Heat Illness Prevention

Fundamentals of Heat Acclimatization and Heat Illness Prevention

- Exertional Heat Stroke (or EHS) is the leading cause of preventable death in high school athletics.
- Exertional heat stroke can be prevented through acclimatization and taking basic safety precautions.
- Knowing the signs of exertional heat stroke and heat illness and having an emergency action plan in place can prevent serious illness and save lives.

Follow these 7 Fundamentals to Keep Every Play Safe

1. Physical exertion and training activities should begin slowly and continue progressively. An athlete cannot be "conditioned" in a period of only 2 to 3 weeks.

2. Keep each athlete's individual level of conditioning and medical status in mind and adjust activity accordingly. These factors directly affect exertional heat illness risk.

3. With an increase in heat/humidity, especially if the heat and humidity level is a significant change from the previous few days: Decrease intensity of activity
   - Increase frequency/duration of rest breaks
   - Reduce uniform/equipment
   - Continue to closely monitor players in these changing conditions.

4. Athletes must begin practices and training activities adequately hydrated.

5. Recognize early signs of distress and developing exertional heat illness, and promptly stop activity for affected players and treat accordingly. Do not delay first aid!

6. Recognize more serious signs of exertional heat-related distress. Immediately stop activity and seek medical attention by activating the emergency medical system. Begin on-site rapid cooling immediately.

7. Develop an emergency action plan with clearly defined, written and practiced protocols. This should be in place before any emergency happens.

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Three Types of Heat Illness

Even with a great hydration plan, heat illness is something you need to be able to recognize and take measures to prevent. There are 3 types of heat illness to be aware of: heat cramps, heat exhaustion and heat stroke.

Heat Cramps

Painful spasms of the skeletal muscle, usually involving the calves. In athletes prone to cramping, sports drinks can help with prevention, as heat cramps appear to primarily be the result of dehydration and loss of sodium through sweating.

Symptoms:

- Painful muscle spasms

Treatment:

- Gentle stretching
- Rest
- Increased fluid and electrolyte consumption

Heat Exhaustion

The most common type of heat illness.

Symptoms:

- Dizziness and fatigue
- Chills
- Rapid pulse

Treatment:

- Remove the student from the hot environment
- Cool as quickly as possible
- Re-hydrate

Heat Stroke

The potential for it to be fatal makes heat stroke by far the most serious type of heat illness. Heat stroke occurs when the body's cooling system completely shuts down or their blood volume is so low that the victim stops sweating and goes into shock.

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Symptoms:

- Very high core body temperature
- Altered central nervous system function (i.e. confusion or unconsciousness)
- Skin is not always hot and dry; student may still be sweating profusely

Treatment:

- Activate the Emergency Medical System (EMS)
- Immediate rapid cooling

If heat stroke is suspected, the following steps must be taken:

1. Have a designated person activate the Emergency Medical System (EMS).
2. Quickly remove all of the athlete's equipment and shirt.
3. If an ice bath is available and assuming there is no potential for head or neck injury, place the student in the pool and immerse his/her torso and extremities in an ice-water bath. Do not let the head become submerged.
4. If an ice bath is not available, move the student to a shaded area and cool his/her torso by covering him/her in ice bags from the shoulders to the hips.
5. Monitor the student for responsiveness, pulse and breathing until medical help arrives.

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Understanding Sweat Loss

Athlete Scenerio

When training with my rowing team, we spend several hours on the water, often during the warmest part of the day with limited opportunities to drink fluid. I tend to sweat more than my teammates and I notice salt caked on my skin and clothing. Lately, I have been very tired after practice. Could I be eating too much salt or not drinking enough water? Should I do something during practice to have more energy and perform better?

Sweat Loss Considerations

- Sweat rate during exercise is individual and is influenced by genetics, gender, age, environmental temperature, exercise intensity, fitness, and acclimatization.
- Evaporation of sweat during exercise cools the body. Dehydration inhibits the body's ability to cool itself during exercise. Consuming fluid replaces sweat loss and aids cooling.
- Gauge your hydration status by monitoring urine color and volume. Urine that is dark in color and low in volume indicates dehydration; light yellow urine is ideal.
- Sodium helps your body retain fluid and stimulates thirst.

Strategies for Managing Sweat Loss

- To perform at your best, avoid losing more than 2% of your body weight during exercise.
- Determine your individual fluid needs by calculating your body weight loss and sweat rate under different training conditions.
- When opportunities to replace fluid loss are limited, follow an individualized hydration plan surrounding exercise.
- If your sweat is salty and contains a high concentration of sodium, consume sodium (endurance-specific sports drinks or other sodium sources) during exercise; eat salty foods before and after prolonged (>2 hours) exercise.

Tips to Take With You

1. Fluid needs are highly individualized; avoid comparing your sweat and hydration patterns with teammates.
2. Replace fluid and electrolytes according to a schedule rather than relying on thirst.
3. A sports dietitian can help you calculate your sweat rate and develop a personalized hydration schedule that meets your needs.

Contact SCAN

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Written by SCAN registered dietitians (RDs). The key to optimal meal planning for athletes is individualization. For personalized nutrition plans contact a SCAN sports dietitian or Board Certified Specialist in Sports Dietetics (CSSD) by accessing "Find a SCAN Dietitian" at **www.scandpg.org | 800.249.2875**.

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