HEAT ILLNESS IN SPORT AND EXERCISE

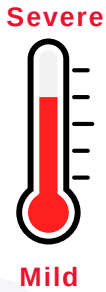
HOW HEAT IMPACTS THE BODY

Our nervous system, cardiovascular system, and skin work together to maintain an optimal internal, or core, body temperature of about 37°C. This process is called **thermoregulation.**

When the temperature outside rises, it makes it harder for the body to cool down and this heat-regulating system can be overwhelmed. When this happens, body temperature can continue to rise and **heat illness** can occur.

THE BASICS OF HEAT ILLNESS

Heat illnesses range from mild to more severe and may occur alone or in combination with other illnesses. Symptoms of heat illness include:



- Stroke
- Heat exhaustion
- Fainting
- Heat cramps
- Heat rash
- Heat edema or swelling

Heat stroke is the most severe and life threatening type of heat illness. It happens when the body's core temperature exceeds 40.5°C and occurs most often in the chronically ill, young children, and sport participants.

WHO IS MOST AT RISK

Several factors can influence an individual's response to heat. Individuals at greatest risk of experiencing heat illness include:

- Older adults
- Young children
- Pregnant women
- Individuals with pre-existing medical conditions
- Individuals who are dehydrated or have not consumed enough food
- Individuals who have experienced heat illness in the past
- Individuals who have sunburns
- Individuals who have recently consumed alcohol or drugs
- Individuals who are engaging in sport and exercise

Research demonstrates that the predicted number of days with temperatures of 30°C or higher in Canadian cities is estimated to double by 2040 and more than triple by 2081.

-Health Canada, 2011

The information in this document should not be used to replace medical advice. Rather, it should be used to increase awareness and discussions around heat illnesses.

WHY SPORT PARTICIPANTS ARE AT INCREASED RISK

EXERTIONAL HEAT ILLNESS

Exertional heat illness is heat illness experienced during physical activity. Regardless of what the temperature is outside, physical activity increases the production of heat in the body and raises the body's core temperature.

Typically, the body cools itself by causing you to sweat and then uses energy, in the form of excess body temperature, to evaporate the sweat. However, when performing physical activity in the heat, direct sunlight or on hot surfaces (like outdoor tracks and courts) sweat evaporates faster, preventing the body from cooling itself down.

In some cases, athletic protective gear or uniforms can also put participants at greater risk of exertional heat illness.

Research shows that the greatest number of exertional heat illnesses were reported in endurance sports like marathon running. Among field-based sports, football players are most likely to experience exertional heat illness.
-Gamage et al., (2020)

SIGNS AND SYMPTOMS OF EXERTIONAL HEAT ILLNESS

While some signs of exertional heat stroke can be seen by individuals like coaches or parents, in many cases heat illness will present first through symptoms that only a participant will be able to detect.

Symptoms of exertional heat exhaustion

- Dizziness
- Headache
- Nausea
- Weakness
- Fatigure

Signs of exertional heat stroke

- Weak or rapid pulse
- Confusion
- Flaccid muscles or rigidity
- Vomiting
- Coma
- Seizure

If symptoms or signs of heat illness are present, an athlete should stop activity immediately so that they can begin cooling down. It takes the organs and the skin some time to reset after a heat episode. After the body has been properly cooled and fluids restored, most sport participants can return to physical activity in one or two days. If an athlete experiences heat illness on numerous occasions, they should seek medical attention.

WHAT TO DO IN THE CASE OF HEAT ILLNESS

If you suspect heat illness in an athlete, move them to cool place, directly apply cold water to their skin or clothing and fan them. Cold towels and cooling tanks may also be used to help cool the athlete down. A cooling tank can be as simple as a clean garbage can or bin filled with cold water. **If heat stroke is suspected, call 911 immediately.**

For more information, please contact the SIRC team at info@sirc.ca.

WHAT YOU CAN DO TO PREVENT HEAT ILLNESS BEFORE A SPORT ACTIVITY

- **Check the outdoor temperature and humidity** using the WetBulb Globe Temperature (WBGT) before you start physical activity so you can adjust your activity ahead of time.
- **Check the Air Quality Health Index (AQHI)**, as air pollution increases in extreme heat and poses additional risk.
- **Consider alternative locations** like a shaded area away from high traffic, moving training to a facility with air conditioning if possible, or rescheduling sessions.
- **Identify individuals who are at risk** of heat illness.
- Encourage participants to **drink cool liquids or foods** like watermelon and cucumbers before they feel thirsty and before being physically active.
- Encourage participants to **wear breathable, loose-fitting and light-coloured clothing, and broad spectrum sunscreen (minimum SPF30)**.

WHAT YOU CAN DO TO PREVENT HEAT ILLNESS DURING A SPORT ACTIVITY

- Have sport participants **splash cold water on their face to help to cool the body temperature** down regularly.
- **Avoid and limit sun exposure** all at times during activity by moving to a shaded area when possible.
- Remind participants to **reapply sunscreen frequently**. Bring extra sunscreen so there is always some on hand.
- **Include more water breaks**. Bring a cooler with extra water and electrolyte drinks so there is always plenty of cool water available.
- After an activity in the heat, **move participants to a cooler place**, like a shaded area or time or air conditioned room to allow the body to recover.

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