43.4.3 Return to Play Criteria

- No athlete should return to play (RTP) or practice on the same day of a concussion.
- Any athlete suspected of having a concussion should be evaluated by an appropriate health-care professional that day.
- Any athlete with a concussion should be medically cleared by an appropriate health-care professional prior to resuming participation in any practice or competition.
- After medical clearance, return to play shall follow a step-wise protocol with provisions for delayed return to play based as directed by an appropriate health-care professional.
- Return to play should only occur after an athlete has returned to full school attendance without academic accommodations.

43.4.4 Appropriate Health-Care Professionals for Return to Play

An appropriate health-care professional is defined as the following:

- Licensed Athletic Trainer
- Physician (MD/DO)
- Licensed Nurse Practitioner
- Physician's Assistant

43.4.5 Return to Academics

- Cognitive rest, including reduced screen time, may be recommended for the first 24-48 hours.
- Student-athletes can engage in sub-symptom cognitive activities as tolerated.
- Cognitive exertions should be stopped if concussion symptoms exacerbation is more than mild and brief and may be resumed once symptoms have returned to their prior level. Mild symptom exacerbation is typically brief and does not delay recovery.
- Schools should have policies to facilitate academic support, especially those that address factors that may prolong return to the classroom (e.g. High symptom burden, social determinants of health).
- Not all student-athletes will need academic support or a return to learn strategy.
- While return to learn and return to sport strategies can occur in parallel, student athletes should complete return to learn before unrestricted return to sport.
- Returning an athlete to the classroom following a concussion should follow a return to learn progression.

43.4.6 Other

43.4.6.1 At the beginning of a game, the coach must certify to the official that the equipment is in compliance with safety regulations and properly fitted.

43.4.6.2 If a helmet comes off or becomes dislodged during play, must remain out for one play or call a time out to have the equipment reassessed.

43.5 HEAT ACCLIMATIZATION & EXERTIONAL HEAT ILLNESS MANAGEMENT POLICY

43.5.1 It is the position of the AIA that prevention is the best way to avoid exertional heat stroke. Prevention includes educating athletes and coaches about:

- Recognition and management of exertional heat illness;
- The risks associated with exercising in hot, humid environmental conditions;
- The need for gradual acclimatization over a 14 day period;
- Guidelines for proper hydrations;
- Implementing practice / competition modifications according to local temperature and relative humidity readings;
- Management/Treatment guidelines for cases of heat illness including heat stroke;
- Appropriate guidelines for Return to Play after Heat Illness.

43.5.2 **Definitions**

Exertional heat illness includes the following conditions, ordered from the least to the most dangerous:

a) **Exercise associated muscle cramps**: an acute, painful, involuntary muscle contraction usually occurring during or after intense exercise, often in the heat, lasting approximately 1-3 minutes.

b) **Heat syncope**: also known as orthostatic dizziness, it refers to a fainting episode that can occur in high environmental temperatures, usually during the initial days of heat exposure.

c) **Exercise (heat) exhaustion**: the inability to continue exercise due to cardiovascular insufficiency and energy depletion that may or may not be associated with physical collapse.

d) **Exertional heat stroke**: a severe condition characterized by core body temperature >40°C (105°F), central nervous system (CNS) dysfunction, and multiple organ system failure induced by strenuous exercise, often occurring in the hot environments.

e) **Excessive Heat Warning**: Extreme heat is occurring or imminent. Studies have shown that our bodies have a greater ability to tolerate heat as the summer wears on. There is not one single, constant temperature used by NOAA/NWS Phoenix to determine when an alert will be issued. Instead, the NOAA/NWS HeatRisk product is leveraged to identify unusually hot days.
(HeatRisk product link: https://www.wrh.noaa.gov/wrh/heatrisk/)
(Reference: National Weather Services; https://www.weather.gov/psr//Heat)

Heat Acclimatization Protocol
(A team may not choose to train in a less severe climate)

Days 1-5:

- Days 1 through 5 of the heat-acclimatization period consist of the first 5 days of formal practice. During this time, athletes may not participate in more than 1 practice per day.
- If a practice is interrupted by inclement weather or heat restrictions, the practice should recommence once conditions are deemed safe. Total practice time should not exceed 3 hours in any 1 day. In addition to practice, a 1-hour maximum walk-through is permitted during days 1-5 of the heat acclimatization period. However, a 3-hour recovery period should be inserted between the practice and walk0through (or vice versa). (Note: a walk-through is defined as no contact with other individuals, dummies, sleds or shields).
- During days 1-3 of the heat-acclimatization period, in sports requiring helmets or shoulder pads, a helmet is the only protective equipment permitted. The use of shields and dummies during this time is permissible as a non-contact teaching tool.
- During days 4-6, only helmets and shoulder pads may be worn.
- Football only: on days 4-6, contact with blocking sleds and tackling dummies may be initiated.

Days 6-14:

- Beginning no earlier than day 6 and continuing through day 14, double-practice days must be followed by a single-practice day.
- On single-practice days, 1 walk-through is permitted, separated from the practice by at least 3 hours of continuous rest. When a double-practice day is followed by a rest day, another double-practice day is permitted after the rest day.
- On a double-practice day, neither practice should exceed 3 hours in duration, nor should student-athletes participate in more than 5 total hours of practice. Warm-up, stretching, cool-down, walkthrough, conditioning and weight-room activities are included as part of practice time. The two practices should be separated by at least 3 continuous hours in a cool environment.
- Beginning on day 7, all protective equipment may be worn and full contact may begin.
- Full-contact sports may begin 100% live contact drills no earlier than day 7.
- Because the risk of exertional heat illnesses during the preseason heat-acclimatization period is high, we strongly recommend that an athletic trainer be on site before, during and after all practices.

43.5.3 **Hydration Strategies**

- Sufficient, sanitary and appropriate fluid should be readily accessible and consumed at regular intervals before, during and after all sports participation and other physical activities to offset sweat loss and maintain adequate hydration while avoiding overdrinking.
- Generally, 100 to 250 mL (approximately 3-8oz) up to 1.0 to 1.5 L (approximately 34-50oz) per hour for adolescent boys and girls is enough to sufficiently minimize sweating-induced body-water deficits during exercise and other physical activity as long as their pre-activity hydration status is good.
- Pre-activity to post-activity body-weight changes can provide more specific insight to a person's hydration status and rehydration needs. Athletes should be well hydrated before commencing all activities.
- The following guidelines are suggested:

Condition	% Body Weight Change
Well Hydrated	+1 to -1
Minimal dehydration	-1 to -3
Significant dehydration	-3 to -5
Serious dehydration	>-5

% Body weight change = [(pre-exercise body weight – post-exercise body weight) / pre-exercise body weight] x 100

(Section 43.5 cont'd. on next page)

43.5.4 **Prevention**

Pre-participation history and physical exam

- A thorough medical history will be gathered (history of heat illness, sickle cell trait/disease, etc.)
- Individuals with risk factors will be identified and counseled (see table below):

Risk Factors for Heat Illness	
Intrinsic	***Strategies to Minimize Risk***
High intensity exercise	Gradually phase in exercise and conditioning
Fever or illness	Monitor and remove at risk athletes as necessary
Dehydration	Educate coaches/athletes on proper hydration Provide adequate access to water
Overweight/obesity	Gradually phase in exercise and conditioning
Lack of heat acclimatization	Follow heat acclimatization program
Medications (antihistamines, diuretics, ADHD drugs)	Monitor and remove at risk athletes as necessary
Skin disorder (sunburn or malaria rubra)	Monitor athletes closely
Predisposing medical conditions	Monitor and remove at risk athletes as necessary
Extrinsic	***Strategies to Minimize Risk***
High ambient temperature, solar radiation or humidity	Avoid exercise in hotter parts of the day
Heavy gear or equipment	Gradually introduce equipment
Poor practice design	Educate coaches regarding strategies to minimize risk

- When applicable the Athletic Trainer or persons responsible will be notified of individuals with pre-existing conditions that place the individual at risk of exertional heat illness.
- As necessary, coaches are notified of individuals at higher risk.

Environmental Monitoring and Activity Modifications/Cancellation

- It is recommended environmental monitoring occur utilizing a WBGT device equivalent to **Kestrel 5400.**
- It is recommended environmental monitoring occur any time it is warm outside (i.e. over 80°F)
- Environmental monitoring and activity modifications may be necessary for certain of indoor facilities.
- Recommend monitoring of WBGT occur every 30 minutes beginning 15 minutes prior to the scheduled practice time.
  - If school designee/athletic trainer is present he/she will monitor WBGT and recommend appropriate modification of activity. If the school designee/athletic trainer is not present the head coach or athletic director will monitor WBGT recommend appropriate modification of activity. WBGT will be measured at the practice/event venue on the playing surface.
  - All environmental monitoring should be documented and stored by the school.
- Modifications will be made in accordance with the best practice guidelines for our region. Arizona is located in WBGT **Region 3**, therefore we will follow the activity guidelines for that region ***after*** the 14 day acclimatization period.
  - *To find what region/category your school is in, please read the Grundstein et al. Regional heat safety thresholds for athletes in the contiguous United States. Applied Geography, 2015 manuscript (https://ksi.uconn.edu/wp-content/uploads/sites/1222/2018/08/RegionalWBGT_2015_AppliedGeography.pdf)*
- Modifications should change based on real time environmental conditions. Therefore, if the environment changes to a higher or lower WBGT that falls in a different category then the activity modifications should reflect the recommendations in the new category.

During Acclimatization Period (Day 1 – Day 14)	Acclimatized Athletes (Day 15+)	Activity Guidelines
<79.7	< 82.0	Normal Activities – Provide at least three separate rest breaks each hour with a minimum duration of 3 minutes each during the workout.
79.8 - 84.6	82.1- 86.9	Use discretion for intense or prolonged exercise; Provide at least three separate rest breaks each hour with a minimum duration of 4 minutes each. Make equipment modifications as necessary.
84.7 - 87.6	87.0 - 90.0	Maximum practice time is 2 hours. For Football: players are restricted to helmet, shoulder pads, and shorts during practice. If the WBGT rises to this level during practice, players may continue to work out wearing football pants without changing to shorts. Make additional equipment modifications as indicated. Including not beginning practice with equipment on for warmups etc. For All Sports: Provide at least four separate rest breaks each hour with a minimum duration of 4 minutes each. Make equipment modifications as indicated.
87.7 – 89.6	90.1 - 91.9	Maximum practice time is 1 hour. For Football: No protective equipment may be worn during practice, and there may be no conditioning activities. For All Sports: There must be 20 minutes of rest breaks distributed throughout the hour of practice. Provide at least four separate rest breaks (every 15 minutes) each hour with a minimum duration of 5 minutes each. Off-Campus sports, (such as Cross Country) practices and games should remain on campus unless dedicated healthcare providers are immediately accessible in case of heat illness. Reduce or eliminate conditioning drills.
≥ 89.7	≥ 92.0	No outdoor workouts. Delay practice until a cooler WBGT is reached.

(Section 43.5 cont'd. on next page)

Equipment Considerations
- Wear loose-fitting, light colored and absorbent/moister wicking clothing
- During hot or humid conditions minimize the amount of equipment and clothing worn. (Football: reduce the amount of equipment worn, i.e. helmet and/or shoulder pads)

Practice Structure and Time Considerations
- Direct sunlight and high temperatures are most common between the hours of 10 am and 5 pm. When conditions indicate practices should be moved from this time window.
- As temperatures rise the ability of the athlete to compensate for prolonged activity at high temperatures decreases. Practices should be shortened when indicated by current environmental conditions.
- High intensity and long duration bouts of exercise (sprints, conditioning, etc) should not be completed when conditions indicate.

Education
- Member Schools will ensure education of medical staff, athletes, coaches, emergency personnel, and parents about EHI and proper hydration has been completed.
- Encourage athletes to sleep at least 6–8 hours and eat a well-balanced diet (Reference: Korey Stringer Institute; https://ksi.uconn.edu/emergency-conditions/heat-illnesses/exertional-heat-stroke/heat-stroke-prevention/)

Management
- Monitoring of student-athletes safety will be continuous during any physical activity.
- Athletic trainers, coaches, administrators and other athletics personnel will be educated on the signs and symptoms of exertional heat illness.
  - These signs and symptoms include (but are not limited to) the table below:

Rectal temperature greater than 105 (40°C) at time of incident.	Rapid pulse, low blood pressure, quick breathing
Headache	Dehydration, dry mouth, thirst
Confusion or just look "out of it"	Decreasing performance or weakness
Disorientation or dizziness	Profuse sweating
Altered consciousness, coma	Collapse, staggering or sluggish feeling
Nausea or vomiting	Muscle cramps, loss of muscle function/balance, inability to walk
Diarrhea	Irrational behavior, irritability, emotional instability

43.5.5 **Treatment in the event of an exertional heat stroke (medical emergency)**

Recognition
- Any athlete with signs of central nervous system dysfunction during exercise in the heat should be suspected to be suffering from EHS.
- ***It is important to emphasize that during and following intense exercise in the heat, temporal, aural, oral, skin, axillary and tympanic temperature are not valid and should never be utilized in evaluating a potential exertional heat stroke.***

Cooling
- The patient must be moved to a cooling zone, begin appropriate treatment and continuously monitor the patient.
- Excess clothing shall be removed to aid cooling.
  - If removal of clothing and/or equipment would cause delays of 5+ minutes, do not remove clothing and equipment, simply initiate cooling.
- Place patient in a cold-water immersion (35-59°F) tub up to the neck if possible.
  - Wrap a towel across the chest and beneath both arms to prevent the athlete from sliding into the tub.
  - Ice shall cover the surface of the water at all times.
  - Water shall be continuously and vigorously stirred to maximize cooling.
  - An ice-cold towel will be placed over the head/neck and rewet and replaced every 2 minutes.
  - Cooling shall cease when core body temperature (best measured rectally) reaches ~102°F or when signs and symptoms indicate.
- Cold Water Immersion (CWI) Tub
  - Must be present at the site and readily accessible when practices and games begin.
  - Recommended set-up includes:
    - A tub filled with water. (Or a tub with water ready to be filled. Water temps may climb to over 100°F if pre-filled in the sun.)
    - Two or more chests filled with ice next to the tub ready for treatment.
    - Available bed sheet or large towels.
    - Towels for placement over the head and neck.

(Section 43.5 cont'd. on next page)

- Cool First, Transport Second
  - When a patient is diagnosed with EHS, the principle of Cool First, Transport Second should be used.
    - Note: EMS should not transport the patient until they reach **~102°F** due to the inability to continue vigorous cooling in the ambulance.

Vital Sign Monitoring

- The QHP will monitor vital signs.
- Vital Signs will be monitored in the unstable patient every 5 minutes.

EMS

- EMS must be called immediately if a patient is suspected of EHS
- HOWEVER, any patient with EHS must be **cooled FIRST and then transported via EMS.**
  - This cool first transport second EAP protocol will be communicated/shared with EMS annually PRIOR to the first official sport practice at the school in accordance with the EAP policy and procedures.

43.5.6 **Return to Play Following Exertional Heat Stroke**

The following is the protocol for return to play following heat stroke:

- Refrain from exercise for at least 7 days following the acute event.
- Follow up in about 1 week for physical exam by licensed physician (MD,DO)
- When cleared for activity by a licensed physician, begin exercise in a cool environment and gradually increase the duration, intensity, and heat exposure for 2 weeks to acclimatize and demonstrate heat tolerance under the direction of a licensed healthcare professional.
- If return to activity is difficult, consider a laboratory exercise-heat tolerance test about one month post incident.
- Athlete may be cleared for full competition if heat tolerance exists after 2-4 weeks of training.

The AIA also recommends that any athlete suspected of having suffered exertional heat exhaustion be referred to a licensed physician for follow-up medical examination and clearance.

43.6 MEDICAL INTERVENTION PROCEDURE

43.6.1 Medical interventions which increase the risk of disease exacerbation or additional injury are never appropriate on the day of competition, or on any other day, for a high school student-athlete. There are three steps of decision making for the basis of the Return to Play decision. These include evaluation of health risks, participation risks, and any factors in decision modification. If a disease process or injury is not adequately controlled by the day of competition to allow safe clearance for play with full function, then invasive medical procedures on the day of competition, performed with the sole purpose of enabling the student-athlete to participate, are philosophically inappropriate and shall not be performed on site. These prohibitive procedures are to include IV's, joint injections, and prescription strength medications not prescribed appropriately to the student athlete.

43.7 EMERGENCY ACTION PLANS

43.7.1 An Emergency Action Plan (EAP) for each practice and competition site, used by the school, shall be completed annually by each member school. The EAP must be kept on file at the school and shared with the appropriate coaches and staff. The emergency action plan should be comprehensive and practical, yet flexible enough to adapt to any emergency situation.

43.7.2 The Emergency Action Plan should contain the following information and/or components:

- Emergency plans must be written documents and should be developed in concert with the member schools' certified athletic trainer(s).
- Emergency plans must be written documents and should be distributed to team and attending physicians, athletic training students, institutional and organizational safety personnel, institutional and organizational administrators, and coaches.
- The emergency plan should be developed in consultation with local emergency medical services personnel.
- An emergency plan for athletics identifies the personnel involved in carrying out the emergency plan and outlines the qualifications of those executing the plan.
- Sports medicine professionals, officials, and coaches should be trained in automatic external defibrillation, cardiopulmonary resuscitation, first aid, and prevention of disease transmission.
- The emergency plan should specify the equipment needed to carry out the tasks required in the event of an emergency. In addition, the emergency plan should outline the location of the emergency equipment. Further, the equipment available should be appropriate to the level of training of the personnel involved.

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