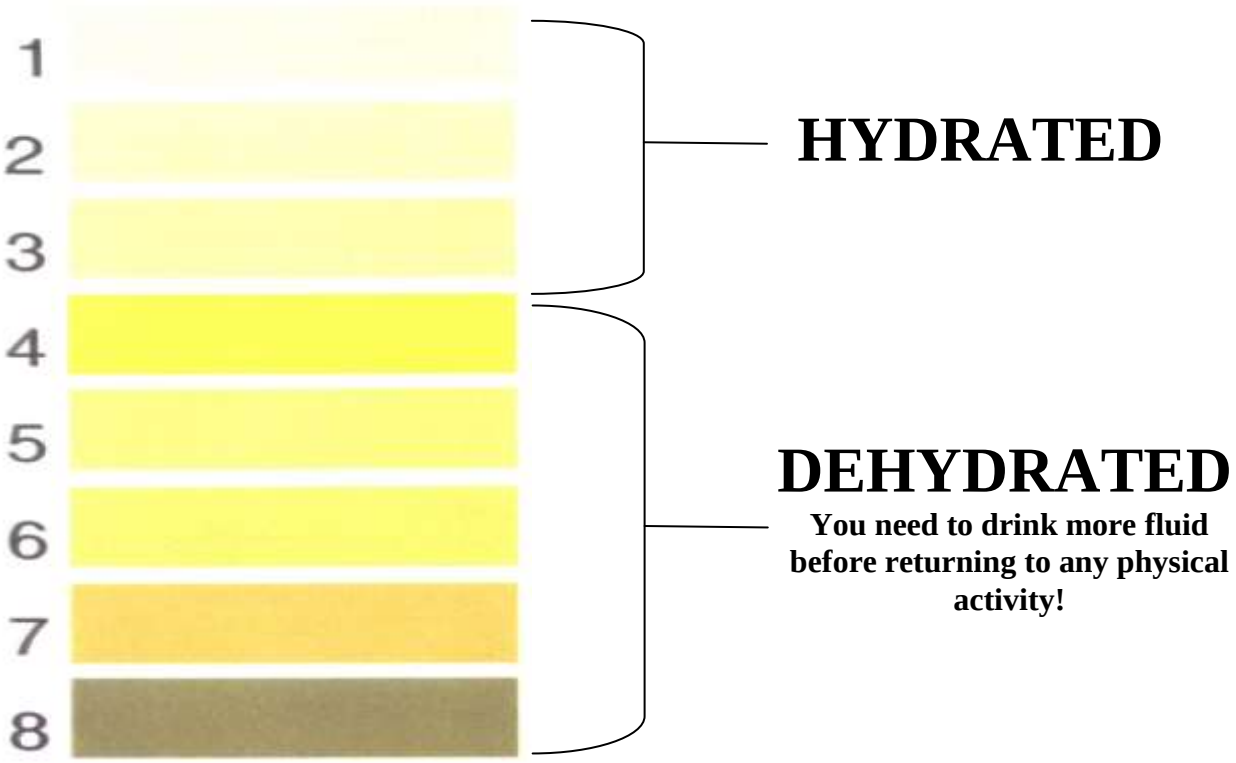
How Hydrated Are You?

This urine color chart is a simple tool you can use to assess if you are drinking enough fluids throughout day to stay hydrated.



Be Aware! If you are taking single vitamin supplements some of the vitamins can change the color of your urine for a few hours, making it bright yellow or discolored.