Cold Stress and Cold Exposure:

Any individual can lose body heat when exposed to cold air, but when the physically active cannot maintain heat, cold exposure can be uncomfortable, impair performance and may be life-threatening. Cold stress may develop as the result of environmental or non-environmental factors. The NATA position statement (2008) states that injuries from cold exposure are due to a combination of low air or water temperatures and the influence of wind on the body’s ability to maintain a normothermic core temperature, due to localized exposure of extremities to cold air or surface. Non-environmental factors that may result in the signs and symptoms of cold stress include (but are not limited to) previous cold weather injury (CWI), race, geological origin, ambient temperature, use of medications, clothing attire, fatigue, hydration, age, activity, body size/composition, aerobic fitness level, acclimatization and low caloric intake. Nicotine, alcohol and other drugs may also contribute to how a person adapts to the stresses of cold.

Cold Injuries include the following:

1. Hypothermia - is defined as a decrease in core body temperature below 95°F
2. Frostbite is actual freezing of body tissues and is a localized response to a cold, dry environment, yet moisture from sweating may exacerbate frostbite due to increased tissue cooling.
3. Chilblain, also known as pernio, is an injury associated with extended exposure (1–5 hours) to cold, wet conditions. Chilblain is an exaggerated or uncharacteristic inflammatory response to cold exposure.
4. Immersion (Trench) Foot. Immersion foot typically occurs with prolonged exposure (12 hours to 4 days) to cold, wet conditions, usually in temperatures ranging from 32°F to 65°F

Important factors to decrease the possibility of cold exposure injury or illness are:

- Wear appropriate clothing (dress in layers and try to stay dry),
- Maintain energy levels (via the use of meals, energy snacks and carbohydrate/electrolyte drinks),
- Stay hydrated but avoid alcohol, caffeine, nicotine and other drugs that cause water loss, vasodilatation or vasoconstriction of skin vessels
- Minimize fatigue and exhaustion as these deplete energy levels,
- Warm-up properly prior to activity,
- Use a partner during cold weather workouts.

Cold Exposure:

- Breathing of cold air can trigger asthma attack (bronchospasm)
- Coughing, chest tightness, burning sensation in throat and nasal passage
- Reduction of strength, power, endurance, and aerobic activity
- Core body temperature reduction, causing a reduction of motor output
**Cold Recognition:**

- Shivering, a means for the body to generate heat
- Excessive shivering contributes to fatigue, loss of motor skills
- Numbness and pain in fingers, toes, ears, and exposed facial tissue
- Drop in core temperature; athlete exhibits sluggishness, slowed speech, disoriented

**Outside participation limited:**

*When temperature or wind-chill (which is lower than actual temperature) reaches 25° F. Frostbite can occur in 30 minutes or less! Limitations will be based on the NOAA wind chill and sport participation chart as set out by the NATA Environmental Cold Injuries position statement.*

**Termination of outside participation:**

When temperature or wind-chill (which is lower than actual temperature) reaches 15° F.

**TEMPERATURE /WIND-CHILL**

**GUIDELINES FOR PRACTICE & CONDITIONING SESSIONS OUTDOORS**

**32° F - 25° F:** practice or conditioning sessions outside must be limited to NO more than 60 minutes followed by a 10 minute warming period inside an enclosed structure or building before returning outside. The total exposure time outside can be no more than 120 minutes.

- Athletes must be aware of potential cold injury and notify personnel of the potential for cold exposure and frostbite
- Athletes are to cover all exposed skin as possible

**25° F - 15° F:** practice or conditioning sessions outside must be limited to NO more than 30 minutes followed by a 15 minute warming period inside an enclosed structure or building before returning outside. The total exposure time outside can be no more than 60 minutes.

- Athletes must be aware of potential cold injury and notify personnel of the potential for cold exposure and frostbite
- Athletes are to cover all exposed skin as possible

**15° F – and below:** NO practice or conditioning session may take place outside
CLOTHING:

Clothing is one of the most important parts of keeping the athlete’s body warm. Athletes should dress in layers and try and stay dry. Layers can be added or removed depending on temperature, activity and wind-chill. Athletes should layer themselves with wicking fabric next to the body, followed by lightweight pile or wool layers for warmth. Athletes should use a wind block garment to avoid wind-chill during workouts. Heat loss from the head and neck may be as much as 50% of total heat loss; therefore the head and neck should be covered during cold conditions. Other extremities should be covered at all times to protect from the wind-chill. Gloves, hats and scarves should be used. Protecting the ears and nose is equally important. No one should be wearing short sleeves outside in cold weather.

First Aid: Cold Exposure

Intense cold can freeze the water in the body's cells (frostbite). Over time, exposure to cold may cause the body's overall temperature to drop (hypothermia). The result can be death.

The brain carries a temperature regulator that keeps the body near a healthy 98°F. But prolonged exposure to extreme cold may confuse this natural thermostat. Remember: When body temperature goes way out of line, trouble isn't far behind.

1. Raise Body Temperature
   - In case of frostbite, wrap the area in a soft, loose cloth and seek medical attention right away. If medical care is not nearby, hold the affected area under warm, but not scalding, water until normal skin color returns. Don’t cause additional tissue damage by rubbing the area affected by frostbite.
   - In case of hypothermia, wrap him or her in warm, dry blankets. Be sure to remove any wet clothing first.

2. Give Warm Liquids
   - Provide warm liquids if the person is alert and aware of his or her surroundings. Tea or hot soups are good choices.

Seek medical help if any of the following is true:

- The person's fingers, toes, nose, or ears are numb.
- The affected body part looks yellow-white or patchy blue.

Call 911 immediately if the victim has any of the following:

- Exceptionally cold skin
- Drowsiness, disorientation, or loss of consciousness
- Loss of muscle control

While you wait for help:

1. Reassure the person.
2. Treat for shock or provide rescue breathing or CPR, if needed.