## POLICY- SPORTS MEDICINE - POSITION STATEMENTS OF THE NFHS SPORTS MEDICINE ADVISORY COMMITTEE

Unless action is taken to the contrary by the Board of Control, any official position statement of the Sports Medicine Advisory Committee of the National Federation of High School Associations (NFHS) shall be considered adopted by the KHSAA Board of Control.

In addition, the KHSAA shall recognize the Kentucky Medical Association Committee on Physical Education and Medical Aspects of Sports (KMA-SMAC) as its official Sports Medicine Advisory Committee and shall provide staff assistance as needed for this group.

## POLICY- SPORTS MEDICINE - REQUIRED EMERGENCY ACTION PLANS

SEC. 1) REQUIREMENT AND COMPONENTS OF EMERGENCY ACTION PLAN

a) Each member school, through its Principal and Designated Representative shall:

(1) In compliance with KRS 158.162 and 160.445, each member school shall develop a venue specific, Emergency Action plan to deal with serious injuries and acute medical conditions in which the condition of the patient may deteriorate rapidly; and

(2) Shall maintain accurate records regarding any training required training under KRS 160.445 including the sports safety course and emergency and cardiac emergency action plans.

SEC. 2) REQUIREMENT FOR EMERGENCY RESPONSE PLAN (KRS 158.162)

a) Each member school shall:

(1) develop an emergency response plan to include medical emergency, fire, severe weather, earthquake, or a building lockdown as defined in KRS 158.164;

(2) develop a written cardiac emergency response plan; and a diagram of the facility that clearly identifies the location of each automated external defibrillator; and

(3) comply with all provisions of KRS 158.162, including cardiac emergency plans and requirements regarding automated external defibrillators as a condition precedent to membership.

SEC. 3) ANNUAL REHEARSAL AND PLANNING FOR EXECUTION OF EMERGENCY RESPONSE PLAN (KRS 158.162)

a) Each member school shall:

(1) Plan and execute a simulation of an athletics event emergency (including heat and cardiac emergencies) as defined in KRS 158.162 and KRS 160.445 before the first contest of each sports season as contemplated in these statutes; and

(2) Plan and execute a strategy to require key elements of the plan to be reviewed and compliance and understanding attested by any coach or other staff member defined in the statute if such member is hired after the initial execution of the simulation, but require attendance at the next simulation conducted by the school in any sport.

SEC. 4) PER CONTEST REVIEW OF EMERGENCY ACTION PLAN PROVISIONS

a) Prior to each contest, and routinely before practices, each school shall review:

(1) Advanced Cardiovascular Life Support (ACLS);

(2) AED placement on the sidelines and at venue and emergency procedures in the evident of cardiac issues;

(3) Sentinel seizure/agonal respiration awareness procedures;

(4) Backboard provisions including assignment of roles for responders;

(5) Face Mask Removal and tools in relevant sports;

(6) C-Spine injury protocol;

(7) Environmental risk status (e.g. heat, lightning, cold);

(8) Cool prior to transport provisions including cooling tub or TACO procedures;

(9) Lightning plan and assigned individuals from participating teams for collaboration; and

(10) Hemorrhage control kit and assigned roles.

b) Contact information should be clearly recorded for:

(1) Athletic Trainer(s);

(2) Team Physician(s) who might be present that night/day;

(3) EMS Squad Status and on-site or on-call status; and

(4) Designated hospital in the event of transport.

c) Practitioners should be clear in any signals and signs to be utilized

d) Additional emphasis for consideration should be:

(1) Consider placing all equipment on stretcher for easy transport;

(2) Entire group should visually check and review any equipment guidelines well in advance of contest;

(3) Consider following responsibilities to be assigned to ensure smooth operations in an emergency, which may be adjusted to different personnel as part of the venue specific plan:

a. Athletic Trainer- Emergency Response Plan, Player Medical History, Multi-tool equipment removal (including face mask and helmet, Knowledge of equipment in play, backboard and Location (if EMS not on site), AED and other EMS supplies if EMS not on site (transition to EMS at appropriate time upon arrival);

b. Doctor or Assigned Medical Staff- Sports injury experience essential in selection, care coordination if necessary;

c. EMS Provider- AED, C-collar; Towel Rolls, Stretcher, Backboard and straps, 2 inch securing tape, sheets, King Airway, Cold Packs, BLS or ALS First Out Med Bag;

d. School Officials and Law Enforcement- Keys to Gates and Doors, Egress Routes, Directions to Hospital, Aeromedical landing coordinates, Scene control, equipment retrieval if necessary.

## POLICY- SPORTS MEDICINE - PROTOCOL RELATED TO CONCUSSIONS AND CONCUSSED STUDENT-ATHLETES INCLUDING RETURN TO PLAY

*This policy applies to all Interscholastic Athletics in the Commonwealth of Kentucky. Released: June, 2010, Commissioner Julian Tackett, Updated per General Assembly Action, April, 2012, Reviewed per General Assembly Action, April, 2017*

SEC. 1) INTRODUCTION

a) In various sports playing rule codes, the National Federation of High Schools (NFHS) has implemented standard language dealing with concussions in student-athletes. The basic rule in all sports (which may be worded slightly differently in each rule book due to the nature of breaks in time intervals at contests in different sports) states:

(1) Any athlete who exhibits signs, symptoms, or behaviors consistent with a concussion (such as loss of consciousness, headache, dizziness, confusion, or balance problems) shall be immediately removed from the contest and shall not return to play until cleared by an appropriate health-care professional. (Please see NFHS Suggested Guidelines for Management of Concussion in the Appendix in the back of each NFHS Rules Book).

(2) The NFHS also has recommended concussion guidelines through its Sports Medicine Advisory Committee (SMAC). These recommendations include:

a. No student-athlete should return to play (RTP) or practice on the same day of a concussion.

b. Any student-athlete suspected of having a concussion should be evaluated by an appropriate health-care professional that day.

c. Any student-athlete with a concussion should be medically cleared by an appropriate health-care professional prior to resuming participation in any practice or competition.

d. After medical clearance, return to play should follow a step-wise protocol with provisions for delayed return to play based upon the return of any signs or symptoms.

(3) To implement these rules, and based on KRS 160.445 and 156.070(2) as amended by the Kentucky General Assembly in 2012, the KHSAA has defined this policy and parameters to guide all interscholastic school athletic representatives and all KHSAA licensed sports officials. References to signs and symptoms of concussion are detailed by the NFHS through its SMAC upon consultation with the Centers for Disease Control and Prevention (CDC).

SEC. 2) FOUNDATIONAL RECOMMENDATIONS

a) The treatment of concussions and suspected concussions should be conducted within the recommended protocols and procedures of the Consensus statement on concussion in sport: the 6th International Conference of Concussion in Sport-Amsterdam, October 2022." Drs. Cantu & Hainlain, among many others, were included as authors when this was published 6/14/23.

SEC. 3) SUSPECTED CONCUSSION

a) A student-athlete suspected by an interscholastic coach, school athletic personnel or contest official of sustaining a concussion (displaying signs/symptoms of a concussion) during an athletic practice or contest shall be removed from practice or play immediately. The student-athlete shall not return to play prior to the ending of practice or competition until the student-athlete is evaluated to determine if a concussion has occurred.

b) A physician or licensed health care provider whose scope of practice and training includes the evaluation and management of concussions and other brain injuries is empowered to make the on-site determination that a student-athlete has or has not been concussed. This will generally include an MD (Medical Doctor), DO (Doctor of Osteopathy), PA (Physician Assistant), ARNP (Advanced Registered Nurse Practitioner), ATC (Certified Athletic Trainer); or LAT (Licensed Athletic Trainer).

c) The player should be medically evaluated on-site using standard emergency management principles, and particular attention should be given to excluding a cervical spine injury. The appropriate disposition of the player must be determined by the treating health care provider in a timely manner. Once the first aid issues are addressed, then an assessment of the concussive injury should be made using the SCAT2 or other similar tool. The player should not be left alone following the injury, and serial monitoring for deterioration is essential over the initial few hours following injury.

d) If any one of these individuals listed in (b) answers that "yes", there has been a concussion, that decision is final and is not appealable.

e) If medical coverage by a person empowered to make the concussion assessment is not on-site, and signs/symptoms of concussion have been observed, a concussion is presumed until such evaluation can be performed. If no health care provider is available, the player should be safely removed from practice or play and an urgent referral to a physician arranged.

f) No student-athlete may return to practice or play in interscholastic athletics that day in the event that a concussion is diagnosed or presumed.

g) A student-athlete may return to play at the time of a suspected concussion if it is determined by appropriate medical personnel that no concussion has occurred.

SEC. 4) ROLE OF COACHES IN ADMINISTERING THE POLICY

a) Coaches are to be current in their certification regarding the KMA/KHSAA Sports Safety Course, including the specific segment(s) related to identifying the signs and symptoms of concussions.

b) Coaches must review and know the signs and symptoms of concussion and direct immediate removal of any student-athlete who displays these signs or symptoms for evaluation by appropriate medical personnel.

c) Coaches have no other role in the process with respect to diagnosis of concussion or medical treatment.

d) It remains the ultimate responsibility of the coaching staff in all sports to ensure that players are only put into practice or contests if they are physically capable of performing.

(1) Upon completion of the required evaluation, a coach may return a student athlete to play if the physician or licensed health care provider determines that no concussion has occurred; or shall not return a student athlete to play if the physician or licensed health care provider determines that a concussion has occurred.

(2) If no physician or licensed health care provider described in paragraph 2(b) of this policy is present at the practice or competition to perform the required evaluation, a coach shall not return a student athlete to play who is suspected of sustaining a concussion. The student athlete shall not be allowed to participate in any subsequent practice or athletic competition unless written clearance from a physician is provided.

SEC. 5) ROLE OF CONTEST OFFICIALS IN ADMINISTERING THE POLICY

a) Officials are to review and know the signs and symptoms of concussion and direct immediate removal of any student-athlete who displays these signs or symptoms.

b) Officials have no other role in the process with respect to diagnosis of concussion or medical treatment.

SEC. 6) RETURN TO PLAY POLICY FOR A STUDENT-ATHLETE RECEIVING A CONCUSSION, AFTER THE MANDATORY REMOVAL THAT DAY

a) Once a concussion has been diagnosed (or presumed by lack of examination by an appropriate health care provider), only an MD or DO can authorize return to play on a subsequent day, and such shall be in writing to the administration of the school after the completion of all concussion protocols.

b) Such approval should not be given unless a stepwise protocol has been observed by all practitioners with separate periods for
(1) No activity;
(2) Light aerobic exercise;
(3) Sport-specific exercise;
(4) Non-contact training drills;
(5) Full-contact/competition practice; and
(6) Return to normal game play.

c) It is highly recommended that each of these protocol steps be no less than twenty-four hours in length.

d) It is highly recommended that no student-athlete return to play unless he/she has been properly recommended to also return to school.

e) School administration shall then notify the coach as to the permission to return to practice or play.

f) If an event continues over multiple days, then the designated event physician has ultimate authority over return to play decisions and such return to play may not be prior to the third day following the initial diagnosis, and until all steps of the protocol in Section (b) have been followed.

## POLICY- SPORTS MEDICINE - KMA/KHSAA PROCEDURE FOR AVOIDING HEAT INJURY/ILLNESS, HEAT INDEX AND MONITORING

SEC. 1) INTRODUCTION AND CHRONOLOGY

a) This procedure requires Analysis of Wet Bulb Globe Temperature (WBGT) or Heat Index (which will be inavlid after the 2023-24 school year), and Restructuring of activities and recommendations for cooling methods to prevent heat-related illness.

b) Original procedure developed by the Kentucky Medical Association Committee on Physical Education and Medical Aspects of Sports (KMA-SMAC) to and for the KHSAA, and adopted by the KHSAA Board of Control as a recommendation for all schools, May 2002.

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 KMA-SMAC issued a recommended procedure to the KHSAA for immediate implementation in 2002.

This procedure originally called for determining the Heat Index using on-site devices to measure the conditions, 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 statewide basis and appeared to be reliably tested in other areas.

Through the years of use of the procedure, regular adjustments were made in the reporting requirements and the on-site devices to be used.

c) On-site procedures have been revised on multiple occasions and reported to the KHSAA Board of Control for consent and now, as part of the KHSAA Approved Board policies, have force of state regulation.

d) In May 2005, the Board of Control, through its policies directed

that all member schools comply with the testing and reporting requirements.
This statewide adoption as state regulation was the first of its kind in the country.

e) 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 the KHSAA bylaws.

f) In March 2007, the KMA-SMAC recommended eliminating all devices except the Digital Sling Psychrometer (DSP) as a means of measuring at the competition/practice site.

g) In June 2009, the KMA-SMAC recommended that specific cooling procedures, including practicing in the event of an emergency, be implemented at the local school level.

h) In August 2010, the KMA-SMAC recommended that the heat index monitoring procedures apply to the sports played in the spring in Kentucky's high schools.

i) In August 2019, a phase-in was approved to transition from the use of the DSP to the use of the WBGT as the official device for heat measure, to be fully implemented before the 2024-2025 school year with further delineation within these policies.
While the gold standard for heat index measurement is the WBGT, the KHSAA originally allowed the use of the DSP as the measurement instrument for heat index as the next best available and a cost effective alternative.

j) Throughout its existence, these policies have been edited and clarified in accordance with the latest reseach reviewed by both the KHSAA and NFHS Sports Medicine Advisory Committes and the NATA and Korey Stringer Institute.

k) The following revision dates have seen changes made and subsequently given regulatory approval:
(1) Revised by KHSAA Board of Control, February 13, 2003
(2) On-site procedures further revised and made mandatory for all schools by the KHSAA Board of Control, May 2005
(3) On-site procedures further revised concerning testing instruments, March 2007.
(4) Cooling Procedures modified as recommended by KMA-SMAC, June 2009.
(5) Heat Index expanded to spring sports, August 2010.
(6) Further revised, April, 2016 with clarifications.
(7) Revised, August, 2019.
(8) Updated, July, 2023 to reflect sunset of Heat Index provisions.

SEC. 2) DIFFERENCES BETWEEN WBGT DEVICES AND DSP MEASUREMENT OF HEAT INDEX

a) The WBGT is:
(1) a measure that factors in the elements of heat index (temperature and relative humidity) but estimates the effect of temperature, relative humidity, wind and solar radiation on humans; and
(2) is generally measured in the sun (at outdoor venues) and uses temperature, relative humidity, wind speed, sun angle, cloud cover and the sun angle (at outdoor venues) to make its calculations;
(3) has no possible conversion chart to determine its calculation and must be measured by a properly calibrated device to yield a single measurement accurately; and
(4) is a measurement of ambient temperature, relative humidity, radiant heat from the sun and wind speed.
When outdoor activities are conducted in the direct sun, the WBGT is the most pertinent to use.
Although read in degrees, it does not reflect degrees of air temperature.
A WBGT reading of 92 F may equate to a Heat Index reading of 104 – 105 degrees F.
(5) is the Gold standard for measuring the climate to determine if activity should be altered.

b) The DSP Heat Index:
(1) is the traditional measure of what the temperature feels like to the human body when relative humidity is combined with air temperatures, also known as the apparent temperature;
(2) Is not to be measured in the shade, and uses temperature and relative humidity to calculate the heat index;
(3) may be manually calculated with accurate on-site temperature and humidity readings at the site of practice or competition.
(4) It is intended to provide outdoor restrictions for the elderly and adolescents during times of elevated temperatures.

c) The transition to WBGT
(1) History shows that most exertional heat stroke deaths occur during August; however, athletes will be at risk whenever in the presence of elevated ambient temperatures with high humidity.
(2) For many years, coaches and state associations have utilized the Heat Index to determine safe conditions for exercise in a hot environment.
(3) Evidence-based research, first initiated with the military, proves that Wet Bulb Globe Temperature (WBGT) should be the environmental monitoring measure during athletic participation in the heat.

SEC. 3) ON-SITE DATA MONITORING REQUIREMENTS

a) All sports and sport-activities are impacted by this policy, and all organized activity (practice or play) is covered by the requirement.

b) The policy calls for determining the Heat Index (Temperature combined with Relative Humidity) or WBGT at the practice/contest site.

c) It is strongly recommended that member schools utilize the WBGT device for heat index in compliance with this policy, which will be the required instrument for the 2024-25 school year, however the DSP will meet the requirement for 2023-24.

d) Measurements using a DSP or WBGT device shall adhere to the following provisions:
(1) The measurements will be taken ONLY using the DSP or WBGT device (exclusively WBGT beginning in 2024-25) at the site of practice or competition.
(2) No website, phone app or other computer programs can substitute and allow a school to remain compliant as only on-site readings are valid.
(3) It is important to note that media-related temperature readings (such as the Weather Channel, local radio, etc.) or even other readings in general proximity are not permitted as they may not yield accurate results when considering the recommended scale, and there is no website, phone app or other computer programs that can substitute and allow a school to remain in compliance;
(4) It is noted that the WBGT (Wet Bulb Globe Temperature) is the "gold standard" for heat determination, however, the digital sling psychometer heat index is the alternative that can be considered before the beginning of the 2024-25 school year.

e) The following procedures will be used to monitor environmental conditions via WBGT:
(1) Heat stress monitoring will be conducted on site at the activity location with a device on a tripod 3-4 feet above the playing surface.
(2) The WBGT should remain exposed to the environmental conditions for >15 minutes before activity.
(3) WBGT measurements should be taken every 30 min for the duration of the athletic activity.
(4) If risk categories of consecutive measurements frequently reflect different levels of activity modification, the activity modification for the higher risk category should be followed.

f) Neither the KHSAA nor KMA-SMAC has endorsed any particular DSP or WBGT device brand and receives no endorsement fee or other consideration for any device sold, and several models on the market will adequately perform the functions.

g) The KHSAA or your local certified/licensed athletic trainer has easy access to catalogs with this type of equipment.

SEC. 4) DEFINITIONS AND REQUIRED PROCEDURES FOR TESTING

a) Definitions
(1) Game: any KHSAA sanctioned event applicable to Bylaw 23.
(2) Practice: the period of time that a participant engages in coach-supervised, school-approved sport or conditioning-related activity, with practices timed from the time the players report to the field until they leave.
(3) Walk through: this period of time shall last no more than one hour and is not considered to be a part of the practice time

regulation, and may not involve conditioning or weight-room activities or the wearing of protective equipment.

b) Required Procedures for Testing

(1) The measurements should be taken at any practice or contest setting where the current temperature is at or above 83 degrees, regardless of what time of year.

(2) If using a WBGT device, the measurements should be taken in the sun in a location where any applicable wind and solar radiation is present.

(3) If using a DSP, any readings are to be taken at the exact location of practice at the specific competition/practice area where the activity will occur.

(4) Thirty (30) minutes before the start of activity, DSP or WBGT readings should be taken at the specific practice/competition site, and periodically measured after that point until the end of the practice or competition.

a. In segmented competitions (i.e. track or cross country meets), this periodic measurement is appropriate and is not necessary between each and every event, except for the notations subsection Sec. b(4)(b) below.

b. In segmented competitions (i.e. track and field or cross country meets), additional measurements should be taken before any race of 1600 meters or longer, even if following a periodic measurement by less than thirty (30) minutes.

(5) Readings must be taken on the practice and game site a minimum of every hour, beginning 30 minutes before the beginning of the practices and games.

(6) The measurements should be recorded on KHSAA Form GE20 and these records should be available for inspection upon request.

(7) All schools are to maintain measurement records in either a paper or electronic format for the duration of the district/school records retention schedule.

(8) Activities must be altered per the adopted alternation table regardless of the device used.

(9) If a reading is determined whereby activity is to be decreased (above 95 degrees Heat Index or above 86.9 WBGT), then re-readings would be required every thirty (30) minutes to determine if further activity should be eliminated or preventative steps are taken, or if an increased level of activity can resume.

SEC. 5) REQUIRED ACTIVITY ALTERATION.

a) WBGT Reading (Gold Standard, Required Device for Monitoring in 2024-25)

(1) WBGT <82.0°F, Green, Very Low Risk for Heat Illness

a. Normal activities

b. Provide at least three separate rest breaks each hour of minimum duration of 3 minutes each during workout

(2) WBGT 82.1°F - 87.0°F, Yellow, Low Risk for Heat Illness

a. Use discretion for intense or prolonged exercise;

b. watch at-risk players carefully;

c. Provide at least three separate rest breaks each hour with a minimum duration of 4 minutes each.

(3) WBGT 87.1°F - 90.0°F, Orange, Moderate Risk for Heat Illness

a. Maximum practice time is 2 hours,

b. For Football, Lacrosse and Field Hockey: All helmets and shoulder pads must be removed for practice and conditioning activities.

c. If the WBGT rises to this level during practice, football players may continue to work out wearing football pants without changing into shorts.

d. For All Sports: provide at least four separate rest breaks each hour with a minimum duration of 4 minutes each.

(4) WBGT 90.1°F - 91.9°F, Red, High Risk for Heat Illness

a. Maximum length of practice is 1 hour.

b. For Football, Lacrosse and Field Hockey: No protective equipment may be worn during practice and there must be no conditioning activities.

c. For All Sports: there must be no conditioning and there must be 20 minutes of rest breaks distributed throughout the hour of practice.

(5) WBGT >92.0°F, Black, Extremely High Risk for Heat Illness

a. No Outdoor Workouts.

b. Delay practice until a cooler WBGT level is reached.

b) Heat Index (optional method through 2023-24 school year)

(1) Under 95 degrees Heat Index

a. All sports

i. Water should always be available and athletes be able to take in as much water as they desire;

ii. Optional water breaks every 30 minutes for 10 minutes in duration to allow hydration as a group;

iii. Have towels with ice for cooling of athletes as needed, with preparedness for change in conditions with full preparatory steps for on-site rapid colling in place;

iv. Watch/monitor athletes carefully for necessary action; and

v. Re-check temperature and humidity every 30 minutes if temperature rises in order to monitor for increased Heat Index.

(2) 95 To 99 Degree Heat Index

a. All sports

i. Water should always be available and athletes should be able to take in as much water as they desire;

ii. Mandatory water breaks every 30 minutes for 10 minutes in duration to allow for hydration as a group. In sports or sport-activities with multiple simultaneous contests or practices, the required monitoring and rest breaks shall be taken at the same time for all contests or practices;

iii. All breaks shall be taken in areas outside of direct sunlight;

iv. Have towels with ice for cooling of athletes as needed with full preparatory steps for on-site rapid colling in place; and

v. Watch/monitor athletes carefully for necessary action.

b. Additional Steps for Contact sports and activities with additional required protective equipment:

i. Helmets and other required equipment (by rule) should be removed when athlete not directly involved with competition, drill or practice, and it is not otherwise required by rule;

ii. Reduce time of outside activity,

iii. No more than one hour of activity per session in these conditions with at least four breaks of at least four minutes each during this hour;

iv. Consider postponing practice to later in the day; and

v. Re-check temperature and humidity every 30 minutes to monitor for increased Heat Index.

(3) 100 Degrees (Above 99) To 104 Degrees Heat Index

a) All sports

i. Water should always be available and athletes should be able to take in as much water as they desire;

ii. Mandatory water breaks every 30 minutes for 10 minutes in duration to allow for hydration as a group. In sports or sport-activities with multiple simultaneous contests or practices, the required monitoring and rest breaks shall be taken at the same time for all contests or practices;

iii. All breaks shall be taken in areas outside of direct sunlight;

iv. Have towels with ice for cooling of athletes as needed with full preparatory steps for on-site rapid colling in place;

v. Watch/monitor athletes carefully for necessary action;

vi. Alter uniform by removing items if possible and permissible by rules;

vii. Allow for changes to dry T-shirts and shorts by athletes at defined intervals;

viii. Reduce time of outside activity as well as indoor activity if air conditioning is unavailable; and

ix. Postpone practice to later in day.

b) Additional Steps for Contact sports and activities with additional required protective equipment:

i. If helmets or other protective equipment are required to be worn by rule or normal practice, suspend practice or competition immediately and resumption may not occur until the index is 99 degrees or below;

ii. For sports that do not have mandatory protective equipment, reduce time of outside activity and consider postponing practice to later in the day; and

iii. Re-check temperature and humidity every 30 minutes to monitor for changes in Heat Index.

(4) Above 104 Degrees Heat Index

a) All sports

i. Stop all outside activity in practice and/or play, and stop all inside activity if air conditioning is unavailable.

SEC. 6) REQUIREMENTS FOR HYDRATION AND REST BREAKS

a) Rest time must involve unrestricted access to fluids (e.g. water or electrolyte beverages).

b) With sports requiring helmets (e.g. football, lacrosse, field hockey), the helmets must be removed during rest time.

c) The site of the rest time must be a in a shaded area.

d) When the WBGT reading is >85.0°F

a. Ice towels, spray bottles filled with ice water or equivalent must be available to aid in the cooling process within the shaded area.

e) Rest breaks may not be combined with any other type of activity and players must be given unlimited access to hydration.

f) In the event of a serious Exertional Heat Illness (EHI), such as an athlete about to collapse, one who has collapsed, or who has a core temperature of 104° the principle of "Cool First, Transport Second" should always be utilized and implemented by the first medical provider onsite until cooling is completed (core temperature of 102 or less); or a minimum of fifteen (15) minutes if unable to obtain a core temperature measurement.

SEC. 7) EHS, EHI AND ON-SITE RAPID COOLING

a) Exertional heat stroke (EHS) is relatively uncommon among exercise associated medical conditions, but is a frequent cause of exercise related death.

b) EHI is more common than EHS and it is important to prepare all involved for any situation that might occur whether it is EHI or EHS.

c) Medical evidence shows that early implementation of body cooling is the most effective method of decreasing mortality in EHS and a more positive outcome in the case of EHI.

d) Many methods of body cooling, including tubs, iced towels (towels with water that have been frozen), water, fans, and shade, have been considered but cold water immersion (CWI) by either tub or Tarp Assisted Cooling Oscillation (TACO) is the most effective method for severe EHI or EHS.

e) TACO is a method in which a combination of ice and cold water are added to an athlete once they have been placed on a tarp with the edges held up by clinicians to create a physical "taco" for the patient to be encased inside, and a demonstration of the technique can be found at https://www.youtube.com/watch?v=A9gbbLjSHh4.

f) The recommendations regarding rapid cooling are classified as essential (foundational to the implementation of treatment, should-have resources that are to be considered required and personnel directed towards implementation), and desirable (important in maximal implementation, should have resources and personnel directed towards implementation as budget and resources allow).

g) 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.

h) Sports, especially at risk, include football, with and without equipment, boys' lacrosse, soccer, and long distance track.

i) Other sports and activities, such as cycling, golf, baseball, lacrosse, tennis, track and field, and band (per the NFHS SMAC), may also be at risk due to long-duration exposure to extreme environmental conditions.

j) It is essential and required that the school and school officials:

(1) Establish a written plan for emergency treatment of EHS, and conduct rehearsal related to the implementation of the plan;

(2) Know how to assess environmental conditions and determine when extreme conditions exist;

(3) Identify a specific spot at the athletic facility that has shade;

(4) Have immediate access to ice and bags containing ice;

(5) Have access to water, and provide water breaks; and

(6) Know the most effective sites for application of ice to the body;

(7) Provided examples of the motivation behind cooling first, such as the video found at www.youtube.com/watch?v=X1-g3dVVvaM&feature=youtu.be.

k) Schools and school officials are to:

(1) Obtain and use, when environmental conditions are determined to be extreme, a tub or pool or tarp to ensure on-site rapid cooling;

(2) Provide a cooling tub filled with water and ice being available before practice or game, to be used in body immersion for maximal cooling and have personnel trained in this technique at it is the "gold" standard;

NOTE: If used, this tub be large enough to place an athlete into the cold, ice and water filled tub and cool the athlete ensuring that both the groin and armpits are in the cooling ice and water;

NOTE: In some events, such as distance running or golf, other methods may need to be used in an emergency due to proximity the tub and the need for immediate cooling; and this is to include rotating ice-water soaked towels to all other areas of the body which can be effective in cooling an affected athlete or having a tarp available to implement the TACO cooling method;

(3) Ensure that the athlete is monitored at all times when in the cooling tub, with individuals designated to control the head and neck at all times in case the athlete becomes unconscious;

(4) That the required emergency plan ensures that cooling of an athlete that is showing signs and symptoms of exertional heat illness is begun immediately including the availability of a CWI technique such as a tub or the TACO;

(5) Include in its required emergency action plan (EAP) the re-stating and practicing of the fundamental principle that the objective is to cool first, transport second, and that the potentially impacted athlete should be monitored continuously until appropriate emergency personnel arrive on the scene;

(6) Reiterate as part of its EAP that for heat illness emergencies, emphasis must be placed on Onsite Rapid Cooling prior to transport;

(7) The NFHS Sports Medicine Advisory Committee, in its November, 2022 revisions to its Heat Illness Position statement, reiterated that Immediate medical treatment and prompt rapid cooling can prevent death or minimize further injury in the athlete with EHS;

(8) The NFHS Statement also reiterated that while pools or tubs of ice water remain the gold standard to be used for rapid cooling of athletes, rapid cooling is vital, and not only must equipment be provided, but all personnel should be trained and practiced in using these facilities for rapid cooling; and

(9) Have trained and authorized medical personnel routinely review and update the school's emergency action plan for athletic emergencies.

l) It is highly desirable that schools and school officials:

(1) Have a certified/licensed athletic trainer on staff to develop and implement these guidelines;

(2) Have immediate access to additional water and ice at all times;

(3) Provide shade breaks;

(4) Provide cooling fans when environmental conditions are determined to be extreme;

(5) Have close access to an air conditioned room; and

(6) 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.

l) It is desirable that schools and school officials:

(1) Have trained and authorized medical personnel in place to be able to monitor the rectal temperature of an athlete in an appropriate contained environment in the event of a heat emergency where an athlete is placed in a cooling tub to ensure the effectiveness and timeliness of treatment until appropriate emergency personnel arrive on the scene.

SEC. 8) CORRELATION OF ON-SITE RAPID COOLING AND WBGT TEMPERATURE

a) As part of its required Emergency Action Plan, all schools must have a comprehensive detailed plan including being properly prepared and equipped to initiate cold water immersion (CWI) or other approved cooling technique.

b) The plan should anticipate starting cooling techniques

immediately, and concurrently with contacting EMS (Emergency Medical Services).

c) This must be followed during all official practice sessions on school grounds on any day in which the ambient air temperature is 83 degrees or higher.

SEC. 9) COLD WATER IMMERSION TUB GUIDELINES

a) WBGT <82.0°F, Green, Very Low Risk for Heat Illness

(1) Mandatory alternative cooling measures of a cooler with ice and towels or a tarp (TACO method) must be available at the practice, game and event site in case conditions change.

b) WBGT 82.1°F - 87.0°F, Yellow, Low Risk for Heat Illness

(1) It is required a 150 gallon cold water immersion tub or a tarp (TACO method) must be filled with water temperature of less than 60°F and accessible for cooling within 5-10 minutes of the practice/contest site.

(2) Remove external clothing/equipment prior to cooling or immediately after entering tub.

(3) Aggressively stir water during cooling process.

c) WBGT 87.1°F - 90.0°F, Orange, Moderate Risk for Heat Illness

(1) It is required a 150 gallon cold water immersion tub or a tarp (taco/burrito method) must be filled with water temperature of less than 60°F and accessible for cooling within 5-10 minutes of the practice/contest site.

(2) Remove external clothing/equipment prior to cooling or immediately after entering tub.

(3) Aggressively stir water during cooling process..

d) WBGT 90.1°F - 91.9°F, Red, High Risk for Heat Illness

(1) Maximum length of practice is 1 hour.

(2) For Football, Lacrosse and Field Hockey: No protective equipment may be worn during practice and there must be no conditioning activities.

(3) For All Sports: there must be no conditioning and there must be 20 minutes of rest breaks distributed throughout the hour of practice.

e) WBGT >92.0°F, Black, Low Risk for Heat Illness

(1) No Outdoor Workouts.

(2) Delay practice until a cooler WBGT level is reached.

SEC. 10) SUMMARY OF HEAT INDEX OR WBGT MONITORING AND HEAT ILLNESS PREPAREDNESS

a) 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.

b) Any further revisions or enhancements will be distributed to the members of the KHSAA.

SEC. 11) TREATMENT OF EXERTIONAL HEAT STROKE

a) All school representatives on site are to immediately implement the district provided Emergency Action plan to begin cooling immediately.

b) If the athletic trainer/medical staff is onsite:

(1) Utilize the principle of Cool First, Transport Second.

(2) When cooling, use CWI or other approved cooling technique, until core temperature is at 102°F.

c) If the athletic trainer/medical staff is not onsite

(1) Cool immediately until the athlete starts to shiver, or for a minimum of 15 minutes based upon the known cooling rate of 1 degree per 3 minutes.

(2) EMS assumes control of the EHS patient upon arrival and continues cooling for the minimum of 20 minutes or until rectal temperature is obtained.

SEC. 12) REFERENCES

https://ksi.uconn.edu/prevention__trashed/wet-bulb-globe-temperature-monitoring/

https://ksi.uconn.edu/prevention__trashed/sports-medicine-policies-procedures/

https://ksi.uconn.edu/prevention__trashed/heat-acclimatization/

https://www.nfhs.org/media/5919613/nfhs-heat-acclimatization-april-2022-final.pdf

## POLICY- SPORTS MEDICINE - SEVERE WEATHER/ LIGHTNING POLICY FOR ACTIONS BY OFFICIALS AT OUTDOOR EVENTS

SEC. 1) LIGHTNING POLICY BACKGROUND INCLUDING PRACTICE

a) Preparedness is the key to execution of any policy designed to help safeguard all individuals at a scrimmage, contest or practice.

b) The following is a suggested list of steps from the National Federation of State High School Association (NFHS) Sports Medicine Advisory Committee (SMAC) that should be taken in advance of any practice or contest, as amended January, 2021.

c) These represent optimal standards and where they cannot be logistically implemented, best practice alternatives shall be developed as part if the Emergency Action Plan (EAP) or Emergency Response Plans (ERP) for after school activities.

(1) Assign staff to monitor local weather conditions before and during practices and contests.

(2) Develop an evacuation plan, including identification of appropriate nearby safer areas and determine the amount of time needed to get everyone to a designated safer area:

a. A designated safer place is a substantial building with plumbing and wiring where people live or work, such as a school, gymnasium or library.

b. An alternate safer place from the threat of lightning is a fully enclosed (not convertible or soft top) metal car or school bus.

c. For scrimmages and contests, this information should be relayed to the game officials and representatives of all competing teams.

(3) Develop criteria for suspension and resumption of practice which should mirror the policy directives in 2 for scrimmages and contests.

a. When thunder is heard or lightning is seen*, the leading edge of the thunderstorm is close enough to strike your location with lightning. Suspend play for at least 30 minutes and vacate the outdoor activity to the previously designated safer location immediately;

b. 30-minute rule. Once play has been suspended, wait at least 30 minutes after the last thunder is heard or lightning is witnessed* prior to resuming play;

c. Any subsequent thunder or lightning* after the beginning of the 30-minute count will reset the clock and another 30-minute count should begin;

d. When independently validated lightning-detection devices or mobile phone apps are available, this technology could be used to assist in making a decision to suspend play if a lightning strike is noted to be within 10 miles of the event location. However, you should never depend on the reliability of these devices and, thus, hearing thunder or seeing lightning* should always take precedence over information from a mobile app or lightning-detection device.

*At night, under certain atmospheric conditions, lightning flashes may be seen from distant storms. In these cases, it may be safe to continue an event. If no thunder can be heard and the flashes are low on the horizon, the storm may not pose a threat. Independently verified lightning detection information would help eliminate any uncertainty.

(4) Review the lightning safety policy annually with all administrators, coaches and game personnel and train all personnel.

(5) Inform student-athletes and their parents of the lightning policy at start of the season.

SEC. 2) LIGHTNING POLICY IMPLEMENTATION

a) Contest officials are encouraged to learn the weather forecast prior to contest time and to work cooperatively with home contest administration prior to making weather-related decisions.

b) The Referee (Lead Official/Crew Chief) has authority once jurisdiction has begun as to suspensions and play, resumption unless events are held at facilities with advance lightning detection technology in which case the host facility representative may supersede the authority of the Referee (Lead Official/Crew Chief) and order postponement or disapprove play resumption.

c) The Referee (Lead Official/Crew Chief) shall stop play in a contest or scrimmage at the first sound of thunder or sight of lightning at the site and ensure adherence to this policy.

d) When thunder is heard or lightning is seen, the leading edge of the thunderstorm is close enough to strike your location with

lightning.

e) If such sight or sound is observed, suspend play for at least 30 minutes and vacate the outdoor activity to the previously designated safer location immediately.

f) Once play has been suspended, wait at least 30 minutes after the last thunder is heard or lightning is witnessed prior to resuming play.

g) Any subsequent thunder or lightning after the beginning of the 30-minute count will reset the clock and another 30-minute count should begin.

h) When lightning-detection devices or mobile phone apps are available, this technology could be used to assist in making a decision to suspend play if a lightning strike is noted to be within 10 miles of the event location but only if sight or sound has not been detected and such has been reported by game management to the Referee (Lead Official/Crew Chief).

i) Contest officials and event managers should never depend on the reliability of new technology and, thus, hearing thunder or seeing lightning shall always take precedence over information (or a lack of indicators) from a mobile app or lightning-detection device.

j) Event managers shall determine, through all available data, the optimum time to begin returning individuals to the competition areas for warming up, etc., but in no case may play (competition) resume until the 30-minutes count has elapsed.

k) If severe weather appears to be of great length or intensity, the Referee (Lead Official/Crew Chief) shall work collaboratively with home contest administration and participating teams on decisions related to the resumption of play.

l) All involved in suspension/resumption decisions should be familiar with any sport-specific rules that might be contained in the KHSAA Competition Rules.

m) Final authority for the decision to resume rests within home contest administration in collaboration with the game officials.

n) Safety of the public and participants is the most important factor in any decision of this type.

## POLICY- SPORTS MEDICINE - AIR QUALITY CONCERNS WITH ATHLETICS FOR LOCAL DISTRICT CONSIDERATION

SEC. 1) BACKGROUND (PER NFHS SMAC)

a) Air pollution is due to a mixture of solid particles and gases that may result from a variety of sources including wildfires, internal combustion engines, and industrial emissions. In people without lung disease, the immediate effects and long-term consequences of air pollution upon athletic performance are not well understood. There is some evidence to indicate that chronic exposure may adversely affect blood vessels throughout the body, but more studies are needed before making definitive statements. However, air pollution has long been known to worsen the symptoms of respiratory diseases such as asthma. When compared to adults, children may be more susceptible to having problems while exercising in polluted air.

b) There are two key components of air pollution that cause respiratory problems, especially in people with underlying respiratory problems: ozone and particulate matter. Ozone is found in smog and is often at its worst in the late afternoon and early evening on hot summer days. It forms through a variety of complex chemical interactions, all of which require sunlight as a catalyst. Ozone can travel significant distances and, contrary to conventional wisdom, is more predominantly a rural pollutant.

c) The particulate matter found in air pollution can be a hazard at any time of the year, especially when the air is still. Particle pollutants can be high near busy roads and factories, and at times when there is smoke in the air from wood stoves, fireplaces, or wildfires. Other potentially harmful air pollutants include carbon monoxide, nitrogen oxides and sulfur dioxide. Smoke from late summer forest and grass fires has very high levels of particulate matter and is of special concern in the western U.S., often causing severe air pollution coinciding with the beginning of the fall sports season.

d) It is important to realize air pollution may also occur indoors. Potential sources include tobacco smoke in any situation, dust in indoor rodeo arenas, and exhaust fumes from ice resurfacing equipment in ice arenas. Consequently, athletes with asthma should always have their medication available and be especially cautious in these venues.

SEC, 2) RECOGNITION AND MANAGEMENT (PER NFHS SMAC)

a) The Air Quality Index (AQI) is a system developed by the US Environmental Protection Agency that describes the general health effects associated with different pollution levels, as well as whatever precautionary steps may need to be taken if air pollution levels rise into an unhealthy range. During times of suspected high air pollution, the AQI should be checked prior to all practices and contests. A particular location's AQI can be found at https://www.airnow.gov/

b) The AQI takes into consideration the five major determinants of air pollution: ozone, particulate matter, carbon monoxide, nitrogen dioxide, and sulfur dioxide. The measured pollutant concentrations are then converted into a number on a scale of 0 to 500. Higher numbers correlate to a greater level of air pollution. Under the Clean Air Act, the National Ambient Air Quality Standard is 100. An AQI level greater than 100 indicates that a pollutant is in the unhealthful range. As specific public health department recommendations may vary, it is critical that state associations and schools consult local or state health departments for guidelines on when outdoor activities should be modified or cancelled.

c) Many western states have additional online resources to track air quality. These websites may use the AQI or a PM2.5 concentration. The PM2.5 describes fine inhalable particulate matter with diameters that are generally less than 2.5 micrometers. As a frame of reference, PM10 is less than the width of a single human hair and is small enough to get into the lungs while matter that is PM2.5 can only be seen with an electron microscope. Because it is so light and small, these tend to stay in the air longer than heavier particles and can penetrate deep into the lung tissue.

d) Both the AQI and the PM2.5 are reported by a color-coded chart which remains consistent across these different tools. A red "unhealthy" day will be the same whether it is reported as an AQI or a PM2.5 value. The state or local health department is available to serve as a resource to learn more about how this data is reported.

e) School personnel should locate the air monitors closest to practice and competition venues at https://www.airnow.gov/. Not all schools and venues will have a nearby monitor, and weather variation (wind) and geographic features (hills and valleys) can account for large differences between relatively close locations. Therefore, anyone assessing air quality must be familiar with the 5-3-1 Visibility Index Method. Based on previous air pollution research, we know that there is a correlation between air quality and visibility.

f) The 5-3-1 Visibility Index Method is a simple way to use visibility to estimate air quality and health effects and is particularly useful with rapidly changing weather conditions, like smoke from wildfires. The key to successful use is preparation, as it requires knowledge of large landmarks visible from the venue. Using an online satellite map, locate three landmarks that can be seen from a specific venue. The landmarks you choose should be 1 mile away, 3 miles away and 5 miles away. If you use multiple venues, you will need to do this for each separate location. Standing with the sun behind you, look at the three objects and when the outline of the landmark can no longer be seen, then the visibility range is less than the distance marker. When the air is smoky and hazy, monitoring the AQI or the Visibility Index should be done at least hourly during competitions and practices as conditions can change quickly.

g) Some students may be more susceptible to the health effects of poor air quality. The Preparticipation Physical Examination helps to identify those students with underlying ailments that make them more affected by poor air quality. Conditions that put students at risk include asthma, recent respiratory infection, and chronic heart or lung disease.

h) All schools must have an Emergency Action Plan (EAP) in place for every practice and competition venue in case of respiratory or other medical emergencies. Students diagnosed with asthma should have an Asthma Action Plan that they follow if symptoms

occur during or after exercise. If poor air quality persists over several days, at risk students will have symptoms triggered more easily than those without pre-existing conditions.

i) If the health effect category is in a zone where your state or local health department discourages outdoor activity, all practices and contests should be moved indoors or cancelled. If activities are moved indoors, you must check with the maintenance staff to ensure existing HVAC systems provide properly filtered indoor air. If the HVAC system cannot appropriately manage the burden of pollutants in the air, indoor air quality may be worse than the outdoor air and it is not appropriate to practice or workout indoors. Furthermore, when moving indoors, Heat and Hydration Guidelines must be followed as temperatures may be hotter inside a gymnasium on a hot summer day than outside. If indoor practices are not an option, practices may be held earlier in the day to avoid warmer temperatures or moved to a location with better air quality.

j) Please note that all of the above principles are not limited to athletic events and should also be followed for physical education classes and other outdoor activities involving physical activity in order to protect both students and staff.

SEC. 3) AIR QUALITY INDEX (PER EPA)

a) AirData uses the Air Quality Index (AQI) in some of its reports and tables and to display data using the visualization tools. The AQI is an index for reporting daily air quality. It tells how clean or polluted the air is, and what associated health effects might be a concern, especially for ground-level ozone and particle pollution.

b) Think of the AQI as a yardstick that runs from 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health concern. For example, an AQI value of 50 represents good air quality with little potential to affect public health, while an AQI value over 300 represents hazardous air quality.

c) An AQI value of 100 generally corresponds to the national air quality standard for the pollutant, which is the level EPA has set to protect public health. AQI values below 100 are generally thought of as satisfactory. When AQI values are above 100, air quality is considered to be unhealthy-at first for certain sensitive groups of people, then for everyone as AQI values get higher.

d) The AQI is divided into six categories:
When the AQI is in this range: ..air quality conditions are symbolized by this color:

| Air Quality Index (AQI) Values | Levels of Health Concern | Color |
|---|---|---|
| 0-50 | Good | Green |
| 51-100 | Moderate | Yellow |
| 101-150 | Unhealthy for Sensitive Groups | Orange |
| 150-200 | Unhealthy | Red |
| 201-300 | Very Unhealthy | Purple |
| 301-500 | Hazardous | Maroon |

e) Each category corresponds to a different level of health concern. The six levels of health concern and what they mean are:

"Good" AQI is 0 - 50. Air quality is considered satisfactory, and air pollution poses little or no risk.

"Moderate" AQI is 51 - 100. Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.

"Unhealthy for Sensitive Groups" AQI is 101 - 150. Although general public is not likely to be affected at this AQI range, people with lung disease, older adults and children are at a greater risk from exposure to ozone, whereas persons with heart and lung disease, older adults and children are at greater risk from the presence of particles in the air.

"Unhealthy" AQI is 151 - 200. Everyone may begin to experience some adverse health effects, and members of the sensitive groups may experience more serious effects.

"Very Unhealthy" AQI is 201 - 300. This would trigger a health alert signifying that everyone may experience more serious health effects.

"Hazardous" AQI greater than 300. This would trigger health warnings of emergency conditions. The entire population is more likely to be affected.

SEC. 4) POLICY RECOMMENDATIONS FOR DISTRICT IMPLEMENTATION

a) No statewide policy directive exists in this area.

b) However local districts and schools should strongly consider implementing guidelines that would clearly identify, via https://www.airnow.gov/, the risk to partiicpation.

c) Policy considerations should consider that readings of 100 to 149 (PM2.5) indicate that people with heart or lung disease, older adults, children and teens – take any of these steps to reduce your exposure:

(1) Choose less strenuous activities (like walking instead of running) so you don't breathe as hard.

(2) Shorten the amount of time you are active outdoors.

(3) Be active outdoors when air quality is better.

d) Districts and schools should consider cessation of outdoor activities when AQI reaches 150 or higher (Unsafe) per https://www.airnow.gov/.