

Managing Heat and Its Effects

Essential Guidance for Utah High School Cycling Coaches

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How many of you have felt this before? It is a scorching day. You are in the thick of a race, pushing down the course to claim a better position. You feel strong, one solid push from securing that spot you've eyed all race. Suddenly, an excruciating pain shoots through your quads. You can't bend your leg, and the pain stops you in your tracks. Welcome to the harsh reality of the impact of heat on performance.

Heat-related illnesses are more than an inconvenience. It can disrupt rides and practices, sideline riders and coaches or, in extreme cases, lead to life-threatening injuries. Seven high school athletes died from July 2020-August 2021 due to exertional heat illness. Understanding and managing heat is critical to keeping your athletes safe and having fun in Utah's intense summer conditions.

HOW HEAT AFFECTS THE BODY

The body maintains a stable internal temperature of about 98.6° through a process called thermoregulation. During exercise, muscles generate heat. Normally, the body releases heat through:

- Radiation (heat moving from the body to cooler surroundings)
- Convection (airflow carrying heat away)
- Evaporation (sweating)

When body temperature rises, blood flow shifts to the skin's blood vessels to promote cooling. This reduces blood available to muscles and increases heart rates. The body also takes steps to reduce your metabolism to help reduce heat production. In hot environments, radiation loses its effectiveness, making sweating the main way that the body cools itself.

In Utah's dry climate, evaporation is efficient, but high temperatures can still be hazardous, especially for unacclimatized youth whose developing physiological systems can be less efficient at cooling.

SIGNS AND SYMPTOMS OF HEAT ILLNESSES

Heat stress occurs with rising core temperature and mild dehydration. It is usually accompanied by fatigue, muscle cramps, and reduced endurance. Athletes will notice a reduction in performance when stressed by the heat. Recovery is critical to prevent further injury.

Heat exhaustion is the next level of heat injury. It happens when we don't adequately replace our fluids. As sweat evaporates, it takes body heat with it. But without enough fluids, the body can't adequately cool our bodies. Symptoms include:

- Cool, moist, pale, ashen (gray) or flushed skin
- Heavy sweating

- Rapid, weak pulse
- Headache, nausea, dizziness
- General weakness

Treating heat exhaustion is urgent:

- Move the athlete to shade
- Provide circulating air or fan them
- Loosen clothing
- Apply wet towels or use a water bottle shower
- Hydrate with electrolytes, juice, milk, or water

If heat exhaustion is left untreated, this can progress to heat stroke. As the body's cooling systems are overwhelmed, core temperatures can exceed 104°. The cardiovascular system overloads as it tries to cool the body while still supplying blood to working muscles. This can lead to serious damage to organs if not treated quickly. Studies show that exertional heat stroke is more common during preseason or unacclimatized periods. Dehydration increases risks by concentrating blood and straining the heart. Symptoms include:

- Warm, dry skin (sweating may stop)
- Confusion
- Seizures
- Unconsciousness

Heat stroke is a medical emergency:

- Call 911 immediately
- Monitor the athlete
- Submerge in cool or cold water if possible
- Watch for and treat shock.

STRATEGIES FOR MANAGING HEAT IN CYCLING

Preventing heat-related issues starts with preparation. With race season starting in August, heat training will be critical to help your athletes be prepared for race conditions. This is especially critical for your JV B+ Girls, JV B+ Boys and Freshmen Boys racing during peak heat.

HEAT ACCLIMATIZATION

- A 2-3 week gradual exposure to hot conditions will help your athletes and coaches adapt to the heat. The body will improve how it sweats. It will increase blood volume and lower exercising heart rate because of heat training.
- Start with shorter, easier rides of 30-45 minutes for the first week in hot conditions.
- Gradually increase the ride duration and intensity.
- Avoid difficult and long rides for the first few practices in the heat.

HYDRATION

Hydration is non-negotiable.

- **Before rides:** 16-20 ounces of fluid two hours before.
- **During rides:** 7-10 ounces every 20 minutes.
- **After rides:** Replace fluids with electrolyte drinks, water, and/or milk.
- Electrolyte drinks are especially helpful for replacing sodium, chloride, and potassium that are lost in sweat.

FOLLOW NICA WEATHER GUIDELINES

- NICA's Hot Weather Assessment Process provides specific heat index thresholds to modify or cancel practices and races. Heat index includes humidity and other factors, and is displayed in most weather apps as the "feels like" temperature.
- Heat index = 95-100° - 2 hours maximum
- Heat index = 100-105 - 1 hour maximum
- Heat index > 105° - cancel or delay practice
- Follow the NICA guidelines even after heat acclimatization.

HAVE A HEAT RESPONSE PROTOCOL

- Train athletes and assistant coaches to recognize symptoms.
- Have shade, water, and cooling aids available.
- Keep 5-gallon water jug(s) full of ice water at practice for hydration, cooling, and emergencies.
- Encourage breathable clothing and use cooling towels on hot days.
- Build recovery into your program with hydration and nutrition after every ride.

Utah's heat can turn a promising race into a painful lesson. But with smart preparation, you can keep your riders safe, strong, and focused on the joy of cycling. As coaches, your vigilance will ensure that athletes perform their best and build lifelong resilience and love for the sport.

COACH'S HEAT SAFETY CHECKLIST

- Begin heat training with a 10-14 day heat acclimatization plan using shorter, lower-intensity rides.
- Ensure athletes hydrate properly: 16-20 oz before and 7-10 oz every 20 minutes during rides.
- Use shade breaks, breathable clothing, and cooling tools such as towels and ice water.
- Train athletes to recognize heat illness symptoms early, including fatigue, cramps, dizziness, and confusion.
- Keep a heat response protocol ready with shade, water, ice, and an emergency plan.
- Follow NICA Hot Weather Guidelines for safe decision-making.

REFERENCES

American Red Cross Heat Exhaustion - <https://www.redcross.org/take-a-class/resources/learn-first-aid/heat-exhaustion?srsId=AfmBOooYvkPkcjHDhxmiaH7lg1ncucR4JpEuoNAHXcd74coRqGDSIljF>.

NATA Position Statement: Exertional Heat Illnesses - https://www.nata.org/sites/default/files/exertional_heat_illnesses.pdf.

NICA Weather Assessment -
<https://docs.google.com/document/d/1o-LLglfCam2ACy-SzAx5rGiaxd3cmpkYuEr6iW0D4dY/edit?tab=t.0>.

Utah High School Activities Association Handbook p.76 - <https://www.uhsaa.org/Publications/Handbook/Handbook.pdf>.