EXTREME HEAT
A GUIDE TO SAFE ATHLETIC PARTICIPATION

Coaches and Administrators of Fall Sports:

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MIAA ATHLETIC HEALTH SERVICES

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Additional information and copies can be found at www.mcsk12.net Popular Link: MIAA Sub Link: Health

I
HEAT INDEX

Heat Index can be described as “what it feels like outside.” By definition, the Heat Index is the relationship between temperature and humidity, which can produce detrimental effects on the body. The heat index changes through out the day; midday (12:00–4:00 p.m.) is often the hottest.

When it is hot the body sweats, in which the water in the sweat evaporates and carries heat away from the body. Sweating cools the body through evaporation. Now, imagine that it is hot outside, and the humidity is relatively high. Humidity is basically how much water is already in the air. When you sweat, the only way you cool down is through evaporation of water from your skin. But if the air is holding too much water already, the sweat stays on your skin and you get little to no relief from the heat. High relative humidity retards evaporation, robbing the body of its ability to cool itself.

The heat index for each day will dictate any cancellations or restricted activity. Our heat plan is designed to protect student-athletes from having heat related illnesses or problems. This guide is to assist coaches and administrators when making decisions about whether it is appropriate to modify and/or suspend athletic activities. Thirty (30) minutes prior to the start of activity, heat index readings should be taken at the activity site.

TSSAA MANDATES THAT ALL OUTSIDE PRACTICES & COMPETITIONS MUST BE SUSPENDED WHEN THE HEAT INDEX REACHES EXCESS OF 104 DEGREES. THIS IS AN ALL SPORT RULE.

- No activities will be allowed when the heat index at the location of the activity is in excess of 104 degrees. This includes practices and contests at any level (HS, MS, JV etc...) and at any location (indoor or outdoor). Schools are required to measure the heat index at the location of its activities associated with sanctioned sports.
- During competition, it is the home team's responsibility to measure heat index when needed before athletic contests to determine what adjustments, if any need to be made.
- The heat index should be checked every 30 minutes if the heat index is 95 degrees or greater to monitor for increased heat index.

HEAT INDEX GUIDELINES

1. **If the heat index is 80-89**: Athletes should be watched closely for any heat distress, and frequent water breaks should be taken.

2. **If the heat index is 90- 94**: Optional water breaks every 30 minutes for 10 minutes in duration. Ice-down towels for cooling. Watch/monitor athletes carefully for any heat distress.

3. **If the heat index is 95-99**: Re-check temperature and humidity every 30 minutes to monitor for increased Heat Index. Mandatory water breaks every 30 minutes for 10 minutes in duration. Along with iced down towels, other means for cooling athletes should be available: water sprinklers, fans, shade etc... Watch/monitor athletes carefully for necessary action. Contact sports and activities with helmets and other possible equipment should be removed while not involved in contact. Athletic activities should be modified such that football players should practice in shorts, shoulder pads and helmets only.

4. **If the heat index is 100-104**: Re-check temperature and humidity every 30 minutes to monitor for increased Heat Index. Mandatory water breaks every 20 minutes for 10 minutes in duration. Along with ice down towels, other means for cooling athletes should be available: water sprinklers, fans, shade etc.... Alter

HEAT INDEX cont.

uniform by removing items if possible or other modifications should be made, such as football practice in shorts, t-shirts and helmets only. Helmets and other possible equipment removed if not involved in contact or necessary for safety. Watch/monitor athletes carefully for necessary action. Reduce time of outside activity as well as indoor activity if air conditioning is unavailable. If necessary for safety, suspend activity.

5. **If the heat index is in excess of 104 degrees**: Activity will be suspended, postponed until later in the evening, or held indoors at the coach's discretion. Stop all indoor activity unless air conditioning is available. Activity could also be rescheduled or postponed, when the heat index has reached an acceptable level. No activity may begin until conditions are acceptable, meaning the heat index is below 104. All appropriate guidelines should be followed based on the reading at the time.

II
HEAT STRESS & ATHLETIC PARTICIPATION

Heat Stress and Athletic Participation- Early fall football, cross country, soccer (and volleyball in gyms without air conditioning) activities are conducted in very hot and humid weather.

During hot weather conditions the athlete is subject to the following:

Heat Related Illness	Treatment
Heat Cramps are involuntary muscle spasms.	Rest in a cool place. Massage cramp with ice and passive stretching. Replenish fluids with water. Return to play when symptom free.
Heat Exhaustion involves: profuse sweating, dizziness, weakness, nausea, headache,	Remove unnecessary clothing & equipment, towel with cool water and/or ice the neck region, armpits and near groin areas (rapidly cool the body). Rest in cool place. Discontinue activity until thoroughly recovered. Return to play when symptom free.
Heat Stroke: A Medical Emergency associated with nausea, seizures, disorientation, a glassy stare and possible unconsciousness or coma. It may occur suddenly without being preceded by any other signs. The individual is usually unconscious with a high body temperature and a hot dry skin. Heat stroke victims, contrary to popular belief, may sweat profusely.	ACTIVATE EMS!!! Remove unnecessary clothing & equipment. Rest in a cool place. Rapidly cool body with ice on neck region, armpits and near groin regions (rapidly cool the body). Treat for shock. Return to play when released by a physician.
With any Heat Related Illness, treatment for all heat conditions involves immediately moving the person to a cool place, rapidly cooling the body, and removing all equipment and unnecessary clothing. Administer cool fluids. Elevate the feet above the heart to maintain blood pressure and circulation to the brain.	

The following practices and precautions are mandatory for athletic participation:

1. Each athlete should have a completed Athlete's Health Record consisting of physical examination from a physician, nurse practitioner or physician's assistant, parent's informed consent and authorization to treat in emergencies, emergency contacts, insurance information and modified medical history before he or she may practice or compete. This form is available at www.mcsk12.net Popular Link: MIAA , Sub Link: Health. Copies of this information should accompany the coach to all games and practices.

HEAT STRESS & ATHLETIC PARTICIPATION cont.

2. Along with physical conditioning the factor of acclimatization to heat is important. Acclimatization is the process of becoming adjusted to heat. 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% acclimatization can be expected to occur after the first 7-10 days. Research states that most heat related fatalities occur in the first four days of preseason practice. Please acclimate your athletes to the heat with gradual practice sessions.

3. The old idea that water should be withheld from athletes during workouts has NO SCIENTIFIC FOUNDATION. The most important safeguard to the health of the athlete is the replacement of water. Water must be on the field and readily available to the athletes at all times. It is recommended that a minimum 10-minute water break be scheduled for every twenty minutes of heavy exercise in the heat. Athletes should rest in a shaded area during the break. WATER SHOULD BE AVAILABLE IN UNLIMITED QUANTITIES. Check and be sure athletes are drinking the water.

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

Coaches, know what to do in case of an emergency and have your emergency plans written with copies to all your staff. All coaches must be CPR and First Aid Certified by either the American Red Cross or American Heart Association. Coaches must maintain an appropriate First Aid Kit at all practices and competitions along with injury ice and bags. Be familiar with immediate first aid practice and prearranged procedures for obtaining medical care, including ambulance service.

III
HYDRATION TIPS AND FLUID GUIDELINES

Get your players involved. Teach them to become responsible for their personal health and safety. The cooler they stay the harder and more effective they can play.

1. Have you athlete's assess there hydration status. Methods include:

    A. Incorporate weight charts into your program. Tell your athletes to weigh before and after each practice. Record the weights and the difference. Typically, a loss of 1-2 pounds indicates possible dehydration and inadequate drinking. Over a 3 % weight loss the athlete should not be allowed to practice in hot and humid conditions. Do not allow athletes to practice until they have adequately replaced their weight by rehydrating.

    B. Urine color can often signal dehydration. Urine that is clear or lightly tinted (color of lemonade) usually means the athlete is well hydrated. Urine that is gold colored or the color of apple juice is representative of dehydration.

2. Encourage your athletes to prepare for activity by drinking early, preferably 2 hours before. Tell them to avoid beverages containing caffeine, alcohol, and/or carbonation. They are not effective in hydrating the body adequately.

3. Remind athletes to continue drinking during activity. That amounts to about 1 cup every 15 minutes.

4. Once activity has concluded, teach athletes to recover within the first 2 hours by hydrating. One way is to refer back to their after practice weight difference and drink about 2 cups per pound loss.

HYDRATION TIPS AND FLUID GUIDELINES cont.

5. Teach your athletes how to recognize signs and symptoms of dehydration: headache, nausea, dizziness, cramps, weakness etc… Encourage them to do the things necessary to prevent heat related illnesses and how to handle symptoms if a situation should arise.

SAMPLE HYDRATION PLAN	
Assessment	Weight Loss > 1-2 lbs Urine Color: gold or color of apple juice *INCREASED RISK OF HEAT RELATED ILLNESSES*
Prepare	2 hours prior drink ~2 cups 10 minutes prior drink ~1 cup
Keep Drinking	~4 cups per hour of play
Recovery	Within 2 hours of completion ~ 2 cups per lb. of weight loss
Be Alert	Teach Athletes to recognize warning signs of dehydration

Remember:

High-body-fat athletes can have a harder time with exercise and can become dehydrated faster than lower-body-fat athletes working out under the same environmental conditions.

Poor acclimatization/fitness levels can greatly contribute to an athlete's dehydration problems.

Medications, fevers and illness greatly affect an athlete's dehydration problems.

Clothing, such as dark, bulky, or rubber protective equipment can drastically increase the chance of heat illness and dehydration.

The best management of heat related illnesses is prevention.

IV
MONITORING ATHLETES

Coaches and team support staff must closely monitor all players for signs and symptoms of developing heat-related injury during practice or competition in stressful environments. Players who are not acclimated or aerobically fit, especially the large linemen with excessive body mass, warrant closer and constant scrutiny for heat illness.

—Pre-activity body weight and urine color can be used as indirect indicators of hydration status.

—Body weight measurements taken just before and after activity can help in determining the amount of fluid that should be replaced to assist in recovery before the next activity and to educate regarding better fluid replacement during activity.

—There should be an adequate number of coaches and staff to effectively monitor all athletes on the field for signs of heat illness.

—All players should be observed during activitys for changes in performance or personality that might be early indications of developing heat injury.

—Any changes in player performance, personality, or well being, including pale color, bright red flushing, dizziness, headache, excessive fatigue, fainting, vomiting, or complaints of feeling hot or cold during activity should be sufficient reason to *immediately* stop activity for all affected players.

—Besides general precautions to sufficiently hydrate, acclimatize, condition, and rest when ill and avoid certain dietary supplements and drugs, prudent special precautions for sickle-trait football players should include no day 1 fitness runs and no timed miles or sustained sprints over 500 meters. Any cramping should be treated as sickling until proved otherwise.

—Teams should use the “buddy” system to monitor players (two players who play the same position assigned to “keep an eye on” each other).

—If exertional heat stroke is suspected, players should be stripped of equipment and cooled in a tub of cold water or by using rapidly rotating ice water towels to the extremities, trunk, and head and ice packs in the armpits, groin, and neck areas, until emergency personnel can assume care and evacuate the athlete to the nearest emergency facility. Importantly, cooling should continue in route.

—If players experience severe muscle pain and weakness after activity, they should monitor urine color. If urine becomes tan or brown in the first hour up to several days after activity, they should immediately seek medical attention, as this may indicate that the kidneys are not functioning properly.

V
ACTIVITY MODIFICATIONS

The insulating nature of football equipment reduces an athlete's capacity to dissipate heat. Therefore, appropriate activity modification decisions should incorporate heat index, in deriving a set of guidelines to shorten exposures and reduce the effects of heat. More frequent fluid and rest breaks should be incorporated during activity, as environmental conditions become more challenging.

Coaches need to anticipate as best as they can (erring on the side of caution) the challenges facing a player, and implement appropriate changes to effectively reduce the associated risks of heat and improve the overall safety for football athletes.

—Midday (12:00–4:00 p.m.) is often the hottest part of the day, especially if it is a bright, sunny day.

—When conditions are too extreme* (e.g., unusual high heat index), activity should be canceled altogether, moved into air-conditioned spaces, or held outside as walk-through sessions with no protective gear or conditioning activities, with regular breaks for fluid consumption and reduced sun exposure.

—Adjusting the work-to -rest ratio, by lowering the activity duration and/or intensity and increasing the frequency and duration of breaks, is an effective way to lower the occurrence of heat related risks.

—Many activities can be continued safely, by simply removing equipment and having players participate in shorts with helmets and shoulder pads only (not full equipment) or shorts only (with all protective equipment removed), as heat stress increases.

— Players should wear as little covering as is appropriate, and helmets should be taken off whenever possible (e.g., during instruction).

—Players should wear light-colored clothing during activity.

—Regular breaks should be included in each activity schedule, to allow rest, cooling, and fluid replacement. Breaks should be *more frequent*, as heat and humidity rise and the risk of excessive heat strain increases.

—Fluid replacement should be further promoted by providing chilled fluids, easy access, and adequate time for ingestion, to encourage sufficient fluid intake and lessen progressive dehydration on the field. Common barriers to adequate fluid intake include a limited number of water coolers and excessive distance to the fluid stations.

—Staff should be encouraged to bring fluid to players on the field between "official" breaks, if portable fluid delivery systems are available.

— During breaks, players should use shade when it is available, to reduce heat load.

—Activity parameters should be individualized for athletes known to be at greater risk for heat injury.

—Players should not use stimulants such as ephedrine, and high-dose caffeine that are often found in certain dietary supplements and "energy" drinks.