



JROTC Virtual Learning

LET 2 Wellness, Fitness, and First Aid
Heat Injuries [U4C2L7]

April 21, 2020



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Courtesy of Army JROTC

U4C2L7

Heat Injuries

Key Words:

Dehydration

Fatigue

Heat Cramps

Heat Exhaustion

Heatstroke

Perspiring

Ventilation

What You Will Learn to Do

Determine first aid treatment for heat-related injuries

Linked Core Abilities

- Do your share as a good citizen in your school, community, country, and the world

Skills and Knowledge You Will Gain Along the Way

- Explain the cause and effect of heat injuries
- Associate the symptoms of the three types of heat injuries
- Explain how to treat heat cramps
- Explain how to treat heat exhaustion
- Explain how to treat heatstroke

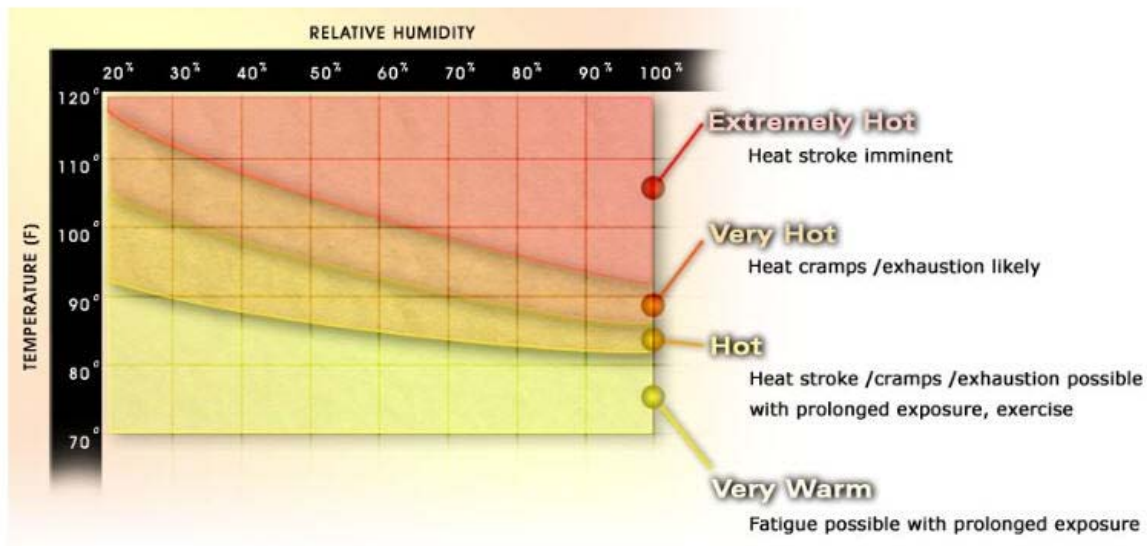
Introduction

Participating in any vigorous outdoor exercise or activity on an extremely hot day can lead to serious injuries if you are not prepared. Knowing how to recognize the signs and symptoms of heat-related injuries can help you prevent a life-threatening situation.

Causes of Heat Injuries

For your body to work properly, its temperature must be normal, which is around 98° Fahrenheit. You risk health problems, and even death, if your body gets too cold or too hot.

Heat injuries can occur when people are exposed to high temperatures and high humidity. When it is hot, your body cools itself by **perspiring**. During perspiration, sweat evaporates and carries heat away from your body. However, you risk heat injuries when you lose large amounts of water, salt, or both, through perspiring, and do not replace the lost fluid quickly enough. This results in **dehydration**. You also risk injury in high humidity when sweat does not evaporate as rapidly as needed to keep the body cool, causing heat to build up. The body will then perspire even more in an attempt to cool itself, losing dangerous amounts of fluids in the process.



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People who may be at risk of heat injuries include those who exercise or work outside in high temperatures and high humidity, or those whose bodies do not regulate heat well, such as older people, overweight people, or babies.

Factors to Consider

When perspiring, the body can lose more than a quart of water per hour. Therefore, since the body depends on water to cool itself, you should drink plenty of water when

working or playing in hot weather. Salt, which helps the body to retain water, is also lost through perspiring. In most cases, however, you do not need to consume extra salt because you obtain adequate amounts through a balanced diet. In fact, consuming salt during hot weather activities may pull water away from muscles and other tissues where it is needed and into your digestive tract.

In addition to water intake and diet, consider the type of clothing you wear in hot weather. Wear clothes that fit loosely but also protect the body from sunburn. Wear natural fabrics, like cotton, through which perspiration evaporates better. Some activities require extra clothing or equipment, such as football or hiking with full camping gear. Soldiers may have problems acclimating to hot weather



because of the type and amount of clothing and equipment they must wear. In all of these cases, protective gear and equipment may reduce **ventilation** needed to cool the body. So, ensure clothing or uniforms fit well but are not tight, and remove extra pieces of clothing and equipment as soon as they are no longer needed.

Types of Heat Injuries

Overheating of the body progresses in stages. At first, a person may suffer heat cramps. If the person ignores the symptoms and continues exercising, working, or playing in the heat, he or she may experience heat exhaustion. If heat exhaustion is left untreated, heatstroke may follow and can be fatal.

Heat Cramps

Heat cramps are muscular pains and spasms caused by the loss of salt from the body through heavy perspiring. Other symptoms may include stomach cramps, wet skin, and extreme thirst.



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Treatment of Heat Cramps

Heat Cramps

- #1 Get the victim to a cooler location
- #2 Lightly stretch and gently massage affected muscles to relieve spasms
- #3 Give sips of up to a half glass of cool water every 15 minutes
- #4 Discontinue liquids if victim is nauseated



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Seek medical aid if cramps continue.

Heat Exhaustion

When people work or exercise heavily in high temperatures or in a hot, humid place, the body loses fluids through heavy sweating. **Heat exhaustion** occurs when fluids are not adequately replaced or when sweat does not evaporate because of high humidity or too many layers of clothing, causing the body to sweat even more. When the body loses a great amount of fluid, less blood flows to vital organs, resulting in a form of shock.

Heat Exhaustion Symptoms

- Heavy sweating
- Weakness or faintness
- Dizziness or drowsiness
- Cool, pale, moist skin
- Headaches
- Loss of appetite
- Heat cramps
- Nausea with or without vomiting
- Confusion



- Chills
- Rapid breathing and pulse
- Body temperature above normal but below 102°F.

Treatment of Heat Exhaustion

Heat Exhaustion

- #1 Get victim to lie down in a cool place
- #2 Loosen or remove clothing
- #3 Apply cool, wet cloths
- #4 Fan or move victim to air-conditioned place
- #5 If victim is conscious, give sips of up to a half glass of cool water every 15 minutes *
- #6 Discontinue water if victim is nauseated
- #7 Seek immediate medical attention if vomiting occurs



** Be sure water is consumed slowly*

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Heatstroke

Heatstroke, also known as sunstroke, is a medical emergency that can be fatal if not treated as soon as possible. The victim's cooling mechanism stops working when the body perspires so much that no fluids remain to produce sweat. Since the body can no longer sweat and sweating is its defense against overheating, body temperature rises and skin becomes red and flushed. If body temperature rises high enough, brain damage and death can occur. Therefore, when you encounter a heatstroke victim, you must cool the victim as fast as possible.



Heatstroke Symptoms

- No sweating
- Hot, dry, red skin
- Headache, dizziness, nausea, and vomiting
- Fast, weak pulse and shallow respiration

- Seizures and mental confusion
- Unconsciousness or sudden collapse
- Very high body temperature.

Treatment of Heatstroke

Heat Stroke

- #1** Call 9-1-1 or emergency medical services
- #2** Move victim to a cooler environment (Use fans and air conditioners)
- #3** Remove clothing (Use extreme caution)
- #4** Try a cool bath, sponging, or wet sheet to reduce body temperature
- #5** Watch for breathing problems



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Prevention of Heat Injuries

You can prevent heat injuries by taking a few simple precautions and exercising a little common sense. If possible, limit your exposure to high temperatures and avoid working or exercising outside in hot, humid weather. During work or training periods, or in extremely hot climates, drink at least one quart of water every hour. Also, remember to dress for the hot weather and the activity being performed.

In the military or in the field, prevention of heat injuries is both an individual and leadership responsibility. Leaders should identify people who have a high risk of injury — basic trainees, overweight individuals, and individuals who have symptoms of **fatigue** or a previous history of heat injury. If possible, leaders should schedule heavy or strenuous activities during cooler morning or evening hours

Conclusion

Vigorous exercise in hot weather can lead to heat cramps, heat exhaustion, or heatstroke. Familiarize yourself with the symptoms of these injuries, which can be serious or even fatal if left untreated. By knowing the signs of heat injuries, and taking precautions, you should be able to enjoy exercising outdoors, even in hot weather.



Lesson Check-up

1. What are the types of heat injury?
2. What symptoms would a victim present if suffering heat exhaustion? How would you treat him?
3. What symptoms would a victim present if suffering from a heatstroke? What first aid would you administer?

Student Learning Plan

Unit 4: Wellness, Fitness, and First Aid

Heat Injuries [U4C2L7]



What you will accomplish in this lesson:

Determine first aid for heat injuries



Why this lesson is important:

Participating in any vigorous outdoor exercise or activity on an extremely hot day can lead to serious injuries if you are not prepared. Knowing how to recognize the signs and symptoms of heat related injuries could help you prevent a life-threatening accident. In this learning plan, you will learn how to provide first aid for heat related injuries.



What you will learn in this lesson:

- Explain the cause of heat injuries
- Describe the symptoms of the three types of heat injuries
- Explain how to treat heat cramps
- Explain how to treat heat exhaustion
- Explain how to treat heat stroke
- Describe how to prevent heat injuries
- Define key words: dehydration, fatigue, heat cramps, heat exhaustion, heat stroke, perspiring, ventilation



You will have successfully met this lesson's purpose:

- by summarizing symptoms and treatment for heat injuries
- when you list symptoms of heat cramps
- when you list symptoms of heat exhaustion
- when you list symptoms of heat stroke
- when you describe first aid for heat cramps
- when you describe first aid for heat exhaustion
- when you describe first aid for heat stroke



Learning Activities:

These learning activities are designed to help you learn the target skills and knowledge for this lesson. Your instructor may assign additional or alternative learning activities.

INQUIRE PHASE: What do you already know?



1. THINK ABOUT what you know about heat injuries. PREPARE for this lesson by discussing *What you will accomplish in this lesson; What you will learn in this lesson; Why this lesson is important, and When you will have successfully met this lesson's purpose.*
2. On your own, COMPLETE Exercise #1: Agree/Disagree. REVIEW the correct answers with your class.
3. REFLECT on what you need to learn about heat injuries. ANSWER the reflection questions presented by your instructor.



GATHER PHASE: So, what else do you need to know or learn?

- Part 1**
- _____ 1. VIEW the presentation on the symptoms of heat injuries.
 - _____ 2. With your team, CREATE a T-Chart on the causes and symptoms of your assigned heat injury. JIGSAW your student text as needed to learn more about your topic. PREPARE to present your topic to the class.
 - _____ 3. REFLECT on the causes and symptoms of heat injuries. ANSWER the reflection questions presented by your instructor.

- Part 2**
- _____ 4. VIEW the presentation on first aid for heat injuries. LISTEN to a briefing on preventing heat injuries.
 - _____ 5. With your team, CREATE a Flow Map on first aid for your assigned heat injury. JIGSAW your student text as needed to learn more about your topic. PREPARE to present your topic to the class.
 - _____ 6. REFLECT on how to treat heat injuries. ANSWER the reflection questions presented by your instructor.

PROCESS PHASE: Now what can you do with this new information you've learned? ...



- Part 1**
- _____ 1. With your team, PRESENT your assigned causes and symptoms topic to the class. TAKE NOTES on other teams' presentations to learn more about each topic.
 - _____ 2. REFLECT on how heat injuries occur. ANSWER the reflection questions presented by your instructor.

- Part 2**
- _____ 3. With your team, PRESENT your assigned first aid topic to the class. TAKE NOTES on other teams' presentations to learn more about each topic.
 - _____ 4. REFLECT on your readiness to give first aid for heat injuries. ANSWER the reflection questions presented by your instructor.



Assessment Activities:

APPLY PHASE: What else can you do with what you've learned today?



- _____ 1. COMPLETE the Heat Injuries Performance Assessment Task. SUBMIT your completed performance assessment task to your instructor for feedback and a grade.
- _____ 2. REVIEW the key words of this lesson.
- _____ 3. REFLECT on what you have learned in this lesson and how you might use it in the future.



Self-Paced Learning and Assessment Activities:

Independently complete the activities outlined below:

1. **Inquire Phase:** Complete the Learning Activities 1 – 3 or as modified by your instructor.
2. **Gather Phase:** Complete the Learning Activities 1 – 6 or as modified by your instructor.
3. **Process Phase:** Complete the Learning Activities 1 – 4 or as modified by your instructor.
4. **Apply Phase:** Complete the Learning Activities 1 – 3 or as modified by your instructor.

Exercise 1: Agree/Disagree

Directions: Circle true if you agree with the statement, and circle false if you disagree.

- True False 1. You can become dehydrated when it is raining.
- True False 2. It's a good idea to eat more salt in hot weather.
- True False 3. Heat exhaustion is a form of shock.
- True False 4. Heat exhaustion can be fatal.
- True False 5. Victims of heat stroke should be encouraged to drink as much water as possible as quickly as possible.
- True False 6. Heat stroke is less serious than heat exhaustion.
- True False 7. Heat cramps are caused by the loss of salt from the body.
- True False 8. Soldiers may be more susceptible to heat injuries because of the clothing and equipment they must wear.
- True False 9. The risk of heat injury declines in humid weather because the body does not lose as much water.
- True False 10. Heat stroke is characterized by heavy sweating.

Performance Assessment Task

Unit 4: Wellness, Fitness, and First Aid

Heat Injuries [U4C2L7]

This performance assessment task gives you an opportunity to document your achievement of the lesson's competency:

Determine first aid for heat injuries



Directions

For this performance assessment task, you will summarize first aid for heat injuries. For this assessment you will:

1. Create How-To cards for heat injury symptoms and first aid.
2. Use the attached scoring guide criteria for what you need to do to complete this task.
3. Submit your completed performance assessment task and scoring guide to your instructor for evaluation and a grade.

RECOMMENDATION: It is recommended that you add this performance assessment task to your Cadet Portfolio.

Heat Injuries Performance Assessment Task Scoring Guide

<i>Criteria</i>	<i>Ratings</i>
1. Your Symptoms of Heat Cramps card lists four possible symptoms	met not met
2. Your Symptoms of Heat Exhaustion card lists 12 possible symptoms	met not met
3. Your Symptoms of Heat Stroke card lists seven possible symptoms	met not met
4. Your First Aid for Heat Cramps card describes first aid procedures explained in the student text or other reference material	met not met
5. Your First Aid for Heat Exhaustion card describes first aid procedures explained in the student text or other reference material	met not met
6. Your First Aid for Heat Stroke card describes first aid procedures explained in the student text or other reference material	met not met
7. Your cards are complete, accurate, and include relevant safety procedures	met not met

Comments:

Name: _____ ***Date:*** _____

Evaluator's Signature: _____ ***Date:*** _____