

# LABORATORY 12.1



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Name \_\_\_\_\_ Date \_\_\_\_\_  
Instructor \_\_\_\_\_ Section \_\_\_\_\_

## Exercising in Harsh Environments

Answer the following true-or-false questions related to exercise and the environment. If a statement is false, change it to make it true. You can check your answers against those provided below.

### TRUE OR FALSE

1. Evaporation is the primary means of heat loss during exercise in a hot environment.  
T F \_\_\_\_\_
2. When exercising in a hot, humid environment, you should wear loose, dark-colored clothing.  
T F \_\_\_\_\_
3. Exercise at high altitude increases the amount of oxygen in the blood.  
T F \_\_\_\_\_
4. At high altitude, it is necessary to reduce the intensity of exercise to stay within your target heart rate range.  
T F \_\_\_\_\_
5. Ozone levels are highest during cool winter days.  
T F \_\_\_\_\_
6. Humans regulate their body temperature around the set point of 98.6°F.  
T F \_\_\_\_\_
7. Low-intensity exercise using small muscle groups produces more body heat than high-intensity exercise incorporating large muscle groups.  
T F \_\_\_\_\_
8. An increase in body temperature during exercise in a hot environment will result in larger increases in heart rate than will exercise in a cool environment.  
T F \_\_\_\_\_
9. The strategy for exercising in the cold is to wear enough clothing to trap just enough heat to maintain body temperature, but not to overheat.  
T F \_\_\_\_\_
10. Heat injuries are nonfatal conditions that result in cramps and fatigue.  
T F \_\_\_\_\_

### ANSWERS

1. True: Of the ways you can lose heat during exercise, evaporation is the primary one because the process of evaporation takes heat with the water vapor that is formed. The other methods do not use this principle of physics and are not as efficient in removing heat.
2. False: When exercising in a hot, humid environment, you should wear loose, light-colored clothing.
3. False: Exercise at high altitude reduces the amount of oxygen in the blood.
4. True: The low oxygen available to the blood causes the heart to work faster as it tries to transport more to the muscles. Thus, some of the increase in heart rate is due to low oxygen.
5. False: Ozone levels are highest during hot summer days.
6. True: Humans are homeotherms (meaning “to maintain the same temperature”). Thus, temperature changes due to environmental or exercise stress must be counteracted by the physiological systems in the body to maintain body temperature around “normal.”
7. False: High-intensity exercise using large muscle groups produces more body heat than low-intensity exercise incorporating small muscle groups.

## LABORATORY 12.1 (continued)

8. True: An increase in heart rate during exercise is due to the body trying to transport nutrients to the muscles. If exercise is done in a hot environment, the body must pump blood faster in an attempt to cool the body as well.
9. True: Insulation is the key to comfortable exercise in the cold. If there is not enough trapped heat, the body will lose too much and injury or death could occur. If too much heat is trapped, you will start sweating. If you get wet with sweat, heat transfer away from the body could be dramatic and life-threatening as well.
10. False: Heat injuries are serious and can result in damage to the nervous system and, in extreme cases, death.

Answer the three questions below to help you increase your awareness of safety issues in harsh environments.

1. If your friend planned to exercise in a warm, high-humidity environment, what safety advice would you give to him or her?
2. What advice would you give to a friend exercising in a cold climate?
3. What can you do to minimize the amount of air pollution in your immediate environment?

To submit the completed lab, save the form to your computer and email it to your instructor or upload it to their digital dropbox as directed.