

ACSM Information On...

Exercising in Hot and Cold Environments



Millions of people live in areas where extreme changes in outdoor temperatures occur. Some may see environmental temperatures fluctuate from 85-90 °F (29-32 °C) during the summer months and then drop to 25-32 °F (-4-0 °C) when winter arrives. Many people continue to participate in outdoor activities when seasonal changes occur. This may include running or cycling on a hot summer day; or cross-country skiing or snowshoeing during the winter. While it is very important to remain physically active throughout the year, it is equally important to prevent the risk for environmental-related injury.

What happens when you exercise in a hot or cold environment?

Normal body temperature is roughly 98.6 °F (37 °C) and is influenced by environmental changes and physical exertion. During exercise, heat is produced from muscles, which causes a rise in body temperature. To manage the increase in body heat, heart rate increases to help deliver blood to the surface of the skin for heat release. Sweating is also initiated to help with cooling. Hyperthermia is a condition when body temperature rises and may lead to injury when the body exceeds 102.2 °F (39°C). During exercise in the cold, the heat produced from contracting muscles may not be enough to prevent a drop in body temperature. Hypothermia is a

condition when body temperature decreases, and the risk for injury increases in some people when body temperature falls below 96.5 °F (35.8 °C).

Symptoms of heat and cold stress

Pay attention to following symptoms when exercising on a hot day:

- Higher than normal heart rate during exercise.
- Very rapid breathing.
- Heavy sweating, sometimes followed by a decrease in sweating.
- Confusion, dizziness or disorientation.
- Pale skin.
- Extreme thirst and dehydration.

Pay attention to the following symptoms when exercising on a cold day:

- Decreased ability to perform small tasks with your hands due to loss of feeling from the cold.
- Hands and feet begin to get cold.
- Mild shivering.
- Areas of the body exposed to the environment may appear red and/or feel painful.
- Dehydration may also occur in the cold because you may forget to drink fluids.

What to do if you get too hot or cold

If you or someone you know has any of the above symptoms, the following treatments will assist with recovery from being too hot or cold.

Treatments for heat stress

- Stop exercising.
- Move to a shaded or air-conditioned area.
- Remove excess clothing or equipment.
- Drink cold beverages.
- Sit in front of a fan.
- Put chilled cloth around neck.
- Place entire body in cool water.

If you are feeling very hot and begin to have trouble concentrating, contact emergency services immediately. In addition, if any of the above symptoms persist despite treatment, contact emergency services.

Treatments for cold stress

- Move to a warm environment.
- Remove cold and wet cloths.
- Find access to warm air, such as heaters or fireplace.
- Use electric or non-electric blankets.
- Drink warm beverages.

Heat and cold stress prevention

Several strategies may assist you with preventing heat or cold injury and might better prepare you for exercise in these environments.

The following will help reduce heat-related injury:

- Improve your level of aerobic fitness. Those who are more aerobically fit can adapt better during exercise in the heat.
- When suddenly exposed to a hot environment (e.g., when taking a vacation to a warmer climate), reduce exercise intensity and length of exercise session. It can take 10 to 14 days of repeated exercise in a hot environment to adapt to the conditions.
- Pay attention to hydration status and be sure to drink plenty of fluids. Signs of dehydration may be a one percent change in body weight, low urine volume in 24 hours, or dark-colored urine.
- When outdoor temperature is above 80 °F (26.6 °C) and humidity is greater than 75 percent, the risk for heat injury is high. It may be best to exercise indoors.
- Perform exercise during cooler times of the day such as early morning or late evening.
- Wear loose fitting, lightweight, and moisture wicking clothing.

The following will help reduce cold related injury:

- Cover your head, face, legs, feet, and hands. These areas are at greater risk for injury.
- The risk for cold injury is higher when the conditions are wet (e.g., snow or rain).
- Wear appropriate footwear to prevent slipping.
- Adjust clothing and layers to help maintain warmth but prevent too much sweating.
- Be aware of the wind speed. For example, if the air temperature is 30 °F (-1.1 °C) and the wind speed is 10 mph, then the actual temperature will be 21 °F (-6.1 °C).
- Avoid exercise if possible when temperature falls below -8 °F (-27 °C).

Tissue injury can occur in 30 minutes or less under these conditions.

Conclusion

Maintaining physical activity throughout seasonal changes is very important for general health and well-being. Recognizing symptoms of heat or cold stress, knowing simple treatment options and understanding preventative strategies will reduce the occurrence of injury. This will allow you to safely perform outdoor activities under extreme weather conditions.

Staying Active Pays Off!

Those who are physically active tend to live longer, healthier lives. Research shows that moderate physical activity—such as 30 minutes a day of brisk walking—significantly contributes to a longer life. Even a person with health risk factors like high blood pressure, depression, diabetes or a smoking habit can gain real benefits from incorporating regular physical activity into their daily life.

As many dieters have found, exercise can also help you achieve weight loss goals. What's more, regular exercise can help lower blood pressure, control blood sugar, improve cholesterol levels and build stronger, denser bones. Exercise helps improve your mental well-being too.

A Complete Physical Activity Program

Regular physical activity provides many health benefits. While it's not required, working with an exercise professional can help you reach your fitness goals, tailor exercises to your abilities and most importantly, minimize your risk of injury. You should expect the exercise professional to ask you to fill out an exercise pre-participation health screening. This form will ask if you exercise regularly and if you have any health concerns that should prompt you to see your healthcare provider before getting started. The following precautions will help you safely participate in exercise programs:

If you DO NOT exercise regularly:

If you have not been diagnosed by a doctor with, AND do not have signs or symptoms of cardiovascular, metabolic or kidney disease, THEN you can start right away with light to moderate intensity exercise. You can gradually build up to vigorous exercise if you stay free of any symptoms of health problems.

If you have ever been diagnosed by a doctor, with OR have signs/symptoms of cardiovascular, metabolic or kidney disease, THEN it is recommended to seek medical clearance before beginning an exercise program. Once you get medical clearance, you should start with light to moderate intensity. You can gradually build up to vigorous exercise if you stay free of any symptoms of health problems.

If you DO exercise regularly:

If you have not been diagnosed with, AND do not have signs or symptoms of cardiovascular, metabolic, or kidney disease, you can continue with moderate exercise or gradually build to vigorous exercise intensity.

If you have been diagnosed with cardiovascular, metabolic, or kidney disease AND do not have any sign/symptoms of health problems, then you can continue exercising at a moderate intensity. If you received medical clearance within the last 12 months AND your symptoms have not changed, then can continue with moderate exercise or gradually build to vigorous exercise intensity.

If at any time you develop a sign or symptom of cardiovascular, metabolic or kidney disease, discontinue exercise and seek a doctor's clearance right away. Then, after getting medical clearance, you may continue your moderate intensity exercise program and gradually progress your effort.

Getting Started with an Exercise Program

A well-rounded exercise program includes aerobic, strength training exercises, but not necessarily in the same session. This blend helps maintain or improve overall health and function. So, it is important to choose exercises you enjoy and can fit into your schedule.

Not all exercise programs are suitable for everyone. Activities should be carried out at an effort level that is comfortable for you. You should stop participation in any exercise activity that causes pain. In such event, you should consult with your health care professional immediately.

ACSM recommends you accumulate at least 30 minutes of moderate-intensity physical activity (working hard enough to break a sweat, but still able to carry on a conversation) most days per week, or 20 minutes of more vigorous activity three days per week. Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation.

Examples of typical aerobic exercises are: walking, running, stair climbing, cycling, rowing, cross country skiing and swimming. Examples of common strength training exercises are: weight machines, free weights and resistance bands. Flexibility exercises can include: stretches of muscles around different joints and yoga.

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