

Football Nova Scotia

Cold Weather Safety Information

Cold-Related Illnesses Information

General.

Cold-related illness is inherent to physical activity outdoors and its incidence increases with dropping temperatures and in environments with wet or windy conditions (or a combination of these). All of these factors increase the risk of cold-related injury for student-athletes. A sport like football that has a season extending into late fall or early winter or begin in early spring, when weather holds the potential for the aforementioned conditions increase athletes' susceptibility to cold injury. These policies and procedures for risk prevention are a cooperative effort of the coaches, training staff and families for the safety of athletes.

Descriptions & Symptoms

Hypothermia. The signs and symptoms of mild hypothermia include vigorous shivering, increased blood pressure, core body temperature less than 98.6F(37.6C) but greater than 95.6F (35.6C), fine motor skill impairment, lethargy, apathy and mild amnesia. Signs of moderate and severe hypothermia include cessation of shivering, very cold skin, depressed vital signs, core body temperature between 90.6F (32.6C) and 95.6F (35.6C) for moderate hypothermia or below 90.6F (32.6C) for severe hypothermia, impaired mental function, slurred speech, unconsciousness and gross motor skill impairment.

Frostbite. The signs and symptoms of superficial frostbite include swelling, redness or mottled gray skin appearance, stiffness and transient tingling or burning. Deep frostbite includes edema, mottled or gray skin appearance, tissue that feels hard and does not rebound, blisters, and numbness or loss of sensation.

Chillblain. Occurs with exposure to cold, wet conditions for more than 60 minutes at temperatures less than 50.6F (16.6C). It can be identified by the presence of small red bumps, swelling, tenderness, itching and pain.

Immersion Foot. Immersion (Trench) Foot: Occurs with exposure to cold, wet environments for 12 hours to three or four days. Symptoms include burning, tingling or itching, loss of sensation, bluish or blotchy skin, swelling, pain or sensitivity, blisters and skin fissures or maceration.

Risk Factors.

All coaches and training staff shall be educated to recognize the risk factors of cold-related illness:

- Extreme cold, precipitation, wind
- Existing medical conditions
- Previous cold injuries. Having sustained a previous cold injury increases the chance of subsequent cold injuries 2 to 4 times, even if prior injuries were not debilitating or resolved with no or minimal medical care
- Low caloric intake, dehydration, and fatigue
- Low caloric intake (less than 1200 to 1500 kcal/day) or hypoglycemia (or both) directly decreases metabolism and concomitant heat production contributing to the inability to maintain body temperature balance through physical activity.
- Dehydration does not negatively affect peripheral vasoconstriction or shivering and, therefore, does not appear to increase susceptibility to cold injury.
- Fatigue associated with hypoglycemia is linked to impaired peripheral vasoconstriction and shivering responses and can lead to faulty decision making and inadequate preparations, indirectly resulting in cold injuries
- African Canadian individuals have been shown to be 2 to 4 times more likely than individuals from other racial groups to sustain cold injuries. These differences may be due to cold weather experience, but are likely due to anthropometric and body composition differences, including less pronounced CIVD, increased sympathetic response to cold exposure, and thinner, longer digits
- Nicotine, Alcohol, and Drug Use
 - Nicotine inhaled through smoking causes a reflex peripheral vasoconstriction, possibly negating the CIVD and later enhancing the cold-induced vasoconstriction to maintain core temperature.
 - Alcohol reduces the glucose concentration in the blood, which tends to decrease the shivering response. Alcohol also may lead to faulty decision making due to its effects on the central nervous system.
 - Drugs with a depressive effect may impair the thermoregulatory system and so inhibit the body's reaction to cold by blunting the peripheral vasoconstriction and shivering responses.
- Body Size and Composition. Body fat and muscle mass appear to be instrumental in providing protection for maintaining core body temperature with exposure to cold air and water. This effect appears in both males and females regardless of the amount of clothing worn.
- Aerobic Fitness Level and Training. Overall, physical training and fitness level appear to have only minor influence on thermoregulatory responses to cold.

- Gender. The hypothermia injury rate for females is 2 times higher than for males. Sex differences in thermoregulatory responses during cold exposure are influenced by interactions among total body fat content, subcutaneous fat thickness, amount of muscle mass, and surface area-to-mass ratio.
- Clothing. The role of clothing in preventing cold injuries lies in its ability to reduce heat loss to the environment by trapping warm air. Cold-weather clothing typically has an internal layer that allows evaporation of sweat without absorption, a middle layer that provides insulation, and an external layer that is wind and water resistant and allows evaporation of moisture. The internal layer is in direct contact with the skin and uses a moisture-wicking material such as polyester or polypropylene. This layer should not retain moisture but should transfer the moisture to other layers, from which it can evaporate. The middle layer provides the primary insulation against heat loss and can be a fleece or wool material. The outer layer should have venting abilities (i.e. zippers or mesh in the armpits or low back area) to allow moisture transfer to the environment.

Preventive Measures

Availability of Medical Personnel. The team will ensure that appropriate medical care is available and that rescue personnel are familiar with cold-related illness prevention, recognition, and treatment.

Evaluation by Health Care Provider. The team will ensure that athletic trainers and other health care providers attending practices or events are allowed to evaluate and examine any athlete who displays signs or symptoms of cold-related illness and have the authority to restrict the student-athlete from participating if cold illness is present.

Pre-Participation Screening. The team and athletic training staff are encouraged to conduct a thorough, physician-supervised, pre-participation medical screening before the season starts to identify student-athletes predisposed to cold-related illness on the basis of risk factors and those who have a history of cold-related illness.

Education. The team and training staff will educate athletes and coaches concerning the prevention, recognition, and treatment of cold injury and the risks associated with activity in cold environments.

Hydration and Nutrition. The team, coaches, and training staff will educate and encourage athletes to maintain proper hydration and eat a well-balanced diet. These guidelines are especially imperative for activities exceeding 2 hours. Consistent fluid intake during low-intensity exercise is necessary to maintain hydration in the presence of typical cold-induced diuresis. Athletes should be encouraged to hydrate even if

they are not thirsty, as evidence suggests the normal thirst mechanism is blunted with cold exposure

Training Guidelines. The team, coaches, and training staff will develop event and practice guidelines that include recommendations for managing student-athletes participating in cold, windy, and wet conditions. The influence of air temperature and wind speed conditions should be taken into account by using wind-chill guidelines.

Clothing. The team will encourage and assist athlete clothing choices so that the athletes are provided an internal layer that allows evaporation of sweat with minimal absorption, a middle layer that provides insulation, and a removable external layer that is wind and water resistant and allows for evaporation of moisture.

Warm-Up. Coaches and training staff will provide the opportunity for athletes to re-warm, as needed, during and after activity using external heaters, a warm indoor environment, or the addition of clothing.

Emergency Supplies. The team coaches or training staff will include the following supplies on the field, in the locker room, or at convenient aid stations for re-warming purposes if at all possible:

- A supply of water or sports drinks for rehydration purposes as well as warm fluids for possible re-warming purposes.
 - Fluids that may freeze during events in subfreezing temperatures may need to be placed in insulated containers or replaced intermittently.
- Heat packs, blankets, additional clothing, and external heaters, if feasible, for active re-warming.
- Flexible rectal thermometer probe to assess core body temperature.
 - Rectal temperature has been identified as the best combination of practicality and accuracy for assessing core temperature in the field.
 - The rectal thermometer used should be a low-reading thermometer (i.e. capable of measuring temperatures below 95.6F [35.6C]).
- Telephone or 2-way radio to communicate with additional medical personnel and to summon emergency medical transportation.
- Tub, wading pool, or whirlpool for immersion warming treatments (including a thermometer and additional warm water to maintain required temperatures)

Policy on cold weather activity:

1. If the temperature without windchill is -25 or below all activity should be cancelled.
2. If the combination of temperature and windchill reach -25 or below all activity should be cancelled. Refer to the chart below.
3. If the temperature with wind under 10km/h is between -11 and -24 degrees outdoor exposure should be limited to 60 minutes.
4. If the combination of temperature and windchill is between -11 and -24 degrees outdoor exposure should be limited to 60 minutes.
5. If the temperature with wind under 10km/h is between 0 and -10 degrees outdoor exposure should be limited to 90 minutes.
6. If the combination of temperature and windchill is between 0 and -10 degrees outdoor exposure should be limited to 90 minutes.

Estimating Wind Chill

Wind Speed (km/h)	What to Look for When Estimating Wind Speed	Temperature (°C)									
		0	-5	-10	-15	-20	-25	-30	-35	-40	-45
10	Wind felt on face; wind vane begins to move.	-3	-9	-15	-21	-27	-33	-39	-45	-51	-57
20	Small flags extended.	-5	-12	-18	-24	-30	-37	-43	-49	-56	-62
30	Wind raises loose paper, large flags flap and small tree branches move.	-6	-13	-20	-26	-33	-39	-45	-52	-59	-65
40	Small trees begin to sway and large flags extend and flap strongly.	-7	-14	-21	-27	-34	-41	-48	-54	-61	-68
50	Large branches of trees move, telephone wires whistle and it is hard to use an umbrella.	-8	-15	-22	-29	-35	-42	-49	-56	-63	-69
60	Trees bend and walking against the wind is hard.	-9	-16	-23	-30	-36	-43	-50	-57	-64	-71

How extreme cold weather affects football:

➤ Under normal playing conditions a player's skin temperature is 22 C and his body's core temperature is 37 C.

