Gregory-Portland High School Band
Procedures on Heat and Student Participation

To ensure the safety of all students participating in the Gregory-Portland High School Band, the following procedures will be followed:

1. Students will be informed of heat illness and proper hydration by the Directors. This will include heat related issues. This will be posted on the Wildcat Band website.

2. Directors will provide water during outside activities.

3. Directors will encourage water consumption during practice, and model good hydration practices. When there are dangerous heat related conditions students will be given 2-3 breaks per hour to hydrate or more as necessary for the conditions.

4. Directors will monitor the relative humidity and temperature daily recording both prior to each outdoor rehearsal. We will use the National Weather Service for our Heat Indices so that conditions are monitored for all outdoor activities.

5. Directors will monitor out-door practice.

6. Directors will inform Administrators of practice locations.

7. Directors will identify "at-risk" students and monitor the throughout rehearsals.

8. Breaks will follow UIL guidelines.

9. Practice will be moved indoors when the heat index (temperature in relation to relative humidity) reaches 105 degrees Fahrenheit.

10. The Directors will establish a point of contact with the Administrators of all outdoor activities beyond the normal practices during class and for after school outdoor rehearsals (Monday, Tuesday and Wednesday afternoons from 4:15-6:15pm).

ATTACHMENT # 1

Heat Related Guidelines

The best defense against heat-related reactions is Prevention. On an annual basis the Band staff will review all precautions to take to ensure student safety during high heat. Staff focus will be on "constant surveillance" of students during high heat to ensure student health. Should symptoms arise, they will be addressed immediately by using basic first aid if needed.

The following guidelines are to be used as appropriate to ensure student safety during high heat. Implementation may vary depending on the activity.

Guidelines for Staff during High Heat Conditions

- Reduce the intensity and duration of strenuous physical activity initially and gradually increase to accomplish acclimatization.
- Provide cool water and schedule frequent rest periods when students are encouraged to drink 2-3 glasses of water. Water will be available for students at anytime during every rehearsal.
- Plan strenuous outdoor activity for times where the heat is lower and within acceptable temperatures for outside activities.
- Directors should be aware of chronic health issues and student medications. Closer surveillance these students will occur.
- Students with certain conditions are at a greater risk to heat stress. Included in these (but not limited to) are: cystic fibrosis, vomiting, diarrhea, fever, obesity, diabetes, chronic heart failure, caloric malnutrition, anorexia nervosa, sweating insufficiency syndrome.
- Check to see if student's medication has specific precautions regarding heat, sunlight, etc.
- Implement extra precautions when practicing on concrete or asphalt.
- Provide water on long, non-air-conditioned bus trips of more than 1 hour and/or encourage students to bring their own.
- The intensity of activities that last 30 minutes or more should be reduced whenever relative humidity and air temperature (Heat Index) are above critical levels (Hi of 100 or above). "The higher the humidity, the more dangerous high air temperature is because of decreased evaporation of body sweat." Note that full sun exposure can increase the Heat Index by as much as 15 degrees F.

Student Guidelines

- Wear lightweight, loose, cool, reflective clothing.
- Wear hats or sun visors when participating in the direct sun
- Wear sunglasses or protective eyewear.
- Avoid caffeine and high-sugar, carbonated drinks.
- Water will be available during every rehearsal but, each student Students are encouraged to bring water to drink throughout activity.
- Inform instructor if you were recently ill.
- Avoid eating heavy, protein-rich foods prior to exercise.
- Wear sun block (SPF 15 or higher) and apply 30 minutes prior to outside activity to cool dry skin. Reapply according to directions.

There are four main heat-related reactions to excess heat:

- ***Heat syncope-*** fainting or near fainting due to overheating.
- ***Heat cramps-*** muscle cramps occurring during intense, prolonged activity in the heat.
- ***Heat exhaustion*** **–** body temperature of 103-105, dizziness, disorientation, nausea, cramps.
- ***Heat stroke*** **–** body temperature of 106-108, disorientation, seizures, hot and dry skin, coma.

Heat –related reactions will increase if proper treatment is delayed.

Appendix 1:
From the UIL Website:

Heat Stress and Athletic Participation

Early fall football, cross country, soccer and field hockey practices are conducted in very hot and humid weather in many parts of the United States. Due to the equipment and uniform needed in football, most of the heat problems have been associated with football. During the 1995 through the 2000 football season there have been 17 heat stroke deaths in football. This is not acceptable. There are no excuses for heatstroke deaths if the proper precautions are taken. During hot weather conditions, the athlete is subject to the following:

Heat Cramps - Painful cramps involving abdominal muscles and extremities caused by intense, prolonged exercise in the heat and depletion of salt and water due to sweating.
Heat Syncope - Weakness, fatigue and fainting due to loss of salt and water in sweat and exercise in the heat. Predisposes to heatstroke.
Heat Exhaustion (Water Depletion) - Excessive weight loss, reduced sweating, elevated skin and core body temperature, excessive thirst, weakness, headache and sometimes unconsciousness.
Heat Exhaustion (Salt Depletion) - Exhaustion, nausea, vomiting, muscle cramps, and dizziness due to profuse sweating and inadequate replacement of body salts.
Heatstroke - An acute medical emergency related to thermoregulatory failure. Associated with nausea, seizures, disorientation, and possible unconsciousness or coma. It may occur suddenly without being preceded by any other clinical signs. The individual is usually unconscious with a high body temperature and a hot dry skin (heatstroke victims, contrary to popular belief, may sweat profusely).

It is believed that the above mentioned heat stress problems can be controlled provided certain precautions are taken. According to the American Academy of Pediatrics Committee on Sports Medicine, heat related illnesses are all preventable. (Sports Medicine: Health Care for Young Athletes, American Academy of Pediatrics, 1991). The following practices and precautions are recommended:

- Each athlete must have a physical exam with a medical history when first entering a program and an annual health history update. History of previous heat illness and type of training activities before organized practice begins should be included. State high school association's recommendations should be followed.
- It is clear that top physical performance can only be achieved by an athlete who is in top physical condition. Lack of physical fitness impairs the performance of an athlete who participates in high temperatures. Coaches should know the **physical condition** of their athletes and set practice schedules accordingly.
- Along with physical conditioning, the factor of acclimatization to heat is important. Acclimatization is the process of becoming adjusted to heat and it is essential to provide for **gradual acclimatization to hot weather.** It is necessary for an athlete to exercise in the heat if he/she is to become acclimatized to it. It is suggested that a graduated physical conditioning program be used and that 80 percent acclimatization can be expected to occur after the first seven to ten days. Final stages of acclimatization to heat are marked by increased sweating and reduced salt concentration in the sweat.
- The old idea that water should be withheld from students/ athletes during workouts has no scientific foundation.

1. The most important safeguard to the health of the students/athletes is the replacement of water.
2. Water must be on the field and readily available to the students/athletes at all times.
3. It is recommended that a minimum of ten minutes be scheduled for a water break every half hour of heavy exercise in the heat.
4. Water should be available in unlimited quantities.
5. Check and be sure students/athletes are drinking the water.
6. Cold water is preferable.
7. Drinking ample water before practice or games has also been found to aid performance in the heat.

- Salt should be replaced daily. Modest salting of foods after practice or games will accomplish this purpose. Salt tablets are not recommended. Attention must be directed to replacing water -- fluid replacement is essential.

Know both the temperature and humidity. The greater the humidity, the more difficult it is for the body to cool itself. Test the air prior to practice or game using a wet bulb, globe, temperature index (WBGT Index) which is based on the combined effects of air temperature, relative humidity, radiant heat and air movement. The following precautions are recommended when using the WBGT Index (ACSM's Guidelines for the Team Physician, 1991):

Below 64	Unlimited activity
65-72	Moderate risk
74-82	High risk
82 plus	Very high risk

There is also a weather guide for activities that last 30 minutes or more (Fox and Mathews, 1981) which involves knowing the relative humidity and air temperature:

Air Temp	Danger Zone	Critical Zone
70 F	80 percent RH	100 percent RH
75 F	70 percent RH	100 percent RH
80 F	50 percent RH	80 percent RH
85 F	40 percent RH	68 percent RH
90 F	30 percent RH	55 percent RH
95 F	20 percent RH	40 percent RH
100 F	10 percent RH	30 percent RH

RH = Relative Humidity

One other method of measuring the relative humidity is the use of a sling psychrometer, which measures wet bulb temperature. The wet bulb temperature should be measured prior to practice and the intensity and duration of practice adjusted accordingly. Recommendations are as follows:

Under 60 F	Safe but always observe athletes
61-65 F	Observe players carefully
66-70 F	Caution
71-75 F	Shorter practice sessions and more frequent water and rest breaks
75 plus	Danger level and extreme caution

Cooling by evaporation is proportional to the area of skin exposed. In extremely hot and humid weather reduce the amount of clothing covering the body as much as possible.

Never use rubberized clothing.

Athletes should **weigh** each day before and after practice and **weight charts checked.** Generally a three percent weight loss through sweating is considered safe and over a three percent weight loss is in the danger zone. Over a three percent weight loss the athlete should not be allowed to practice in hot and humid conditions. Observe the athletes closely under all conditions. Do not allow athletes to practice until they have adequately replaced their weight.

Observe athletes carefully for signs of trouble, particularly athletes who lose significant weight, and the eager athlete who constantly competes at his/her capacity. Some trouble signs are nausea, incoherence, fatigue, weakness, vomiting, cramps, weak rapid pulse, visual disturbance, and unsteadiness.

Teams that encounter hot weather during the season through travel or following an unseasonable cool period should be physically fit but will not be environmentally fit. Coaches in this situation should follow the above recommendations and substitute more frequently during games.

Know what to do in case of emergency and have your emergency plans written with copies to all your staff. Be familiar with immediate first aid practices and prearranged procedures for obtaining medical care, including ambulance service.

Heat Stroke - This is a medical emergency. DELAY COULD BE FATAL.
Immediately cool body while waiting for transfer to a hospital. Remove clothing and place ice bags on the neck, in the axilla (armpit), and on the groin area. An increasing number of medical personnel are now using a treatment for heat illness that involves applying either alcohol or cool water to the victim's skin and vigorously fanning the body. The fanning causes evaporation and cooling. (Source--The First Aider--September 1987)

Heat Exhaustion - OBTAIN MEDICAL CARE AT ONCE.
Cool body as you would for heat stroke while waiting for transfer to hospital. Give fluids if athlete is able to swallow and is conscious.
Summary - The main problem associated with exercising in the hot weather is water loss through sweating. Water loss is best replaced by allowing the athlete unrestricted access to water. Water breaks two or three times per hour is better than one break an hour. Probably the best method is to have water available at all times and to allow the athlete to drink water whenever he/she needs it. Never restrict the amount of water an athlete drinks, and be sure the athletes are

drinking the water. The small amount of salt lost in sweat is adequately replaced by salting food at meals. Talk to your medical personnel concerning emergency treatment plans

Source:

http://www.uil.utexas.edu/athletics/health/heat_stress.html

Appendix 2:
The following is a consensus statement from the Gatorade Sport Science Institute (GSSI) about preventing Exertional Heat Illness. The GSSI is the world's leading researcher of heat illness and hydration.

Preventing Exertional Heat Illness: A Consensus Statement

By Douglas Casa, PhD, ATC, FACSM

Inter-Association Task Force
Inter-Association Task Force on Exertional Heat Illness Consensus Statement [PDF]
Exertional Heat Illness
Dehydration

Heat Cramps
Heat Exhaustion
Exertional Heat Stroke
Exertional Hyponatremia

Every athletic organization should have a written plan for recognizing, preventing and treating exertional heat illnesses (i.e., dehydration, heat cramps, heat exhaustion, exertional heat stroke and exertional hyponatremia). The risk factors that must be addressed include:

- Intrinsic factors such as inadequate heat acclimatization, inadequate fitness level, higher body fat, dehydration or overhydration, illness or fever, presence of gastrointestinal distress, salt deficiency, inadequate meals or insufficient energy intake, skin conditions (e.g., sunburn, skin rash, abrasions, infections, etc.), prepubescence, ingestion of medications or dietary supplements, overly motivated athletes, athletes reluctant to report problems.
- Extrinsic factors such as training intensity and duration, frequency and length of rest breaks, wet bulb globe temperature (WBGT) values, exposure to high heat/humidity in preceding days, clothing and equipment, staff awareness/education regarding EHIs, an emergency action plan, a policy to guide fluid replacement and assure adequate hydration.

It is possible to prevent exertional heat illnesses by proper education and the presence of appropriate on-site medical staff. Pre-participation physical examinations on all athletes that include the athlete's history of cramping or heat illness, use of prescription and over-the-counter medications and intake of dietary supplements is a key part of the prevention and education program.

Dehydration

When athletes do not replenish lost fluids, they become dehydrated. Mild dehydration (less than two percent body weight) is sometimes unavoidable because athletes can not always balance fluid intake with fluid loss. However, even mild dehydration can hinder performance and thermoregulatory function.

Symptoms of dehydration may include dry mouth, thirst, irritability, general discomfort, headache, apathy, weakness, dizziness, cramps, chills, vomiting, nausea, head or neck heat sensations, excessive fatigue and diminished performance.

Preventing Dehydration

Maintaining normal hydration (as indicated by baseline body weight) is an important key to preventing heat illness. Athletes should not be allowed to practice if their total body weight loss is greater than two percent of their baseline (e.g., 4 lbs in a 200-lb athlete). Athletes should begin each exercise session properly hydrated (within two percent of their baseline body weights) and must have easy access to fluids during and after practice.

Treating Dehydration

The athlete should first be moved to a cool environment and rehydrated with a sports drink containing carbohydrates and electrolytes (i.e., sodium and potassium). (A flavored beverage enhances voluntary drinking.)

Return-to-Play Issues for Dehydration

Continued participation is acceptable if dehydration is minimal (i.e., < 2% deficit in baseline body weight) and the athlete is symptom-free. Periodic checks from on-site medical personnel are recommended.

Heat Cramps

The etiology of muscle cramps is not well understood. Whether or not heat-related, cramps tend to occur later in an activity, in conjunction with muscle fatigue and in the presence of dehydration and large sodium losses. Dehydration due to large sweat losses and inadequate fluid intake, and a diet inadequate in minerals (such as sodium, potassium, calcium, and magnesium) appear to provoke whole-body, muscle cramps.

Muscle cramps can largely be avoided with adequate conditioning, acclimatization, rehydration, electrolyte replacement and appropriate dietary practices.

Muscles cramps are often seen in athletes who:

- Are "salty" or heavy sweaters (those with white residue caked on uniforms and equipment)
- Are not adequately acclimatized to the heat
- Have insufficient intake of sodium during meals and practices
- Are fatigued and dehydrated
- Eat irregular, inadequate meals
- Have a pervious history of cramping

Treating Heat Cramps

Reestablishing normal hydration status and replacing sodium losses are primary treatment steps. Light stretching and massage of the involved muscles may also help reduce the acute pain of a muscle cramp.

Return-to-Play Issues for Heat Cramps

Athletes can return to play once they can perform at the level needed for successful participation. Diet, rehydration practices, electrolyte consumption, fitness status, level of acclimatization and use of dietary supplements should be reviewed and possibly modified to decrease the risk of recurrence.

Heat Exhaustion

Heat exhaustion results from strenuous physical exercise and environmental heat stress. It is characterized by the body's inability to sustain adequate cardiac output and can be recognized in an athlete who has obvious difficulty continuing intense exercise in heat, by mild hyperthermia (*usually < 104° F/40° C*) and by the absence of CNS dysfunction.

Symptoms can include physical fatigue and dizziness, dehydration and/or electrolyte depletion, syncope, profuse sweating, pallor, headache, nausea, vomiting, diarrhea, stomach or intestinal cramps and persistent muscle cramps. Rehydration in a cool environment will result in rapid recovery. It should be noted that skin color and wetness should not be used to recognize heat illness.

Treating Heat Exhaustion

It is best to remove athletes from activity to a shaded or air-conditioned area and remove excess clothing and equipment. Then:

- Cool athletes until rectal temperature is less than 101° F (38.3° C) and lay them comfortably with legs propped above heart level
- Rehydrate athletes orally with cool water or sports drink, if they can tolerate oral fluids
- If athletes can't tolerate oral fluids, implement intravenous normal saline
- Monitor heart rate, blood pressure, respiratory rate, core temperature and CNS status
- Transport to an emergency facility if rapid improvement is not noted

Return-to-Play Issues for Heat Exhaustion

Athletes should be symptom-free, fully hydrated and cleared by a physician before returning to play. Gradual return to full-intensity training and competition is recommended.

Exertional Heat Stroke (EHS)

Exertional heat stroke is the metabolic, circulatory and neural consequence of an overwhelmed thermoregulatory system. As thermoregulatory capacity is exceeded and body temperature rises, extreme circulatory and metabolic stresses may produce tissue damage and/or severe physiological dysfunction that can culminate in death.

Recognizing EHS

The ability to rapidly and accurately assess core body temperature and CNS function is critical for evaluating EHS. The two most critical parameters are:

- Hyperthermic (rectal temperature > 104° F/40° C) immediately post-incident
- The presence of overt CNS dysfunction (altered consciousness, coma, convulsions, disorientation, irrational behavior, decreased mental acuity, irritability, emotional instability, confusion, hysteria or apathy).

Other symptoms may include nausea, vomiting, diarrhea, headache, dizziness, weakness, increased heart and respiratory rates, decreased blood pressure and dehydration.

Treating EHS

It is best to remove the athletes' clothing and equipment and immediately immerse them in cold water (~35° -58° F/1.7° -14.5° C). If cold-water immersion is not possible, move them to a shaded area or air-conditioned facility and begin alternative cooling strategies such as spraying their bodies with cold water, fans, ice bags on the neck and groin, or applying ice all over. Then:

- Call 911
- Closely monitor ABCs, core temperature and CNS status
- Place an intravenous line using normal saline (if medical staff is available)
- Cease aggressive cooling when core temperature reaches ~101° F (38.3° C)
- Transport to a medical facility

Return-to-Play Issues for EHS

The severity of an incident should dictate the off-time before an athlete can return to play. Athletes should avoid exercise for at least one week after release from medical care, returning gradually to full practice after being completely asymptomatic and cleared by a physician.

Exertional Hyponatremia

During lengthy athletic events, the sodium lost in sweat, coupled with inadequate sodium intake, increases the risk of hyponatremia. Although excessive fluid intake is likely the most common cause of hyponatremia, exertional hyponatremia can also occur in athletes in very prolonged exercise (e.g., > 6 hours) who are not overhydrated, but who simply do not adequately replace the sodium they lose in sweat.

Hyponatremia can be avoided if fluid consumption does not exceed fluid loss and if adequate sodium is ingested. These fluid and electrolyte needs can be determined by determining a "sweat rate".

Recognizing Exertional Hyponatremia

The most critical criteria for identifying exertional hyponatremia are:

- The absence of severe hyperthermia (most commonly < 104° F/40° C)
- Low blood-sodium levels (< 130 mmol/L)
- Likelihood of excessive fluid consumption before, during and after exercise (e.g., weight gain during activity)
- Low sodium intake during exercise
- Likelihood of sodium deficits before, during and after exercise

CNS changes (e.g., altered consciousness, confusion, coma, convulsions, altered cognitive functioning) and respiratory changes resulting from cerebral and/or pulmonary edema may also be noted. Other symptoms may include increasing headache, nausea or vomiting, swelling of extremities (hands and feet), copious urine with low specific gravity, lethargy, apathy or agitation. Some of these symptoms are similar to those associated with heat illness. For that reason, measurement of core body temperature and blood sodium levels are critical diagnostic tools.

Treating Exertional Hyponatremia

If exertional hyponatremia is suspected and blood sodium levels cannot be determined on-site, delay rehydrating athletes. Instead, implement measures to cool athletes, such as removing or loosening clothing and equipment, fanning or placing cool water on skin and transport them immediately to a medical facility.

Return-to-Play Issues for Exertional Hyponatremia

Physician clearance is strongly recommended in all cases.

The Inter-Association Task Force on Exertional Heat Illnesses

American Academy of Pediatrics
American College of Emergency Physicians
American College of Sports Medicine
American Dietetic Association
American Medical Society for Sports Medicine
American Orthopedic Society for Sports Medicine
American Osteopathic Association of Sports Medicine
American Physiological Society
CDC - Nutrition and Physical Activity
Department of Defense Health Affairs
Gatorade Sports Science Institute
National Association of Emergency Medical Services Physicians
North American Society for Pediatric Exercise Medicine
National Association of Sport and Physical Education/AAHPERD
National Athletic Trainers' Association
National SAFE KIDS Campaign
National Strength and Conditioning Association
U.S. Army Center for Health Promotion and Preventative Medicine

Kulka J, Kenney WL. Heat balance limits in football uniforms: how different uniform ensembles alter the equation. *Physician Sportsmed*. 2002;30(7):29-39.

Figure 1

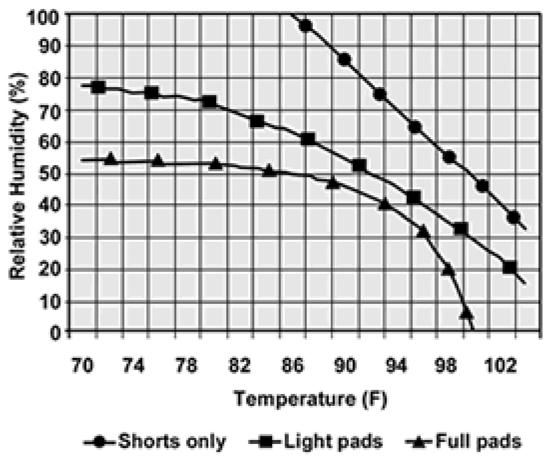

Figure 1. Heat stress risk can be assessed based on environmental temperature and humidity. Note that the amount and type of clothing worn by the athlete has a major impact on the overall heat stress the athlete can tolerate.

Moderate Risk (Conditions beneath the line with triangles)

- Work-to-rest ratio of 30 to 40 minutes of activity followed by a five to ten minute rest and fluid breaks
- No equipment limitations

Elevated Risk (Conditions between triangles and squares)

- Work to rest ratio of 20 to 30 minutes of activity followed by a five to ten minute rest and fluid breaks Minor equipment limitations

High Risk (Conditions between squares and circles)

- Work to rest ratio of 15 to 20 minutes of activity followed by a five to ten minute rest and fluid breaks,
- Shorts only

Chart 1

Sample Sweat Rate Calculation*

A	B	C	D	E	F	G	H	I	J
		Body Weight							
		Before	After	Change in	Drink	Urine	Sweat Loss	Exercise	Sweat Rate
Name	Date	Exercise	Exercise	ΔBW (C-D)	Volume	Volume †	(E+F-G)	Time	(H/I)
		kg (lb/2.2)	kg (lb/2.2)	g (kg x 1000)	mL (oz x 30)	mL (oz x 30)	mL (oz x 30)	min h	mL/min mL/h
		kg (lb/2.2)	kg (lb/2.2)	g (kg x 1000)	mL (oz x 30)	mL (oz x 30)	mL (oz x 30)	min h	mL/min mL/h
		kg (lb/2.2)	kg (lb/2.2)	g (kg x 1000)	mL (oz x 30)	mL (oz x 30)	mL (oz x 30)	min h	mL/min mL/h
		kg (lb/2.2)	kg (lb/2.2)	g (kg x 1000)	mL (oz x 30)	mL (oz x 30)	mL (oz x 30)	min h	mL/min mL/h
Kelly K. ‡	9/15	61.7 kg (lb/2.2)	60.3 kg (lb/2.2)	1400 g (kg x 1000)	420 mL (oz x 30)	90 mL (oz x 30)	1730 mL (oz x 30)	90 min 1.5 h	19 mL/min 1153 mL/h

* Reprinted with permission from Murray R. Determining sweat rate. *Sports Sci Exch.* 1996; 9 (Suppl 63).
† Weight of urine should be subtracted *if urine was excreted prior to post-exercise body weight.*
‡ In the example, Kelly K. should drink about 1 L (32 oz.) of fluid during each hour of activity to remain well hydrated.

Formula for Calculating Sweat Rate

Calculate each athlete's sweat rate (sweating rate = [preexercise body weight - postexercise body weight + fluid intake - urine volume]/exercise time in hours) for a representative range of environmental conditions, practices and competitions (Table 2).

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