

SPRING-FORD SENIOR HIGH SCHOOL

Heat Exposure Guidelines

Heat illness and injury can range from a simple muscle cramp to life threatening heat stroke. Catastrophic heat injuries are preventable. Following the recommendations found in this document, the risk of heat injuries can be reduced significantly. The most important components in preventing heat injury are the prevention of dehydration and limiting activity when temperature and humidity make it near impossible for the body to cool through evaporation of sweat. The body produces heat at rest. This heat production increases 10 to 20 times with exercise. Evaporation is the major method of cooling the body during exercise. Evaporation of sweat dissipates the heat from the core of the body, keeping the internal organs cool. Exercising in a dehydrated state reduces the ability to sweat, therefore compromising the ability to cool. Dehydration also causes a reduction in blood volume, compromising cardiac output. The air temperature and humidity have a direct effect on the efficiency of this cooling process. Based on the effects of dehydration and exercising in the heat and humidity, the following guidelines have been established to provide administrators, coaches, and athletic training staff, with a sound plan to prevent heat injury.

Heat Illness Facts

- Adolescents take longer to acclimatize to the heat than adults
- Dehydration of 1% to 2% of body weight begins to impact athletic performance
- Dehydration greater than 3% of body weight significantly increases the risk of heat related illness.
- 1.5 times the amount of water lost must be consumed to replace lost weight.
- Unrelated illnesses causing vomiting and/or diarrhea will increase risk of heat related illnesses. These conditions should be brought to the attention of the ATC and/or coaching staff prior to participation and close monitoring of these individuals should take place during practice sessions and competition.
- Athletes taking certain medications including diuretics, antihistamines, beta blockers and anti-cholinergics are at higher risk for heat illnesses. Common medications among teens such as Ritalin and Aderal are within these high risk categories.
- Wear light weight and light colored clothing. Light colored breathable clothing can assist the body in cooling.
- Athletes who are overweight, poorly conditioned, recovering from illness, lacking in sleep, or taking medications are at added risk for heat illnesses and should be monitored closely and/or have their participation level modified.
- Sports drinks should contain less than 8% carbohydrates (check label!). Carbohydrate content greater than 8% compromises the rate of gastric emptying and should be avoided.
- Early morning commonly produces a humid environment and lower temperatures. Usually, as the sun rises, the temperature will increase and the humidity decreases. As the evening hours approach, the temperature decreases and the humidity will rise. Often, the most critical times to monitor athletes' ability to exercise in hot weather occurs when the

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temperature rises quickly during the early morning prior to the sun burning off the humidity, or during storms when the humidity remains high due to cloud cover, etc.

- A mild breeze can reduce the humidity on a particular field, as well as improve the evaporative process.

Wet Bulb Temperature Monitoring (WBTG) Guidelines

- WBTG has been shown to provide an accurate measure of environmental heat stress.
- WBTG can be used as a preventive measure during exercise in the heat by making activity modifications as WBTG rises.
- When developing guidelines for activity modification using WBTG, it is necessary to include work:rest ratios, length of activity, hydration breaks, equipment to be worn (if applicable), and a level in which activity is cancelled.
- WBTG guidelines must be region (geographic) specific since temperatures fluctuate differently by regions. People's response to exercising in heat may vary by the geographic region in which their usual exercise sessions take place.

The WBTG reading will be monitored by the Kestral 5400 and guidelines for practices will be set and/or modified based off of the readings obtained. Follow guidelines outlined below:

WBTG READING	ACTIVITY GUIDELINES & REST BREAK GUIDELINES
Under 82.0	Normal activities--Provide at least three separate rest breaks each hour of minimum duration of 3 minutes each during workout
82.0 - 86.9	Use discretion for intense or prolonged exercise; watch at-risk players carefully; Provide at least three separate rest breaks each hour of a minimum of four minutes duration each
87.0 - 89.9	Maximum practice time is two hours. For Football: players restricted to helmet, shoulder pads, and shorts during practice. All protective equipment must be removed for conditioning activities. For all sports: Provide at least four separate rest breaks each hour of a minimum of four minutes each
90.0 - 92.0	Maximum length of practice is one hour, no protective equipment may be worn during practice and there may be no conditioning activities. There must be 20-minutes of rest breaks provided during the hour of practice
Over 92.1	No outdoor workouts; Cancel exercise; delay practices until a cooler WBTG reading occurs

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The following chart is a simple method to determine the amount of increased risk with variations of heat and humidity, and subsequent suggestions to modify participation in physical activities. This chart can be used by inputting the temperature and humidity available from a thermo-hygrometer, via local radio stations, Internet locations, etc. Simply cross-reference the relative humidity (top row) with the temperature (first column) to determine the **humiture**. Follow guidelines outlined below:

Heat Index Chart (Temperature & Dewpoint)																
Dewpoint (° F)	Temperature (° F)															
	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
65	94	95	96	97	98	100	101	102	103	104	106	107	108	109	110	112
66	94	95	97	98	99	100	101	103	104	105	106	108	109	110	111	112
67	95	96	97	98	100	101	102	103	105	106	107	108	110	111	112	113
68	95	97	98	99	100	102	103	104	105	107	108	109	110	112	113	114
69	96	97	99	100	101	103	104	105	106	108	109	110	111	113	114	115
70	97	98	99	101	102	103	105	106	107	109	110	111	112	114	115	116
71	98	99	100	102	103	104	106	107	108	109	111	112	113	115	116	117
72	98	100	101	103	104	105	107	108	109	111	112	113	114	116	117	118
73	99	101	102	103	105	106	108	109	110	112	113	114	116	117	118	119
74	100	102	103	104	106	107	109	110	111	113	114	115	117	118	119	121
75	101	103	104	106	107	108	110	111	113	114	115	117	118	119	121	122
76	102	104	105	107	108	110	111	112	114	115	117	118	119	121	122	123
77	103	105	106	108	109	111	112	114	115	117	118	119	121	122	124	125
78	105	106	108	109	111	112	114	115	117	118	119	121	122	124	125	126
79	106	107	109	111	112	114	115	117	118	120	121	122	124	125	127	128
80	107	109	110	112	114	115	117	118	120	121	123	124	126	127	128	130
81	109	110	112	114	115	117	118	120	121	123	124	126	127	129	130	132
82	110	112	114	115	117	118	120	122	123	125	126	128	129	131	132	133

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105° and up

No outside activities * (or non-air conditioned inside activities)

95° to 104°

No equipment (helmets, pads, etc) be used during activity. Practice time is limited. Unlimited access to water. Mandatory Rest breaks every 20 minutes.

90° to 94°

Equipment to be removed as often as possible (during rest breaks, on sideline, etc.). Careful monitoring of all athletes for signs of heat problems. Unlimited access to water. Mandatory rest breaks every 20 minutes

Below 89°

Adequate water supply at all practices and competitions with breaks every 20 to 30 minutes for rehydration.

