



Building Blocks of Clinical Practice

Helping Athletic Trainers Build a Strong Foundation



Issue #10: Treatment of Heat Illness

General Considerations

- Cold water immersion should be set up prior to any high risk event
- Follow a proper heat-acclimatization program to reduce the risk of exertional heat illness
- Monitor environmental conditions on a regular basis, promote and monitor proper hydration
- Should an emergent situation occur, be prepared to initiate emergency action plan
- Be sure to follow state regulations when communicating about your patient with heat related illness and administering treatment to them



Heat Exhaustion (Urgent Condition)

- Remove patient from heat to a cooler, shaded environment
- Remove excess clothing and equipment
- If available, obtain a core body temperature to rule out heat stroke
- Cool the patient with fans and/or ice towels
- Elevate the patient's legs
- Monitor vital signs
- Provide fluids for the patient to rehydrate
- If patient does not improve within five minutes, treat as exertional heat stroke
- Initiate emergency action plan as needed

Heat Stroke (Emergent Condition)

- If heat stroke is suspected, immediately remove the patient from activity to a cooler, shaded area
- Initiate emergency action plan
- If available, obtain and monitor core body temperature
- Immediate on-site cold water immersion is STRONGLY recommended if heat stroke is suspected
 - cold water immersion is the gold standard for heat stroke treatment
 - survival from exertional heat stroke depends on rapid cooling of the patient
 - individuals tend to cool an average of about 1°F every three minutes during cold water immersion
- Return to play following physician clearance

Exertional Sickling (Emergent Condition)

- Withdraw the athlete with sickle cell trait from exercise if he/she shows any signs and symptoms of exertional sickling
- Initiate emergency action plan
- Monitor vital signs
- Provide supplemental oxygen (15 L/min with a non-rebreather mask)
- If vital signs decline:
 - have AED accessible
 - if available, initiate an IV of normal saline
 - transport to hospital
 - call ahead for hospital to prepare for explosive rhabdomyolysis
- Return to play following physician clearance

Hyponatremia (Emergent Condition)

- If hyponatremia is suspected, do NOT provide fluids or IV normal hypotonic saline until blood sodium is evaluated
- Mild hyponatremia: blood sodium 130-135 mEq/L
 - restrict fluids and consume salty foods
 - continue this until diuresis and correction of blood sodium
- Severe hyponatremia: blood sodium < 130 mEq/L and deteriorating mental status
 - IV hypertonic saline (3% to 5%) until blood sodium reaches 128-130 mEq/L
 - serial measures of blood sodium
 - transport to hospital
- Return to play following physician clearance and a plan to prevent further episodes

Cooling Techniques to Manage Heat Illness

- ▶ Cold water immersion
- ▶ Rotating wet ice towels over the entire body
- ▶ Dousing with cold water (e.g., cold shower)
- ▶ Fanning patient



Step-by-Step Cold Water Immersion

- ▶ Ice should be added to the tub as a soon as heat stroke is suspected
- ▶ Insert thermometer probe for measuring rectal temperature, if available
- ▶ Using as many people as possible, lift the patient into the tub
- ▶ Some patients may become aggressive and will need to be restrained in the tub
- ▶ Immerse as much of the body as possible
- ▶ Support the patient in the tub by looping a towel under his/her arms
- ▶ Cover the patient's head with a wet towel that is changed every 2-3 minutes
- ▶ Stir the water and monitor the patient's temperature continuously
- ▶ Remove patient when his/her rectal temperature is 102° F
- ▶ If core/rectal temperature is not available, cool for 15 minutes
- ▶ Continue to monitor patient's temperature during recovery as his/her temperature may continue to drop

References

1. Casa DJ. *Preventing Sudden Death in Sport and Physical Activity*. Jones & Bartlett Publishers; 2011.
2. Binkley HM, Beckett J, Casa DJ, Kleiner DM, Plummer PE. National Athletic Trainers' Association Position Statement: Exertional Heat Illnesses. *J Athl Train*. 2002;37(3):329–343.
3. Casa DJ, McDermott BP, Lee EC, Yeargin SW, Armstrong LE, Maresh CM. Cold water immersion: the gold standard for exertional heatstroke treatment. *Exerc Sport Sci Rev*. 2007;35(3):141–149.
4. Casa DJ, Guskiewicz KM, Anderson SA, et al. National Athletic Trainers' Association Position Statement: Preventing Sudden Death in Sports. *J Athl Train*. 2012;47(1):96–118.