



Kentucky High School Athletic Association

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KENTUCKY MEDICAL ASSOCIATION / KENTUCKY HIGH SCHOOL ATHLETIC ASSOCIATION PROCEDURE FOR AVOIDING HEAT INJURY / ILLNESS THROUGH ANALYSIS OF HEAT INDEX AND RESTRUCTURING OF ACTIVITIES AND RECOMMENDATIONS FOR COOLING METHODS DUE TO HEAT RELATED ILLNESS

Complete listing of support documents available at <http://www.khsaa.org/sportsmedicine/>

Original Procedure Made by the Kentucky Medical Association Committee on Physical Education and Medical Aspects of Sports to and for the Kentucky High School Athletic Association and adopted by the KHSAA Board of Control as recommendation for all schools, May, 2002

On site Procedures Revised by KHSAA Board of Control, February 13, 2003

On site procedures further Revised and Made Mandatory for all schools by the KHSAA Board of Control, May, 2005

On site procedures further revised with respect to testing instruments, March, 2007

Cooling Procedures Modified as Recommended by Kentucky Medical Association, June, 2009

Heat Index Expanded to Spring Sports, August, 2010

INTRODUCTION

Following months of study, after one year of implementation and in an effort to help protect the health and safety of student-athletes participating in high school sports, the Kentucky Medical Association Committee on Physical Education and Medical Aspects of Sports issued a recommended procedure to the Kentucky High School Athletic Association for immediate implementation in 2002. This procedure called for the determination of the Heat Index (using on site devices to measure Temperature and Relative Humidity), and a guideline for activity to be conducted at that time based on the Heat Index reading. Though other procedures and measurements were considered, the application of the Heat Index appeared to be most readily implementable on a state wide basis, and appeared to be reliably tested in other areas.

Through the first five years of use of the procedure, minor adjustments were made in the reporting requirements, and the on site devices to be used. In May, 2005, the Board of Control through its policies directed that all member school comply with the testing and reporting requirements. In October, 2006, the member schools of the Association overwhelmingly approved at their Annual Meeting, a proposal to make such reporting not simply a Board of Control policy, but a school supported and approved Bylaw as it approved Proposal 9 to amend KHSAA Bylaw 17 (full details are available at

<http://www.khsaa.org/annualmeeting/20062007/annualmeetingproposals20062007.pdf>)

In March, 2007, the Kentucky Medical Association Committee on Physical Education and Medical Aspects of Sports recommended the elimination of all devices with the exception of the Digital Sling Psychrometer as a means of measuring at the competition/practice site.

In June, 2009, the Kentucky Medical Association Committee on Physical Education and Medical Aspects of Sports recommended that specific cooling procedures, including the practicing in the event of an emergency, be implemented at the local school level.

In August, 2010, the Kentucky Medical Association Committee on Physical Education and Medical Aspects of Sports recommended that the heat index monitoring procedures apply to the sports played in the spring in Kentucky's high schools.

Each of these recommendations were adopted by the KHSAA Board of Control.

GENERAL PROCEDURE

The procedure calls for the determination of the Temperature and Relative Humidity at the practice / contest site using a Digital Sling psychrometer. It is important to note that media-related temperature readings (such as the Weather Channel, local radio, etc.), or even other readings in the general proximity are not permitted as they may not yield defensible results when considering the recommended scale. The readings must be made at the site.

Neither the KHSAA nor KMA has endorsed any particular brand of psychrometer and receives no endorsement fee or other consideration for any device sold. There are several models on the market that will properly perform the functions, including companies such as Medco and others. The KHSAA or your local Certified Athletic Trainer has easy access to catalogs with this type of equipment. In addition, the KHSAA web site has a variety of links to various dealers.

INDOOR AND OUTDOOR VENUES

While much of the original discussion concerning this package centered on outdoor sports, the Kentucky Medical Association Committee on Physical Education and Medical Aspects of Sports has advised the KHSAA that indoor sports, particularly in times of year or facilities where air conditioning may not be available, should be included in the testing. Such has been approved by the Board of Control as policy requirement. The recommendations contained in this package clearly cover both indoor and outdoor activity, as well as contact and non-contact sports.

PROCEDURE FOR TESTING

- Thirty (30) minutes prior to the start of activity, temperature and humidity readings should be taken at the practice / competition site.
- The information should be recorded on KHSAA Form GE20 and these records shall be available for inspection upon request. All schools will be required to submit this form in either a paper or electronic form.
- The temperature and humidity should be factored into the Heat Index Calculation and Chart and a determination made as to the Heat Index. If schools are utilizing a digital sling psychrometer that calculates the Heat Index, that number may be used to apply to the regulation table.
- If a reading is determined whereby activity is to be decreased (above 95 degrees Heat Index), then re-readings would be required every thirty (30) minutes to determine if further activity should be eliminated or preventative steps taken, or if an increased level of activity can resume.
- Using the following scale, activity must be altered and / or eliminated based on this Heat Index as determined –

Under 95 degrees Heat Index	<ul style="list-style-type: none"> ❖ All sports <ul style="list-style-type: none"> ➢ Water should always be available and athletes be able to take in as much water as they desire. ➢ Optional water breaks every 30 minutes for 10 minutes in duration to allow hydration as a group ➢ Have towels with ice for cooling of athletes as needed ➢ Watch/monitor athletes carefully for necessary action. ➢ Re-check temperature and humidity every 30 minutes if temperature rises in order to monitor for increased Heat Index.
95 degrees to 99 degrees Heat Index	<ul style="list-style-type: none"> ❖ All sports <ul style="list-style-type: none"> ➢ Water should always be available and athletes should be able to take in as much water as they desire. ➢ Mandatory water breaks every 30 minutes for 10 minutes in duration to allow for hydration as a group ➢ Have towels with ice for cooling of athletes as needed ➢ Watch/monitor athletes carefully for necessary action. ❖ Contact sports and activities with additional required protective equipment <ul style="list-style-type: none"> ➢ Helmets and other equipment should be removed when athlete not directly involved with competition, drill or practice and it is not otherwise required by rule. ❖ Reduce time of outside activity. Consider postponing practice to later in the day. ❖ Re-check temperature and humidity every 30 minutes to monitor for increased Heat Index.
100 degrees (above 99 degrees) to 104 degrees Heat Index	<ul style="list-style-type: none"> ❖ All sports <ul style="list-style-type: none"> ➢ Water should always be available and athletes should be able to take in as much water as they desire. ➢ Mandatory water breaks every 30 minutes for 10 minutes in duration to allow for hydration as a group ➢ Have towels with ice for cooling of athletes as needed ➢ Watch/monitor athletes carefully for necessary action. ➢ Alter uniform by removing items if possible and permissible by rules ➢ Allow for changes to dry t-shirts and shorts by athletes at defined intervals. ➢ Reduce time of outside activity as well as indoor activity if air conditioning is unavailable. ➢ Postpone practice to later in day. ❖ Contact sports and activities with additional required protective equipment <ul style="list-style-type: none"> ➢ If helmets of other protective requirement are required to be worn by rule or normal practice, suspend practice or competition immediately ❖ For sports that do not have mandatory protective equipment, reduce time of outside activity and consider postponing practice to later in the day. ❖ Re-check temperature and humidity every 30 minutes to monitor for changes in Heat Index.
Above 104 degrees Heat Index	<ul style="list-style-type: none"> ❖ All Sports <ul style="list-style-type: none"> ➢ Stop all outside activity in practice and/or play, and stop all inside activity if air conditioning is unavailable.

- This procedure is to be used until such time as the temperature is below 84 degrees as no combination of heat and humidity at that level will result in a need to curtail activity. The KHSAA will use September 15 as the standard date for the return of the Heat Index forms in the fall, and April 15 as the start date in the spring but reminds its member schools that the monitoring shall continue until such a time that no combination of heat and humidity at that level will result in a need to curtail activity.

SUMMARY OF HEAT INDEX MONITORING RECOMMENDATIONS

Though much more scientific information and other alternative methods for determining Heat Index and participation restrictions are being studied, these initial steps should help ensure the health and safety of the participants in high school sports. Adherence to these guidelines represents a conscious effort by the interscholastic community to emphasize health and safety on a much higher level than any loss of competitive preparation. Any further revisions or enhancements will be distributed to the members of the KHSAA.

COOLING METHODS DUE TO HEAT RELATED ILLNESS

Exertional heat stroke (EHS) is relatively uncommon among exercise associated medical conditions, but is a frequent cause of exercise related death. 3 athletes have died of EHS in Kentucky in the past 5 years. The majority of medical evidence shows that early institution of body cooling is the most effective method of decreasing mortality in EHS. This paper contains recommendations regarding the methods of body cooling, including tubs, ice bags, iced towels (towels with water that have been frozen) water, fans, and shade. The recommendations are classified as essential (foundational to the implementation of treatment, should have resources and personnel directed towards implementation), and desirable (important in maximal implementation, should have resources and personnel directed towards implementation as budget and resources allow). The recommendations are only guidelines, are not intended as a standard of care, and should not be considered as such. These guidelines should be considered in the care of athletes who can be expected to be at risk of EHS due to the sport or the environmental situation of the activity. Sports especially at risk include football with and without equipment, soccer, and long distance track. Other sports and activities, such as cycling, golf, baseball, tennis, track and field, and band, may also be at risk due to long duration exposure to extreme environmental conditions.

It is essential that the school and school officials:

- Establish a written plan for emergency treatment of EHS, and conduct drills in the implementation of the plan
- Know how to assess environmental conditions and determine when extreme conditions exist
- Identify a specific spot at the athletic facility that has shade
- Have immediate access to ice and bags to contain ice
- Have access to water, and provide water breaks as outlined in the KMA/KHSAA Heat Illness and Prevention Policy
- Know the most effective sites for application of ice to the body

It is highly desirable that the school and school officials

- Obtain and use, when environmental conditions are determined to be extreme, a tub or pool, filled with water and ice before practice or game, to be used in body immersion for maximal cooling, and how have personnel trained in this technique.

It is desirable that schools and school officials:

- Have a certified athletic trainer (AT,C) on staff to develop and implement these guidelines
- Have immediate access to water
- Provide shade breaks
- Provide fans when environmental conditions are determined to be extreme
- Have close access to an air conditioned room
- Have access to and use iced towels that can be rotated to appropriate areas of the body, including the axilla, groin, and back of the neck

REFERENCES

1. Binkley HM et al. NATA Position statement: Exertional heat illness. J Ath Training 2002; 37: 329- 343.
2. Casa DJ et al. Survival strategy: Acute treatment of exertional heat stroke. J Strength Conditioning Res 2006; 20: 462.
3. Armstrong LE et al. ACSM position stand: Exertional heat illness during training and competition. Med Sci Sports Exerc 2007; 41: 556- 572