UNIT TITLE: 5.0 Wellness, Fitness, and First Aid

UNIT OBJECTIVE: (A written or oral examination will be administered following a presentation of each topic.)

5.0 In this unit, you will learn how to use exercise and nutrition to maximize your physical well-being, gain awareness of the dangers to wellness of alcohol and other drugs, and the principles and techniques of first aid.

LESSON TOPIC: 5.1 Choosing the Right Exercise Program for You

ALLOTTED SESSIONS: 5

LESSON TOPIC OBJECTIVES:
5.1.1 Classify exercises as aerobic, anaerobic, isometric, and isotonic.
5.1.2 Compare the benefits of aerobic, anaerobic, isometric, and isotonic exercise.
5.1.3 Identify the benefits of regular exercise.
5.1.4 Determine the essential components of a good exercise program.

LESSON TOPIC: 5.2 Evaluating Your Physical Fitness

ALLOTTED SESSIONS: 2.5

LESSON TOPIC OBJECTIVES:
5.2.1 Explain why stretching is important to building healthy skills.
5.2.2 Describe the proper techniques for the three basic physical fitness exercises evaluated in NJROTC.
5.2.3 Describe the Presidential Physical Fitness Award.
5.2.4 Identify the events in the Presidential Physical Fitness Award.

LESSON TOPIC: 5.3 You Are What You Eat

ALLOTTED SESSIONS: 2

LESSON TOPIC OBJECTIVES:
5.3.1 Explain how calories consumed versus calories used affects body weight.
5.3.2 Identify daily required food and portions.
5.3.3 Identify sources and benefits of fiber in diet.
5.3.4 Describe the importance of water.
5.3.5 Describe the possible effects of a diet high in fat and cholesterol.
5.3.6 Explain why salt, sugar, and caffeine should be used in moderation.

LESSON TOPIC: 5.4 Nutrition: Nourishing Your Body

ALLOTTED SESSIONS: 3

LESSON TOPIC OBJECTIVES:
5.4.1 Explain the six nutrients your body requires.
5.4.2 Explain the difference between simple and complex carbohydrates.
5.4.3 Describe the role fat and cholesterol play in body functioning.
5.4.4 Compare saturated and unsaturated fats.
5.4.5 Describe ways to reduce cholesterol levels.
5.4.6 Compare the functions of vitamins, carbohydrates, fats, and proteins.
5.4.7 Identify food sources of vitamins and minerals.

LESSON TOPIC: 5.5 Dietary Guidelines

ALLOTTED SESSIONS: 1
LESSON TOPIC OBJECTIVES:
5.5.1 Identify the nine National Academy of Sciences dietary goals.
5.5.2 Identify factors that affect the nutritional requirements of individuals at various life stages.
5.5.3 Identify signs and symptoms of anorexia nervosa and bulimia.
5.5.4 Examine varying viewpoints on vitamin and mineral supplement usage.
5.5.5 Calculate your personal blueprint.

LESSON TOPIC: 5.5 Controlling Fat

ALLOTTED SESSIONS: 5

LESSON TOPIC OBJECTIVES:
5.6.1 Identify the risks of obesity.
5.6.2 Explore tendencies that encourage fat accumulation.
5.6.3 Define current and desired state for healthy lifestyle.
5.6.4 Identify steps that can lead to a lean body fat content.
5.6.5 Relate food intake and physical activity to weight control.

LESSON TOPIC: 5.7 Taking Care of Yourself

ALLOTTED SESSIONS: 6

LESSON TOPIC OBJECTIVES:
5.7.1 Recognize the benefits of maintaining good hygiene habits.
5.7.2 Explain how to keep clean in field conditions.
5.7.3 Explain the correlation between physical fitness and hygiene.
5.7.4 Identify possible results of poor sanitation.
5.7.5 Detail procedures of disinfecting water.
5.7.6 Explain how to guard against food poisoning and the spread of germs through waste.

LESSON TOPIC: 5.8 Understanding and Controlling Stress

ALLOTTED SESSIONS: 6

LESSON TOPIC OBJECTIVES:
5.8.1 Differentiate between stress and anxiety in overall health.
5.8.2 Identify the physical and psychological effects of stress.
5.8.3 Practice prevention of stress overload including relaxation and anger management techniques.
5.8.4 Identify leadership strategies that promote healthy stress levels within a group.
5.8.5 Explore positive ways to deal with depression and anxiety.

LESSON TOPIC: 5.9 Drug Awareness

ALLOTTED SESSIONS: 5.5

LESSON TOPIC OBJECTIVES:
5.9.1 Identify commonly abused substances.
5.9.2 Recognize the differences among drug use, misuse, and abuse.
5.9.3 Explain reasons why people might use, misuse, or abuse alcohol or drugs.
5.9.4 Identify the risks associated with alcohol and various drugs.
5.9.5 Explain the effects of alcohol and drug use, misuse, and abuse on daily life.

LESSON TOPIC: 5.10 First Aid for Emergency and Nonemergency Situations

ALLOTTED SESSIONS: 9

LESSON TOPIC OBJECTIVES:
5.10.1 Assess first aid situations.
5.10.2 Demonstrate life-saving skills in emergencies.
5.10.3 Determine first aid procedures for a bleeding victim.
5.10.4 Give first aid treatment for shock, fractures, strains, and sprains.
5.10.5 Give first aid treatment for burns, wounds, bruises, and poisoning.
5.10.6 Give first aid treatment for heat- and cold-related injuries.
5.10.7 Give first aid treatment for bites, stings, and poisonous hazards.
INSTRUCTIONAL REFERENCES:
1. Introduction to the Navy Junior Reserve Officers Training Corps

INSTRUCTIONAL AIDS:
1. Chalkboard and equipment
2. Computer
3. LCD projector and screen
4. PS2 Mouse
5. NS1 Digital Videodisc

CRITERION TEST:
1. A written test will be given on this lesson.

HOMEWORK:
1. Study Unit V, Wellness, Fitness, and First Aid.

ASSIGNMENT(S): None

OUTLINE OF INSTRUCTION

I. INTRODUCTION

A. Establish contact.

1. Introduce the topic for this lesson: “Choosing the Right Exercise Program for You.”

B. Establish readiness.

1. Motivating statements

   Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.

2. Lesson overview

   In this lesson, you will learn to identify the benefits of exercise in general. You will also learn the different classes of exercise—aerobic, anaerobic, isometric, and isotonic—and the benefits of each specific type. In addition, you will be able to determine the essential components of a good exercise program.

INSTRUCTOR ACTIVITY

Ensure the NS1 DVD is in the DVD player with the label facing up.

Get the cadets ready to learn.

Trainee motivation

Learning incentives

Bring out the importance of the material being presented.
II. PRESENTATION

A. Introduction

Explain that what you eat and how much you exercise can directly affect how you look and feel. When it comes to your appearance, diet and exercise help you maintain proper weight, muscle tone, and healthy hair and skin. When it comes to your health, diet and exercise can lower your risk of heart disease, high blood pressure, and other health problems, including depression. Staying healthy and looking good means following a balanced diet and exercising regularly. This chapter discusses guidelines for a healthier lifestyle that will help keep you fit and feeling great, now and throughout your life. This first chapter specifically covers exercise, including types of exercises and how to stick with an exercise program.

Explain that some people consider exercise a chore; others think it’s fun. There are even those who avoid it altogether. With the right outlook, however, everyone can find an exercise program that they enjoy. More and more people find ways to keep fit, from walking to joining fitness clubs, because they recognize the importance of exercise for physical and mental health.

Explain that although the fitness craze has hit many older Americans, it has not yet reached most of America’s youth. This is unfortunate because not only is exercise good for you, it can also be fun. You can form friendships with people you meet while exercising on the track or basketball court or at the gym or pool. You will feel better about yourself, improve your resistance to disease, and relieve stress found at school and work. Basically, being fit improves your overall health—both physically and mentally.

Do you think you are physically fit? Physical fitness is the ability of the heart, blood vessels, lungs, and muscles to work together to meet the body’s needs. When you are physically fit, your body’s systems work as a team allowing you to breathe easily and contract muscles in coordinated movement.

Explain that your body is made for activity. Stimulating your muscles, bones, heart, lungs, and blood vessels with regular exercise helps you gain or maintain physical fitness. A program of vigorous exercise, however, is not the only important factor in fitness and a healthy lifestyle. Rest, sleep, and good nutrition are just as important. What muscles are required to move the furniture in the photo on page 175?
**B. Components of Fitness**

Explain that each individual has his or her own potential of fitness. For example, you may not have the capability of becoming an Olympic weightlifter or a professional gymnast; yet you can reach your own personal best. Physical fitness can be broken down into four health-related areas: cardiorespiratory endurance, muscular strength and endurance, flexibility, and body composition. Each component is a necessary part of fitness.

**1. Cardiorespiratory Endurance**

Explain that the first component, cardiorespiratory endurance, is the ability of your heart, blood vessels, and lungs to distribute nutrients and oxygen and to remove wastes. When you exercise, your heart and lungs must supply more oxygen to your muscles than they need when you are resting. When you are at rest, for example, your heart pumps about 5 to 6 quarts (5.5 to 6.6 liters) of blood per minute, but it pumps about 20 to 25 quarts (22 to 27 liters) when you are exercising.

Explain that if your heart and lungs function easily during hard exercise and recover quickly afterward, you probably have good cardiorespiratory endurance. People with poor cardiorespiratory endurance might be left short of breath and have a very high heart rate after light exercise. Their lungs and heart are unable to keep up with the muscles’ demand for oxygen.

**2. Muscular Strength and Endurance**

Explain that the capacity of a muscle or a group of muscles to exert or resist a force is called muscular strength. In contrast, muscular endurance is the ability of muscles to keep working for an extended time. For example, the amount of weight you can lift is one measure of your muscular strength. How long you can hold that weight—or how many times you can lift it—is a measure of your muscular endurance. You need muscular strength for all sports and most everyday activities. Acts of muscular endurance include repeated actions, such as raking leaves, shoveling snow, or doing sit-ups.

**3. History Connection**

Explain that great emphasis was placed on physical fitness in the schools of ancient Greece. Students received instruction in exercise and sports such as wrestling, running, and jumping. In fact, the word gymnasium comes from the ancient Greek word *gymnasion*, meaning “school.”

See Box, Page 177

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5-1-5
### OUTLINE OF INSTRUCTION

<table>
<thead>
<tr>
<th>TEXTBOOK CONTENT</th>
<th>INSTRUCTOR ACTIVITY</th>
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<tbody>
<tr>
<td><strong>4. Flexibility</strong></td>
<td>Show slide(s) 15</td>
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<tr>
<td>Explain that the ability to use a muscle throughout its entire range of motion is called flexibility. This means that you can bend, stretch, and twist your joints easily. The sit-and-reach test measures the flexibility of specific groups of muscles in the back and legs, but it is also used to indicate overall flexibility. However, flexibility can vary in different joints. Some people may show poor flexibility in the sit-and-reach test, for example, yet have excellent flexibility in the shoulders and arms. Stretching exercises, if done correctly, can increase flexibility and may reduce the risk of injury during exercise.</td>
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<td><strong>5. Body Composition</strong></td>
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<td>Explain that the fourth component of physical fitness, body composition, is the amount of body fat compared to lean tissue, such as muscle and bone. Skinfold measurement is one method for assessing body fat. Excessive body fat has been linked with heart disease, diabetes, arthritis, cancer, and other harmful health conditions.</td>
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<td><strong>C. The Benefits of Exercise</strong></td>
<td>See Figure 1.1, Page 178</td>
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<td>What happens inside you when you run, swim, dance, play hockey, or enjoy some other form of exercise? As the muscles in your arms, shoulders, or legs alternately contract and relax, they use energy that comes from chemical reactions in which oxygen combines with nutrients. Because of the increased needs of your muscles, your heart beats faster, and you breathe more rapidly and deeply. The flow of blood to your heart, lungs, and skeletal muscles increases as your blood vessels dilate, or widen. Your blood pressure and body temperature rise, and you begin to sweat. How do these responses benefit your body? Refer to Figure 1.1 to help you answer this question.</td>
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<tr>
<td><strong>1. Physical Benefits</strong></td>
<td>Show slide(s) 24</td>
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<td>Explain that because blood circulates more rapidly through vessels during exercise, the rate at which it brings oxygen and nutrients to, and removes wastes from, your tissues is increased. This increased circulation rate is one reason why you feel refreshed and energetic after a hard workout. In addition, over time, regular exercise may increase the number of capillaries in your body. These additional capillaries provide muscles with a greater supply of blood, not just when you are exercising but at all times. Explain that cardiorespiratory endurance is significantly improved by an exercise program. Your heart becomes stronger and pumps blood more efficiently. Regular exercise can also lower your blood pressure and can improve the function of your lungs. An exercise program can help prevent atherosclerosis and coronary heart disease.</td>
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Explain that as you stretch your muscles when you exercise, you can improve your flexibility by loosening stiff muscles and joints. When you run, swim, or do other endurance exercises on a regular basis, your muscles become stronger and are able to work longer. Regular exercise also strengthens your bones, making them thicker and denser. Strong bones and muscles are less likely to be injured than are weak ones. Table 1.1 shows ratings of various exercises.

Explain that exercise can also improve or maintain body composition. A regular workout is important in keeping body fat within recommended levels. A program of regular exercise is an important factor in successful weight loss or weight maintenance.

2. Psychological Benefits

Explain that people who exercise regularly are likely to sleep better, feel more self-confident, and focus more productively on their work. Exercise may also increase creativity by releasing body chemicals that stimulate the brain’s centers of creativity.

Explain that one of the most important psychological benefits of exercise is the reduction of emotional stress. Simple stretching exercises, for example, can help you relax tense muscles and allow you to sleep better. If you are feeling depressed, exercise can generally help make you feel better. In fact, many health professionals consider exercise an important part of a complete treatment for depression, whether the depression is mild or serious.

Have you ever experienced a sense of physical and emotional exhilaration after a hard workout? This feeling is at least partly the result of certain substances called endorphins. Endorphins, which are chemicals produced in your brain, help to give you a sense of satisfaction and pleasure. During vigorous exercise, cells within your brain produce greater amounts of endorphins.

D. Types of Exercise

Explain that no single exercise can improve or maintain all four components of physical fitness. Table 1.1 compares the fitness benefits you can receive from many activities. Notice, for example, that recreational activities such as basketball and rowing provide many health benefits. Swimming is also an excellent exercise.
Explain that exercises can be classified into different types, depending on what their performance involves. Included among these are aerobic, anaerobic, isotonic, isometric, and isokinetic exercise.

1. Aerobic Exercise

Explain that nonstop, repetitive, strenuous physical activity that raises the breathing and heart rates is called aerobic exercise. Aerobic exercises increase the amount of oxygen that is taken in and used by the body. Aerobic exercise works the heart, lungs, and blood vessels. As you exercise aerobically, your heart beats faster and you breathe in more air, so your blood can supply more oxygen to your hard-working muscles. This type of physical exercise improves blood and oxygen flow to vital organs, as well as lung capacity (the ability to take in and use more air). Swimming, riding a bike, running, brisk walking, and cross-country skiing are all forms of aerobic exercise. If aerobic exercises last for at least 20 minutes at a time and are done frequently, on a regular, ongoing basis, they will improve cardiovascular endurance. Aerobic exercises are therefore especially important in maintaining the health of your circulatory and respiratory systems. As the information in Table 1.1 indicates, activities that provide good aerobic exercise do not always improve muscular strength. They do, however, generally improve your muscular endurance.

2. Anaerobic Exercise

Explain that anaerobic exercise, on the other hand, works the muscles intensely in fast bursts of movement and does not require as much oxygen as aerobic exercise. Instead of endurance, anaerobic exercise requires bursts of power and energy and the ability to maneuver quickly. For example, a sprinter working his or her leg muscles hard in a burst of energy to cross the finish line in a few seconds is performing an anaerobic exercise. Many sports, from tennis to football, require anaerobic work to move from one point to another as quickly as possible. Imagine that for 20 minutes you exercise like a weight lifter. Although your overall exercise time is 20 minutes, the periods of intense physical activity come only when you actually lift the weight. Anaerobic exercise is intense physical activity that lasts only from a few seconds to a few minutes, during which time muscles use up more oxygen than the blood can supply. Anaerobic exercises usually improve the flexibility, strength, and sometimes speed at which muscles work. However, it does not specifically condition the cardiovascular and respiratory systems. Most anaerobic exercises are designed to develop specific skills, agility, flexibility, or strength. Lifting weights, sprinting, push-ups, and some forms of gymnastics, for example, are usually considered anaerobic activities.

Show slide(s) 34-38

Show slide(s) 39-40

Show slide(s) 41-42
3. Isotonic, Isometric, and Isokinetic Exercise

Explain that other forms of exercise concentrate specifically on firming and toning muscles and building muscle strength. Working against resistance builds muscle strength. You work against resistance when you try to open a tight lid on a jar or push a heavy piece of furniture across a room. Three types of exercise—isotonic, isometric, and isokinetic—can increase the strength and endurance of specific groups of muscles. Isometric exercise builds muscle strength by using resistance without joint movement, while isotonic exercise uses resistance with joint movement. For example, when you try to pull your locked hands apart, you perform an isometric exercise. You contract your muscles but do not move any joints. Most weight training, on the other hand, is isotonic. When you do bicep curls, you contract your muscles and bend your elbows to raise the weights to shoulder level. Isotonic exercise involves the contraction and relaxation of muscles through the full range of their motion. You can perform isotonic exercises with or without weights. Through repetition of isotonic exercises, you can develop muscle strength.

Place your palms together and push them against each other. You are performing an isometric exercise in which muscles contract but very little body movement takes place. Pushing against a wall is another example of isometric exercise. Even though this activity involves little movement, your muscles are contracting and thus working. If you continue isometric exercises over a long period, the muscles you use will become stronger.

Explain that perhaps you have seen an accident victim or injured athlete use a special machine in order to recover the use of specific muscle groups. They are performing isokinetic exercises. Isokinetic exercises are exercises that involve moving a muscle through a range of motion against a resistance, or weight that changes. Unlike isotonic exercises, isokinetic exercises always use special machinery to provide the resistance. Many exercise machines in gymnasiums and fitness centers provide isokinetic exercise.

Show slide(s) 43

Show slide(s) 44-45
4. Defining Your Goals

Do you want to obtain total fitness, increase your stamina, have a trimmer body, achieve better coordination, or just feel more alert? Your goals help to determine the best exercise program for you. Reexamine Table 1.1, which lists different types of exercises and their benefits. If your goal is to strengthen muscles, for example, your program might include anaerobic exercises such as lifting weights. If you want to improve your cardiorespiratory endurance, you may develop a program of aerobic exercise. Basketball, jumping rope, or brisk walking will fit into this type of program. Most likely, you have a combination of goals in mind. For example, you may want to increase both your cardiorespiratory endurance and your flexibility.

Explain that as you create your exercise program, remember that your fitness program should be fun! Choose activities or a sport that you enjoy and will look forward to. Combine exercise with social activities; for example, take a hike with a group of your friends. You can often develop an enjoyable fitness program by expanding on the activities that are already a part of your life, as shown by the weekly exercise record in Figure 1.2.

Youth Fitness Fact Sheet

- Youth fitness in the United States has not improved in the last 10 years and, in some cases, has declined.

- Approximately 50 percent of girls ages 6 to 17 and 30 percent of boys ages 6 to 12 cannot run a mile in less than 10 minutes.

- Fifty-five percent of girls ages 6 to 17 and 25 percent of boys ages 6 to 12 cannot do a pull-up.

- Boys generally perform better than girls on fitness tests, except in the area of flexibility.

- Girls’ scores increase until age 14, where they plateau and then decrease (except for flexibility, which continues to improve to age 17).

- American children have become fatter since 1950 (U.S. Public Health Service).
• Forty percent of children between the ages of 5 and 8 show at least one heart disease risk factor, e.g., *obesity* (overweight), elevated cholesterol, or high blood pressure.

• Only 36 percent of America’s schoolchildren in grades 5 through 12 are enrolled in daily physical education, with the average number of gym classes per week in grades 5 through 12 being 3.6.

E. The FIT Principle

Explain that the effectiveness of your exercise depends on three factors: how often you exercise, how hard you exercise, and how long you exercise at each workout session. These ingredients make up the FIT principle, which stands for frequency, intensity, and time. To achieve fitness, you need to meet minimum standards for each FIT factor. Do you think the students playing basketball are FIT?

1. Frequency of Exercise

Explain that to stay physically fit, you should exercise frequently, preferably three or more times a week. As you become more fit, some studies suggest that if the intensity of your exercise is moderate, four times a week is most effective in increasing cardiorespiratory endurance and weight loss. If you exercise vigorously, however, do not do so more than five times a week; otherwise, injuries can result.

Explain that no matter what your goal is, you should spread your exercise out over the week. Being inactive during the week does not prepare your body for an intense weekend workout. Weekend athletes are more likely to injure themselves than those who exercise regularly throughout the week.

2. Intensity of Exercise

Explain that if your goal is increased cardiorespiratory endurance, you must work your cardiovascular and respiratory systems with greater-than-normal effort through aerobic exercise. The intensity of a workout is indicated by the number of times your heart beats per minute. The more intense the exercise, the faster your heart rate.
Explain that your maximum heart rate is your heart’s top speed or your heart rate when you have exercised to the point of exhaustion. For teenagers, this rate is about 200 beats per minute. You should not try to work out at your maximum heart rate, since exercise at that intensity puts a strain on your heart. Your target heart rate, which is lower than your maximum heart rate, is the approximate heart rate you need to maintain during aerobic exercise in order to benefit from the workout. Your target heart rate depends on your age, your current level of fitness, your resting heart rate, and your maximum heart rate. It is often expressed as a range, such as 145 to 170 beats per minute. Do you think that cross-country skiing is intensive exercise?

Explain that during exercise, you need to check your heart rate regularly to determine whether it is within your target heart rate range. To check your heart rate, you need to stop exercising briefly and count your pulse. Your heart rate slows down quickly, so take your pulse for only six seconds and multiply by ten to get an accurate count of the number of heartbeats per minute.

Explain that the “talk test” is an easy way to check your exercise intensity. If you are so out of breath while exercising that you cannot talk, your exercise level is too intense. If you can sing while you exercise, however, you probably are not working hard enough. You are working at the proper intensity if you can talk comfortably.
3. Exercise Time

Explain that finally, the amount of time spent exercising affects your level of fitness. If you are just beginning an exercise program, start out with only a short period of exercise—about 10 or 15 minutes. Then increase the exercise time gradually, by no more than 10 percent a week. Increasing your exercise program needs to take place over several weeks, as illustrated in Figure 1.3. Once your workout program is well established, most research suggests that 20 to 30 minutes of vigorous exercise four times a week will lead to greater fitness. If your goal is cardiorespiratory improvement, you must exercise within your target heart range for 20 to 30 minutes each session. If your goal is to reduce body fat, your exercise period should be a minimum of 30 minutes, which is longer than the 20-minute minimum required for a cardiorespiratory workout. You should, however, exercise only at a moderate level of intensity—about 60 percent of your maximum heart rate. This is because, at a moderate level of intensity, your muscles tend to use body fat as an energy source, rather than the glucose that is used to provide energy for high-intensity exercise. In order to burn a significant amount of fat, you need to exercise for at least 30 minutes.

F. Phases of Exercise

Explain that a complete fitness workout should be preceded by warming up and followed by cooling down. Although skipping these preliminary and follow-up procedures does not always result in injury, the safest and most healthy exercises include these two phases.

1. Warming Up and Stretching

Explain that before doing any type of exercise you must warm up. A warm-up is a 5- to 10-minute period of mild exercise that prepares your body for vigorous exercise. During a warm-up, your body temperature begins to rise, your heart rate picks up, blood flow to your muscles increases, and your muscles become more elastic and less likely to become injured.

Explain that some people suggest that you go through the motions of your planned activity when you warm up. Rather than doing these movements at full intensity, do them at a slower pace. If you are planning to run, for example, start out by walking. Then gradually increase your speed until reaching your usual pace.
Explain that your warm-up should include 5 to 10 minutes of stretching. As you know, stretching increases your flexibility, and proper stretching may decrease your chance of injury. However, it is very important to know your limits and stretch according to safe guidelines, such as those given in Building Health Skills in Chapter 2. Don’t overstretch, as that can damage ligaments and weaken joints. Stretching should be a constant, even pull on the muscles on both sides of your body. Because muscles work in pairs, you need to stretch both muscles in a pair. As you stretch each muscle group, you should feel tension but not pain. Do not bounce when you stretch, since bouncing can tear muscle fibers.

2. The Workout

Explain that the goal of this phase of exercise is to improve one or more of the components of physical fitness. Figure 1.4 summarizes the parts of a total fitness workout, which includes strength/endurance exercises as well as those designed to improve cardiovascular fitness. Depending on your goals, you may not plan on doing both cardiovascular and strength/endurance exercises. Alternatively, you might switch between cardiorespiratory and strength/endurance workouts in successive exercise sessions. If you do both in the same session, however, the cardiorespiratory workout should be done first.

Explain that it is important to do strengthening exercises on alternating days because a full day is needed for your muscles to recover from such a workout. Also, when doing muscletstrengthening exercises, you should plan on short periods or sets of physical activity followed by rest periods during which the muscles can recover.

3. Checking Your Progress

Explain that one of the most exciting and gratifying aspects of sticking with a fitness program is seeing your progress. Your fitness will improve only gradually, so wait three or four weeks before retesting your fitness. In most exercise programs, you will begin to notice significant changes within 12 weeks. You may find that you look better, sleep better, or feel more alive. Perhaps you will notice that you have gained muscle strength, lost weight, or lowered your resting heart rate.
a. Cooling Down and Stretching

Explain that a slow warm-up period brings you safely from minimal to maximal activity. The cool-down is a period of milder exercise that allows your body and your heart rate to return slowly and safely to their resting states. Your cooldown should be at least as long as your warm-up. If you stop exercising abruptly, blood can collect in the muscles you were using. When this happens, blood may not return fast enough to your heart and brain. As a result, you may become dizzy and faint. Walking is a common method of cooling down.

Explain that stretching after your cool-down loosens muscles that have tightened from exercise and prevents muscle and joint soreness. Spend at least five minutes repeating the stretches you did before your workout.

b. Your Resting Heart Rate

Explain that someone with average cardiovascular fitness has a resting heart rate between 72 and 84 beats per minute. In general, girls and women have higher resting heart rates than boys and men. In either sex a resting heart rate below 72 beats per minute usually indicates a good fitness level. A young athlete in top competitive condition may have a resting heart rate as low as 40 beats per minute. The athlete’s heart is so strong and efficient that it doesn’t need to beat more rapidly to meet the body’s needs. Your resting heart rate will probably not drop that low, but you may notice a drop of five to ten beats per minute after three to four weeks of exercise.

Explain that if one of your goals is to lose body fat, you need to combine your exercise program with changes in your eating habits. As you track your progress, keep in mind that to be healthy, your body must store some fat; you cannot expect to lose all your body fat. In addition, remember that it is possible to lose fat tissue without losing weight. If you lose fat and gain muscle, you may even find that you weigh more than when you began your program. This is because muscle tissue is heavier than fat.

Explain that you will, however, have a trimmer body. To get an idea of whether you are losing body fat, you might measure and record the circumference of your upper arm at the start of your exercise program. Then measure your arm again every three to four weeks to track any changes.

INSTRUCTOR ACTIVITY

See Box, Page 189

Show slide(s) 73-74

Show slide(s) 75

Show slide(s) 76

Show slide(s) 77
Explain that to keep track of your overall progress in your workout program, you might keep a record in a table such as that shown in Figure 1.5. About every three or four weeks, write your fitness data in the table. Then, as the weeks go by, you can compare early data with later test results.

G. A Safe Workout

Explain that anyone who exercises faces the risk of injury. Although some injuries may be unavoidable, most can be prevented by following some common-sense practices.

1. Equipping for Safety

Explain that you do not need expensive equipment in order to be safe. Depending on the activity you choose, you may need nothing more than sneakers. The key point is to choose the right equipment for your particular kind of exercise. Proper clothing, footwear, and protective gear help you to avoid discomfort and injury.

Explain that clothing should be comfortable and allow unrestricted movement. Avoid clothing that inhibits your body’s ability to cool itself through the evaporation of sweat. Also avoid any clothing that can trip you or get caught in your equipment. For example, do not wear loose-fitting long pants or skirts when bicycling. Long pants and long sleeves are appropriate in sports such as skating, where falls and skin scrapes are a risk.

Explain that to protect your feet from injury, footwear must fit properly, be in good condition, and provide support and protection. Although athletic footwear is highly specialized, you probably do not need to buy expensive shoes. For example, do not waste your money on shoes meant for professional runners if your main activities are walking and bicycling.

Explain that shoulder pads, helmets, mouth guards, and other protective gear are designed to prevent injuries in contact sports such as football and hockey. Hard-shell helmets worn by football players, hockey players, and baseball players at bat are designed to protect the head from a direct blow. Of course, you would not play a contact sport without a helmet, but did you know that you should regard a helmet as standard operating equipment anytime you get on wheeled sports equipment? A helmet should be worn each time you bike, skateboard, or roller skate. Knee and elbow pads are important equipment for skateboarders and roller skaters.
2. Fluids and Food

Explain that your body can require water even when you are not thirsty. If you exercise for more than 45 minutes, you should take fluids during your exercise period. This is especially important in hot weather. To help prevent dehydration on warm days, you should have a cup of fluid a few minutes before you exercise and every 15 minutes during your exercise.

Explain that you need energy for exercising, and you get that energy from the food you eat.

3. Avoiding Overexertion

Explain that you may feel unusually tired during the session or even a few hours after if you exercise too intensely, too long, or too often. This tiredness is a signal that you have overworked your body. Other signs of overexertion include nausea or vomiting during or after a workout, and muscle or joint aches and pains that do not go away quickly. If you experience any of these symptoms, you need to cut back the intensity and length of your exercise. Avoid overexertion by sticking to a consistent exercise schedule, rather than occasional bursts of activity followed by periods of inactivity. In addition, always keep your exercise within your comfort level. Do not make the mistake of pushing yourself too hard in order to reach your fitness goal quickly.

4. Weather Considerations

Ensure that your clothing is appropriate for the weather. Regardless of the air temperature, you should feel slightly cool at the beginning of your workout. When you exercise outdoors on warm, sunny days, wear light-colored clothing to reflect the sun’s rays, and dress lightly to prevent overheating. The lighter or more sun-sensitive your skin is, the more you will need to protect yourself from sunburn with a sunscreen lotion.

5. Exercise Myths and Facts

1. MYTH: “No pain, no gain”; exercise to the point of feeling pain is the only way to improve your abilities.

   **FACT:** Pain is a danger signal, a signal that you are causing harm. Sharp or sudden pain should be a signal to stop immediately.

2. MYTH: Sit-ups and other abdominal exercises will decrease fat in the stomach area.

   **FACT:** You cannot “spot reduce” or lose fat just in one area.

3. MYTH: Drinking fluids before exercising can cause stomach cramps.
FACT: Plain water will not cause cramps. Without adequate water, you can become dehydrated, which can lead to muscle cramps and other more serious problems.

4. MYTH: Being thin is a sign of fitness.

FACT: Thin people who do not exercise are likely to have poor heart, lung, and muscular fitness. Cardiovascular fitness is a better indication of overall fitness than your appearance.

5. MYTH: If women lift weights, they will develop large muscles.

FACT: Women actually have less muscle tissue and more fat tissue than men. They also have a balance of hormones that is different from men and that prevents the development of large muscle mass.

6. MYTH: Exercise is unsafe for older people.

FACT: The health of elderly people can benefit greatly from moderate exercise.

Explain that when it is cold, your clothing should protect you from frostbite. Cover your hands and head, since you lose a lot of heat from these parts of your body. You may need a sweat suit for warmth but do not overdo it. Clothing that is too thick or heavy can inhibit the evaporation of sweat and possibly cause overheating. If you wear layers of clothing, you can regulate your temperature by taking off or adding layers as necessary.

Show slide(s) 94-95

H. Choosing the Right Exercise Program

Explain that your exercise program should be based on your current fitness ratings and your own interests, needs, and abilities. Even if you think you are perfectly healthy, it makes good sense to check with a physician or other health-care professional to be sure your new activities will not put you at risk. After you have a physician approved exercise plan, an exercise specialist, such as your physical education teacher, can help you select the best exercises. Moreover, he or she can give you specific pointers on the techniques that will make the activities safe and effective.

Explain that the type of exercise program you choose should have three parts: warm-up, conditioning, and cool-down.

Show slide(s) 96

Show slide(s) 97
Explain that the warm-up period allows for a slow increase in the heart rate and sends extra blood through muscles to warm them up. Your warm-up could include slow walking, mild stretching, or calisthenics. Remember, warm-up for five to seven minutes.

Explain that the conditioning period brings you into cardiorespiratory endurance and/or muscle strengthening activities. This is where most of your exercising occurs. These exercises should push your body to its normal limit, and when you are feeling strong, a little beyond. As exercising becomes easier, your normal limit should change. Walk or jog a little farther; do a few more sit-ups or push-ups. When weight training to gain bulk, increase to heavier weights; to build strength without bulk, keep lighter weights and increase repetitions. With muscle strengthening exercises, give your muscles a day off between workouts to rest. Or work your upper body one day and your lower body the next. The conditioning period generally lasts twenty minutes.

Explain that figure 1.6 is a sample of a weekly physical fitness training schedule. Notice how it includes the warm-up and conditioning periods as well as a cool-down period.

Explain that the cool-down period allows your heart rate to slow down, relaxes muscles, and cools the body. Slow walking, simple calisthenics, and mild stretching are good ways to cool down. Stretching during cool-down can prevent muscle cramps and soreness. Cool-down should last four to six minutes.

I. Sticking with an Exercise Program

Explain that even though many people know how important exercise is to a healthy lifestyle, they have trouble sticking with an exercise program. Follow these tips and you will find it easier to keep your resolution to become or remain physically fit.

- Think of fitness as part of your daily routine, just like brushing your teeth, going to class, or eating dinner.

- Set realistic and specific goals for yourself. If you have never jogged before, do not expect to jog three miles your first time out. You may become discouraged. Plan to jog one mile and stick with it, even if you have to walk part of the way. You will find that you progress quickly, which will build your self-confidence.
• Exercise at least three times a week. If you exercise less than this, you probably will not see much progress, which will give you an easy excuse to give up.

• Keep track of your progress in a journal. It is motivating to look back at where you started and see how far you have come.

• If you are a routine person who likes for things to remain the same, keep the same exercise routine from week to week. If you get bored easily and like change, develop several exercise routines that you can alternate from week to week.

• Exercise with a friend or group. You will get support from others and feel more committed to stick with it.

• Choose a place to exercise that is convenient for you. If the place you plan to exercise is far from home or school, you may not get there as often as you should.

• Wear comfortable clothing and shoes to make your exercise experience as pleasant as possible.

• Stay positive and have fun. Remember that you are doing something good for yourself. Be serious and consistent with your exercise routine, but enjoy it as well. If you choose an exercise program that you just cannot learn to enjoy, try something else. There is an exercise program for everyone!

Caution: Before beginning any exercise or diet program, it is important that you have the approval of your physician.

J. Assessing Cardiovascular Fitness and Determining Target Heart Rate

Explain that when you exercise, your heart and lungs must supply your muscles with more oxygen than they need when you are resting. Your heart, for example, pumps about 5 quarts (about 5.5 liters) of blood per minute when you are at rest and 20 to 25 quarts (about 22 to 27 liters) when you are exercising vigorously. Running track is a great way to get a cardiovascular workout.

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<tr>
<td>Explain that your target heart rate is the heart rate you need to maintain during exercise in order to improve your cardiovascular fitness. The following is a simple test for assessing your cardiovascular fitness and the procedure for determining the range in which your target heart rate should fall. These are followed by some guidelines for improving cardiovascular fitness.</td>
<td>Show slide(s) 109-110</td>
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<tr>
<td>1. Test Your Cardiovascular Fitness</td>
<td>Explain that before you do this test or start an exercise program, have a physical examination to make sure that you do not have any health problems that rule out vigorous exercise. The examination should include a check of your blood pressure and resting heart rate. Do not attempt this test if you are ill or if you have a history of health problems.</td>
<td>Show slide(s) 111</td>
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<td>Explain that to test your cardiovascular fitness, you must walk and/or run one mile as fast as you can. You can alternate running with walking, but your goal is to cover one mile in as little time as possible. You will need to work with a partner. Your partner should use a watch with a second hand to measure the time, in minutes and seconds, it takes you to complete the distance of one mile.</td>
<td>Show slide(s) 112</td>
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<tr>
<td>2. Compare Your Results to Recommended Results</td>
<td>Compare your score to the scores listed in Table 1.2. To be at a good fitness level, your time should be no greater than the minimum times listed in the table.</td>
<td>See Table 1.2, Page 195 Show slide(s) 113</td>
</tr>
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<td>3. Take Your Resting Pulse and Determine Your Target Heart Range</td>
<td>Explain that to determine your resting heart rate, you will need a watch or clock with a second hand. Use your index finger or middle finger to find your pulse, either in your wrist or in your neck. Then count the number of pulse beats during one minute.</td>
<td>Show slide(s) 114</td>
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<td>Subtract your resting heart rate from 200, which is approximately your maximum heart rate. Then multiply the resulting number first by 0.6 and then by 0.8.</td>
<td>Show slide(s) 115</td>
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<td>Add your resting heart rate to each of the two numbers you obtained in the previous step. The two sums give you the range in which your target heart rate should be.</td>
<td>Show slide(s) 116-117</td>
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<td>4. Choose an Appropriate Cardiovascular Exercise Program</td>
<td>Ask your physical education teacher to help you select appropriate activities for building cardiovascular fitness, such as those in the table. Select moderate intensity activities first; then switch to activities of higher intensity as your fitness improves.</td>
<td>Show slide(s) 118</td>
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**OUTLINE OF INSTRUCTION**

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<td>Do these activities three to four times a week. Take your pulse rate immediately after you stop exercising to see if you are exercising in your target heart range. (Because your heart rate begins to decrease as soon as you stop exercising, count the beats in 6 seconds and multiply this number by 10 to get the total number of beats for 60 seconds.)</td>
<td>Show slide(s) 119</td>
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<tr>
<td>Explain that after you have been exercising regularly for a while, repeat the cardiovascular walk/run fitness test to monitor your progress.</td>
<td>See Box, Page 196</td>
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<tr>
<td>Apply the Skill</td>
<td>Show slide(s) 120</td>
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<tr>
<td>1. Complete the timed one mile walk/run to determine your cardiovascular fitness level. Record your results. Be sure to do warm-up stretches before you begin.</td>
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<tr>
<td>2. Determine the range in which your target heart rate falls.</td>
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<td>3. After a physical checkup by a qualified health-care professional, design a cardiovascular fitness program that will improve your fitness level.</td>
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<td><strong>K. Fitness Throughout Life</strong></td>
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<td>Explain that one of the most important and challenging things you can do for yourself is to start exercising now and continue your program for your entire life. If you begin and continue an exercise program when you are young, it will help you stay healthy and fit as you age. Some people are discouraged from achieving this goal because they think that exercise is too difficult or time-consuming. They do not realize that many activities that they already perform may actually be forms of exercise. In addition, fitness activities can actually be a lot of fun. Both aerobic dance classes and recreational dancing can help you become physically fit.</td>
<td>Show slide(s) 121-122</td>
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<tr>
<td><strong>1. Fitness and Recreation</strong></td>
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<td>Do you have fun riding your bike to visit a friend? Is a brisk walk on a cool morning something that you enjoy? At school dances, do you love to jump and turn enthusiastically in time to fast music? Do you and your friends ever get together for a hike, a quick game of basketball, or a swim at a local lake or pool? If you answered yes to any of those questions, you already perform activities that contribute to your physical fitness. Recreational activities that involve exercise, such as walking, biking, dancing, and swimming, are an important part of a fitness program.</td>
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<td>2. Fitness and Aging</td>
<td>Explain that as people age, they undergo physical changes. Their bodies become less flexible, and their bones tend to fracture more easily. Those changes do not, however, have to prevent older people from being physically fit. Studies have shown that moderate exercise can help reduce the effects of, and sometimes eliminate, many physical problems associated with old age, such as cardiovascular disease and arthritis. This is true even if exercise begins late in life. Explain that some older people mistakenly think that they need to avoid exercise to protect themselves from injury. In fact, bones and muscles are more likely to stay strong and function well if they are exercised regularly. Exercise can significantly reduce the risk of osteoporosis, a condition in which the bones of elderly people—particularly elderly women—become fragile. Older people who get little exercise are generally less healthy than those who remain active. Explain that moderation is especially important in a fitness program for older adults. Older people may not be able to exercise at as high an intensity as they once did. Older people are more likely than younger people to develop circulatory-system problems, and the target heart rate for exercise decreases as a person ages. Elderly people also need to be especially careful not to put too much stress on bones and muscles. If older people exercise carefully and moderately, however, they can continue to benefit from regular exercise.</td>
<td>Show slide(s) 124</td>
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<td>Show slide(s) 126</td>
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<td>3. Finding Ways to Get Fit</td>
<td>Do you still think you just cannot bring yourself to plan and carry out a fitness program? Then at least try to increase your daily level of activity. Make a game out of trying to add just a little more exercise each day. If you travel mostly by car or bus, bicycle or walk instead. Use stairs instead of an elevator. If you already walk quite a bit, pick up your pace or jog for a short distance. A small amount of exercise is better than none at all. People who get even a little bit of exercise have less risk of cardiovascular disease than those who are totally inactive.</td>
<td>Show slide(s) 127-129</td>
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</table>
L. Conclusion

Explain that regular exercise is important to maintaining your health. It can make you feel and look better and help your body fight disease. Different exercise programs have different benefits, like aerobic dancing for a strong heart and weight lifting for strong muscles. No matter what exercise program you choose, remember that the most important thing is to stay active. So much in life today makes things easy for us—elevators, escalators, cars, electric appliances—that it is easy to get out of shape. In addition to an exercise program, take the stairs, walk or bike to the store, go bowling with friends instead of watching television. It can be fun, and it is all to your benefit!

Explain that in the next chapter, you will learn about the exercises designed for the NJROTC Physical Fitness Test and the Presidential Physical Fitness Award (PPFA) program.

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<tr>
<td>III. APPLICATION</td>
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<tr>
<td>A. Review Questions</td>
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<td>Ask the following questions to ensure understanding.</td>
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<td>1. How does aerobic exercise differ from anaerobic exercise? Give an example of each.</td>
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<td>2. List three physical benefits of regular exercise.</td>
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<td>3. Explain how your target heart rate affects the level of intensity of the exercise you perform to improve your cardiorespiratory endurance.</td>
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<td>4. List two ways to reduce your risk of injury when you exercise.</td>
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<td>IV. EVALUATION</td>
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<tr>
<td>A. Test</td>
<td>N/A</td>
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OUTLINE OF INSTRUCTION
I. INTRODUCTION

A. Establish contact.
   1. Introduce the topic for this lesson: “Evaluating Your Physical Fitness.”

B. Establish readiness.
   1. Motivating statements
      Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.
   2. Lesson overview
      Bring out the importance of the material being presented.

II. PRESENTATION

A. Introduction
   Explain that this is it! Time to put on your sneakers and start warming up for what may be the toughest part of your unit—participating in exercises designed for the Physical Fitness Test (PFT). Get ready to tackle these exercises developed to assess your physical ability: sit and reach, curl-ups, push-ups, and a run. They require endurance, speed, strength, and flexibility. What can the PFT do for you? First, it allows you to develop an understanding of and appreciation for physical fitness. Second, it shows how an exercise program can improve health and appearance, thereby improving self-confidence. Finally, there is the personal satisfaction associated with striving to achieve a goal as well as recognizing and recording your own progress.

Ensure the NS1 DVD is in the DVD player with the label facing up.

Get the cadets ready to learn.

Trainee motivation

Learning incentives

Show slide(s) 1-3
### B. Building Health Skills

Explain that as you go through this or any exercise program, it’s important to protect your body as well as develop some health skills. These skills include knowing how to warm up, cool down, and stretch. These activities should be viewed as essential conditioning that ensure the body can sustain periods of exercise like the PFT.

#### 1. Warming Up, Cooling Down, and Stretching

Imagine that you are about to go on a five-mile bicycle ride or play your favorite sport. You know that these are strenuous activities that put stress on your bones, muscles, and tendons. How should you prepare your body for these activities? After the activity, what should you do to minimize the effects of the stress your body has just undergone?

Explain that before a workout, use slow movements to warm up the muscles that you will use. When the muscles are warmed up, stretch them. Stretching cold muscles is not effective and can cause injury. After your workout, cool down by slowly moving the muscles you used. Then stretch these muscles as you did before the workout.

Explain that although no single stretching routine is appropriate for every activity, the stretching exercises that follow provide a base for you to build on. It is important not to rush when you perform these movements. A pulled muscle can hold you up much longer than the few minutes of warming up/stretching and cooling down/stretching needed with each workout.

Explain that when you perform stretching exercises, do not bounce. Bouncing can tear muscle fibers, and scar tissue can form as a result.

Note: To warm up for bike riding, begin by pedaling slowly and gradually increase your speed.

#### a. Warming Up/Cooling Down

Explain that before your workout, walk, jog slowly, or do the activity that you are about to participate in at a reduced pace. This warms up your muscles, preparing them for the more intense activity of the workout itself. Similarly, right after the workout, you need to continue moving your muscles at a reduced pace for five to ten minutes, as you did in the warm-up. This cool-down period helps ease the body back to normal levels of muscular activity.
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<tr>
<td>b. Side Stretch</td>
<td>Stand with feet apart, knees bent, and one hand on your hip. Extend the opposite arm overhead and stretch to the side, as shown in Figure 2.1. Hold 15 seconds. Repeat in the other direction. Do five times in each direction.</td>
<td>See Figure 2.1, Page 200 Show slide(s) 12</td>
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<tr>
<td>c. Hand Grasp</td>
<td>Grasp your hands behind your back and hold. Stand with your feet apart and knees slightly bent, and lean over at the waist. Pull up your arms behind you, as shown in Figure 2.2, and hold 15 seconds.</td>
<td>See Figure 2.2, Page 200 Show slide(s) 13</td>
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<tr>
<td>d. Lower Back Curl</td>
<td>Lie on your back with legs extended. Bring one knee up to your chest. Grasp the leg behind the knee and pull the knee closer to your chest. Next, curl your shoulders toward your knee. Figure 2.3 shows how this is done. Hold this position for 15 seconds. Switch to the opposite leg and repeat.</td>
<td>See Figure 2.3, Page 201 Show slide(s) 14</td>
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<tr>
<td>e. Calf Stretch</td>
<td>Stand in a stride position with your right leg forward and hands on your hips. Lean your upper body forward. Simultaneously bend your right leg and extend your left leg back in a continuous line with your upper body. Push your left heel to the ground. Figure 2.4 shows this position. Hold for 15 seconds. Repeat with the other leg. Do this five times on each side.</td>
<td>See Figure 2.4, Page 201 Show slide(s) 15</td>
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<tr>
<td>f. Hamstring Stretch</td>
<td>Sit on the floor and extend one leg, toes facing up. Tuck your other foot against your extended thigh. Reach forward over your extended leg and slide your hands down your leg until you feel a stretch. Hold for 15 seconds. Switch to the other leg. Repeat with each leg twice.</td>
<td>Show slide(s) 16</td>
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Take five minutes to practice these stretching exercises.

Explain that each day for a week, do the stretching routine and record how you felt before and after the routine, including any soreness or stiffness. At the end of the week, evaluate the stretching routine and your reactions to it. What are its benefits?

Note: Select a favorite sport or other physical activity and then ask your physical education teacher or coach to suggest an appropriate warm-up routine for that activity, including stretching exercises.

C. Basic Rules of Exercise

Explain that as you prepare for the PFT, remember to follow these basic rules:

- To produce positive results, exercise at least three times a week

5-2-3
• Begin your exercise program by warming up for 5 to 7 minutes
• Spend at least 20 minutes on conditioning then cool down for 4 to 6 minutes
• Make the sit and reach part of your warm-up or cool down.

Explain that remember to follow an exercise program that includes aerobic exercise for the run/walk, anaerobic exercise which aids in muscle strengthening for curl-ups and push-ups, and stretching for the sit and reach. If you give it your all and perform to the best of your abilities, you will have a stronger body, feel good about yourself, and appreciate health and fitness.

D. Taking the Physical Fitness Test

1. Sit and Reach
   The sit and reach test serves as important functional measure of hip and back flexibility. After a sufficient warm-up, the sit and reach is conducted by sitting on the floor with knees fully extended, feet together, ankles at right angles, and toes pointed up. Reaching forward slowly, attempt to touch the tips of your toes with your fingertips. This position must be maintained for one second. You will have three attempts to perform the sit and reach per evaluation period.

2. Curl-ups
   Conduct **curl-ups** on a flat, clean surface, preferably with a mat. Start in lying position on your back with your knees up so your feet are flat on the floor and about 10 inches from your buttocks. You should have your arms crossed so that your hands are placed on opposite shoulders with your elbows close to your chest. Have your partner hold your feet at the instep. At the command, “ready go,” raise the trunk of your body, curling up to touch the elbows to the thighs; then lower your back so that your shoulder blades touch the floor/mat. This constitutes one repetition of a curl-up. You should attempt as many curl-ups as possible in the time allotted and may rest in either the UP or DOWN position. During each repletion, bouncing off the floor/mat is not allowed and the fingers much touch the shoulders at all times.
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<td>3. Right Angle Push-ups</td>
<td>Lie face down on the mat/floor with your hands under your shoulders, fingers straight, and legs parallel with your toes supporting the feet. Your feet should remain together. This is the standard starting position for push-ups. Straighten the arms to push off the ground keeping the back and knees straight. Now lower the body until there is a 90-degree angle at the elbows, with the upper arm parallel to the mat/floor. Explain that a partner may hold his or her hand underneath your chest at the point of the 90-degree angle (typically one fist-length from the ground) so that you go down only until your chest touches your partner’s hand, then back up. When you return to the UP position this constitutes one repetition of a push-up. At no time should your buttocks be raised. You should attempt as many push-ups as possible in the time allotted and are allowed to rest in the UP position.</td>
<td>Show slide(s) 25</td>
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<td>4. Run/Walk</td>
<td>Explain that the run/walk is meant to measure your cardiorespiratory endurance. This event is conducted on a flat area that has a known measured distance of one mile with a designated start and finish line. Start from the standing position. At the command, “ready, go,” start running the specified distance—most often a distance of 1.5 miles is used for this event. Although walking is permitted, try to cover the distance in the shortest time possible. Scores are recorded to the nearest second.</td>
<td>Show slide(s) 26</td>
</tr>
<tr>
<td>E. Improving Your Scores</td>
<td>Explain that the exercises in the PFT test your endurance and physical strength. Initially, it does not matter what you score on these events—although you should always strive for your best—except for the purpose of establishing a base score from which to build. From there, however, you should develop a routine exercise program, so that your score will improve, and along with it, your health.</td>
<td>Show slide(s) 27</td>
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<td>F. More Than Healthy Rewards</td>
<td>Explain that in 2007, President George W. Bush started the President’s Challenge Program for the purpose of encouraging all Americans to make being active a part of their everyday lives. The Physical Fitness Program is not all that different from the NJROTC PFT. It includes five events that measure muscular strength/endurance, cardiorespiratory endurance, speed, agility, and flexibility. By earning a score in 85 percent or higher on all five areas of the test, you are eligible for the Presidential Physical Fitness Award (PPFA). The five events are curl-ups (or partial curl-ups), pull-ups (or right angle push-ups), v-sit reach, shuttle run, and a one mile run.</td>
<td>Show slide(s) 28-30</td>
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<tr>
<td>1. The Presidential Physical Fitness Award</td>
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<td>Show slide(s) 31-36</td>
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Explain that if you achieve a standard of 84 percent or below, but more than 50 percent, you qualify for the National Physical Fitness Award (NPFA). You may also use a flexed-arm hang instead of pull-ups or push-ups to receive this award. The PPFA consists of a round blue emblem embroidered with an eagle and the NPFA consists of a round red emblem embroidered with an eagle. If you are interested in participating in the President’s Challenge you can find more information at www.presidentschallenge.org in Get Fit: A Handbook for Youth, or ask your Naval Science Instructor.

G. Conclusion Explain that the Physical Fitness Test is an introduction to a specific goal. You will see your scores improve as you continue to practice. Making healthy changes in your lifestyle and working hard to reach this goal will make you a stronger, healthier individual, both mentally and physically, and will bring you the great satisfaction of a job well done.

Explain that the following chapter introduces you to the importance of good nutrition. You will learn that “you are what you eat,” and how a balanced diet is essential when planning a fitness program.

III. APPLICATION

A. Review Questions Ask the following questions to ensure understanding.

1. Explain the events of the PFT.
2. Describe what you can do to help your body prepare for the PFT.
3. Contrast the difference between the PPFA and the NPFA.

IV. EVALUATION

A. Test Administer test at senior naval science instructor’s discretion.
| Q.1. What term is used to refer to exercise in which sufficient amounts of oxygen are delivered to the muscles? | A. Isotonic  
B. Isometric  
C. **Aerobic**  
D. Anaerobic |
|---|---|
| Q.2. What term is used to refer to exercise in which adequate amounts of oxygen are not being delivered to the muscles? | A. Aerobic  
B. **Anaerobic**  
C. Isokinetic  
D. Isometric |
| Q.3. What term is used to refer to exercise in which muscles contract, but there is very little body movement? | A. **Isotonic**  
B. Isometric  
C. Isokinetic  
D. Anaerobic |
| Q.4. The length of time you can hold a particular weight or the number of times you can lift it is a measure of your muscular ______. | A. strength  
B. flexibility  
C. composition  
D. **endurance** |
| Q.5. Flexibility, which is using the entire range of motion of a muscle, is best measured by which of these exercises? | A. Sit-ups  
B. Push-ups  
C. **Sit and reach**  
D. Running |
| Q.6. What term is used to refer to exercise that builds muscle strength using resistance without joint movement? | A. Isotonic  
B. **Isometric**  
C. Isokinetic  
D. Anaerobic |
| Q.7. What term is used to refer to exercise that builds muscle strength using resistance with joint movement? | A. Isotonic  
B. Isometric  
C. **Isokinetic**  
D. Anaerobic |
Q.8. Select the set that best completes this sentence: Regular exercise _______ risk of cardiovascular disease, _______ stress and anxiety, and _______ bone strength.

A. decreases, helps control, increases  
B. improves, aids, relieves  
C. reduces, improves, helps control  
D. helps control, aids, relieves

Q.9. Which exercise is NOT classified as anaerobic?

A. Weightlifting  
B. Sprinting  
C. Push-ups  
D. Bike riding

Q.10. Which exercise is NOT classified as aerobic?

A. Cross country skiing  
B. Gymnastics  
C. Running  
D. Swimming

Q.11. Which of these statements about cardiorespiratory endurance is NOT accurate?

A. The cardiorespiratory system includes the heart, blood vessels, and lungs.  
B. Shortness of breath and a high heart rate after light exercise are symptoms of poor cardiorespiratory endurance.  
C. During exercise, the heart pumps 20-25 quarts of blood per minute.  
D. People with good cardiorespiratory endurance recover slowly after hard exercise.

Q.12. Which of these exercises places the highest demands on cardiorespiratory endurance?

A. Swimming  
B. Gymnastics  
C. Baseball  
D. Volleyball

Q.13. Which of these exercises rates the highest in all four categories of fitness: cardiorespiratory, muscular strength, muscular endurance, and flexibility?

A. Hockey  
B. Calisthenics  
C. Soccer  
D. Tennis
Q.14. The feeling of physical and emotional well-being after exercising is partly the result of the body’s production of what substance?
A. Adrenalin
B. Melatonin
C. **Endorphins**
D. Insulin

Q.15. Isotonic, isometric, and isokinetic exercises all improve the body in what way?
A. Building cardiovascular endurance
B. Improving flexibility
C. Increasing oxygen supply to cells
D. **Toning and building muscles**

Q.16. Weight training is considered a type of all these exercises except which one?
A. Isotonic
B. Anaerobic
C. **Aerobic**
D. Isokinetic

Q.17. To receive benefits from an exercise program, what is the minimum number of times you should exercise per week?
A. Two
B. **Three**
C. Four
D. Five

Q.18. What does the “talk test” measure?
A. Goal setting
B. Stress level
C. Exercise duration
D. **Exercise intensity**

Q.19. Which of these statements about heart rate contains an error?
A. Maximum heart rate, which is 200 beats per minute for teenagers, is your heart’s highest speed after exercising to the point of exhaustion.
B. To measure your target heart rate during exercise, stop and take your pulse for 6 seconds, then multiply by 10.
C. Your target heart rate is lower than your maximum heart rate, and is expressed in a range such as 135-170.
D. **The number of times your heart beats per minute measures exercise frequency.**
Q.20. For cardiorespiratory improvement, exercise within your target heart range for _______ minutes, but to burn fat, exercise at least _______ minutes.

A. 15-20; 30  
B. 30-40; 20  
C. 20-30; 30  
D. 30-45; 45

Q.21. Which of these descriptions about warming up is accurate?

A. When doing the lower back curl, pull both knees toward your head.  
B. For the calf stretch, stand in a stride position, then place the heel of your back leg on the ground.  
C. To stretch your hamstring, reach over your extended leg and bounce gently.  
D. To properly do the hand grasp, hold both arms overhead while clasping your hands, then bend first to one side and then the other.

Q.22. Which of the following steps in finding your target heart rate contains an error?

A. Take your pulse, counting the number of pulse beats for one minute to find your resting heart rate.  
B. Subtract your resting heart rate from 200.  
C. Multiply the resulting number by .5 to find the low range of your target heart rate.  
D. Multiply the resulting number by .8 to find the high range of your target heart rate.

Q.23. Your warm-up period could include _______, which are light gymnastic exercises that develop strength and grace.

A. low impact aerobics  
B. calisthenics  
C. weight bearing exercises  
D. isometrics

Q.24. Which of these pieces of advice would be least likely to help someone stick with an exercise program?

A. Exercise with a friend or group.  
B. Set high goals immediately.  
C. Make fitness part of your daily routine just like eating or going to school.  
D. Choose a convenient place to exercise so you can get there quickly and easily.
OUTLINE OF INSTRUCTION

Q.25. The Physical Fitness Test has all of the following benefits except which one?

- The PFT helps you understand and appreciate physical fitness.
- The PFT fosters competition as you compare yourself to others and endeavor to surpass them.
- The PFT gives you a method for achieving personal satisfaction through striving and achieving.
- The PFT boosts your self-confidence through your improved health and appearance.

Q.26. Which of these exercises is not part of the Physical Fitness Test (PFT)?

- Curl-up
- Sit and reach
- Push-up
- Shuttle run

Q.27. All of the following basic rules for PFT preparation contain errors except which one?

- Warm up and cool down for approximately 5 minutes.
- Incorporate the curl-up into your warm up routine.
- Spend at least 20 minutes on conditioning.
- Exercise at least 5 times a week.

Q.28. Select the set that best completes this sentence: To perform the curl-up, sit up from a lying position until your ______ touch your ______.

- elbows, thighs
- hands, feet
- head, knees
- chin, thighs

Q.29. Most often, how many miles is the run/walk event of the Physical Fitness Test?

- .75
- 1
- 1.25
- 1.5

Q.30. The events of the Physical Fitness Test and the Presidential Physical Fitness Test have which of these events in common?

- Curl-ups
- Sit and reach
- Pull-up
- Shuttle run
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<tr>
<td><strong>I. INTRODUCTION</strong></td>
<td></td>
<td>Ensure the NS1 DVD is in the DVD player with the label facing up.</td>
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<tr>
<td>A. Establish contact.</td>
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<td>Get the cadets ready to learn.</td>
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<tr>
<td>1. Introduce the topic for this lesson: “You Are What You Eat.”</td>
<td></td>
<td>Trainee motivation</td>
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<td>B. Establish readiness.</td>
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<td>Learning incentives</td>
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<tr>
<td>1. Motivating statements</td>
<td></td>
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</tr>
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<td>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</td>
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<tr>
<td>2. Lesson overview</td>
<td></td>
<td>In this lesson, you will evaluate the impact of diet on your life. You will learn how calories consumed versus calories used affects body weight, daily requirements and portions of foods, the sources and benefits of dietary fiber, the importance of water, and the possible effects of consuming too much fat, cholesterol, salt, sugar, and/or caffeine.</td>
</tr>
<tr>
<td><strong>II. PRESENTATION</strong></td>
<td></td>
<td>Direct cadets to follow this discussion from Unit V, <em>Wellness, Fitness, and First Aid.</em></td>
</tr>
<tr>
<td>A. Introduction</td>
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<td>Show slide(s) 1-3</td>
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<tr>
<td>Explain that a healthy lifestyle includes good nutrition as well as exercise. You need to eat well to maintain an exercise program. Just as a car will not run without fuel, your body will not work properly without the right <em>nutrients</em>. Eating a balanced diet also helps you maintain proper weight and lowers your risk of disease. This chapter explains the importance of a proper diet to your health.</td>
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</table>
OUTLINE OF INSTRUCTION

TEXTBOOK CONTENT

INSTRUCTOR ACTIVITY

Explain that Americans live in a fast-paced environment and frequently eat on the run. Eating on the run too often, however, may affect your nutrition and weight. You can end up consuming too many fats and too few vegetables and fruit, leaving you overweight and/or deficient in certain nutrients. Learning to eat balanced meals, even on the run, contributes to your overall well-being by helping to maintain proper weight, providing energy for physical activity, and supplying nutrients for good health.

Note: Although too many fats can be bad for you, your body needs a certain amount of fat from the foods you eat. Many necessary vitamins are fat-soluble only; without fat, these vitamins cannot be absorbed.

B. Balancing Calories

Explain that you must eat to fuel your body. The more active you are, the more fuel your body requires. Even if you remain very still, your body uses a certain amount of energy, or calories, on basic functions that work automatically all the time to keep you alive, such as your heart beating, your lungs inhaling, and your nerves delivering information. You do not have much control over the amount of calories used for these basic functions. Some people’s bodies naturally use more calories to sustain their basic functions; some people’s use less. It’s often said that those who use more have a high metabolism, meaning they can eat more and not gain weight.

Explain that your body also uses calories to do everything else throughout the day, from brushing your teeth, to studying, to stretching. Unlike your basic functions, however, you can control how many calories you voluntarily use throughout the day by how active you are. For example, you will use more calories if you choose to walk for an hour instead of watching television for an hour. Also, the more effort you put into an activity, the more calories you burn. For example, walking at a brisk pace uses more calories than walking at a leisurely pace.

Explain that when your body uses the same amount of calories daily than you eat daily, your weight stays the same. If you eat more calories than your body uses, your body stores the unused calories as fat and you gain weight. If you eat fewer calories than your body needs, your body uses the stored fat for energy and you lose weight. It’s a balancing act between numbers of calories eaten and calories used.

Show slide(s) 4-6

Show slide(s) 7-8

Show slide(s) 9-11

Show slide(s) 12

Show slide(s) 13-14
Explain that here’s an example of making sensible choices when choosing the foods you eat.

1. Karen and Andrea

Explain that Karen wonders why she keeps gaining weight—10 pounds over the last year. One Saturday, she and her friend, Andrea, meet at the local fast-food restaurant for lunch. While they wait in line, Andrea says she played tennis that morning. Karen admits she slept late and watched television. Andrea orders a small soda and a salad with grilled chicken and light Italian dressing; Karen orders a double hamburger with mayonnaise only, large French fries, and a large chocolate milkshake.

Explain that Andrea shakes her head and asks Karen if she ever eats fruit or vegetables. Karen shrugs and says “sometimes.” Andrea explains that she eats hamburgers and French fries every once in a while; in fact, she had that for lunch a few days ago, which is why she ordered a salad today. Andrea tells Karen that eating fruit and vegetables more often than fried foods and sweets helps her maintain her desired weight, and she feels better, too. Karen thinks about this for a moment as they sit down to eat.

Explain that perhaps if Karen had access to the following calorie counts, she would reconsider what she ordered. Keep in mind that most people need only between 2,000 and 3,000 total calories a day. Table 3.1 shows the difference between the two food orders.

Explain that even if Karen did not want a salad, she could cut her calories considerably by ordering a single hamburger with mustard and ketchup, a small milkshake, and a regular order of fries. She could also have lettuce and tomato on the burger to eat some vegetables. Her new calorie intake would look similar to Table 3.2.

Explain that if Karen really wants to lose those extra 10 pounds, however, she should skip the milkshake and replace the fries with a small salad and light dressing. This would reduce her calorie intake to about 400 for lunch. She should then get some exercise like her friend Andrea. Playing tennis for an hour uses three times as many calories as watching television for an hour. If Karen sticks to eating sensibly and exercises daily, she will start using more calories than she eats, losing those extra pounds. How many calories are contained in the food you eat? Figure 3.1 gives you an idea of the calories contained in everyday foods.
C. The Importance of a Proper Diet to Your Health

Explain that just as important as eating the correct amount of calories to supply your body with energy and maintain proper weight is what you eat to get those calories. If you eat like Karen every day, you are giving your body too much fat, cholesterol, salt, and sugar, and denying your body many necessary nutrients. Many health problems are related to poor diets, and these problems can start when you are young. At your next physical examination, ask your doctor about your cholesterol, blood pressure, and blood sugar levels. You may be surprised to find you need to change your diet to improve your health.

D. What Should You Eat?

Explain that the United States Department of Agriculture (USDA) developed the Food Guide Pyramid to indicate how many servings of six different food groups you should eat daily to get the nutrients your body needs. If you follow these guidelines, you will get enough vitamins and minerals to keep your body’s processes functioning properly, and you will have enough carbohydrates, protein, and fat to supply your body with energy. When you do not get enough of certain nutrients, you increase your risk of disease. For example, if you do not get enough calcium, a mineral found in milk products, almonds, sardines, leafy vegetables, and beans, you can develop osteoporosis.

Explain that to see the current Food Guide Pyramid, as offered by the USDA, check out http://www.nal.usda.gov/fnic/Fpyr/pyramid.html or Figure 3.2.

Explain that your body also needs fiber, the only form of carbohydrate that is not an energy source. Fiber aids in digestion. It prevents cholesterol, fats, and other toxic materials from entering the bloodstream and for this reason may lessen your chances of cancer and heart disease; it also helps balance your blood sugar levels, which is important if you suffer from diabetes. To obtain fiber, eat raw or lightly cooked vegetables, fresh fruit, beans, nuts, and whole wheat or bran breads, cereals, and crackers.
Explain that one final nutrient which contains no calories is water. Water can be obtained from plain or sparkling water, fruits and vegetables and their juices, milk and yogurt, cooked cereal, rice and soups. More than 65 percent of the body is water, and, as the body loses water through normal activity and exercise, it must be replaced. Water aids in digestion, regulates temperature, carries vitamins and minerals to all parts of the body, and is important for the removal of waste products from the kidneys. Drink a minimum of five to six glasses of water a day. On the days you exercise, you may need to drink more.

E. Eating in Moderation

Explain that your body needs fat for energy, but too much fat in your diet can make you gain weight and can lead to high cholesterol. Cholesterol, a type of fat, is a natural, waxy substance produced by your body and found in animal products. Your body needs some cholesterol to remain healthy, but too much is harmful. As shown in Figure 3.3, cholesterol forms plaque on artery walls, restricting the flow of blood within blood vessels. This leads to high blood pressure and an increased risk of heart disease. To lower cholesterol levels, lower your intake of fat by eating less meat, using oil-free dressings, avoiding fried foods, eating low-fat dairy products, and consuming lots of fiber.

Explain that many foods, especially prepackaged foods and restaurant foods, already have added salt, so do not shake on more. Too much salt in your diet forces your body to retain unnecessary water and may contribute to high blood pressure.

Explain that sugary foods like candy, soda, syrup, and table sugar supply you with calories and few (if any) nutrients. These foods contain “empty calories”; they give your body calories and nothing else. Avoid them while dieting, and do not eat them as a replacement for other foods that provide nutrition. Many fruits and vegetables naturally contain sugar, but they also provide many other important nutrients.

Limit your intake of coffee, tea, and sodas that contain caffeine, a stimulant. Although caffeine temporarily reduces drowsiness and makes you more alert, in large quantities it can upset your stomach, make you nervous and irritable, keep you awake when you want to sleep, and give you diarrhea.
F. Conclusion Explain that your body needs food for energy, just like a car needs fuel to run. How much food your body needs depends on how active you are and how many calories your body uses to keep its basic functions operating. You know you are getting the right amount of calories from food when you maintain your ideal weight. Not only does food supply you with energy, but the right foods also provide the nutrients your body needs to operate properly and lower your risk of disease. Eating a healthy, balanced diet and exercising regularly increase your chances of a long, strong, and disease-free life.

Explain that in the next chapter, you will learn more about nutrition and what it takes to properly nourish your body.

III. APPLICATION

A. Review Questions Ask the following questions to ensure understanding.

1. Think about what you had for breakfast. How could you have balanced your calories better?

2. Do you feel you have a slow or fast metabolism? How can you plan your meals with this in mind?

3. Looking at the food pyramid, what food group do you need to eat more or less of?

4. Define the term *metabolism*.

IV. EVALUATION

A. Test N/A
# OUTLINE OF INSTRUCTION

## I. INTRODUCTION

### A. Establish contact.

1. Introduce the topic for this lesson: “Nutrition: Nourishing Your Body.”

### B. Establish readiness.

1. **Motivating statements**
   
   Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.

2. **Lesson overview**

   Bring out the importance of the material being presented.

In this lesson, you will learn to analyze how well you meet nutrient guidelines. You will learn the six nutrients your body requires, the difference between simple and complex carbohydrates, the role of fat and cholesterol in body function, the difference between saturated and unsaturated fats, the functions of vitamins, carbohydrates, fats and proteins, and the food sources of vitamins and minerals.

## OUTLINE OF INSTRUCTION

### II. PRESENTATION

Direct cadets to follow this discussion from Unit V, *Wellness, Fitness, and First Aid*.

### A. Introduction

Explain that nutrition is the science of nourishing the body properly to reach the higher levels of dynamic living. This chapter introduces you to the six nutrients and shows you how to best provide them in a diet that is well rounded yet diversified. You will learn the newest methods available in how to choose your foods and how to read labels. Finally, you will better understand how to maintain a lean body, free from the damaging effects of carrying too much personal fat.

### INSTRUCTOR ACTIVITY

- Ensure the NS1 DVD is in the DVD player with the label facing up.

- Get the cadets ready to learn.

- Trainee motivation

- Learning incentives

- Bring out the importance of the material being presented.

- Show slide(s) 1-2
Explain that our diets have radically changed during the past 35 years. With the advent of fast-food outlets, an increase in dual-career parents, and sky-rocketing numbers of single-parent households, most Americans now have a hurry-up lifestyle where proper eating habits take a back seat to convenience and lack of time.

Explain that knowing that our lifestyles are busy and sometimes hurried, it is very important that young adults have at least a basic understanding of nutrients, how to obtain them, and how to control fat. This knowledge will lead to a more dynamic life and a higher quality lifestyle. The six types of nutrients are carbohydrates, fats, proteins, vitamins, minerals, and water.

Explain that we also refer to the first three nutrients, carbohydrates, fats, and proteins, as foodstuffs. They give us the energy for all of the bodily processes. When our body uses the foodstuffs, it releases energy. We measure this energy in calories.

B. Carbohydrates

Explain that carbohydrates are the starches and sugars found in fruits, grains, and vegetables. They have a caloric value of four calories per gram and supply us with short- and long-term energy to accomplish everything from thinking and breathing to running a race.

Explain that the short-term carbohydrates are the sugars, or simple carbohydrates, which are quickly digested and absorbed into the blood. The most important simple sugar is glucose, or blood sugar. Before the body’s cells can use other simple sugars (such as fructose, sucrose, and lactose) for energy, a change must occur converting them into glucose. Many sugary foods are sources of simple carbohydrates; however, those such as soda and candy have few other nutrients, while fruit is an excellent source of simple carbohydrates and contains many other vitamins and minerals as well.
### OUTLINE OF INSTRUCTION

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<tr>
<td>Explain that the long-term carbohydrates are starchy, or <strong>complex carbohydrates</strong>, which are made up of combinations of simple sugars. They take longer to digest because the body must break them into simple sugars (glucose) before they can enter the bloodstream. When your body has extra glucose that it does not need immediately for energy, it converts it into the complex carbohydrate glycogen and stores it in the muscles and liver to be released later when energy is needed, usually for short periods of strenuous activity. After your muscles and liver store as much glycogen as they can hold, your body changes the rest to body fat for long-term energy. Long distance runners use carbohydrate loading (eating large quantities of carbohydrates) to have the long-term energy they need to complete the race.</td>
<td>Show slide(s) 10-11</td>
</tr>
<tr>
<td>Explain that good sources of complex carbohydrates are grains (such as bread, cereal, pasta, and rice) and starchy vegetables (such as peas, corn, beans, and potatoes). These starchy foods are also important sources of vitamins, minerals, and fiber. Fiber provides no calories but is roughage that aids in the movement of food through the digestive system.</td>
<td>Show slide(s) 12-13</td>
</tr>
<tr>
<td><strong>C. Nourishing Your Body’s Fuel with Fats</strong> Explain that fats, or lipids, perform the vital roles of maintaining body temperature, insulating body organs, providing the body with stored energy, and carrying the <strong>fat soluble vitamins</strong> A, D, E, and K to the cells. One gram of fat is the equivalent of nine calories of energy, more than twice the amount of carbohydrates; therefore, a minimum consumption of fats is the most sensible approach to maintaining a lean body fat content.</td>
<td>Show slide(s) 14-15</td>
</tr>
<tr>
<td>Explain that triglycerides are the primary fats in the foods we eat, as well as the fats stored in body tissue. They include saturated fat, which mainly comes from animal sources and does not melt at room temperature, and <strong>monounsaturated</strong> and <strong>polyunsaturated fats</strong>, which are usually liquid oils of vegetable origin. When you eat too many calories, your liver changes them into triglycerides and stores them as fat. When you eat too many <strong>saturated fats</strong>, your liver makes more cholesterol than your body needs, which is unhealthy.</td>
<td>Show slide(s) 16-19</td>
</tr>
<tr>
<td><strong>1. Cardiovascular Disease Is the Main Killer of Americans</strong> Explain that your liver already produces about 1,000 milligrams (mg) of cholesterol daily and diet adds another 400 to 500 mg. Cholesterol, a waxy, sticky substance found in animal and human tissue, insulates nerves and forms hormones, cell membranes, vitamin D, and bile to aid in food digestion.</td>
<td>Show slide(s) 20</td>
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</table>

5-4-3
Explain that your blood carries cholesterol by way of lipoproteins, with low density lipoproteins (LDL) carrying cholesterol from the liver to the cells to accomplish the functions mentioned. Unfortunately, the LDLS deposit any cholesterol that is not needed by the cells in the arteries, giving them the nickname of the “bad guys.” Cholesterol accumulated on the inside walls of the arteries is a factor in the development of atherosclerosis. Eventually, cardiovascular disease, in the form of a heart attack or stroke, may result.

Explain that the high density lipoproteins (HDL) carry the extra cholesterol in your blood to the liver to dispose of it, thus preventing cholesterol from building up in the arteries. For this reason, HDLs are known as the “good guys.” To keep cholesterol at a normal level in the body, you must lower LDL levels and raise HDL levels. Steps you can take to accomplish this are to eat less fat, especially saturated fat, maintain appropriate body weight, and participate in a regular exercise program. Eating more fiber will also help because it binds with cholesterol and carries it out of the body; and consuming monounsaturated fats, such as olive, canola, and peanut oils, raises HDLs.

**D. Nourishing Your Body with Proteins**

Explain that the body contains substances called proteins in every cell. They aid in the development and maintenance of muscle, bone, skin, and blood. Proteins are also the key behind keeping the immune system strong. They control the chemical activities in the body that transport oxygen, iron, and nutrients to the body cells. The body can also use protein for energy if it is low on carbohydrates and fats; but in most cases, its role as an energy source is minor. Proteins, like carbohydrates, contain four calories per gram.
Explain that the building blocks of protein are the *amino acids*. These chains of carbon, hydrogen, oxygen, and nitrogen linked together in different ways control all of the body’s chemical activities. There are 22 amino acids found in the human tissue, but the body cannot manufacture all of them. Eight (nine for children) amino acids, known as the essential amino acids, must come from the food we eat because the body cannot produce them. We refer to the food products that contain all eight essential amino acids as having complete proteins. The best sources of complete proteins are meat, fish, poultry, and dairy products. Plant foods generally contain incomplete proteins since they are either low on or lack an essential amino acid. However, plant foods can be combined easily, such as rice and beans or peanut butter and bread, to include all essential amino acids in high enough amounts to form a complete protein.

Explain that the remaining 14 amino acids are known as the nonessential amino acids. They are still necessary for bodily functioning, but are called *nonessential* because they do not have to be supplied in the diet. Instead, the body manufactures nonessential amino acids itself.

Keep in mind that although animal and dairy products are sources of complete proteins, many are often high in fat as well. As you will read later in this text, Americans get most of their protein from animal sources instead of from combinations of complex carbohydrates. You will have a healthier diet and still meet your protein needs if you consume less fatty foods and more carbohydrates in the forms of grains and vegetables.

E. Regulating Your Body with Vitamins, Minerals, and Water

1. Vitamins

Explain that three important components that your body needs to be healthy are vitamins, minerals, and water. Vitamins and minerals are found in the foods you eat, and water is essential for proper hydration.

Explain that vitamins are promoters of health and wellness. Unlike the carbohydrates, fats, and proteins, the body does not digest vitamins; instead, food products release them and your body tissues absorb them. Vitamins are classified as either fat soluble or water soluble. With the help of fats, the intestinal tract absorbs fat soluble vitamins (A, D, E, and K) and stores them in the body. The water in the tissues dissolves the *water soluble vitamins* (B complex and C).
Explain that many countries have standards for vitamin and mineral requirements to recommend daily amounts needed for good health. For example, the standards for the United States are the **Referenced Daily Intakes (RDI)**. From time to time, the federal government reviews these standards and proposes new ones as research continues and more complete information about vitamins and minerals is discovered. Table 4.1 shows the current U.S. RDI for vitamins.

### a. Points of Interest: Vitamins

According to a 10-year study of 11,348 U.S. adults, vitamin C was effective at cutting death rates from heart disease and stroke. Sources of vitamin C are illustrated on the following page. The study tested three groups getting:

- 50 mg or more a day in food, plus an average supplement of 500 mg
- 50 or more mg and no supplement
- Less than 50 mg with no supplement.

Men in Group 1 had a 35 percent lower mortality rate and 42 percent lower death rate from heart disease and stroke. Women in Group 1 were 25 percent less likely to die of heart disease or stroke and had a 10 percent lower mortality rate.

Taking supplements of 2,000 mg of vitamin C daily might be helpful to allergy sufferers.

### 2. Minerals

Minerals are elements found in the environment that help regulate the bodily processes. Without minerals, the body cannot absorb vitamins. Macrominerals, shown in Table 4.2, are minerals that the body needs in large amounts. These minerals are calcium, phosphorus, magnesium, potassium, sulfur, sodium, and chloride.

Although sodium is a macromineral, many Americans consume too much of it, which can contribute to high blood pressure. High blood pressure, in turn, can contribute to cardiovascular disease. On the other hand, many Americans do not consume enough calcium, and a calcium deficiency can lead to osteoporosis later in life.
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<td>Explain that although the body only needs trace minerals (such as selenium, manganese, molybdenum, iron, copper, zinc, iodine, and chromium, shown in Table 4.3) in very small amounts, they are also essential for proper functioning of the body. For example, an iron deficiency can reduce the number and size of red blood cells, causing weakness, sleepiness, and headaches. Iron is contained in many foods.</td>
<td>See Table 4.3, Page 220</td>
<td>Show slide(s) 55-59</td>
</tr>
<tr>
<td><strong>a. Point of Interest:</strong> Minerals</td>
<td>Explain that a study has found that heart-disease patients who received 150 mcg of chromium per day had a dramatic jump in the HDL cholesterol, the good stuff that helps keep arteries clear.</td>
<td>Show slide(s) 60</td>
</tr>
<tr>
<td><strong>3. Water</strong></td>
<td>Explain that about 60 to 70 percent of your body is water, with most of your blood, brain, and muscles being water and even 20 percent of your bones. Water carries the other nutrients, when dissolved, to all parts of the body where and when needed. It also aids in digestion, regulation of temperature, removal of wastes, joint lubrication, and biochemical processes taking place in the body all the time. Without water you would die in a few days. To maintain all the bodily functions water helps carry out, you need to consume the equivalent of six to eight glasses of water a day. If you exercise regularly, you may need as many as ten glasses, especially on the days you exercise.</td>
<td>Show slide(s) 61-63</td>
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<td><strong>F. Hunger and Malnutrition</strong></td>
<td>Explain that as long as people can easily obtain an abundant and varied diet, it is not difficult for them to meet their nutritional needs. When such fortunate people become hungry, they can usually satisfy their need for food. However, many people in the world cannot obtain enough of the right foods, and in some cases cannot get much food at all. For them, hunger is a way of life—an ongoing, painful condition over which they have little control. Poor nutrition is a serious, worldwide problem.</td>
<td>Show slide(s) 64</td>
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<tr>
<td><strong>1. Malnutrition</strong></td>
<td>Explain that technically, malnutrition is any condition in which a person’s nutrient consumption is inadequate or unbalanced. Most cases, however, are the result of consuming too little of one or more nutrients. Malnutrition harms every system of the body and also damages emotional well-being.</td>
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<tr>
<td>OUTLINE OF INSTRUCTION</td>
<td>TEXTBOOK CONTENT</td>
<td>INSTRUCTOR ACTIVITY</td>
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<td>Explain that when people are malnourished, they do not have the energy to perform well in school or at work. Malnourished people are also more susceptible to disease than those who eat a healthy diet. Malnourished children usually grow much more slowly than children whose diet is adequate. If malnutrition occurs during pregnancy, the baby may weigh less than normal and have serious health problems.</td>
<td>Show slide(s) 66</td>
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<td>Explain that there are various types of malnutrition, including the vitamin and mineral deficiencies discussed earlier in this chapter. In one especially serious condition known as protein-energy malnutrition, the diet does not contain adequate protein, nor does it supply enough calories to meet the body’s energy needs. The effects of this condition are especially severe on children because their bodies need protein and calories for growth. Severe cases can cause death, either directly through starvation or indirectly through the diseases to which its victims become susceptible. Protein-energy malnutrition is the most serious nutrition problem affecting people in developing countries today.</td>
<td>Show slide(s) 67</td>
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<td>Explain that malnutrition has various causes. In some cases, people may be undernourished because they are unaware of the foods that they need for good health. Also, diseases and other conditions may prevent the digestive system from absorbing nutrients. But, indirectly, poverty is by far the most common cause of malnutrition. Victims of severe poverty cannot afford to buy or grow the food they need.</td>
<td>Show slide(s) 68</td>
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<tr>
<td>2. A World Problem</td>
<td>Explain that hunger and malnutrition are an especially severe problem in many of the world’s poorer nations. Severe famines, for example, have devastated countries such as Somalia and Bangladesh. However, hunger is also a problem in more prosperous countries, including the United States. Although few people starve in the United States, many are not receiving adequate nutrition. Hungry people in the United States are those who have little or no income, such as homeless people, teenage runaways, families dealing with unemployment, and some elderly people.</td>
<td>Show slide(s) 69-70</td>
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</table>
Explain that various programs and organizations are trying to solve the problem of malnutrition and provide food for those who need it. For example, the Food and Agriculture Organization of the United Nations combats hunger by helping people improve methods of agriculture and food distribution. The U.S. government sponsors the Food Stamp Program that enables low-income people to purchase the food that they need. Volunteers also work hard to help those who are hungry. For example, soup kitchens, which are often staffed by volunteers, provide meals for those in need.

G. Conclusion

Explain that understanding what nutrition your body needs is essential to maintaining both physical and emotional health. Without the proper balance of carbohydrates, fats, proteins, vitamins, and minerals, you open the door to all kinds of health problems—some possibly fatal. Even with a fast-paced lifestyle, it’s still possible to eat correctly and give your body the fuel it needs.

Explain that next, you will learn about dietary guidelines. You will examine the National Academy of Sciences’ 2001 report on how we should eat, as well as some alternative choices that many nutritionists advocate.

III. APPLICATION

A. Review Questions

Ask the following questions to ensure understanding.

1. How do carbohydrates help the body?

2. Compare and contrast monounsaturated fats and polyunsaturated fats.

3. What roles do proteins play in nutrition?

4. What are the effects of malnutrition?
I. INTRODUCTION

A. Establish contact.

1. Introduce the topic for this lesson: “Dietary Guidelines.”

B. Establish readiness.

1. Motivating statements
   Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.

2. Lesson overview
   In this lesson, you will learn how to use the National Academy of Sciences dietary guidelines to improve your own diet. You will learn the nine National Academy of Sciences dietary goals, nutritional needs at various stages of an individual’s life, symptoms of anorexia nervosa and bulimia, varying viewpoints on vitamin and mineral supplements, and how to calculate your personal dietary blueprint.

II. PRESENTATION

A. Introduction
   Explain that today’s hurry-up lifestyles, diverse family structures, fast-food restaurants, and personal finances have all impacted on the way we eat. Thus, by our actions, America has become a country that is overweight and suffering greatly from cardiovascular disease, cancer, diabetes, and other ailments that hinder our efforts to live a dynamic lifestyle.

   Explain that this chapter explains the National Academy of Sciences’ report on how we should eat, as well as some alternative choices that many nutritionists advocate.
### B. The Lifetime Eating Plan

Explain that nutritional needs vary at different ages. There are different needs for children (age two to adolescence), adolescents, adults, and the elderly. There are also special conditions and needs for pregnant women.

Explain that for example, the special concerns for teens are that they often have erratic eating habits, their calcium requirements are high, and after the onset of menstruation, females need more iron. General dietary recommendations are to ensure you eat sufficient calories to support your growth and activity levels with high-carbohydrate foods. Also, consume iron-rich foods and keep healthy snacks available.

Explain that pregnant women need to increase their caloric intake and to eat adequate protein, iron, calcium, folic acid, and vitamin C. Proper nutrition is essential to avoid complications, including nausea, heartburn, constipation, and gestational diabetes. General dietary recommendations are to eat two dairy servings daily and two cups of calcium-rich vegetables; also eat green leafy vegetables, legumes, broccoli, asparagus, and whole grains. Avoid overcooking. An obstetrician may recommend supplements. Drink at least eight glasses of liquid daily. Avoid alcohol and caffeine.

### 1. The New American Diet—Step by Step

Explain that another popular eating plan is the New American Diet. This plan yields similar dietary recommendations as those explained elsewhere in these nine guidelines. However, the basis for this plan is the development of a healthier lifestyle by following a three step approach: Phase I stresses the use of substitutions to your present diet; Phase II introduces new recipes; Phase III prescribes a new way of eating.

### 2. Eating Disorders

Explain that eating disorders such as *anorexia nervosa* and *bulimia* are common in today’s society. People with anorexia nervosa experience extreme weight loss, *amenorrhea*, and a variety of psychological disorders culminating in an obsessive preoccupation with the attainment of thinness. However, for 10 to 15 percent of its victims, the disease becomes *episodic* and relentless, resulting in death from the consequences of starvation.

Explain that a person with anorexia nervosa normally exhibits the following characteristics:
• An unwillingness to maintain minimal normal body weight for the individual’s age and height; weight loss that leads to the maintenance of a body weight 15 percent below normal; or a failure to gain the amount of weight expected during a period of growth, resulting in a body weight that is 15 percent below normal.

• An inordinate fear of gaining weight and/or becoming fat despite being significantly underweight.

• An unrealistic perception of body weight, size, or shape. The person “feels fat” or perceives that one specific part of the body is “too fat.”

• An absence of at least three, otherwise normal, menstrual cycles.

Explain that on the other hand, people with bulimia experience alternate cycles of binge eating and restrictive eating. Purging usually follows binges, primarily by self-induced vomiting supplemented with the use of laxatives and diuretics. The physical and psychological results of such a struggle with bulimia include esophageal inflammation, erosion of tooth enamel caused by repeated vomiting, the possibility of electrolyte imbalances, and altered mood states, particularly anxiety and depression.

Explain that a person with bulimia normally exhibits the following characteristics:

• An episodic eating binge, characterized by rapid consumption of large amounts of food in a short time.

• At least two eating binges per week for at least three months, even possibly experiencing a loss of control over eating behavior while in the process of binges.

• Frequent purges after eating; then engages in fasting, strict dieting, or vigorous exercise.

• A constant concern over body shape, size, and weight.

Explain that if you think someone has an eating disorder,

• Express your concern about the person’s health. Although the person may deny there is a problem, show that you care.
• Try to focus on feelings that the person may be experiencing, such as excessive worrying, anxiety, poor self-esteem, anger, or hurt. Encourage the person to talk about issues not related to food. Be a good listener.

• Encourage the person to talk to parents, relatives, or a health care or mental health professional.

• Talk to someone else (possibly a professional) about your concerns for that person.

• Do not label the person. That may make the person feel accused and strengthen feelings of denial.

Getting Help for Eating Disorders
For more information about anorexia, bulimia, and other eating disorders, contact:
National Eating Disorders Association
603 Stewart St., Suite 803
Seattle, WA 98101
(206) 382-3587
www.nationaleatingdisorders.org

Explain that the National Academy of Sciences believes there is a close association between total fat intake, saturated fat, high cholesterol, and heart disease. They developed nine guidelines for reducing the risk of chronic diseases and helping to provide protection against the possibility of early disease.

Note: The American diet should consist of a total fat intake between 35 to 40 percent of the total calories consumed each day; however, the typical American diet consists of nearly 50 percent fat calories.

3. Guideline #1
Explain that the goals of this guideline are to reduce your total fat intake to 30 percent or less of your total calories, your estimated fatty acids (building blocks of fat) intake to less than 10 percent of your total calories, and your cholesterol intake to less than 300 milligrams. Take a look at Figure 5.1 and determine which of these foods has the lowest percent are of saturated fat.

Explain that tips for achieving these goals include the following:
• Limit your egg intake. Use two or three egg whites for every yolk. Cholesterol is in the yolk, and egg white is a great source of protein.

• Use skim, nonfat, or one percent milk. Purchase low-fat or nonfat cheeses, yogurt, and other dairy products.

• Use margarine sparingly. The soft tub or liquid margarine is best.

• Read labels. Avoid foods that contain trans-fat. Trans-fat causes the same type of damage in your arteries as saturated fats and cholesterol. Trans-fat is found in foods that contain solid plant fat, such as stick margarine, cream filling in cookies, and baking shortening.

• When ordering in a restaurant, tell the waiter to ask the chef to use only half the oils or fat products he would normally use.

• Try to eat three servings of fish per week. Cold water and deep sea running fish are best because of the high omega three oils (fat that may aid in the maintenance of the heart and blood vessels).

• Eat lean meat and then sparingly.

• Bake and broil meat products, if possible.

• Use the lowest saturated fat cooking oils.

• When eating snacks, choose low-fat, low sugar content sweets.

• Learn how to read a label and calculate the fat content in food products.

Explain that Figure 5.2 shows a sample food label that might appear on a package. See Figure 5.2, Page 228

a. Alternative Guideline #1

   Explain that an alternative goal for Guideline #1 is to reduce fat intake to 20 percent or less of your total calories, saturated fat to 5 percent of your total, cholesterol intake to 100 milligrams, and use only 4 to 7 teaspoons of mono- or polyunsaturated fat a day. Show slide(s) 28
Explain that your eating habits can affect your health. Try to develop an eating plan that will keep you at your healthiest level and avoid eating disorders. A discussion of two acceptable eating plans and two common, potentially dangerous eating disorders was given at the beginning of this chapter.

4. Guideline #2

Explain that the goal of Guideline #2 is to increase starches and other complex carbohydrates. The typical American diet consists of 22 percent complex carbohydrates and 24 percent sugar.

Explain that general dietary recommendations are to receive 60 to 65 percent of your diet from the carbohydrate group, 50 to 55 percent of that from the complex carbohydrates, and 20 percent from sugar, with most of that coming from fruits.

Note: Almost all nutritionists agree with the National Academy’s number two guideline. By choosing those percentages, you will receive more than adequate amounts of fiber.

5. Guideline #3

Explain that the goal of this guideline is to maintain protein intakes at moderate levels. Americans receive 68 percent of their protein from animal sources (compared to 4 to 5 percent for the Chinese). There is evidence pointing to the rise in some cancers with the increase in animal protein.

Explain that the body needs no more than 0.45 of a gram of protein per pound of lean body weight per day. Since the minimum requirement is 0.16 grams per pound, 10 to 15 percent of your food should come from proteins and the majority of that from plant sources.

a. Alternative Guideline #3

Explain that the American Heart Association recommends no more than two protein servings daily. However, the U.S. Department of Agriculture recommends two to three servings of the milk, cheese, and yogurt group daily and two to three servings of the meat, poultry, fish, beans, eggs, and nuts group.
6. **Guideline #4**  
Explain that the goal of this guideline is to balance food intake and physical activity to maintain appropriate body weight. Approximately one-third of the American population is overweight. Overweight teenage boys are more likely to die at a higher than usual rate by age 45. Teenage girls who are overweight are eight times more likely to have trouble in later years with daily routines such as climbing stairs, lifting, and walking.

Explain that to balance food intake and physical activity requires planning each day’s food intake based upon these guidelines as well as each week’s physical activities to include at least three 30-minute workouts. While in school, participating in sports programs and daily physical activities is the best way to accomplish this goal.

a. **Alternative Guideline #4**  
Explain that body weight is not the best indicator of measuring food intake versus physical activity. Measurement of body fat is a healthier indicator and a much more concise measuring tool in determining the best balance of food intake and physical activity. Also, the more fat that accumulates around the stomach represents more of a danger to the person.

Explain that fewer than 10 percent of Americans over age 18 exercise vigorously and regularly.

Explain that exercise can decrease a person’s chance of dying of heart disease, cancer, and a host of other illnesses.

7. **Guideline #5**  
Explain that the main goal of Guidelines #5 is to avoid alcoholic beverages. Alcohol can produce the following problems with nutritional balance and wellness:

- Upsets metabolism
- Produces fullness, thus the person does not eat a balanced diet
- Increases nutritional needs
- Causes inadequate assimilation (digestion and absorption) of the nutrients

Explain that it is not easy to avoid the temptation of alcoholic beverages, particularly with the pressure that our peers put upon us. The best way to avoid alcoholic beverages is to make the decision not to drink an alcoholic beverage before it is offered to you.
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<tr>
<th>OUTLINE OF INSTRUCTION</th>
<th>TEXTBOOK CONTENT</th>
<th>INSTRUCTOR ACTIVITY</th>
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<tbody>
<tr>
<td>a. Alternative Guideline #5</td>
<td>Explain that try to avoid putting yourself into a situation that will force you to make the choice to drink or not to drink alcohol. First make the decision not to drink alcoholic beverages and let your friends know that alcohol is not for you. Whenever possible, avoid parties and other events where alcohol is served. If you have to attend these events, always plan ahead and have your decision made.</td>
<td>Show slide(s) 45-46</td>
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<td>8. Guideline #6</td>
<td>Explain that the goal here is to limit the daily intake of salt to no more than 3 grams. Salt is 60 percent chloride and 40 percent sodium. Too much sodium can lead to high blood pressure in some people (those who are salt sensitive). Furthermore, salt absorbs water in the body, causing the blood pressure to increase because of the larger volume of water the heart must pass through the system. Try to avoid adding salt to your meals. It is best not to add table salt to any of your meals. All processed or manufactured food has salt added. Just read the label on any canned food and you will be surprised how much salt has already been added.</td>
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<tr>
<td>a. Alternative Guideline #6</td>
<td>Explain that there are several ways that you can cut down on your salt intake, including the following:</td>
<td>Show slide(s) 48-49</td>
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<td>• The National Academy of Sciences recommends no more than 2400 milligrams (1/2 teaspoon; 2.4 grams) of salt a day. One teaspoon of salt is equivalent to 5 grams.</td>
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<td>• Switch to “lite” salt, thus reducing the sodium content by one half. You can also increase potassium (too little increases blood pressure) by using “lite” salt.</td>
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<td>• Eat less processed or manufactured food.</td>
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<td>• Avoid snack food or use unsalted varieties.</td>
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<td>• Limit smoked foods.</td>
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<td>• Limit brine prepared foods such as pickles, olives, and sauerkraut.</td>
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<td>9. Guideline #7</td>
<td>Explain that the goal for Guideline #7 is to maintain adequate calcium intake. Most Americans do not receive enough calcium from their normal diets. Ninety-nine percent of our body’s calcium is present in the bones and teeth. One percent aids in the functioning of the blood, muscles, and nerves.</td>
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5-5-8
Explain that to meet its need for calcium, the body will pull calcium from the bones, causing them to lose their density. This condition, known as osteoporosis, can lead to hip, leg, and arm fractures. Diets that are low in calcium may also cause hypertension (high blood pressure) and some forms of cancer.

Explain that the referenced daily intake for ages 11 to 24 is 1200 milligrams a day. Adult men and women need 1000 milligrams. Pregnant and nursing women also need 1200 milligrams. To prevent osteoporosis:

- Participate in lifelong weight-bearing exercises to ensure the density of the bones
- Avoid excessive protein
- Eat a diet rich in calcium (skim milk, certain fruits, and vegetables)
- Take calcium supplements, if needed
- Avoid starvation diets
- Avoid alcohol and smoking

a. Alternative Guideline

Explain that a well-balanced diet following the Food Guide Pyramid guidelines, as shown in Figure 5.3, ensures adequate calcium intake. Make sure that there is a variety of colors on your plate each meal. For example, dark leafy green vegetables contain calcium, just as dairy products do.

Note: For more information on the Food Guide Pyramid, see Chapter 3, “You Are What You Eat.”

10. Guideline #8

Explain that the goal for Guideline #8 is to avoid taking dietary supplements in excess of the referenced daily intake in any one day.

See Figure 5.3, Page 232
Show slide(s) 54

Show slide(s) 55-56
Explain that there are two schools of thought on this guideline. One says that we can get all of our vitamins and minerals from our normal diet without supplementation. The other opinion is that by taking supplemental dosages of specific vitamins and minerals, we can protect ourselves from birth defects, cataracts, cardiovascular disease, and cancer, as well as strengthen the immune system.

a. Alternative Guideline #8

Explain that as an alternative to Guideline #8, you can

- Take a general vitamin/mineral supplement daily, not to exceed the RDI
- Take a calcium supplement
- Take antioxidant vitamins in supplemental form: vitamin C, vitamin E, and betacarotene (see the following nutrition prescription for an additional alternative).

Note: Always consult a healthcare professional before taking any supplements.

b. Your Nutrition Prescription

Explain that vitamin and mineral supplements are indispensable anti-aging weapons, but too many people use them shotgun style—a handful of this, a bunch of that—instead of coordinating them for the most life-lengthening strategy. To ensure that you are not over- or underdoing any element, you need a prescription customized for your age, gender, health, and lifestyle. Look at the Supplement Blueprint in Table 5.1 and see how much of each supplement you take. Then answer the following six questions. For each yes answer, follow the directions for revising the Supplement Blueprint. If you end up with more than one recommendation for a particular nutrient, follow the highest single dosage.

- Are you male? Delete iron.
- Do you smoke or live/work with a smoker, or do you live in an air-polluted area? Increase C to 1000 mg, selenium to 400 mcg, beta-carotene to 25,000 IU, E to 400 IU, copper to 3 mg, and zinc to 50 mg.
- Do you exercise at least three times a week for 20 or more minutes? Increase E to 400 IU, magnesium to 400 mg, B-1 to 100 mg, and zinc to 50 mg.
- Are you on the Pill (birth-control pills)? Increase B-6 to 50 mg.
• Are you pregnant or nursing? Increase folic acid to 800 mcg, iron to 60 mg, calcium to 1300 mg, and magnesium to 400 mg. Delete A.

• Do you have high cholesterol levels and/or a family history of heart disease?
  Increase E to 400 IU, C to 1000 mg, beta-carotene to 25,000 IU, chromium to 200 mcg, and magnesium to 400 mg.

Explain that according to Ronald Hoffman, Director of the Center for Holistic Medicine in New York City, supplements are especially important for people who do not eat: 1) fresh fruits and vegetables daily; 2) dairy products more than once a week; or 3) at least two full meals a day. Some of the above recommendations are higher than the U.S. RDI’s because longevity research has leapfrogged over the old standards. However, all recommendations are well within safety guidelines. Avoid taking more than the amounts suggested; mega dosing can be dangerous. Remember, check with your doctor before starting any supplement regimen.

11. Guideline #9

Explain that the goal for this guideline is to maintain an optimal intake of fluoride, particularly during tooth formation, which normally continues until the beginning of the teenage years. The requirement for sufficient intake of fluoride begins during pregnancy to ensure proper tooth and bone development.

Explain that fluoride is important to tooth and bone formation. It makes the teeth harder, and they can resist decay and breakdown. Only two-thirds of the U.S. population receives fluoridated water. The National Research Council of the National Academy of Sciences recommends 1 milligram of fluoride for each liter of water consumed.

a. Alternative Guideline #9

Explain that most cities and towns in the United States add fluoride to the communities’ drinking water, which provides the fluoride needed to help fight tooth decay; however, it is also recommended that you brush your teeth with a fluoride toothpaste to ensure that you are providing adequate protection for your teeth.
C. Conclusion  
Explain that the nine guidelines presented in this chapter are the results of one of the most comprehensive scientific analysis of potential health risks and benefits stemming from diet. Implementing these guidelines means that we will need to devote more time and attention to our daily diets and the risk factors associated with improper diets.  

Explain that in the following chapter, you will learn tips and hints to help control your intake of fats in your diet. You will also learn that some fat is essential to good health.

### III. APPLICATION

<table>
<thead>
<tr>
<th>A. Review Questions</th>
<th>INSTRUCTOR ACTIVITY</th>
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<tbody>
<tr>
<td>1. What is the goal for total daily fat intake?</td>
<td>Ask the following questions to ensure understanding.</td>
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<tr>
<td>2. What are the differences between anorexia nervosa and bulimia?</td>
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<td>3. What are the signs of anorexia nervosa and bulimia?</td>
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<td>4. What is the general dietary recommendation for daily carbohydrate intake?</td>
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### IV. EVALUATION

<table>
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<tr>
<th>A. Test</th>
<th>INSTRUCTOR ACTIVITY</th>
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<tr>
<td>A. The amount of energy required to make the body produce one gram of fat</td>
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<td>B. The amount of energy the body uses to burn one gram of fat</td>
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<tr>
<td>C. The amount of energy required to run basic functions (heartbeat, breathing, etc.) for one hour</td>
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<tr>
<td>D. The amount of energy required to raise one kilogram of water one degree Celsius</td>
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</table>
Q.2. Metabolism may be defined as the_______.

A. absorption of food molecules into the bloodstream
B. movement of food through the digestive organs
C. collection of chemical reactions that convert food into energy
D. process of breaking down food into components that the body can use

Q.3. Too much cholesterol harms the body by _______.

A. sticking to artery walls and restricting blood flow
B. interfering with the body’s ability to regulate sugars
C. blocking the body from absorbing nutrients
D. inhibiting the ability of the red blood cells to carry oxygen

Q.4. Nutrients that occur naturally in plant and animal tissue and are required for proper function of the body are called what?

A. Proteins
B. Carbohydrates
C. Vitamins
D. Minerals

Q.5. Natural chemical elements of the Earth used by the body to supply necessary nutrition are called what?

A. Proteins
B. Carbohydrates
C. Vitamins
D. Minerals

Q.6. Nutrients that are made of amino acids and that maintain body tissues and supply energy to the body are called what?

A. Proteins
B. Carbohydrates
C. Vitamins
D. Minerals

Q.7. What substances may be described as starches from plant material that are broken down by the body into glucose to use for long-term energy?

A. Proteins
B. Fats
C. Simple carbohydrates
D. Complex carbohydrates

Q.8. What substances are sugars that are quickly digested and absorbed in the blood?

A. Proteins
B. Fats
C. Simple carbohydrates
D. Complex carbohydrates
### Q.9. What substances help maintain body temperature, serve as a source of stored energy, and carry vitamins A, D, E, and K to the cells?

- **A. Fats**
- B. Simple carbohydrates
- C. Complex carbohydrates
- D. Proteins

### Q.10. What type of fat does not melt at room temperature and raises blood cholesterol level?

- A. Monounsaturated
- B. Polyunsaturated
- **C. Saturated**
- D. Triglycerides

### Q.11. What is the primary source of unsaturated fat?

- A. Meat
- B. **Vegetables**
- C. Dairy products
- D. Processed foods

### Q.12. Which of these statements about cholesterol is NOT accurate?

- A. HDLs (high density lipoproteins) help the body get rid of extra cholesterol.
- B. LDLs (low density lipoproteins) deposit extra cholesterol in the arteries where the accumulations can interrupt blood flow.
- C. Fiber helps the body get rid of extra cholesterol by binding to it and carrying it out of the body.
- **D. The body does not produce its own cholesterol but requires it for healthy nerves, cells, and digestion.**

### Q.13. Which of these is NOT a monounsaturated fat and is therefore a poor dietary choice?

- A. Peanut oil
- B. Canola oil
- C. **Coconut oil**
- D. Olive oil

### Q.14. The basic units of protein are called what?

- A. Complex carbohydrates
- B. Simple carbohydrates
- C. Cholesterol
- **D. Amino acids**
Q.15. Which of these foods is NOT a source of complete protein?

A. Beans  
B. Fish  
C. Milk  
D. Chicken

Q.16. Complete protein foods are those that ________.

A. contain fiber as well as amino acids  
B. supply all eight essential amino acids  
C. bind with cholesterol and take it out of the body  
D. furnish the proteins that the body uses as short-term energy

Q.17. Which of these statements about vitamins, minerals, and water contains an error?

A. The body requires large amounts of certain minerals such as calcium, potassium, and sodium (which are called macrominerals), but only small amounts of others such as iron.  
B. Because 60-70% of the body is water (which carries nutrients, aids in digestion, lubricates joints, and allows many chemical processes), we would die within a few days without it.  
C. Vitamins are taken into the body either by being dissolved into the tissues by water or by being absorbed into the intestines with the help of fats.  
D. The most recent standards developed by the government that regulate vitamin and mineral requirements are called the RDA (Recommended Daily Allowance).

Q.18. Which of these vitamins or minerals is paired incorrectly with its function?

A. Iron: healthy blood  
B. Calcium: strong bones and teeth  
C. Vitamin B complex: energy conversion  
D. Vitamin D: maintenance of eyes and skin

Q.19. What percentage of the human body is made of water?

A. 60-70  
B. 40-50  
C. 30-40  
D. 20-25
Q.20. The most common cause of malnutrition is _______.

A. poverty
B. unawareness of nutritional needs
C. diseases that prevent absorption of nutrients
D. crop failure from famine or drought

Q.21. A person who repeatedly overeats then vomits in an attempt to be thin is suffering from _______.

A. amenorrhea
B. anorexia
C. bulimia
D. obesity

Q.22. A person with _______, though significantly underweight, fears being fat and therefore has an aversion to food.

A. bulimia
B. anorexia
C. hypoglycemia
D. bingeing disorder

Q.23. To reduce total fat intake to a healthy level, avoid all _______ (the most recent addition to nutritional labels), which is found in food with solid plant fat such as stick margarine and cream fillings.

A. monounsaturated fat
B. polyunsaturated fat
C. saturated
D. trans-fat

Q.24. According to the guidelines of the National Academy of Sciences, total fat intake should be _______ percent or less of your total calories.

A. 15
B. 25
C. 30
D. 35

Q.25. Most nutritionists recommend a diet of at least _______ percent carbohydrates.

A. 40
B. 50
C. 60
D. 70

Q.26. Most Americans receive more than two-thirds of their protein from _______ but most of it should come from _______.

A. animal sources, plant sources
B. fatty meats, lean means
C. simple carbohydrates, complex carbohydrates
D. saturated fats, monounsaturated and polyunsaturated fats
| Q.27. Approximately _______ of Americans are overweight. | A. 1/2  
B. 1/3  
C. 1/4  
D. 2/3 |
| Q.28. Too much _______ can lead to high blood pressure. | A. calcium  
B. iron  
C. protein  
D. sodium |
| Q.29. The average person should have no more than _______ grams of salt in a day. | A. 3  
B. 4  
C. 5  
D. 6 |
| Q.30. Too little _______ can lead to osteoporosis, or loss of bone density, because the body draws it from the bones to meet its needs. | A. fluoride  
B. iron  
C. calcium  
D. protein |
I. INTRODUCTION

A. Establish contact.
   1. Introduce the topic for this lesson: “Controlling Fat.”

B. Establish readiness.
   1. Motivating statements
      Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.
   2. Lesson overview
      Bring out the importance of the material being presented.

In this lesson, you will learn how fat and obesity affect your health and how to control your body weight and percentage of body fat.

II. PRESENTATION

Direct cadets to follow this discussion from Unit V, *Wellness, Fitness, and First Aid*.

A. Introduction
   Explain that in today’s society, obese and overweight people, young and old, seek corrective advice from all types of organizations and individuals. These “experts,” for many reasons, attempt to encourage and control what we eat, how we eat, when we eat, how much of what we eat, etc.

   Explain that in this chapter, you learn how it is possible, without difficulty, to carry an amount of fat that is helpful and encourages the dynamic living principle. You will see in the simplest terms a method designed to keep you healthy and promote enjoyment of living while participating in life to your fullest potential.
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<th>OUTLINE OF INSTRUCTION</th>
<th>TEXTBOOK CONTENT</th>
<th>INSTRUCTOR ACTIVITY</th>
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<tr>
<td><strong>B. Fat Control</strong></td>
<td>Explain that when you are obese or overweight, you increase your risk of cardiovascular disease, high blood pressure, gall bladder disease, diabetes, and certain types of cancer. Obesity also prevents you from performing actively at your highest potential and from raising your self-esteem and self-assurance. Explain that determining whether you are obese or overweight is not dependent on how much you weigh on a scale. All of us have our own unique and special body types, which include our inherited strengths and weaknesses and tendencies that encourage accumulation of fat in our formative years, such as the following:</td>
<td>Show slide(s) 4</td>
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<td></td>
<td>• Family eating habits • A tendency to develop more fat cells • A large skeletal structure • Any number of unproved theories passed down through the years. Explain that to ensure that you follow a proper and proven method for obtaining a healthier lifestyle, we will present you with a few guidelines on learning how to control your fat intake. Explain that the steps to controlling body fat are a combination of restricting your fat intake, getting adequate exercise, making the right food choices, and understanding how to measure your body fat and how to use that information in your overall wellness program.</td>
<td>Show slide(s) 5</td>
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<tr>
<td><strong>1. Step 1: Restricting Your Fat Intake</strong></td>
<td>Explain that most of us are continually trying to lower our body fat. When you diet, the body says you need to store more fat instead of less fat. This causes, especially in females, the body to slow down, which reduces the fat burning enzymes. Therefore, with each diet you undertake, the body reduces more fat burning enzymes, making it harder for you to lose fat. But remember, fat levels that drop too low are also unhealthy and unsafe. A certain amount of <strong>essential fat</strong> is necessary to maintain the bodily functions discussed earlier.</td>
<td>Show slide(s) 6-8</td>
</tr>
</tbody>
</table>
Explain that for example, most women should not go below eight percent, as this would upset the menstrual cycle, the ability to conceive children, and eventually hormonal balance. In men, the lower limit is approximately three to four percent.

Explain that storage fat, on the other hand, is our fat reserve that can become a problem for many of us. Women in general seem to have a greater propensity to store fat. The reason for this is probably estrogen, which increases the fat-storing capability. Evidence points to the hips, thighs, and buttocks as the body’s most desirable storage areas.

Explain that the following are ratings of body fat percentages by age and gender:

<table>
<thead>
<tr>
<th>Males ages 18 to 30:</th>
<th>Females ages 18 to 30:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athletes</td>
<td>Athletes</td>
</tr>
<tr>
<td>6–10%</td>
<td>10–15%</td>
</tr>
<tr>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>11–14%</td>
<td>16–19%</td>
</tr>
<tr>
<td>Acceptable</td>
<td>Acceptable</td>
</tr>
<tr>
<td>15–17%</td>
<td>20–24%</td>
</tr>
<tr>
<td>Possibly needs help</td>
<td>Possibly needs help</td>
</tr>
<tr>
<td>18% and over</td>
<td>25% and over</td>
</tr>
<tr>
<td>(Obese/Overweight)</td>
<td>(Obese/Overweight)</td>
</tr>
</tbody>
</table>

Explain that the average-weight adult has approximately 25 to 30 billion fat cells, whereas the average overweight adult has between 60 to 100 billion. Some overweight people can have as many as 200 billion. Many factors are responsible for the development of these fat cells. Despite all the reasons, a person’s growth and/or activities may or may not use all of the foods, or calories, consumed. The body will store the non-used calories as fat. For maximum benefit, keep saturated fat to a minimum. Count your total fat intake over a seven-day period. If you foul up, just cut back the next day.

Explain that when your fat content is where you desire, the next step is to develop a lifetime guideline for healthy eating. Calculate your daily intake of carbohydrates, fats, and proteins (as you did in the Journal Exercises in the previous chapters). Then choose one of the following plans and stick to it. The two plans that best enhance the dynamic living profile are #2 and #3. Whichever plan you select will require an effort on your part to make it succeed; but it will work and you can enjoy the benefits of that change.
### Outline of Instruction Textbook Content Instructor Activity

<table>
<thead>
<tr>
<th>Plan #1 (Average American Diet)</th>
<th>Plan #2 (The New American Diet)</th>
</tr>
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<tbody>
<tr>
<td><strong>Fat</strong></td>
<td><strong>Fat</strong></td>
</tr>
<tr>
<td>37–42%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Saturated Fat</strong></td>
<td><strong>Saturated Fat</strong></td>
</tr>
<tr>
<td>12–15%</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td><strong>Protein</strong></td>
</tr>
<tr>
<td>10–15%</td>
<td>10–15%</td>
</tr>
<tr>
<td><strong>Carbohydrates</strong></td>
<td><strong>Carbohydrates</strong></td>
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<tr>
<td>40–45%</td>
<td>60–65%</td>
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<table>
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<tr>
<th>Plan #3 (The Lifetime Eating Plan)</th>
<th>Plan #4 (U.S. Dietary Goals)</th>
</tr>
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<tbody>
<tr>
<td><strong>Fat</strong></td>
<td><strong>Fat</strong></td>
</tr>
<tr>
<td>10%</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Saturated Fat</strong></td>
<td><strong>Saturated Fat</strong></td>
</tr>
<tr>
<td>Low</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td><strong>Protein</strong></td>
</tr>
<tr>
<td>10–15%</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Carbohydrates</strong></td>
<td><strong>Carbohydrates</strong></td>
</tr>
<tr>
<td>75–80%</td>
<td>60%</td>
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2. **Step 2: Exercise—How the Body Burns Food (Calories/Energy)**

Explain that in addition to eating a healthy diet, you must follow an exercise program to maintain a lean body fat content. Balancing how many calories you consume with how many calories your body burns daily is the key to maintaining body fat content and weight. People gain body fat when they consume more calories daily than their bodies use for energy. Keep in mind that one pound of body fat contains approximately 3,500 calories. Therefore, if a person wants to lose a pound of body fat in one week, he or she must burn 3,500 calories more than he or she consumes over the course of the week.

Explain that your body burns calories even when it is at complete rest. **Basal metabolic rate (BMR)** is the number of calories burned at complete rest, and it varies based on age, health, and body size, shape, and weight. For example, after age 25, most people’s BMR decreases approximately 1 percent because their requirements for energy slow down. In addition to your BMR, your body burns calories through muscle activity; and while you do not have much control over your BMR, you do have control over the amount of physical activity in which you participate. Obviously, the more active you are, the more calories you use.

Choose an exercise program that accomplishes the two goals of improving your heart and lungs, as well as working your muscles. You can increase the efficiency of the heart and respiratory system through exercises such as jogging, swimming, and biking that increase the heart rate and maintain it for a set period of time. The time will vary based on your age, abilities, and the exercise being performed.

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5-6-4
### OUTLINE OF INSTRUCTION

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<tr>
<th>TEXTBOOK CONTENT</th>
<th>INSTRUCTOR ACTIVITY</th>
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<tr>
<td>Explain that the second goal of working your muscles includes toning your muscles and/or increasing your muscle size and improving your muscle strength. Because muscle burns more energy than fat, the more muscle tissue you have, the more calories you burn. This is also true of your BMR, meaning that even at rest, the more muscle mass you have, the more energy your body will burn. You can work your muscles through weight training and exercises such as push-ups and sit-ups.</td>
<td>Show slide(s) 24-26</td>
</tr>
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</table>

3. **Step 3: Food Control and Choice**

Explain that people eat for many different reasons: they feel hungry, the time of day, they missed a meal, or they are following their families’ eating routine. Whatever the reason to eat at any given time, it is the choice of food that will truly make the difference in whether you will develop an overweight problem or maintain the dynamic living profile.

Explain that as you learned in previous chapters, the most recent USDA-approved Food Guide Pyramid can be accessed at www.mypyramid.gov. This is an interactive website where you can enter your age, gender, and level of activity to design an eating program geared towards your body type and lifestyle. For example, if you are a 16-year-old female who gets 30 to 60 minutes of exercise per day, you should be getting 2,000 calories per day, consisting of:

- Six ounces of whole grains (breads, pastas, cereals, and so on)
- Two and a half cups of vegetables (it is recommended that you eat more dark green vegetables such as spinach and other leafy greens; orange vegetables such as sweet potatoes and squashes; dried beans and peas)
- Two cups of fruit (fresh, frozen, dried, or canned, but try to go easy on the fruit juices)
- Three cups of milk (low- or no-fat is preferable)
- Five and a half ounces of lean protein foods (broiled, grilled or baked) with a variety of chicken, fish, beans, peas, nuts, and seeds.
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<tr>
<td>Explain that limit your oil (butter and other fats) intake to six teaspoons per day, and try to avoid an excess of sugar. You should strive to limit your extra oils and sugars to 265 calories per day.</td>
<td>4. Step 4: Measuring Your Body Fat</td>
<td>Show slide(s) 30</td>
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<tr>
<td>Explain that this section presents two fairly accurate methods of measuring your body fat. Follow the directions and do not be discouraged. Body types differ, and you are your own special person.</td>
<td><strong>a. Pinch an Inch Test</strong></td>
<td>Show slide(s) 31-32</td>
</tr>
<tr>
<td>Explain that your body does not need large amounts of fat. When your storage, or reserve, fat begins to melt away, you can determine the right level by using the “pinch an inch” test as a simple method of measuring and maintaining your body’s fat.</td>
<td>Explain that you can perform the “pinch an inch” test by pinching the skin fold of your triceps (women only), waist, or thighs between your fingers. If the fat is over an inch between your thumb and forefinger, you might consider continuing your fat control program.</td>
<td></td>
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<tr>
<td><strong>b. Estimating Body Fat</strong></td>
<td>Explain that Jack H. Wilmore, an exercise physiologist at the University of Texas in Austin, created the following ways to measure body fat.</td>
<td>Show slide(s) 33</td>
</tr>
<tr>
<td>Explain that women: Measure the circumference of your hips at the widest point and plot that measurement and your height on the chart in Figure 6.1. Then, using a straight edge, draw a line connecting the two plots. Your body fat percentage is where the line crosses the percent fat column. Refer to the appropriate chart in Step 1 to see if your fat content is acceptable, good, athletic, or needs help.</td>
<td><em>Show slide(s) 34 See Figure 6.1, Page 240</em></td>
<td></td>
</tr>
<tr>
<td>Explain that men: Refer to Figure 6.2 and measure the circumference of your waist at the exact level of the belly button, making sure to keep the tape perfectly horizontal. Plot that measurement and your weight on the chart at the top of the next column. Then, using a straight edge, draw a line connecting the two plots. Your body fat percentage is where the line crosses the percent fat column. Refer to the appropriate chart on in Step 1 to see if your fat content is acceptable, good, athletic, or needs help.</td>
<td><em>See Figure 6.2, Page 241 Show slide(s) 35</em></td>
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<th>OUTLINE OF INSTRUCTION</th>
<th>TEXTBOOK CONTENT</th>
<th>INSTRUCTOR ACTIVITY</th>
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<tr>
<td>c. The Road to Fat Control</td>
<td>Explain that a 1992 Consumer Reports survey with 68 nutrition experts indicated a deepening concern over America’s dietary habits and implicated the leading causes of death as being associated with eating and drinking. The causes of death are coronary artery disease (heart attack), cancer, cerebral vascular disease (stroke), diabetes, liver disease, bowel disorders, and osteoporosis. Explain that the 68 experts agreed on a reasonable diet for the American people as one that closely resembles the dietary guidelines set forth by the U.S. RDI and the Department of Health and Human Services. Additionally, the experts were much more deliberate in defining an “ideal” diet as one that maximizes the immune system, reduces the risk of disease, and minimizes the process of aging. Explain that by understanding the experts’ opinions and responses, you can develop a formula that promotes a healthier lifestyle. If used properly, this formula can improve your immune system and lower risks of the leading causes of death; keep your body fat at a healthy level; and enhance your potential to maintain an ideal body fat content for life.</td>
<td>Show slide(s) 36 Show slide(s) 37 Show slide(s) 38-39</td>
</tr>
<tr>
<td>C. Carbohydrates: How to Eat Them</td>
<td>Explain that a definition of natural foods is one that fits the carbohydrate category perfectly. Natural foods are foods that are as unrefined as possible and free from additives and preservatives. Fruits, vegetables, and grains in their natural state are the key elements to a maximized immune system and a body fat content that will maintain itself for a lifetime. Explain that there is growing evidence that a diet rich in fruits, vegetables, and grains will reduce the risk of certain cancers. Such a diet will also protect the heart and bones from early breakdown and infirmity, which limit millions of Americans from enjoying their potential. Explain that depending on your gender, body type, and level of activity, experts recommend at least three ounces of whole grains, a variety of fruits and vegetables, lower no-fat dairy products, broiled, grilled, or baked meats, and a limited amount of fat and sugar. To be realistic in our hurry-up lifestyles, this may not be possible. However, evidence supports eating small amounts of these natural products several times a day for maximum benefit.</td>
<td>Show slide(s) 40-41 Show slide(s) 42 Show slide(s) 43-44</td>
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<td>OUTLINE OF INSTRUCTION</td>
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<td>INSTRUCTOR ACTIVITY</td>
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<tr>
<td>Explain that when you design your own eating program at <a href="http://www.mypyramid.gov">www.mypyramid.gov</a>, you can ensure you will be receiving all the carbohydrates you need (20 to 35 grams a day) without worrying about supplemental fiber. Plus, there is also room to enjoy a sweet treat. But remember, look at the label and keep the fat content at a reasonable level, and your sugar intake to nearly zero.</td>
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<tr>
<td><strong>D. Protein: Don’t Worry</strong></td>
<td>Explain that if you are eating the recommended amounts of carbohydrates in a diversified manner, tests indicate you will receive your complete protein needs without concern. Most of your protein (about 85 to 90 percent) should come from plant sources or the complex carbohydrates. Studies indicate that populations eating a high degree of protein coming from animal products (as do Americans, with 70 to 75 percent) will have a higher incidence of problems.</td>
<td>Show slide(s) 46-47</td>
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<tr>
<td><strong>E. Vitamins, Minerals, and Water: The Regulators</strong></td>
<td>Explain that in general, the experts believe that you can receive your vitamins and minerals in sufficient amounts from a well-balanced diet. They also suggest that you drink water at a rate of six to eight glasses per day—more if you work out rigorously.</td>
<td>Show slide(s) 48</td>
</tr>
<tr>
<td><strong>F. Planning a Balanced Diet</strong></td>
<td>Explain that up and down Elm Street, families begin the day with healthy breakfasts. The Gilmores eat bran muffins, orange juice, and shredded-wheat cereal with milk. Across the street, the Lins sit down to a traditional Korean breakfast of soybean soup with chunks of bean curd (tofu) and rice. Explain that people’s food choices are influenced by many factors, one of which is their culture. The term culture refers to the way of life of a group of people, including their customs and beliefs. Food is one important aspect of culture. As the two breakfasts demonstrate, different groups consume different foods. Look at Figure 6.3 and imagine which breakfast you would choose. Explain that both culture and personal preferences affect the types of food that are served in your household. Some families may dislike fish, for example, while others may choose not to eat red meat. In addition, most people respond to peer pressure when selecting food; when you eat a meal with friends, you may choose different foods than when you are by yourself or with your family. Your economic situation also plays a role in what you decide to eat. People with low incomes cannot afford to buy certain foods.</td>
<td>Show slide(s) 49 See Figure 6.3, Page 243 Show slide(s) 50-51 Show slide(s) 52</td>
</tr>
<tr>
<td>OUTLINE OF INSTRUCTION</td>
<td>TEXTBOOK CONTENT</td>
<td>INSTRUCTOR ACTIVITY</td>
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<tr>
<td>Explain that when you are making decisions about what to eat, consider the nutrition content of foods. There are many ways of meeting your nutritional needs, no matter what your preferences are. With a little imagination, you can have a variety of well-balanced meals and snacks.</td>
<td>Show slide(s) 53-54</td>
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1. Meals

   What is your favorite meal of the day? Whether it is breakfast, lunch, or supper, it and your other meals should provide you with a balance of healthy nutrients. 

   **a. Breakfast**
   
   Explain that even if you are rushed in the morning, do not neglect breakfast, because many nutritionists believe that breakfast is the most important meal. After a night without food, your stomach is empty, and your body needs fuel for the day’s activities. A good, balanced breakfast should provide as much as one-third of your daily food needs. If your breakfast is inadequate, you may be tempted later to eat snacks that are low in nutrient density. 

   **b. Lunch**
   
   Explain that school cafeterias provide nutritionally balanced meals planned by dietitians. Some school cafeterias even offer nutritious snacks, salad bars, and special diet foods. Because lunch makes up another third of your food needs for the day, make sure that you choose nutrient-dense foods. You might, for example, eat a turkey sandwich on whole-wheat bread, a salad, a carton of milk, and an orange. 

   **c. Supper**
   
   Explain that in many cultures around the world, lunch is the major meal of the day. In the United States, the biggest meal is generally the evening meal. Because you may be less physically active after this meal, supper should not account for more than the final third of your daily calorie needs. The evening meal can be an opportunity to fill in gaps in the day’s Food Guide Pyramid selections. Suppose, for example, you have not eaten foods from the vegetable group at breakfast and lunch. You might volunteer to prepare a fresh green salad for dinner that includes several vegetables, such as spinach, carrots, and celery. 

   Show slide(s) 55 

   Show slide(s) 56 

   Show slide(s) 57 

   Show slide(s) 58-59
d. Snacks

Explain that snacks can contribute significantly to your nutritional needs if you choose them wisely. However, many snack foods, such as those frequently sold in movie theaters, vending machines, and the snack-food sections of supermarkets, are high in fats and sugar and low in nutrient density. If you fill up on chips, soft drinks, and candy bars, you may have no appetite for the nutrient-dense foods that you need. Moreover, because snack foods are often high in calories, frequent snacking may result in unwanted weight gain. Finally, many snack foods, such as soft drinks and chocolate, contain caffeine, which can cause nervousness and sleeplessness.

Explain that for snacks, choose foods with a high nutrient density. Instead of an evening snack of cookies, try satisfying your craving for sweets with some fruit. Make a bagel, not a doughnut, your after-school treat. When you go to the movies, choose unbuttered popcorn instead of chips or candy.

2. Fast Foods

Picture this: You and a friend drop by your favorite fast-food restaurant several times a week for a meal of double cheeseburgers, fries, and shakes. Table 6.1 shows a nutritional breakdown of your favorite fast-food meal.

Explain that similar to this one, many fast-food meals are high in fat and calories. When you eat in fast-food restaurants, follow these guidelines:

- Substitute low-fat or nonfat milk or orange juice for shakes and soft drinks
- Select the salad bar in place of fries and onion rings
- Choose a grilled chicken sandwich instead of a hamburger or cheeseburger
- Sauces and dressings can add a lot of fat; use them sparingly
- Taste food before adding extra salt to it.

G. Improving Your Diet

Explain that the Food Guide Pyramid’s recommendations can help you select specific kinds and amounts of food. In addition, nutrition experts have identified some general ways in which the American diet can be improved. Their recommendations, called the Dietary Guidelines for Americans, can help you plan a healthy diet.
• Eat a variety of foods. To obtain all the different nutrients you need, choose a wide selection of foods.

• Balance the food you eat with physical activity to maintain or improve your weight. Health problems can develop if you are too fat or too thin.

• Choose a diet with plenty of grain products, vegetables, and fruits. These foods are especially rich in starch and fiber.

• Choose a diet low in fat, saturated fat, and cholesterol. Choose lean meats, fish, poultry, and legumes instead of fatty meat. Cut away all visible fat on meats, and remove the skin from poultry. Limit fried foods, including potato chips, french fries, and doughnuts.

• Choose a diet moderate in sugars. Foods high in sugar are high in calories but often low in more useful nutrients. Limit your intake of sweet snacks and soft drinks.

• Choose a diet moderate in salt and sodium. Sodium, which is found in table salt and salty foods, has been linked to high blood pressure. Avoid eating too many salty snacks, pickled foods, luncheon meats, and canned soups. Do not add salt to foods at the table.

• Adults who use alcohol should do so in moderation. Alcoholic beverages are very low in nutrient density. In addition, as you will learn later, alcohol can damage every system in your body. Many adults choose not to drink at all, but those who do drink alcohol should strictly limit their intake.

H. Changing Nutritional Needs

Explain that just as your body changes throughout life, so do your nutritional needs. During infancy, childhood, and adolescence, the body needs great amounts of all the nutrients necessary for physical growth. Teenagers need ample protein in their diets to support their physical growth. Adolescents also need significant amounts of iron; girls lose iron during menstruation, and boys need additional iron to support the development of muscle mass. The need for calcium also reaches its peak during the teenage years. Adolescent girls, in particular, are advised to eat calcium-rich foods as a means of preventing the weakening of bone that can occur later in life.
Explain that after adolescents become adults, their activity levels generally decrease, and continue to do so as they grow older. As activity decreases, so do energy needs. For this reason, adults need to watch their caloric intake carefully. Older adults, moreover, may need to increase the fiber in their diet as an aid to digestion. With proper attention to their nutritional needs, older people can live healthy and vigorous lives.

I. Managing Your Weight

Are you content with your weight, or would you like to change it in some way? If you are comparing yourself to athletes, film stars, and friends whose appearance you admire, you may be trying to achieve a weight that is unrealistic for you—and even unhealthy. When people have unrealistic expectations about their weight, they sometimes develop eating disorders such as anorexia nervosa and bulimia. However, some people do have good reasons for wanting to lose or gain weight. Those reasons relate to health, and not to some idealized concept of beauty or handsomeness.

1. Assessing Your Weight

Explain that Cassie and her best friend Thuy are the same height. Cassie weighs 10 pounds more than Thuy, but both girls have a weight that is appropriate for them. Thuy is small boned, while Cassie has a larger bone structure. In addition, Cassie is very athletic, and some of her extra weight is in the form of muscle mass, not body fat. A person’s appropriate weight depends on various factors, including body structure and level of activity. Your appropriate weight is one that you feel comfortable with, one that does not present any health risks. A physician or nutrition expert can help you determine your appropriate weight.

Explain that the amount of body fat, rather than weight, should be your concern. Various tests measure body fat. In one test, for example, an instrument called a skin-fold caliper is used to measure the fat deposits that accumulate under the skin.

Explain that even though you do not have skin-fold calipers, you can get a rough idea of whether or not you have too much body fat. Pinch a fold of skin on your upper arm and estimate its thickness. If the fold of skin is more than one inch (2.5 centimeters) thick, you may have excess fat. However, remember that your estimate is not as accurate as a test done by a professional who is trained in evaluating weight problems.
### TEXTBOOK CONTENT

2. Appetite, Hunger, and Metabolism

Explain that if an appropriate test has determined that you should change your weight, you will probably need to modify your eating habits. Once you have achieved a healthy weight, you will want to maintain it. To maintain a healthy weight, the number of calories that you eat each day should match the daily calorie needs of your body. Calories are units of energy. If you eat more calories than your body can use, it will store the excess energy as fat, causing you to gain weight. A diet that contains fewer calories than you need can make you lose weight.

Explain that your calorie needs are partly determined by your activity level; the more active you are, the more calories you need. In addition, your basal metabolic rate—the rate at which you use energy when your body is completely at rest—affects your calorie needs. The higher your basal metabolic rate, the more calories you will burn. Various factors affect basal metabolic rate. For example, older people tend to have a lower basal metabolic rate than do younger ones. Children and pregnant women tend to have higher basal metabolic rates than the rest of the population. Regular exercise may help increase a person’s basal metabolic rate.

Explain that if you are trying to change your eating habits, your task will be easier if you understand the physical and emotional factors that make you crave food. Hunger is a feeling of physical discomfort that is caused by your body’s need for nutrients. Appetite, in contrast, is a desire for food that is based on emotional factors rather than nutritional need. Unlike hunger, which is an inborn response, appetite is learned. For example, suppose you smell chicken roasting. Your appetite may make you want to eat the chicken because you have learned to associate that particular aroma with a delicious taste. Your appetite may sometimes make you eat even when you are not hungry.

Explain that appetite and hunger are not the only factors that affect people’s eating behavior. Emotional stress, for example, can influence eating. Some people crave more food when they experience stress, while others lose their appetite. People may eat because they are bored or because they are with others who are eating.

### INSTRUCTOR ACTIVITY

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<tr>
<td>2. Appetite, Hunger, and Metabolism</td>
<td>Explain that if an appropriate test has determined that you should change your weight, you will probably need to modify your eating habits. Once you have achieved a healthy weight, you will want to maintain it. To maintain a healthy weight, the number of calories that you eat each day should match the daily calorie needs of your body. Calories are units of energy. If you eat more calories than your body can use, it will store the excess energy as fat, causing you to gain weight. A diet that contains fewer calories than you need can make you lose weight. Explain that your calorie needs are partly determined by your activity level; the more active you are, the more calories you need. In addition, your basal metabolic rate—the rate at which you use energy when your body is completely at rest—affects your calorie needs. The higher your basal metabolic rate, the more calories you will burn. Various factors affect basal metabolic rate. For example, older people tend to have a lower basal metabolic rate than do younger ones. Children and pregnant women tend to have higher basal metabolic rates than the rest of the population. Regular exercise may help increase a person’s basal metabolic rate. Explain that if you are trying to change your eating habits, your task will be easier if you understand the physical and emotional factors that make you crave food. Hunger is a feeling of physical discomfort that is caused by your body’s need for nutrients. Appetite, in contrast, is a desire for food that is based on emotional factors rather than nutritional need. Unlike hunger, which is an inborn response, appetite is learned. For example, suppose you smell chicken roasting. Your appetite may make you want to eat the chicken because you have learned to associate that particular aroma with a delicious taste. Your appetite may sometimes make you eat even when you are not hungry. Explain that appetite and hunger are not the only factors that affect people’s eating behavior. Emotional stress, for example, can influence eating. Some people crave more food when they experience stress, while others lose their appetite. People may eat because they are bored or because they are with others who are eating.</td>
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<tr>
<td>3. Dangers of Obesity</td>
<td>Explain that if you frequently eat more calories than you need, you risk becoming overweight. People are overweight if they weigh more than 10 percent above their appropriate weight. The condition known as obesity (oh BEE sih tee) occurs when a person’s weight is 20 percent or more above an appropriate weight. Obesity can create many serious health problems and risks, as illustrated in Figure 6.4. Obese people may suffer from high blood pressure and experience difficulty breathing. Being obese also increases a person’s risk of heart attack, stroke, diabetes, arthritis, and certain forms of cancer. People who are significantly overweight should make every effort to reduce their weight to a healthier level.</td>
<td>See Figure 6.4, Page 248 Show slide(s) 83-84</td>
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<td>4. Reducing Weight and Fat Safely</td>
<td>Explain that a sensible program of weight loss involves choosing nutritionally balanced meals and snacks. Even though you want to reduce the number of calories that you consume, you still need to make sure that you are obtaining the nutrients necessary for good health. Choose low-calorie foods that are high in nutrient density.</td>
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<tr>
<td>a. Recognizing Eating Patterns</td>
<td>Explain that before you plan your diet, keep a diary of what you presently eat. Record the foods that you consume, when you eat them, and how you feel at these times. Use calorie guides to count the approximate number of calories you consume each day. Explain that as you review your diary, you may discover eating patterns or behaviors you were not aware of. You may even find out what triggers your overeating. Some people overeat when they are disappointed, depressed, excited, or tired.</td>
<td>Show slide(s) 86 Show slide(s) 87</td>
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<td>b. Planning Helpful Strategies</td>
<td>Explain that the following are some strategies that will help you eat sensibly:</td>
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<td>• Do not try to lose weight too fast. If you change your eating habits gradually rather than suddenly, your weight-loss program will be more successful in the long run.</td>
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<td>• Take small portions of food and eat your food slowly so that you can enjoy its taste.</td>
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<td>• If you tend to overeat when you are unhappy or bored, think of an enjoyable behavior that you might substitute for eating—taking a walk, for example.</td>
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<td>• To avoid between-meal hunger, save some food from regular meals, such as bread, and later eat it as a snack.</td>
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• If you occasionally overeat, do not become upset. Just go back to your sensible eating habits.

c. Exercising

Explain that your weight reduction program should involve regular exercise, such as walking, dancing, or swimming. Changing your eating habits alone is far less effective than eating changes combined with exercise. When you decrease your calorie intake but do not exercise, your basal metabolic rate goes down. Thus your body does not burn calories as rapidly as it did before you began reducing your calorie consumption, and your weight loss slows or stops.

5. Fad Diets, Diet Aids, and Fasting

Explain that many people want to lose weight very quickly, so they rely on strategies such as fad diets, pills, or fasting. These approaches are unrealistic and unsafe.

a. Fad Diets

Explain that a fad diet is a popular diet that may help a person lose weight but without proper regard for nutrition and other matters of health. Fad diets range from high protein, low carbohydrate diets to diets with special ingredients that are supposed to help you burn fat. These diets often exclude some important nutrients.

b. Dieting Myths and Facts

Explain that there are many myths and facts surrounding diets and dieting.

MYTH: Eating starchy foods, such as bread and pasta, will make you gain weight.

FACT: Starchy foods, or complex-carbohydrate foods, have fewer calories per ounce than fats.

MYTH: You can lose a lot of weight just by exercising.

FACT: To lose a pound by exercising alone, you would need to run for 4 1/2 hours or do aerobics for more than 6 hours.

MYTH: You can lose weight if you don’t eat breakfast.

FACT: Omitting any meal is likely to make you overeat at the next meal. If you skip breakfast, you will probably eat an extra-large lunch.
MYTH: You can lose weight by eating only one food, such as grapefruit, bananas, rice, or celery.

FACT: Because one-food diets are monotonous and nutritionally inadequate, dieters return to previous eating patterns and regain weight.

MYTH: Drinking caffeine always makes your appetite decrease.

FACT: Caffeine can make the level of sugar in your blood drop. This can make you hungry.

MYTH: After you lose weight, you can then resume your former eating habits.

FACT: Maintaining weight loss means changing eating and exercise patterns for the rest of your life.

Explain that the weight loss achieved with a fad diet is usually only temporary. Frequently, fad diets restrict food choices too much. People become so bored with the diet’s limitations that they stop dieting and begin to overeat again.

Show slide(s) 97

c. Diet Pills

Explain that diet aids, such as pills and candies, are supposed to suppress the appetite. However, they are usually ineffective and can be habit-forming. The major ingredient in most diet pills is caffeine, which may cause nervousness, sleeplessness, and high blood pressure. Diet aids do not provide long-term weight control. If you want to lose weight and keep it off, you need to change your eating behavior rather than rely on medication.

Show slide(s) 98
d. Fasting

Explain that when people refrain from eating all foods, they are fasting. Fasting is not a healthy way to lose weight, because muscle tissue as well as fat is lost. Long-term fasting may stunt your growth. It may also put a strain on your kidneys and cause hair loss. It has even been linked with irregular menstrual periods in girls and women.

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<td>6. Gaining Body Weight Wisely</td>
<td>Explain that being too thin can be as emotionally painful as being too heavy. You are underweight if you weigh at least 10 percent less than appropriate. If you are underweight, remember that teenagers as a rule need a large number of calories for growing. Eventually, your growth rate will become slower and then stop. You may put on weight when you are in your early twenties. In addition, some people are naturally thinner than others, and thinness is not a health problem unless it is excessive. However, since underweight can be an indication of health problems, underweight people should be checked by a physician. Explain that the goal of gaining weight can best be achieved by changing any habits that keep you too thin. Eliminate snacks right before mealtimes because they may spoil your appetite. When you do snack, choose nutrient-dense foods, as shown in Figure 6.5 that are high in calories. Never skip a meal. At mealtimes, take bigger helpings of food than usual. While you are increasing your caloric intake, do not neglect exercise. Exercising will help you gain healthy muscle tissue as well as fat.</td>
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<td>J. Special Diets</td>
<td>Explain that people’s circumstances may call for special diets. Certain physical conditions, such as diabetes and hypoglycemia, have special nutritional requirements. Lifestyle choices, such as the decision not to eat meat, may also affect how people meet their dietary requirements.</td>
<td>See Figure 6.5, Page 250</td>
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<tr>
<td>1. Diet and High Blood Pressure</td>
<td>Explain that as blood flows through your body, it exerts a force called blood pressure that pushes against the walls of your blood vessels. High blood pressure, or hypertension, is a condition in which this force becomes too strong. Sodium, found in table salt and many other foods, is thought to be a factor in high blood pressure. People with high blood pressure need to limit their sodium intake. They can do this by using herbs and spices instead of table salt to add flavor to foods. They also need to avoid salty snack foods, such as potato chips. Many processed foods, such as soup mixes and canned vegetables, contain large amounts of sodium. Therefore, people with high blood pressure need to read food labels carefully to avoid high-sodium foods.</td>
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2. **Diets for Diabetics**  
   Explain that glucose is the principal carbohydrate that circulates in your blood and is used by your cells for energy. A substance called insulin enables glucose to pass from the blood into the body’s cells. Diabetes mellitus is a disorder in which the body does not produce or properly use insulin, resulting in high levels of glucose in the blood. Symptoms may include sudden excessive thirst, an increase in appetite combined with a loss in weight, and frequent urination. Some people also feel fatigued, irritable, and confused. If you have a combination of any of these symptoms, you should see a physician.

   Explain that diabetes usually can be controlled. Some diabetics may need to take daily insulin injections. They also need to eat balanced meals and exercise on a regular schedule. Frequently people with diabetes carry a snack that they can eat to regulate their blood glucose levels if they are unable to eat a regular meal.

   Explain that diabetics’ diets should help to control blood glucose levels by leaving out foods high in sugar and focusing on complex carbohydrates. The American Diabetes Association also emphasizes the importance of foods high in fiber and low in fat. Obesity is a factor in one type of diabetes, and those diabetics need to control their weight. For more information, go to www.ada.com (American Diabetes Association).

3. **Diet and Hypoglycemia**  
   Explain that if the body produces too much insulin, the level of glucose in the blood may fall dramatically. The result is a condition known as hypoglycemia, or low blood sugar. People with hypoglycemia may experience hunger, weakness, severe headaches, and shakiness as their blood glucose levels fall. Hypoglycemics need to eat several small meals per day instead of three big ones, with foods rich in complex carbohydrates and low in fat. Concentrated sweets, such as candy, should be avoided altogether.

4. **Vegetarianism**  
   Explain that a person who does not eat meat is called a vegetarian. Some vegetarians eat no foods that come from animal sources. Others, however, include eggs and dairy products in their diets. Complete proteins contain all the essential amino acids, but incomplete proteins do not. Vegetarians who eat no food from animal sources must make sure that their diets contain all the essential amino acids. Complete proteins can be obtained from a combination of plant foods. For example, beans and rice are a complete protein and are illustrated above.
**5. Nutrition and Pregnancy**

Explain that a woman’s diet during pregnancy must provide for her needs as well as the needs of the developing baby. When a mother’s diet is inadequate, she may give birth to a premature baby or a baby who weighs less than normal. A baby with a low birth weight may be susceptible to disease and slow to develop mentally and physically.

Explain that most pregnant women should gain between 25 and 35 pounds (about 11 to 16 kilograms) during the pregnancy. To do this, they need to consume more calories than they did before pregnancy (about 300 extra calories per day). A pregnant woman also needs extra amounts of protein and the vitamin folate, since both of these nutrients are essential for the formation of the baby’s cells. The minerals calcium, phosphorus, and magnesium are needed for building the baby’s teeth and bones. Iron is especially important. Without it, the baby might not get enough oxygen from its mother’s blood. For this reason, extra iron is often prescribed during pregnancy.

Explain that pregnant teenagers have higher nutrient needs than any other group in the population. Since pregnant adolescents themselves are still growing, their diets need to supply both them and their babies with nutrients needed for growth. Young pregnant teenagers—those between the ages of 13 and 16—are encouraged to gain about 35 pounds (16 kilograms).

**6. Diets for Athletes**

Explain that athletes should eat a basic well-balanced diet but with added calories to accommodate a higher level of physical activity. Most of these calories should come from an increase in complex carbohydrates. High-fat and sugar-rich foods should be avoided. During competition, athletes should drink plenty of fluids to replace water lost in perspiration.
Explain that you have probably heard of runners practicing carbohydrate loading before a long race. Carbohydrate loading consists of greatly increased carbohydrate intake, accompanied by decreased levels of exercise, in the days immediately before a competition. This practice is an attempt to make extra carbohydrates available to supply energy for the muscles. Carbohydrate loading may benefit highly conditioned athletes who participate in long-lasting sports such as marathon running. However, for most athletes, the best policy is just to eat their normal diet.

7. Buying Food Wisely

Explain that to choose nutrient-dense foods, you need knowledge and practice. When you buy food, do not be swayed by attractive packaging. Instead, use food labels and other information to evaluate foods.

a. Food Labels

Explain that the U.S. Food and Drug Administration (FDA) requires that manufacturers of foods list certain information on a food’s label. Labels must provide the name and address of the manufacturer, the weight of the food, and a list of ingredients in descending order of weight. It must also indicate the number of servings per container, based on a standard serving size for that type of food.

b. Nutrition Information

Explain that food labels must also provide facts about the nutrient content of the product. The nutrition information on food labels is especially important for consumers to read and evaluate. The label indicates the following for each serving:

- The total number of calories per serving
- The number of those calories that come from fat
- The weight, in grams or milligrams, of nutrients such as saturated fat, total fat, cholesterol, sugar, dietary fiber, total carbohydrates, protein, and certain minerals
- The percentage of the Daily Values for different nutrients that are supplied by the food

Explain that manufacturers are free to volunteer additional information. Any claims relating to nutrition or health, however, must meet FDA standards.
c. Food Additives

Explain that when you have read a food label, have you ever noticed a series of long chemical names in the ingredients list? These are food additives. Additives are chemicals that are added to a food to prevent spoiling, to control and improve color and texture, to replace or add nutrients, or to improve flavor. While some people may be allergic to specific additives, such as artificial colors, food additives are safe for most people.

Explain that additives that are used to prevent spoilage or to keep foods from losing their natural color or texture are called preservatives. For example, the preservative calcium propionate prevents mold from growing on baked goods. Other preservatives keep peeled and cut fruits from becoming brown. Many preservatives prevent food poisoning and increase the length of time that a food is safe to eat.

Explain that often when a food is canned or processed in some other way, some of its vitamins and minerals may be lost. When nutrients are added to replace those that have been lost, the food has been enriched. Some breads and cereals are enriched with the vitamins thiamin, riboflavin, niacin, and the mineral iron. If vitamins, minerals, and even proteins are added to a food that does not normally contain them, the food is fortified. Milk, for example, is fortified with vitamin D. The types of foods shown above are frequently enriched or fortified.

Explain that sometimes manufacturers use additives to improve the texture or taste of foods. A leavening agent makes baked goods rise. An emulsifier (ih MUHL suh fy ur) is used to keep fats from separating from the other ingredients in a food. Emulsifiers in salad dressing, for example, keep the fat from floating to the top.

K. Evaluating Foods

Explain that wise shoppers check the nutrient content of foods. Price and freshness are other characteristics to consider.

1. Nutrients

Carefully read the label on a packaged food. Check the number of calories and whether the food contains large amounts of fat or sugar. Compare similar foods to determine which are more nutritious. If you are choosing breakfast cereals, for example, look at the amount of dietary fiber, vitamins, minerals, and protein in different products.
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| 2. Reading a Food Label | Explain that every time you go into a supermarket, you see thousands of different food products: cereals in brightly colored boxes, snack foods in shiny foil bags, and frozen dinners in packages that can be used in a microwave oven. Attractive and convenient packaging is designed to make you want to purchase the product. In addition, before you even enter a store, advertisements in magazines, in newspapers, and on television try to convince you to buy certain foods. Explain that to judge the nutritional value of a food, do not rely on advertisements or nice looking packages. Instead, read the food label carefully. The U.S. Food and Drug Administration (FDA) requires packaged foods to be labeled with a list of ingredients and nutrition information. Explain that to use food labels to make healthy food choices, use the following steps: 1. Read the ingredients. Be aware of the ingredients that a food contains. • Become familiar with terms for different kinds of ingredients. For example, even if the word *sugar* does not appear on the label, the product may contain sugar; words ending in *ose* are generally the names of different sugars. • Notice that ingredients are listed in order by weight from most to least. • If you have specific dietary restrictions, it is especially important to check the ingredients list first. For example, people who have an allergy for a particular food need to make sure that the product does not contain that ingredient. 2. Notice the number of servings per container. Serving sizes are standardized for over 100 different food categories, so you can compare similar food products for the number of servings they provide. For example, if you need enough lasagna to feed four people, a brand that provides four servings in one container may be a better purchase than one that provides only three servings per container. 3. Note the calories in one serving. Keep in mind that recommended daily caloric intake levels vary depending on a person’s age, sex, weight, basal metabolism, and activity level. Active teenagers usually need more calories than do older people. | Show slide(s) 149  
Show slide(s) 150  
Show slide(s) 151-152  
Show slide(s) 153  
Show slide(s) 154 |
• If the number of calories is high and you are trying to lose weight, you might want to choose a different food.

• If you are trying to gain weight, a high-calorie food may be a good choice, as long as it provides useful nutrients.

4. Look at the percentages of the Daily Values. The food label indicates what percentages of the Daily Values for different nutrients are supplied by that product. For example, if the label says “Vitamin C—20%,” that food supplies 20 percent of the vitamin C that the average person should obtain each day. Notice that the Daily Values are based on a diet of 2,000 calories per day.

• Check the percentages of valuable nutrients, such as dietary fiber, iron, calcium, and vitamins. Is this food a good source of many nutrients that you need?

• Also note the percentage of nutrients that you should limit, such as saturated fat and cholesterol. If a food is high in those nutrients, you may want to avoid it.

5. Read any health-related descriptions or claims. The FDA sets standards for the use of descriptions such as “high fiber” and “low fat.” You can use those descriptions for guidance. Also notice any health claims on the package. For example, a label can indicate that high-calcium foods may help prevent osteoporosis.

3. Freshness
   Explain that many foods, such as meat and baked goods, have a date on their packages. This product date is an estimate of how long the product is usable. Reduced-price foods may not be a bargain if the product date has already passed.

4. Price
   Explain that to find out which of two competing products is the better buy, compare the unit price, or cost per unit of measurement. The unit price is usually expressed in ounces or pounds. Suppose, for example, a 20-ounce loaf of bread and a 16-ounce loaf of bread both cost $1.50. The 20-ounce loaf has a unit price of about 8 cents per ounce, while the 16-ounce loaf costs about 9 cents per ounce. If both these loaves have approximately the same nutrients, which is the better buy?
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<td>5. Advertising and Food Choices</td>
<td>Explain that advertising can have a strong influence on food choices. Often advertisers use special techniques, such as humor and lively music, to make products appealing. A television commercial for frozen waffles, for instance, may show a smiling, healthy-looking family. Yet the label on the waffles may reveal that the product is not particularly nutritious. As a smart food consumer, be aware that advertisements can mislead you.</td>
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<td>L. Conclusion</td>
<td>Explain that the science of nourishing the body properly is a continually revolving door of facts, information, and misleading information. Much of the data is very conflicting and difficult to sort out, although there is some material that has remained consistent throughout the years. A basic understanding of this information will enable you to stay properly nourished.</td>
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<td>Explain that to begin building a healthy diet, the Dietary Guidelines of Americans provides the following advice:</td>
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<td>• Eat a variety of foods to obtain the energy, proteins, vitamins, minerals, and fiber you need for good health.</td>
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- Avoid drinking alcoholic beverages. Although alcoholic beverages supply calories, they have little or no nutrients. Furthermore, drinking alcohol is the cause of many health problems and accidents.

Explain that this chapter presented up-to-date information and numerous guidelines from which you can make proper dietary choices. However, there are still many unanswered questions, such as “What is the role of supplementation?” and “How much fat is too much?” In the future, there will be more discoveries, which will lead to unlocking more doors and to expanding our understanding and potential for a dynamic, healthier way of life.

Explain that in the next chapter, you will get even more information about living a healthy lifestyle and how you can take better care of yourself.

III. APPLICATION
A. Review Questions
   1. What are the risks of obesity?
   2. What tendencies encourage fat accumulation?
   3. Describe a desired state for a healthy lifestyle.
   4. List the steps that you can take to achieve a lean body fat content.

IV. EVALUATION
A. Test
   Q.1. To lose one pound, you must burn _______ calories more than you consume.
      A. 1750
      B. 2200
      C. 3000
      D. 3500
### OUTLINE OF INSTRUCTION

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<tr>
<td>Q.2.</td>
<td>The number of calories your body burns when completely at rest is known as _______.</td>
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<td>Q.3.</td>
<td>What is the LOWEST safe body fat percentage for most women?</td>
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<tr>
<td>Q.4.</td>
<td>What is the LOWEST safe body fat percentage for most men?</td>
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<td>Q.5.</td>
<td>The body fat reserve that can become a problem for many of us is called _______.</td>
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<td>Q.6.</td>
<td>The body fat reserve necessary for good health is called _______.</td>
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<td>Q.7.</td>
<td>George has 14% body fat. His body fat percentage is _______.</td>
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<td>Q.8.</td>
<td>Anna has 26% body fat. Her body fat percentage is _______.</td>
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| Q.2. | A. body mass index  
B. basal metabolic rate  
C. fat burning ratio  
D. calorie expenditure |
| Q.3. | A. 15%  
B. 12%  
C. 10%  
D. 8% |
| Q.4. | A. 3–4%  
B. 6–8%  
C. 10–12%  
D. 15–20% |
| Q.5. | A. essential fat  
B. storage fat  
C. saturated fat  
D. unsaturated fat |
| Q.6. | A. essential fat  
B. storage fat  
C. saturated fat  
D. unsaturated fat |
| Q.7. | A. athletic  
B. good  
C. acceptable  
D. indicating he needs help |
| Q.8. | A. athletic  
B. good  
C. acceptable  
D. indicating she needs help |

5-6-26
Q.9. If you measure the number of calories your body burns at complete rest, you have measured your _______.

A. cardiovascular rate (CVR)
B. calorie disposal rate (CDR)
C. metabolic burn rate (MBR)
D. basal metabolic rate (BMR)

Q.10. Which of the following foods is NOT widely believed to be part of the food trio that protects against certain cancers and promotes healthier hearts and immune systems?

A. Fruits
B. Grains
C. Fish
D. Vegetables

Q.11. Most of the protein in your diet should come from _______.

A. meat products
B. plant products
C. dairy products
D. healthy fats

Q.12. Breakfast should provide up to _______ of your daily nutritional needs.

A. one-fifth
B. one-fourth
C. one-third
D. one-half

Q.13. Which of these groups of foods provides healthier nutrition?

A. Hamburger, soft drink, candy bar
B. Grilled chicken sandwich, milk shake, chips
C. Salad bar, low-fat milk, fries
D. Turkey on whole wheat, orange juice, unbuttered popcorn

Q.14. Which of the following is a high nutrition density snack?

A. Potato chips
B. Doughnut
C. Soft drink
D. Bagel

Q.15. Which of the following is NOT a good guideline for eating nutritiously at a fast food restaurant?

A. Select the salad bar instead of fries.
B. Have a high protein drink like a milkshake.
C. Choose grilled chicken instead of a hamburger.
D. Taste food before adding extra salt.
Q.16. The human body’s need for calcium reaches its peak at _______.  
A. adolescence  
B. early childhood  
C. infancy  
D. adulthood

Q.17. If you want to lose weight, the number of calories you consume each day must _______.  
A. be fewer than the number your body needs  
B. be at least equal to the number that your body needs  
C. be counterbalanced by calories used in aerobic exercise  
D. be derived from complex carbohydrates and proteins

Q.18. Which of the following is a dieting myth?  
A. Starchy foods have fewer calories per ounce than fats.  
B. Omitting a meal is likely to make you overeat at the next one.  
C. Caffeine can make your blood sugar drop, making you hungry.  
D. You can lose weight by eating only one food, like grapefruit.

Q.19. Which of these statements about weight management is NOT accurate?  
A. Children, pregnant women, and athletes have higher metabolic rates than other people.  
B. When you decrease your calorie intake, your basal metabolic rate goes down.  
C. People can quickly lose a lot of weight just by exercise alone.  
D. Losing weight by fad dieting usually is only temporary.

Q.20. What condition exists when someone weighs 20 percent or more above the appropriate weight?  
A. Morbidity  
B. Obesity  
C. Overweight  
D. Hypoglycemia

Q.21. Most pregnant women should gain how much weight?  
A. None  
B. 10-15 pounds  
C. 18-20 pounds  
D. 25-35 pounds
Q.22. Runners who increase their carbohydrate intake and reduce exercise before a competition are doing what?
A. Resting
B. Hydrating
C. Carbohydrate loading
D. Carbo-energizing

Q.23. Which of these diseases is NOT correctly paired with its associated substance?
A. Diabetes: iron
B. Hypoglycemia: insulin
C. High blood pressure: sodium
D. Heart disease: fat

Q.24. A food that has had nutrients added to replace those lost in processing is called _______.
A. emulsified
B. enriched
C. fortified
D. pasteurized

Q.25. A food that has nutrients added to it that it does not usually contain is called _______.
A. emulsified
B. enriched
C. fortified
D. pasteurized

Q.26. A food that has an additive to keep fat from floating to the top is called _______.
A. emulsified
B. enriched
C. fortified
D. pasteurized

Q.27. An orange juice label has the expression “Vitamin C—20%.” What does that mean?
A. The juice is composed of 20% vitamin C.
B. After you drink a serving, you will still need 80% more vitamin C.
C. You need to drink 20% of a serving to get the amount of vitamin C you need in a day.
D. A serving contains 20% of the vitamin C the average person needs in a day.
Q.28. A shopper can get a good idea of a packaged food’s freshness from the _______.

A. list of ingredients
B. date on the package
C. nutritional information
D. picture on the package

Q.29. Which of these statements about food labels is correct?

A. If sugar is an ingredient in a food, it may appear as different names but they all end in –ase.
B. The ingredients, except for the additives, are listed alphabetically.
C. The Daily Values for different nutrients based on a 2,000 calorie a day diet are displayed.
D. The FDA does not set standards for descriptions such as “high fiber” or “good source of calcium,” but these can still be helpful to the consumer.

Q.30. Which one of the following is NOT a good way to judge whether or not to buy a particular food?

A. Nutrition
B. Advertising
C. Freshness
D. Price
I. INTRODUCTION

A. Establish contact.
   1. Introduce the topic for this lesson: “Taking Care of Yourself.”

B. Establish readiness.
   1. Motivating statements
      Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.
   2. Lesson overview
      In this lesson, you will learn about the impact sanitation and hygiene have on your health. You will know the benefits of maintaining good hygiene habits and how to keep clean in field conditions. You will be able to explain the correlation between physical fitness and hygiene and identify possible results of poor sanitation. You will also learn detailed procedures for disinfecting water and how to guard against food poisoning and the spread of disease through waste.

INSTRUCTOR ACTIVITY

Ensure the NS1 DVD is in the DVD player with the label facing up.

Get the cadets ready to learn.

Trainee motivation

Learning incentives

Bring out the importance of the material being presented.
II. PRESENTATION

Direct cadets to follow this discussion from Unit V, *Wellness, Fitness, and First Aid*.

A. Introduction

Explain that exercise, rest, and good **hygiene** and nutrition can help you stay healthy and avoid many illnesses and infections. In other words, you can prevent disease and injury by taking good care of yourself. You learned about the importance of nutrition and exercise to your health in the previous chapter. This chapter covers the importance of good hygiene habits. In particular, it discusses hygiene and **sanitation** when attending JROTC summer camp or camping on your own, with friends, or family. In these cases, you may not have the modern conveniences of clean, running water or indoor plumbing, but you must still know how to take care of yourself to help prevent illness and maintain good health.

B. Personal Hygiene

Explain that most likely, there are certain habits that you perform routinely at the start of each day. You are probably so accustomed to doing them that you do not give them a second thought. First, you wake up after resting your body during the night. Then you shower if you did not shower the night before, wash your face, and comb your hair. It is now time for breakfast—some toast and cereal perhaps. And, last but not least, you brush your teeth and leave for school.

Now, stop for a minute and think about the activities that we have just described. They involve rest, nutrition, and cleanliness, three elements that are important to maintaining good health and are a part of **personal hygiene**.

Explain that it is easy for most of us to practice personal hygiene in our homes where there are sinks, showers, toilets, and clean water, all of which help with sanitation. In some situations, however, practicing personal hygiene and maintaining sanitary conditions take more effort and require greater care. For example, if you are camping, you may have to work harder at hygiene and sanitation depending on conditions at your campsite. Also, when you are staying in close quarters with several other people, like at JROTC summer camp, hygiene and sanitation become extremely important. The poor sanitation or hygiene habits of one person can lead to a disease or illness that affects an entire group.
Explain that personal hygiene is important to maintaining your personal health and establishing your health image to other people. A neat, clean, physically fit person illustrates a healthy image and a positive leadership posture.

1. Principles of Hygiene
   Explain that it is not always simple to apply the basic principles of personal hygiene. It takes a conscience effort to follow these principles and to stay healthy.

2. Field Sanitation
   Explain that the following story illustrates the importance of maintaining all aspects of health and sanitation when out in the field.

   Explain that on Togatabu Island in 1942, the 14th Artillery and the 404th Engineer Battalions were part of a task force preparing to attack Guadalcanal. Fifty-five percent of the engineers and 65 percent of the artillerymen contracted a disease called “Filariasis,” transmitted by mosquitoes. Both units had to be medically evacuated without seeing any enemy action because they were not combat ready. The use of insect repellent and insecticides and the elimination of standing water would have prevented the spread of this disease.

   Explain that often in military history, the health of the troops influenced the course of battle more than strategy or tactics. “Historically, in every conflict in which the United States has been involved, only 20 percent of all hospital admissions have been from combat injuries. The other 80 percent have been from diseases and nonbattle injuries.” (Field Hygiene and Sanitation, FM 21–10)

   a. Hand Hygiene
      Explain that hand washing needs to be second nature. It is important to wash your hands after contact with an animal, after using the toilet, before eating, or before touching a person at risk for infection. A good routine needs to include removing any jewelry, wetting hands with warm water, using an anti-bacterial soap if available, washing hands vigorously for at least 30 seconds, rinsing hands, and drying hands on a clean towel or using a hand drying machine. Hand hygiene is also important in the field.
b. Oral Hygiene  
Explain that after each meal or at least twice a day, you need to eliminate food particles and dental plaque from your teeth as well as clean your gums. Visiting the dentist twice a year is also recommended. Use fluoride toothpaste and brush up and down in a light circular motion, in front, behind and across the top of the teeth for at least three minutes. Avoid putting objects and fingers in your mouth as well as sugar and sweets that encourage germ proliferation.

Show slide(s) 20

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c. Personal Hygiene  
Explain that a dirty body is a hotbed for developing germs. Dust, sweat and other secretions, and warmth are all factors that encourage germs to multiply. A shower with effective soap and shampoo should follow any physical activity. Showering daily is necessary to maintain good personal health. Clean clothes should be worn and underwear changed daily; the fabric in clothes is a breeding ground for many germs. Imagine how you would feel if you did not bathe for a week. Now imagine how others would feel about having to be around you during that time. Uncleanliness or disagreeable odors affect the morale of others, so the solution is for everyone to take personal responsibility for their own hygiene.

Show slide(s) 21

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d. Nasal Hygiene  
Explain that nasal secretions are highly contagious. Runny noses and sneezing are sources of germ dissemination. Frequent nose blowing using a disposable paper tissue clears the nostrils and limits the spread of germs. Repeated blowing of the nose can cause irritation, so use a soft tissue and blow softly.

Show slide(s) 22-23

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e. Food Hygiene  
Explain that food poisoning is on the rise. Some of these cases can be linked to the food processing industry and centralized distribution of food. You can reduce your risk of food poisoning by following simple yet effective hygiene practices. High-risk foods include eggs and egg products, poultry (particularly chicken), and food eaten raw. It is estimated that 50 percent of domestic food poisoning cases are due to poor hygiene in the home. Refrigeration is a means of reducing the spread of germs, but not of eliminating germs. Refrigerators need to be cleaned on a regular basis. Food that needs refrigeration needs to be kept at the recommended temperature; food that does not need to be kept refrigerated should be stored as indicated on the packaging, and the date indications on food packaging should be followed.

Show slide(s) 24-25

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5-7-4
Explain that cooking food is an excellent way of keeping germs from spreading. Cooking food at sufficiently high temperature will eliminate many germs. Rigorous hygiene is also required in the kitchen. Always wash hands before handling food. Wash frequently any cloths and towels used in the kitchen. Avoid using wooden chopping blocks, salad bowls and spoons because nicks or cracks can create an ideal place for germs. Kitchen utensils should not be used to prepare different dishes unless they have been cleaned in between. Tables and worktops should be cleaned with an anti-bacterial product between preparing different types of food. You should also watch for the country of origin of the food you eat; note the best before dates on food labels; and use the most effective practices in food preparation.

f. Pet Hygiene

Explain that most people today spend a great deal of time with a pet or pets. Our pets carry a number of germs as well as affect allergy sufferers. However, it is easy to apply simple rules of hygiene without affecting the bond between people and pets. Animals need to be cleaned regularly. It is also essential to disinfect a pet’s scratch or bite with an antiseptic. Clean everything that your pet touches on a regular basis. Floor areas used by an animal should also be cleaned, paying particular attention to allergen traps such as carpets and bedding. Hands should always be washed after touching an animal.

C. Stay Physically Fit

Explain that people who are physically fit are less likely to get sick or injured, so participate regularly in a fitness program. Physical fitness training will also help you become adjusted to a field environment. Remember to use caution when exercising in extremely hot or cold weather, particularly if you are going to run long distances.

D. Get Enough Sleep

Explain that the average person needs eight hours of sleep a night. Make sure you get enough sleep so you have the energy to effectively complete the required tasks of your day. You may have a harder time sleeping when you are away from home, bunking with others, or camping. Follow these suggestions to get as much rest as possible.

- Sleep as much as you can before going someplace where you may not be able to sleep comfortably or as much as you should
- Take catnaps whenever you can but expect to need a few minutes to wake up fully
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<td>• When in the field, follow your leader’s instructions and share tasks with other cadets so everyone gets time to sleep</td>
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<td>• After going without sleep, catch up as soon as possible</td>
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<td>• Learn and practice techniques to relax yourself quickly.</td>
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Explain that if you have not gotten enough sleep in the field and are required to remain awake and alert, try these suggestions:

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<td>• Play mental games or talk with other cadets to stay alert during dull watches or critical jobs such as driving at night</td>
<td>Show slide(s) 30-31</td>
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<td>• Take short stretch breaks or do light exercises in place</td>
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<td>• Do not trust your memory; write things down and double check your communications and calculations</td>
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<td>• Watch out for your mind playing tricks (like seeing things that are not there) when you are very tired; check strange observations before acting.</td>
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E. Learn to Reduce Stress

Explain that stress begins in the mind but causes physical reactions in the body. Although stress can be beneficial in small doses by supplying you with bursts of energy to complete a project on time or compete in an important game, stress that continues over long periods of time can weaken your immune system and lead to exhaustion and illness. People under too much stress may not care for themselves properly or be able to complete tasks effectively.

Explain that to keep yourself healthy and efficient, you must learn to relax and reduce stress. The following hints may help:

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<td>• Maintain a positive attitude</td>
<td>Show slide(s) 32</td>
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<td>• Do not try to do more than is possible or take on tasks for which you are not prepared</td>
<td>Show slide(s) 33-34</td>
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• Talk with friends or family when you encounter difficulties
• Take time each day to do something that you enjoy, even if it is only for 15 minutes
• Do not worry about things that are out of your control but concentrate on what you can do
• Exercise regularly
• Recognize that stress is a normal reaction to many situations, like taking a test, giving a speech, or participating in field training
• Take a deep breath, relax, and do not let stress interfere with accomplishing the task at hand.

Explain that to help reduce stress in a group or among friends or fellow cadets, give each other moral support if things are tough at home, school, or in the unit. Welcome new replacements into your group and be active in establishing friendships. By building a feeling of esprit de corps, you can minimize stressful feelings of loneliness and isolation. When in the field, attempt to care for other cadets and work together to provide everyone food, water, sleep, shelter, protection from heat, cold, and poor sanitation.

F. Basic Principles of Sanitation

   Explain that poor sanitation can contribute to conditions that may result in diarrhea and dysentery. Intestinal diseases are usually spread through contact with bacteria and germs in human waste, by flies and other insects, or through improperly prepared food and water supplies.

   1. Use Purified Water

   Explain that when you are staying outdoors, in the field, or traveling in foreign countries with questionable water supplies, use only water that is purified. Fill your canteen with treated water at every chance. To treat or disinfect water, bring it to a boil for 5 to 10 minutes. When heated water is not available, disinfect water using one of the following methods:

   Show slide(s) 35
   Show slide(s) 36-38
   Show slide(s) 39-41

5-7-7
OUTLINE OF INSTRUCTION

a. The Preferred Method: Iodine Tablets
   1. Fill a one-quart canteen with the cleanest water available.
   2. Put one iodine tablet in the water; two in cold or cloudy water. Double these amounts in a two-quart canteen.
   3. Place the cap on the canteen, wait 5 minutes, then shake. Loosen the cap and tip the canteen over to allow leakage around the canteen threads. Tighten the cap and wait an additional 25 minutes before drinking.

b. Treating with Chlorine
   1. Fill a one-quart canteen with the cleanest water available. Show slide(s) 44-46
   2. Mix one ampule of chlorine with one-half canteen cup of water. Stir the mixture with a clean device until the contents dissolve. Take care not to cut your hands when breaking open the glass ampule.
   3. Pour one canteen capful of the chlorine solution into your quart of water.
   4. Replace the cap on your canteen and shake. Slightly loosen the cap and tip the canteen over to allow leakage around the threads. Tighten the cap and wait 30 minutes before drinking.

c. Another Alternative: Tincture of Iodine
   1. Fill a one-quart canteen with the cleanest water available. Show slide(s) 47-49
   2. Add five drops of 2 percent Tincture of Iodine to the water. If the water is cold or cloudy, add 10 drops.
   3. Mix thoroughly by shaking the canteen. Slightly loosen the cap and tip the canteen over to allow leakage around the threads. Tighten the cap and wait 30 minutes before drinking.
   4. Very cloudy or cold water may require prolonged contact time. Let it stand several hours or overnight if possible.
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<td>2. Guard Against Food</td>
<td>Wash your hands for at least 30 seconds after using the bathroom or before touching food. Inspect all cans and food packages prior to using them and throw away any cans with leaks, bulges, or holes. Do not eat foods or drink beverages that have been prepared in <em>galvanized</em> containers, which may result in zinc poisoning. When camping or in the field, wash your mess kit in a mess kit laundry or with treated water or disinfectant solution.</td>
<td>Show slide(s) 50-51</td>
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<td>Poisoning</td>
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<td>3. Bury Your Waste</td>
<td>Explain that on a march, personal disposal bags should be used if available; if not available personal cat holes can be used. Always dispose of your waste immediately to prevent flies from spreading germs from waste to your food and to keep unwanted animals out of your <em>bivouac</em> area. Chemical toilets should be used in bivouac area.</td>
<td>Show slide(s) 52-53</td>
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| G. Keep Your Body and  | Bathe every day, if possible, or at least once a week. A daily bath or shower helps maintain cleanliness and prevent body odor, common skin diseases, and infection. When you are in the field, however, bathing daily may not be possible. In this case, make sure you take a full shower at least once a week (or at the earliest opportunity) and use a washcloth daily to wash:  
  • Your face  
  • Your armpits  
  • Your genital area  
  • Your feet  
  • Other areas where you sweat or that become wet, such as between your thighs or, for females, under the breasts.  
Explain that powders, such as talcum powder, help to keep your skin dry when in the field. Apply it to places where you tend to sweat and to your feet and inside your socks each morning, especially if you have had prior foot infections. Change to clean clothing regularly. Protection of your feet is extremely important and requires daily attention. | Show slide(s) 54-55 |
| Uniform Clean          |                                                                                                                                                                                                                   | Show slide(s) 56    |
Explain that good personal hygiene practices reduce infestation of insects such as body lice and mites. Make sure the clothing you wear in the field is loose and does not restrict circulation. Avoid wearing nylon undergarments. Wear cotton, which is more absorbent and allows the skin to dry. Wash your uniform frequently or at least once a week. Use the quartermaster laundry or a stream, lake, or washbasin. Air-dry uniforms, especially underwear and socks.

1. Other Instructions for the Field
   a. Follow Medical Advice: Take medications, such as antimalaria pills, that help prevent diseases. Use any medication that is prescribed by medical personnel.
   b. Protect Yourself at Night: Use your bed net when sleeping and ensure that it is in good repair. Always follow label directions and precautions when using DoD approved insect spray.
   c. Wash Your Mess Kit/Eating Utensils: Protect yourself from diarrhea by washing your mess kit/eating utensils. Use a mess kit sanitation center or use treated water or disinfectant solution.
   d. Domestic and Wild Animals or Birds: Do not handle or approach animals in the field. Unless approved by veterinary personnel, do not collect or support with food and shelter any stray or domestic animals in the unit area.
   e. Poisonous Plants: Avoid contact with poisonous plants by properly wearing the uniform and avoid areas where poisonous plants grow. Only eat plants that have been approved by medical personnel.

H. Conclusion
   Explain that practicing good personal hygiene and sanitation are common sense actions that everyone should perform. They are particularly important in the field where cadets have a responsibility to both themselves and others, and leaders must plan and enforce preventative measures.

   Explain that correct cleanliness habits, regular exercise, good nutrition, and adequate amounts of rest and relaxation can directly affect a person’s well-being. By practicing these preventative measures, you can significantly reduce time lost due to illness and injuries.
Explain that the following chapter deals with a common problem in today’s world—stress. Knowing how to control stress can help with your emotional and physical health.

### III. APPLICATION

A. Review Questions

1. How do you keep clean in the field?
2. What is the correlation between physical fitness and hygiene?
3. What are some results of poor sanitation?
4. Describe one method of disinfecting water.

### IV. EVALUATION

A. Test

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Outlining the Instruction

I. INTRODUCTION

A. Establish contact.
   1. Introduce the topic for this lesson: “Understanding and Controlling Stress.”

B. Establish readiness.
   1. Motivating statements
      Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.
   2. Lesson overview
      Bring out the importance of the material being presented.

II. PRESENTATION

   Direct cadets to follow this discussion from Unit V, Wellness, Fitness, and First Aid.
   A. Introduction
      Explain that stress in small doses is a normal, healthy part of life; however, stress that continues over long periods of time can lead to exhaustion and possible mental or physical illness. This chapter discusses what causes stress, how it can affect you, and ways that you can manage it. Handling stress in your life and recognizing symptoms of stress in others will make your life more enjoyable and your leadership more effective.

INSTRUCTOR ACTIVITY

Ensure the NS1 DVD is in the DVD player with the label facing up.

Get the cadets ready to learn.

Trainee motivation

Learning incentives

Bring out the importance of the material being presented.

Show slide(s) 1-2

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<td>Explain that the media often portrays the teen years as a carefree time, with few major responsibilities and lots of new and exciting experiences. Many young people know, however, that this is only one side of the coin. You may not have the responsibilities of your parents, but your responsibilities are growing as you grow older. New challenges and experiences, while exciting, can also be a bit scary. Expectations for the future can be exhilarating, but they can also result in anxiety and pressure to succeed. As teenagers make their way to adulthood, they experience a range of emotions and changes that can make their high school years very stressful.</td>
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<td><strong>B. What Is Stress?</strong></td>
<td>Explain that stress is the way your body reacts and adjusts to the psychological and physical demands of life. It can be brought on by situations that cause feelings such as fear, irritation, endangerment, excitement, and expectation. Surprise tests can cause stress. Stress in small amounts is beneficial and needed for motivation, improvement, and growth. It can give you a burst of energy to complete a project or run a race, the control and strength to get through a difficult time, or the inspiration to write a poem or paint a picture. Stress can be an important factor in your achievement and progress.</td>
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<td>Explain that yet times of stress should be followed by times of relaxation to ensure recovery from stress. Experiencing constant stress without a break has a negative effect on people. Stress followed by a period of rest can actually make a person better prepared for the next stressful event. Stress followed by more stress without recovery in between can exhaust a person, making him or her less prepared to handle the next stressful event. Eventually, constant stress can affect a person psychologically and physically, disrupting normal behavior and resulting in illness.</td>
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<td><strong>1. Physical Effects of Stress</strong></td>
<td>Explain that when your mind perceives a situation as stressful, it triggers a series of physical and chemical reactions in your body. These include increased blood flow to the muscles and brain; decreased blood flow to the skin and digestive organs; a shut down of the immune system; and the release of fuel, such as fat, into the bloodstream. While these internal reactions to stress will not be obvious to you, noticeable results of these reactions include increased heart and breathing rates, muscle tension, dilated pupils, cold hands, and dry mouth.</td>
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<td>Show slide(s) 9-11</td>
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Explain that these reactions happen as part of a **fight-or-flight response** developed in primitive humans to deal with physical threats by either fighting or fleeing. Either way, primitive man’s mind and body placed emphasis on physically responding to stressful situations by providing extra fuel and blood to the muscles while slowing or shutting down other functions.

Explain that for modern man, most stressful situations are not life threatening and do not require a physical response, yet being stuck in a traffic jam or pushing hard to finish a report still causes the same physical reactions as those needed for fight or flight. Luckily, once modern man deals with the stress, finishes the stressful activity or the source of stress goes away, the body and all of its functions return to normal.

Explain that on the other hand, if the source of stress continues, the person does not deal with the stress effectively, or the person faces stressful situation after stressful situation, his or her body will not recover its normal state. Eventually, the body’s continual reaction to prolonged stress may result in the following physical problems:

- Insomnia
- Diarrhea
- Indigestion
- Ulcers
- Nausea
- Backaches
- Headaches
- **Migraines**
- Uncontrollable tics or twitches
- Stuttering
- Allergies
• Asthma
• High blood pressure
• Heart disease
• Grinding or clenching of teeth, especially when sleeping.

Explain that of particular note is the connection between continual stress and heart disease. Because most of modern man’s stressful situations do not require physical action, the fat pumped into the bloodstream to act as fuel for the muscles is left unused, collecting on artery walls and contributing to heart disease.

2. Psychological Effects of Stress

Explain that generally, the first indications a person may have of stress overload are certain feelings, like irritability or worrying. If the person pays attention to these feelings and takes action to reduce stress, the effects of stress will not continue. If, however, the person ignores these initial warning signs and seeks no relief from stress, he or she will experience more psychological effects and probably begin to experience some of the physical effects discussed previously.

Explain that psychologically, continual stress may cause the following:

• Irritability
• Excessive worrying
• Anxiety
• Inability to relax
• Forgetfulness
• Disorganization
• Inability to concentrate
• Inability to complete tasks
• Lack of energy
• Trouble with relationships
• Changed eating habits; over- or undereating with corresponding weight gain or loss
• Use or increased use of alcohol and other drugs
• Lowered self-esteem
• Feelings of discouragement
• Excessive feelings of guilt or self-blame
• Emotional overreaction, like exploding or crying without reason
• Waking from sleep with a sense of doom
• Disinterest in the world and life
• Dissatisfaction with things that were previously satisfying
• Tendency to avoid people and activities, even those that were previously enjoyed
• Unexplained feelings of helplessness or hopelessness

• **Depression.**

Explain that when stress continues to go unchecked, negative feelings, like depression and hopelessness, can intensify over time. In severe cases, people can become depressed enough to try to commit suicide. It is important, therefore, to listen to your feelings, relate them to what is happening in your life, and respond to them promptly before the effects of stress get out of hand.

Show slide(s) 27-29
C. Causes of Stress

Explain that causes of stress and levels of stress experienced under certain circumstances vary from person to person depending on their personalities and tolerance for different situations and experiences. For example, an outgoing person may find public speaking easy and enjoyable, while a shy person may find it difficult and frightening. On the other hand, the shy person may be quite content to study alone, while the outgoing person may find studying alone nerve-wracking. Neither of these people is better or worse than the other; they are simply two different people reacting differently to the same situations. Do not compare yourself with others when it comes to stress. What is important is that you understand what causes you stress and learn to manage it before the stress “mismanages” you.

Explain that read through the following items that are common causes of stress for many young people. Think about which ones are stressful for you and whether or not they are things that you can control. Recognizing what causes your stress is a step toward managing it.

1. Personal Habits

Explain that personal habits can contribute to stress. Listed below are four negative personal habits. Do any apply to you?

- Poor time management
- Poor diet
- Irregular sleep habits
- Lack of exercise.

2. Social Activities

Explain that social activities create situations that can be very stressful for young people. Which apply to you?

- Conflicts with family or friends
- Peer pressure to use alcohol, tobacco, or drugs
- Peer pressure to engage in a sexual relationship
- Pressure to be popular
• Lack of money.

3. Major Life Changes  
   Explain that major life changes affect all people. Have you been effected by any of these major life changes recently?
   - Death in the family
   - Severe illness in the family
   - Parents’ divorce
   - Parent remarries
   - Moving
   - Changing schools.

4. Environmental  
   Explain that the environment can affect you mentally as well as physically and can create stress in your life. Are you currently being exposed to any of the following items?
   - Air and noise pollution
   - Feeling confined
   - Overcrowding
   - Poor lighting
   - Uncomfortable temperature
   - Feeling unsafe in your neighborhood, home, or school.

5. Responsibilities  
   Explain that personal responsibilities are placed on everyone at one time or another and can be very stressful. Are you experiencing any of the following items?
   - Participating in too many activities
   - Having unrealistic expectations of yourself
   - Constant deadlines
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<tr>
<td>• Concern about grades</td>
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<tr>
<td>• Concern about college and career decisions</td>
<td></td>
<td></td>
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<tr>
<td>• Having to work and go to school</td>
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<td>Show slide(s) 42-43</td>
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<tr>
<td>• Having to care for younger brothers or sisters.</td>
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D. Stress Strategies

Explain that there is no way to completely eliminate stress from life. In fact, as previously explained, a stress-free life would not even be desirable, because stress in reasonable amounts aids performance, creativity, and problem solving. Letting stress get out of hand, however, is a common problem in today’s hectic world. Fortunately, once you recognize signs of stress overload in yourself and identify its cause, you can either eliminate the source of stress or, if it is not possible to eliminate it, learn to manage the stress associated with it.

1. Preventing Stress Overload

Explain that the best way to ensure stress does not get the best of you is to follow lifelong habits that promote mental and physical well-being. Getting plenty of sleep, eating well-balanced meals, and exercising regularly will help you cope better with stressful situations; maintaining a positive outlook will help you face difficulties with more confidence. In addition to these common sense approaches, the following can also promote well-being and prevent stress overload.

- Manage your time with daily, weekly, and/or monthly schedules. In addition to scheduling time for school, study, extracurricular activities, and so on, make sure you allow enough time for sleep, unhurried meals, relaxation, and other things you enjoy.

- Take care of your problems as soon as possible; avoiding them will not make them go away. The longer you put off dealing with a problem, the more anxious you will feel about it, and the more stress you will create for yourself.

- Keep a journal of the situations you find stressful. For each situation, explain why you find it stressful, how you handled it, and whether or not you believe you could handle it better in the future.

- Develop a hobby and/or participate regularly in an activity you enjoy.  

5-8-8
• Take some time every day to do something you find relaxing—whether it is sitting quietly alone and thinking, talking with a good friend on the phone, or laughing at your favorite sitcom.

• Talk over problems with people you trust and who you know are good listeners. Keeping all your thoughts and feelings to yourself can be very stressful. Although you may believe you can handle all your problems on your own, everyone needs at least one person to confide in.

• Accept that throughout life you will encounter stressful situations that you cannot or should not avoid, but recognize that you also have control over how you approach and respond to those situations. For example, while Shelley dreads going to the dentist, she realizes it is important, and instead of dwelling on how much she hates it, she focuses on the benefits of dental care to her overall health and on how good her teeth will look and feel after the dental appointment. Approaching stressful situations positively and looking to the ultimate outcome of the situation can lower the amount of stress you experience.

• When you do have a choice, do not participate in activities you find stressful and unrewarding. Often, young people will take part in activities because their friends do, they believe their parents want them to, or they just believe they must do it all. Only you know which activities are enjoyable and worthwhile to you, which bring you negative stress, and how many things you can do before getting overloaded. Be honest with yourself and with those who care about you in making decisions about participating in certain activities. If taking aerobics with your friends makes you feel more uptight than healthy and relaxed, and you would really rather get your exercise going for a walk alone, let your friends know how you feel and then do what is best for you.

• Be prepared when you know you will have to face a stressful situation. For example, if you know that you must give a class presentation, plan for it and rehearse it until you feel comfortable with it. By preparing for it, you will be calmer during the time leading up to the presentation and will feel more confident when giving it.
• Do not use tobacco, alcohol, or other drugs. Using drugs does not solve any problems and, more often than not, causes new ones.

• Do not be overly self-critical; remember that making mistakes is part of the growing process and that learning from them will make you more successful in the future.

• If you can, limit the number of changes you make in your life at any one time. For example, if in the same week that you start a new job after school, you also start getting up earlier each morning to jog before school, you are probably putting too much pressure on yourself. To limit your stress level, get used to the new routine of having an after-school job before you add anything else to your schedule.

• Learn a relaxation technique like meditation, visualization, or deep breathing.

2. Relaxation Techniques
Try using these relaxation techniques when you notice the warning signs of stress.

a. Deep Breathing
Explain that to relax through deep breathing, follow these steps:

1. While closing your eyes, take a deep breath in through your nose so that your abdomen expands.

2. Slowly exhale through your mouth, letting all the air out of your lungs and allowing your stomach to contract.

3. Repeat for 5 to 10 minutes.

b. The Worry Box
Explain that relaxing through “the worry box” can be done by following these steps:

1. Start deep breathing.

2. Visualize a box that has a lock and key.

3. Imagine yourself putting all your worries and fears in the box, then closing the lid, and locking it with the key.

4. Imagine yourself putting the key somewhere out of sight—like under a mattress or on the top shelf of a closet—and, therefore, out of mind.
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<tr>
<td>c. Meditation</td>
<td>Explain that meditation can help you clear your mind and relax. To do so, follow these steps:</td>
<td>Show slide(s) 51</td>
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<td>1. Find a quiet place where you can be alone for at least 10 minutes.</td>
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<td>2. Sit on the floor with your legs crossed. Some people put one or both of their feet up onto their inner thighs when meditating. Keep your back and neck straight. Relax your arms with your hands in your lap or on your knees—palms up or down, whichever feels most comfortable to you.</td>
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<td>3. Close your eyes and try to empty your mind. Many people do this by concentrating on their breathing or on a single word, image, or sound.</td>
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<td>d. Quick Calming</td>
<td>Explain that to calm and center yourself quickly, follow these steps:</td>
<td>Show slide(s) 52</td>
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<tr>
<td>Response</td>
<td>1. Turn inward and listen to a sound or word that you find relaxing and choose to use when stress overload hits.</td>
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<td>2. As you repeat the sound or word inside yourself, slowly take deep breaths in and out, visualizing the release of the “tense air” from your body with each exhaled breath.</td>
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<td>e. Progressive</td>
<td>Explain that to try progressive relaxation, do the following:</td>
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<tr>
<td>Relaxation</td>
<td>1. Sit or lie down in a comfortable position and begin deep breathing.</td>
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<td>2. As you inhale, tighten the muscles in your head and neck area.</td>
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<td>3. Relax the tensed muscles as you slowly exhale.</td>
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<td>4. Continue with all parts of your body, working your way from head to foot.</td>
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<td>3. Letting Off Steam</td>
<td>Explain that sometimes, stressful situations can make you feel frustrated and angry. To keep the stress from getting the better of you and possibly “losing your cool,” try the following:</td>
<td>Show slide(s) 54-57</td>
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<tr>
<td></td>
<td>• Take several deep breaths, releasing tension with each exhale</td>
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<td></td>
<td>• Close your eyes and visualize yourself in a calming situation or place</td>
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5-8-11
• Take a break; if possible, remove yourself from the problem or situation until you feel more relaxed and under control

• Analyze the importance of the situation. Does it really matter if someone cuts you off in traffic or bumps into you and does not excuse him or herself? Is it worth feeling angry about or wasting your time and energy on? Is it better just to forget it and move on?

• If something is important to you and you can take action, confront the person or situation calmly. If it is not possible to confront the person or problem directly, let off steam, depending upon the situation, by either talking to someone you trust or writing an angry letter, then throwing it away.

• Work off tension with a physical activity, like screaming into a pillow, taking a walk, or lifting weights.

E. Stress and Leadership

Explain that as a leader, you should learn to manage your own stress effectively, so that you do not create a negative environment for your followers. Recognize that your behavior can directly affect the stress level of your group of cadets. Stress in groups can be increased to counterproductive and unhealthy levels when leaders

• Act unpredictably

• Constantly find fault with their followers, which eats away at their followers’ self-esteem and results in increased anxiety

• Set up win-lose situations in which either they are right and their followers are wrong or vice versa

• Demand too much or too little of their followers.

Explain that leaders can keep a group’s stress to healthy levels by

• Allowing some participation in the decision-making process, which creates a feeling of trust and usefulness in followers, and promotes team spirit and cooperation within the group
• Giving credit where it is due and praise when warranted
• Offering constructive criticism when necessary
• Having a good working knowledge of the tasks the group needs to perform
• Monitoring and tracking tasks as they are performed and offering guidance when necessary.

Explain that as a leader, you must also be aware of any indications that cadets are feeling or acting “stressed out.” If you realize someone is showing signs of stress, let them know that you have noticed they have not been themselves lately, or ask if everything is okay with them. Your concern will probably encourage them to talk to you about how they are feeling, and just the fact that they are talking about it and you are listening can help to relieve their stress.

F. Depression

Explain that people often say, “Oh, I’m so depressed,” when they are having a bad day or because some unhappy event has recently occurred. Sadness and grief are normal reactions to certain events in life. A person who is having a passing blue mood is not truly depressed. For minor low moods, stimulating or enjoyable activities, like running or reading a good book, are often all that is needed to raise a person’s spirits.

Explain that major depression, on the other hand, is a serious illness that requires treatment. It affects the whole body and involves thoughts, feelings, bodily functions, and behaviors. Most people usually recover from bad events in life after a reasonable amount of time; depressed people do not. And while some cases of depression can be traced to a specific stressful experience, other cases of depression seem to have no apparent reason for occurring.

Explain that an episode of depression can occur once in a person’s life or many times. A depressed person’s symptoms may last for months, years, or a lifetime. Depression can be so severe that the person cannot function at all. Some people who are chronically depressed are able to function but never feel really well, content, or happy. They may be unaware that they are even depressed because they are so used to feeling that way.
Explain that depending on the individual and the severity of the illness, a depressed person will experience a variety of these symptoms to different degrees. Note that many of these symptoms are similar to symptoms of stress.

- Constantly feeling sad or “empty”
- Feeling hopeless, worthless, and helpless
- Unable to make decisions, remember things, or concentrate
- Loss of interest in normally pleasurable activities
- Irritability
- Disinterest in school, at home, and in other activities
- Not caring about appearance
- Avoiding people; staying alone most of the time
- Problems falling asleep and then problems getting up
- Loss of appetite
- Feeling tired and “slowed down” all the time
- Chronic aches and pains and digestive problems
- Frequent thoughts of death and/or suicide
- Suicide attempts.

Explain that it is important to remember that depression is a real illness and not caused by personal weakness. Potential for developing some kinds of depression may be inherited, and therefore, biologically related. For instance, manic-depressive illness seems to occur in people whose genetic makeup is different than those who do not become ill; however, not everyone who has the genetic makeup for the illness gets it. This suggests that other factors, such as stress, also play a role in the development of the disease.
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<td>Explain that as with stress, physically active people who eat well and get plenty of sleep tend to feel less depressed than people with less healthy lifestyles. Therefore, if you are feeling mildly depressed, take a look at your current eating, sleeping, and exercise habits and try to make some changes there. In addition, do things you enjoy, try something different that you have always wanted to do, talk to friends, spend time outside because the color green and the sun are known to boost spirits, and try not to pressure or push yourself for awhile.</td>
<td>Show slide(s) 74-75</td>
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<td>Explain that likewise, if you know someone who is exhibiting signs of depression, take the time to listen to how they are feeling and offer them your support. Give them the suggestions listed above for lifting their spirits and breaking out of negative habits. Be patient. Often, depressed people are not fun to be around and may even try to push you away, but they really need a friend to understand and encourage them to try to make some changes.</td>
<td>Show slide(s) 76-77</td>
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<td>Explain that if after giving these suggestions a try, you think his or her depression is worsening or becoming long-term, encourage your friend to seek help. Likewise, if you yourself are depressed and believe it is worsening and continuing, seek help. Doctors, psychologists, counselors, mental health clinics, hospitals, family services, social agencies, and private clinics are among the many people and places that offer help for all types of emotional disorders, including depression.</td>
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<td>G. Anxiety</td>
<td>Explain that anxiety is a feeling that everyone experiences occasionally when dealing with things they fear or worry about. Unlike depression, which makes people feel tired and unenergetic, anxiety makes people feel nervous and energetic, almost as if they cannot sit still. Like stress, anxiety in small amounts and for short durations can be beneficial. It can give you a spurt of energy and sharpen your mind. Too much anxiety, however, can be harmful and lessen your ability to perform. For example, while a little anxiety before giving a speech can heighten your powers of recall, projection, and expression, too much anxiety can make you freeze, forgetting information and stammering through the presentation.</td>
<td>Show slide(s) 81-82</td>
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Explain that to keep anxiety from getting the best of you, admit to yourself those things you fear and/or worry about. Then, when you know you will have to deal with one of them, make sure you are thoroughly prepared for it: practice for the speech, study for the test, rehearse the dance routine, work out faithfully before the big meet, and so forth. Being unprepared will only fuel your anxiety. When you start to worry or feel afraid, remind yourself that it is a waste of your energy, then visualize yourself doing well instead. Prior to the event or situation, focus on its positive outcomes, use the relaxation techniques discussed previously, and avoid caffeine, which only increases anxiety.

Explain that although it is normal to be mildly anxious about something that frightens or worries us, feeling anxious without a specific reason can indicate an anxiety disorder. When a person experiences anxiety over a long period of time that is related to so many worries and fears that the anxiety has become generalized, the person is suffering from free-floating anxiety. Often, the effects of free-floating anxiety are the same as stress overload.

Explain that when a person experiences anxiety attacks, which are strong, sudden attacks of anxiety for no apparent reason that last only a few minutes, he or she feels panic and extreme stress accompanied by dizziness, faintness, rapid heartbeat, excessive perspiration, and nausea. A person having an anxiety attack is not able to function until the attack passes. Some people have severe anxiety attacks so frequently that they are constantly fearful and unable to cope with many things in life. People suffering from excessive anxiety, whether free floating or anxiety attacks, should seek help from a counselor who can help them reduce or learn to deal with their anxiety.

H. Conclusion

Explain that humans experience a wide range of emotions and not all of them are pleasant. Yet, even certain uncomfortable emotions such as stress and anxiety are beneficial in small doses. Sometimes, though, because of hectic, hurried schedules and pressures to do too many things or things we do not necessarily enjoy, stress can get out of hand. When you start feeling and showing warning signs of stress overload, step back and take a look at what is going on in your life. Ask yourself what is causing your symptoms of stress, then take care of it or reduce the stress you associate with it.
TEXTBOOK CONTENT

Explain that meanwhile, to be prepared for the stressful events that will surely pop up throughout your life, maintain a healthy lifestyle so that you are better able to handle whatever life throws your way. Keep negative stress and anxiety at bay by doing things you enjoy, learning ways to relax, and thinking positively.

Explain that remember, if these uncomfortable emotions ever become extreme, your mental and physical well-being may be threatened. They can even become initial indications of mental illness and physical disease.

OUTLINE OF INSTRUCTION

III. APPLICATION

A. Review Questions

1. Differentiate between stress and anxiety.
2. What are the physical and psychological effects of stress?
3. List positive ways to deal with depression and anxiety.
4. Define the term depression.

IV. EVALUATION

A. Test

Q.1. What term is used to refer to the science of maintaining good health and preventing disease?
   A. Sanitation
   B. Sterilization
   C. Hygiene
   D. Purification

Q.2. Sanitizing the hands is especially important following which of these actions?
   A. Eating
   B. Using the toilet
   C. Preparing food
   D. Handling machinery

INSTRUCTOR ACTIVITY

Show slide(s) 91

Show slide(s) 92

Ask the following questions to ensure understanding.

Administer test at senior naval science instructor’s discretion.
OUTLINE OF INSTRUCTION

Q.3. Military history shows that ______ percent of hospital admissions have resulted from disease and non-battle injuries.

A. 20
B. 40
C. 60
D. 80

Q.4. All of the following actions are effective in preventing food poisoning except which one?

A. Using wooden chopping blocks instead of ones made of plastics
B. Cooking food at adequately high temperatures
C. Washing cloths, towels, and utensils frequently
D. Carefully handling high-risk foods such as poultry and eggs

Q.5. Which of the following suggestions will help optimize sleep and alertness in the field?

A. Since you may not be able to sleep as well in the field, several days before you go, shorten the amount of sleep you allow yourself.
B. Avoid taking catnaps since they will make you groggy and impede your performance for a long time after you wake up.
C. Learn and practice relaxation techniques to help you stay alert during dull stretches of watch.
D. Share tasks with other cadets so that everyone can receive adequate amounts of sleep.

Q.6. An esprit de corps, which means ______, can help minimize feelings of stress and isolation of cadets.

A. patriotism
B. common emotions
C. group morale
D. psychological understanding

Q.7. Poor sanitation can result in ______, an intestinal disease accompanied by stomach pain and diarrhea.

A. malaria
B. dysentery
C. colitis
D. typhoid

Q.8. For how many minutes should you boil water to disinfect it?

A. 5-10
B. 15-20
C. 30-35
D. 60
| Q.9. An ampule of what substance is used to purify canteen water? | A. Hydrogen peroxide  
B. Iodine  
C. Chlorine  
D. Isopropyl alcohol |
| --- | --- |
| Q.10. For how many total minutes should a tablet of iodine be left in canteen water to purify it? | A. 15  
B. 20  
C. 25  
D. 30 |
| Q.11. All of the following actions will contribute to the hygiene in the field except which one? | A. Using chemical toilets in the bivouac area  
B. Daily washing of face, armpits, genital area, and feet  
C. Eating or drinking only items that have been prepared in galvanized containers  
D. Washing mess kits and eating utensils in treated water or disinfectant solution |
| Q.12. Poor personal hygiene can result in an infestation of ________, tiny wingless parasitic insects that live in the hair of warm-blooded animals. | A. lice  
B. ticks  
C. scabies  
D. fleas |
| Q.13. What is the recommended minimum length of time in seconds for adequate hand washing? | A. 20  
B. 30  
C. 45  
D. 60 |
| Q.14. Which of the following statements about adequate hygiene around animals is NOT accurate? | A. Washing hands after touching animals is necessary, as is washing and disinfecting any scratches or bites.  
B. Everything that an animal touches should be cleaned frequently, including floor areas.  
C. Since bedding and carpets can be allergen traps, special attention should be given to keeping these clean.  
D. In the field, handling, petting, or approaching an animal is harmless because wild animals do not carry disease. |
Q.15. Which of these substances is preferred to disinfect drinking water in canteens?

A. Chlorine ampules  
B. Iodine tablets  
C. Tincture of iodine  
D. Hydrogen peroxide

Q.16. Which one of these physical responses is a result of stress?

A. Decreased heart and breathing rates  
B. Increased blood flow to the muscles and brain  
C. Activation of the immune system  
D. Contracted pupils

Q.17. What term is used to refer to the body’s involuntary reaction to immediate threat or danger?

A. Defense impulse  
B. Aggression stimulus  
C. Distress instinct  
D. Fight or flight response

Q.18. A recurring, disabling, intense headache that is often accompanied by nausea, vomiting, and visual disturbances is known as a _______ headache.

A. cluster  
B. tension  
C. migraine  
D. sinus

Q.19. Which of these is NOT generally a symptom of depression?

A. Disorganization  
B. Anhedonia  
C. Feelings of hopelessness  
D. Heightened powers of concentration

Q.20. What term is used to an over-eagerness to be successful that sometimes is accompanied by agitation?

A. Anxiety  
B. Depression  
C. Anhedonia  
D. Emotional overreaction

Q.21. Which one of these circumstances is a major life change that causes stress among young people?

A. Peer pressure to use alcohol, tobacco, or drugs  
B. Divorce of parents  
C. Lack of exercise  
D. Perception of being unsafe at home or at school
Q.22. Which one of these suggestions about managing stress is least effective?

A. Be very critical of yourself so that you can show your best face to others, thereby preventing their criticism.
B. Accept the inevitability of stressful situations and resolve to control your reaction to them.
C. Face problems as they occur instead of putting them off and prolonging your anxiety.
D. Every day do something that you find relaxing, even if you have a heavy agenda or busy schedule.

Q.23. Which of these relaxation techniques involves sitting quietly and emptying your mind by concentrating on your breathing or on an image, word, or sound?

A. Quick calming response
B. Visualization
C. Meditation
D. Progressive relaxation

Q.24. Which of these behaviors of group leaders is least effective in lessening group stress?

A. Monitoring and tracking progress of tasks
B. Keeping the stress of participation in the decision-making process away from them
C. Demanding too little from group members
D. Over-emphasizing faults and setting up win-lose situations between them and their followers

Q.25. Which of the following statements about depression is NOT accurate?

A. Depression affects a person physically and behaviorally as well as mentally.
B. Symptoms of depression can last for months, years, or even a lifetime.
C. The source of depression can always be traced to a specific experience.
D. Depression is a real illness, and one’s potential for suffering from it may be biological.

Q.26. A technique of dealing with stress by deeply contemplating a religious or philosophical subject is known as ________.

A. visualization
B. meditation
C. relaxation
D. actualization
Q.27. Another name for manic-depressive illness is _______ disorder.

A. bipolar
B. anxiety
C. panic
D. fatigue

Q.28. All of the following are effective suggestions for dealing with stress overload except _______.

A. scheduling time for sleep, study, unhurried meals, and relaxation to ensure none are neglected
B. making several changes in your life at one time to increase adaptability
C. keeping a journal describing and analyzing stressful situations to improve next time
D. dealing with problems immediately to shorten periods of anxiety

Q.29. If you know someone who shows signs of depression, you should react in all the following ways except which one?

A. Respect his or her feelings and do not pursue the issue if they push you away.
B. Take time to listen and offer support by listening.
C. Give him or her specific suggestions for coping and for lifting their spirits.
D. Suggest he or she seek help if you do not see improvement.

Q.30. Which of these statements about anxiety is NOT accurate?

A. Generalized anxiety indicates a more serious condition than anxiety over something specific.
B. A person who experiences excessive anxiety or anxiety attacks should seek professional help.
C. Anxiety attacks occur for no apparent reason, and cause a person to feel extreme stress, dizziness, rapid heartbeat, and nausea.
D. Before facing an anxiety-causing situation, repress your anxiety after visualizing the worst case scenario.
I. INTRODUCTION

A. Establish contact.
   1. Introduce the topic for this lesson: “Drug Awareness.”

B. Establish readiness.
   1. Motivating statements
      Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.
   2. Lesson overview
      Bring out the importance of the material being presented.

      This lesson will teach you the effects substance abuse could have on your life and health. You will learn to identify commonly abused substances and to recognize how drug use, misuse, and abuse are different. You will also learn some reasons why people abuse substances, the risks of alcohol and various drugs, and the effects of substance abuse on daily life.

INSTRUCTOR ACTIVITY

Ensure the NS1 DVD is in the DVD player with the label facing up.

Get the cadets ready to learn.

Trainee motivation

Learning incentives

Bring out the importance of the material being presented.
### OUTLINE OF INSTRUCTION

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<tr>
<td>A. Introduction</td>
<td>Explain that data presented by the TeenGetGoing website (<a href="http://www.teengetgoing.com">www.teengetgoing.com</a>) advocated by the JROTC program notes that teen alcohol and drug trends suggest that 90 percent of teens will “use” alcohol and/or other drugs during adolescence. Fifty percent of teens will abuse alcohol and/or <strong>drugs</strong>, and 15 percent will become addicted while still in adolescence. Look around your classroom. What kind of numbers does this represent? This chapter presents the latest information about alcohol and drugs, defines drugs, and explains the difference between drug use, drug <strong>misuse</strong>, and drug <strong>abuse</strong>. You will learn several types of drugs that people abuse, their side effects, and indications of overdose which will allow you to process this information in a way that is meaningful both to you and your community.</td>
<td>Show slide(s) 1-6</td>
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<tr>
<td>B. Drug Use, Misuse, and Abuse</td>
<td>Explain that used under proper conditions, drugs can relieve pain, cure illness, and save lives. When abused, however, drugs can ruin lives and even cause death. Think about the word <em>drug</em> for a moment. It can bring many images to mind, such as over-the-counter aspirin to stop a headache, a news report about someone who was arrested for cocaine possession, a prescription for antibiotics from your doctor, a drug-related death covered on the front page of the paper, medical research to develop drugs to cure illnesses, the war on drugs, and so on. So exactly what is a drug? Explain that broadly defined, a drug is any <strong>substance</strong> taken into the body that changes how the body functions, whether mentally or physically. This includes medications used for the prevention and treatment of disease, as well as any <strong>controlled substance</strong> to which a person can become addicted. Whether or not a drug is legal or illegal is no indication of whether or not it is addictive. For example, nicotine, which is found in tobacco products, and alcohol are addictive drugs. And just because a drug has a medical purpose does not mean it is not addictive. Many medications, when misused or abused, can cause <strong>addiction</strong>.</td>
<td>Show slide(s) 7</td>
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<td>1. What Can You Do to Remain Drug-Free?</td>
<td>• Fill your life with activities and people you enjoy. • Believe in yourself.</td>
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<td>Show slide(s) 9-12</td>
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5-9-2
• Practice saying no before you are actually in a situation where someone offers you drugs, so you will not hesitate to say no when the time comes.

• Think through the consequences of abusing drugs. Where will drugs lead you in life? How long will your body remain healthy if you abuse drugs? How many of your plans can drugs ruin?

• Remember that drugs do not solve problems; they create them.

*Explain that drug use* is taking a legal drug as recommended or prescribed for medical reasons. *Drug misuse* is taking a legal drug for medical reasons but not as recommended or prescribed. For example, people who double the recommended dosage of a pain reliever because they think it will make their headache go away quicker are misusing a drug. *Drug abuse* is taking a legal or illegal drug for a nonmedical reason in a way that can injure your health or ability to function.

C. Why Do People Abuse Drugs?

Explain that some people try drugs out of curiosity or as an act of rebellion. Others cannot resist the peer pressure to try drugs. After people have tried a drug, whether or not they continue to abuse it depends on their individual personalities and situations and on the kind of drug abused.

Explain that most drugs that people abuse produce feelings of pleasure and well-being. When people are unhappy, lonely, stressed, or are missing something in their lives such as friends, love, or satisfying work, they may abuse drugs to avoid their problems or fill a void. But when the effects of the drug wear off, they realize the problems and the voids are still there. So they turn to the drug again.

Explain that this cycle is what leads to addiction, a trap that can ruin a person emotionally, socially, economically, legally, and physically. Some drugs are far more addictive than others. For example, a first-time user of crack cocaine has a 1 in 3 chance of becoming an addict. This is why it is important to stop before you ever start taking drugs.

Explain that many people take drugs without knowing what effect they have on the mind and body. Knowing ahead of time what a drug can do is often enough to convince a person not to try it, especially if one of the potential dangers of abusing a drug is death.
D. Alcohol

Explain that alcohol, which is legal for those 21 years of age and older, is the most widely consumed and abused drug in the United States. It is socially acceptable in our society for adults to drink in moderation. In excess, however, alcohol is a dangerous drug. Drinking and driving remains the number one cause of death among high school students. Heavy alcohol use kills about 50 high school and college students each year because of alcohol poisoning.

1. Alcohol Statistics
   • Ninety percent of teenage automobile accidents involve alcohol
   • Drinking and driving accidents are the leading cause of death among 15- to 24-year-olds
   • Seventy percent of teenage suicide attempts involve alcohol

Explain that alcohol is a natural substance formed when sugar and yeast react and ferment. Some alcohols are distilled; other are simply fermented. Alcohol is a drug; it is a depressant that is absorbed into the bloodstream and transmitted to virtually all parts of the body. Many people don’t realize that alcohol is a drug. Some hold the view that experimentation with or use of alcohol is normal or acceptable behavior. However, the use of alcohol can cause alcohol addiction and often progresses to further drug abuses. Accordingly, some experts attach the term gateway to this substance. The use of drugs such as cocaine and heroin is unusual in those who have not previously used alcohol.

Explain that alcohol abuse can cause serious chemical dependencies, harmful physical and psychological effects, and much suffering by family and friends. As awareness of these ill effects reaches new heights, more and more Americans are joining forces to fight alcohol abuse every day.

Explain that when a person drinks alcohol, it follows the same pathway as food through the digestive system. Unlike food, however, alcohol does not have to be digested by the stomach to be absorbed into the blood. After alcohol reaches the blood, it is circulated throughout the body and affects every part, including the brain and the rest of the nervous system.

2. Alcohol’s Effects on the Body

Explain that the effects of ethyl alcohol (ethanol) on the human body can range greatly depending on the:
   • Size of the individual
   • How empty the stomach is at the time of alcohol consumption

Show slide(s) 20-21
Show slide(s) 22
Show slide(s) 23-28
Show slide(s) 29
Show slide(s) 30
Show slide(s) 31
• State of health and fatigue
• Mental attitude
• Speed and amount of consumption.

Explain that it is also important to note that the three most common types of alcoholic drinks—beer, liquor, and wine—contain the same amount of alcohol. Although alcohol may make a person feel “high,” alcohol is actually considered a “downer” drug. It slows down or depresses the central nervous system, causing slowed reactions, slurred speech, impaired coordination and judgment, and sometimes unconsciousness. Because alcohol affects reaction time, coordination, and judgment, people under its influence are more accident prone and less likely to make wise decisions. For these reasons, drinking and driving are a very dangerous and illegal combination.

a. Long-Term Effects
Explain that the long-term effects of alcohol abuse include alcoholism; cancers of the liver, stomach, colon, larynx, esophagus, and breast; high blood pressure; heart attacks; strokes; stomach ulcers; birth defects; premature aging; and a diminished immunity to disease due to nonfunction of infection-fighting cells. In men, hormone levels change, causing lower sex drives and enlarged breasts; women’s menstrual cycles become irregular, possibly resulting in infertility.

Explain that the list of effects goes on to include shrinking of the muscles, including the heart; kidney, bladder, and pancreas damage; brain damage affecting vision and memory; depression; and mental illness. Obviously, long-term damage from alcohol abuse can be irreversible and result in death.

(1) Tolerance
Explain that when the body becomes accustomed to or builds up a resistance to a drug, the body has developed tolerance to the drug. Tolerance causes a drinker’s body to need increasingly larger amounts of alcohol to achieve the effect that was originally produced.

(2) Dependence
Explain that when the body develops a resistance to a drug and requires the drug to function normally, dependence occurs. The drinker’s body develops a chemical need for alcohol. Dependence occurs as tolerance builds. Dependence is also called addiction.
Explain that a dependent person who stops taking a drug will suffer from withdrawal. The signs of alcohol withdrawal include shakiness, sleep problems, irritability, rapid heartbeat, and sweating. The drinker also may see, smell, or feel imaginary objects.

Explain that the major psychological symptom of dependence is a strong desire or emotional need to continue using a drug. This need is often associated with specific routines and events. For example, some people drink whenever they face a difficult task or when they feel angry about something.

(3) Brain Damage
Explain that long-term alcohol abuse destroys nerve cells in the brain. Destroyed nerve cells usually cannot grow again. The loss of many nerve cells causes forgetfulness, an inability to concentrate, and poor judgment. These losses interfere with normal everyday functions.

(4) Digestive Problems
Explain that ongoing drinking irritates the tissues lining the mouth, throat, esophagus, and stomach. The irritation can cause the tissues to swell and become inflamed. Repeated irritation increases the risk of cancers of the mouth, tongue, esophagus, and stomach. Alcohol also affects the intestines and can cause recurring diarrhea. Large amounts of alcohol cause the stomach to produce too much stomach acid. The overproduction of acid may lead to indigestion, heartburn, or ulcers.

(5) Liver Damage
Explain that alcohol interferes with the liver’s ability to break down fats. As a result of heavy drinking, the liver begins to fill with fat. The excess fat blocks the flow of blood in the liver, and the fat-filled liver cells die. Cirrhosis of the liver is a disease in which useless scar tissue replaces normal liver tissue. Because there is no blood flow in the scarred area, the liver begins to fail. Heavy drinkers suffering from cirrhosis may have high blood pressure, get infections easily, have swelling of the abdomen, and show a yellowing of the skin and eyes. Cirrhosis is the last stage of liver disease and can result in death.

Explain that heavy drinkers often develop alcoholic hepatitis, or inflammation of the liver, caused by the toxic effects of alcohol. Hepatitis causes weakness, fever, yellowing of the skin, and enlargement of the liver. Recovery may take weeks. Sometimes hepatitis can lead to liver failure and even death.
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<td>(6) Heart Disease</td>
<td>Explain that excessive drinking contributes to increased blood pressure and heart rate, and irregular heartbeat. These problems can cause disruption in blood flow and possible heart damage. Also, alcohol causes fat to be deposited in heart muscle. Fatty heart muscle, in turn, causes the heart to pump blood through the body less efficiently. Alcohol abuse leads to heart disease, the leading cause of death in the United States.</td>
<td>Show slide(s) 46-47</td>
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<td>(7) Fetal Alcohol Syndrome</td>
<td>Explain that pregnant women who drink put the health of their child at risk. A disorder called fetal alcohol syndrome (FAS) refers to the group of birth defects caused by the effects of alcohol on the unborn child. FAS occurs when alcohol in the mother’s blood passes into the fetal, or unborn baby’s, blood. Babies born with FAS often suffer from heart defects, malformed faces, delayed growth, and poor motor development. Alcohol prevents FAS babies from ever developing the reasoning abilities of healthy babies. Tragically, it is the leading preventable cause of mental retardation in America. Explain that if a woman who is pregnant does not drink, her baby will not be born with FAS. Any woman who is pregnant or planning to become pregnant should not drink alcohol at all.</td>
<td>Show slide(s) 48-49</td>
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<td>b. Short-Term Effects</td>
<td>Explain that the short-term effects of alcohol include those that happen within minutes, and sometimes within days, of drinking alcohol. Figure 9.1 identifies the short-term effects of alcohol on the body.</td>
<td>See Figure 9.1, Page 288 Show slide(s) 50-53</td>
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<tr>
<td>(1) Bloodstream</td>
<td>Explain that when alcohol enters the blood, it causes the blood vessels to widen. More blood flows to the skin’s surface. The drinker feels warm for a short time as the skin flushes; however, the drinker’s body temperature drops as the increased blood flow to the surface allows body heat to escape. People who drink alcohol in cold weather to get warm actually accomplish the opposite.</td>
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<td>(2) Brain</td>
<td>Explain that after reaching the brain, alcohol immediately has a depressant effect and slows the speed of some brain activities. People who drink alcohol may describe the change as relaxing. What they actually experience are physical changes such as a loss of sensation and a decrease in sharpness of vision, hearing, and other senses. Alcohol also affects the parts of the brain that control muscle coordination, which is why drinkers may lose their balance or stumble.</td>
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<td>Explain that if drinking continues, alcohol depresses the part of the brain that controls breathing and heartbeat. Breathing rates, pulse rates, and blood pressure, which initially increased, now decrease. A drinker may lose consciousness, slip into a coma, or die from alcohol poisoning.</td>
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<td>Explain that heavy drinkers and many first-time drinkers may suffer blackouts. Blackouts are periods of time that the drinker cannot recall. Other people recall seeing the drinker talking, walking, and in control. The following day, however, the drinker has no memory of some events from the day before.</td>
<td>Show slide(s) 58</td>
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<td>(3) Liver</td>
<td>Explain that in the bloodstream, alcohol is carried to the liver. The liver chemically breaks down alcohol into energy and the waste produces carbon dioxide and water. The carbon dioxide is released from the body in the lungs. The water passes out of the body as breath vapor, perspiration, or urine. When people drink alcohol faster than the liver can break it down, they become intoxicated.</td>
<td>Show slide(s) 59-60</td>
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<td>(4) Kidneys</td>
<td>Explain that alcohol prevents the release of body chemicals that regulate how much urine the kidneys make. The kidneys produce more urine than usual, and the drinker loses more water than usual. The drinker becomes very thirsty. In extreme cases, a drinker may lose water needed for the body to function properly.</td>
<td>Show slide(s) 61</td>
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<td>(5) Motor-Vehicle Crashes</td>
<td>Explain that almost half of the fatal crashes and about two-thirds of all crashes involving personal injury in the United States are related to alcohol use. In addition, more than one-third of accidents involving pedestrians who are struck and killed by motor vehicles are caused by drunk drivers.</td>
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<td>Explain that driving while intoxicated is illegal in all of the 50 states. Driving while intoxicated means a driver exceeds the level of blood alcohol concentration allowed by law in a state. Drivers who cause motor-vehicle crashes usually undergo blood, urine, breath, or saliva tests to determine their blood alcohol concentration (BAC, discussed on the next page). If their BAC is above the legal limit, drunk drivers can have their driver’s license taken away and can be prosecuted.</td>
<td>Show slide(s) 63-65</td>
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<td>(6) Synergism</td>
<td>Explain that some drugs can interact to produce effects that are many times greater than the individual drugs would produce. When drugs increase each other’s effects when taken together, the interaction is called synergism.</td>
<td>Show slide(s) 66</td>
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Explain that as previously stated, alcohol is generally a depressant drug. When a person drinks alcohol and takes another depressant, such as sleeping pills, the combination can cause drastic changes in the body. Together the depressants’ effects are more than doubled and can cause a dangerous slowing of breathing and heart rates. In extreme cases, synergism of alcohol and other depressants can lead to coma or death.

(7) Overdose
Explain that taking an excessive amount of a drug that leads to coma or death is called an overdose. Severe intoxication causes the heart and breathing to stop, resulting in death from alcohol overdose. Many drinkers assume that they will pass out before drinking a fatal amount. This is not necessarily true. Alcohol continues to be absorbed into the blood for 30 to 90 minutes after the last drink. The drinker’s BAC can increase even if the drinker becomes unconscious. First-time drinkers who participate in a drinking contest may die from alcohol poisoning.

3. Blood Alcohol Concentration
Explain that the amount of ethanol in a person’s blood is expressed by a percentage called the blood alcohol concentration (BAC). BAC measures the number of milligrams of ethanol per 100 milliliters of blood. A BAC of 0.1 percent means that one-tenth of 1 percent of the fluid in the blood is ethanol. A BAC of 0.1 percent reduces a person’s muscle coordination, perception, and judgment.

Explain that a variety of factors can affect a person’s BAC, including the following:

- Gender
- Age, weight, and height
- Amount of food in the stomach
- Concentration of alcohol in beverages consumed
- Volume of alcohol consumed
- Rate of consumption and absorption.
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<td>Explain that the rate at which a person’s liver can break down alcohol is fairly constant. In one hour, the liver can break down the amount of ethanol in a can of beer, a shot of liquor, or a glass of wine. Thus, someone who has three cans of beer in the last 45 minutes of a 3-hour party will become more intoxicated than someone who drinks those three cans of beer over the three-hour period. The effects of BAC on the body are shown in Figure 9.2.</td>
<td>See Figure 9.2, Page 290</td>
<td>Show slide(s) 71-77</td>
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<td>Discuss the “Drinking and Driving” scenario on page 291. Do you use the DECIDE process?</td>
<td>Show slide(s) 78-86</td>
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<td>Explain that provided the person does not continue to drink, the BAC decreases. The intoxicating effects of alcohol slowly diminish. As reflexes and coordination return to normal, a person gradually becomes steadier. Many people refer to this process as “becoming sober” or “sobering up.”</td>
<td>Show slide(s) 87-89</td>
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<td>Explain that you may have heard that cold showers, exercise, fresh air, or coffee will help a person sober up more quickly. But this is not true. Nothing can speed up the liver’s ability to break down alcohol. Coffee or fresh air may keep a person awake, but they do not eliminate the intoxicating effects of alcohol.</td>
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<td>4. Behavioral Effects</td>
<td>Explain that in addition to the physical effects of alcohol, certain behavioral, or learned, effects are connected to drinking. A person’s mood and reason for drinking can alter the effects of alcohol. Sometimes the person’s mood and reason for drinking make the effects stronger; sometimes they make the effects weaker. The environment in which alcohol is consumed may influence its effects as well.</td>
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<td>Explain that at a quiet family dinner, family members may consume wine with no negative effects. The calm nature of the event and the fact that both parents and children expect each other to behave politely creates an environment in which people drink responsibly.</td>
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<td>Explain that at a party in which “getting drunk” is the main theme, alcohol consumption often leads to negative behaviors. The loss of coordination may be exaggerated for comic effect. People who have been drinking may insist that they are still perfectly able to drive. They may not want to admit that they cannot drink as much as others.</td>
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5-9-10
Explain that as alcohol takes effect, drinkers begin to lose judgment and self-control. At the same time, alcohol decreases drinkers’ natural fears. When these two effects are combined, the person’s inhibitions are reduced. Inhibitions are the controls that people put on their emotions and behavior in order to behave in socially acceptable ways.

Explain that after they lose their inhibitions, drinkers may behave in ways they normally would never consider. For example, a person under the influence of alcohol may express anger in violent or destructive ways. Shy people may behave in outgoing ways, and serious people may act foolishly.

5. Alcoholism

Explain that some drinkers cannot control their drinking. Their major goal in drinking is to get drunk. People who have an addiction to alcohol suffer from the disease of alcoholism. Psychologically, alcoholics consider drinking a regular, essential part of coping with daily life. Physically, an alcoholic’s body requires alcohol to function. An alcoholic’s drinking patterns eventually control every aspect of his or her life.

Explain that no one is sure why some drinkers become alcoholics, but anyone who drinks even one drink is at risk of becoming an alcoholic. Because alcoholism tends to run in families, there appears to be some genetic basis for it. On the other hand, the attitudes in the home in which a person grows up may play a role in whether or not a person develops a drinking problem.

E. Drugs

Explain that a drug is any chemical substance that changes the function of the mind or the body. Aspirin is a drug; allergy medication is a drug; marijuana is a drug; beer is a drug; the nicotine in cigarettes is a drug. A drug is neither good nor bad; it is what a person does with a drug that makes the difference.

Explain that use, misuse, and abuse are terms thrown around quite a bit when talking about drugs. Use is taking a legal drug as prescribed or recommended for medical reasons. Misuse is taking a legal drug for medical reasons but not as recommended or prescribed. Abuse is taking any drug, legal or illegal, for a nonmedical reason in a way that can injure your health or ability to function. Taking drugs is a serious matter; there is no such thing as recreational drug use. Abusing drugs is not a sport or a hobby and always involves an unnecessary risk to your health.
Explain that when people talk about drugs, you often hear that someone is a drug *addict* or that a drug can or cannot cause dependence. Addiction and *drug dependence* mean basically the same thing; however, the term *addict* tends to make people think of a desperate individual living in the back alleys of a big city. But anyone from any background in any place can be addicted or drug dependent. People who are dependent cannot refuse the drug they have been abusing.

Explain that a person has a physical dependence on a drug when, after being deprived of the drug for any length of time, he or she experiences symptoms like nausea, vomiting, anxiety, watery eyes and nose, and an overwhelming desire to use the drug. Such symptoms are typical of withdrawal sickness. Withdrawal happens because the body’s chemistry has been changed, causing the user to be unable to function comfortably without the drug.

Explain that most people who are physically dependent are also psychologically dependent. Some have psychological dependence without the physical dependence, which can be an equally strong dependence. With this type of dependence, the user feels a powerful motivation to continue abusing a drug for the temporary pleasure or relief of discomfort the drug gives. Because the mind and the body work together very closely, it is often difficult to tell the difference between physical and psychological dependence. The mental craving for a drug may be so powerful that it seems to be a physical need.

1. Marijuana (Pot, Grass, Weed, Dope, Reefer)

Explain that marijuana (Acapulco Gold, Ganga, Grass, Mary Jane, Pot, Weed, Reefer, Stick, Smoke) comes from the dried flowers, leaves, and small stems of the cannabis plant. It is smoked in cigarettes, known as joints, and also in pipes. Marijuana use is illegal in the United States, but in the past it was used medicinally to reduce swelling of the eyes caused by glaucoma and to counteract the intense nausea brought on by certain cancer treatments. Its legalization, especially for these medical purposes, has been a controversial subject in this country for years.

Explain that the tetrahydrocannabinol (THC) produced by cannabis is the main psychoactive substance that produces marijuana’s mind-altering effects. THC is quickly absorbed into the lungs and then travels through the blood to affect the brain. It distorts the senses, including hearing, taste, touch, and smell, alters the sense of time and place, and affects emotions. THC affects sleep patterns and remains in body fat for at least a month after only one joint has been smoked. It causes users to crave food (getting the munchies) and to enjoy eating, which is unusual for a drug. It also tends to dull sexual urges and pleasure.
Explain that there are several hundred other chemicals in marijuana that vary between different types of cannabis plants and between plants grown during different seasons. The active chemicals in marijuana affect the brain, altering hearing, taste, touch, smell, and a sense of time and space. The effects of marijuana vary from person to person depending on each person’s expectations and how much they smoke and because the chemicals in different marijuana plants vary. People may experience anything from a mild euphoria to uncontrollable laughter to hallucinations. Marijuana can also contain dangerous substances such as pesticides and molds and is sometimes mixed with PCP to make the user believe it is more potent.

Explain that because marijuana is widely abused today and has been around for thousands of years, many people believe that its use poses no harm. However, research studies prove this notion wrong. The effects of marijuana use include the following:

- Short-term memory loss and shortened attention span, both of which interfere with the ability to learn. Heavy, long-term use is often called “burn out” because the user’s thinking is slow and confused.
- Increased heart rate and irregular heartbeat.
- Weakening of the immune system.
- Reduced hormone levels resulting in lower sperm counts in males and irregular menstrual cycles in females.
- Development of “amotivational syndrome,” which results in apathy and loss of ambition and drive.
- Impaired judgment, unsteadiness, lack of coordination, and slowed responses, which make driving a dangerous activity.
- Lung damage and increased risk of lung cancer. This risk is higher than that of smoking tobacco cigarettes because marijuana is inhaled more deeply and then held in the lungs for a longer period of time. Joints also lack filters to cut down on harmful chemical effects.
Possible depression and moodiness. Some users feel tired and unhappy the morning after smoking marijuana and may respond by smoking a joint to feel better. This cycle may lead to psychological dependency.

Possible intense fear and anxiety, called a “pot panic” and even paranoia and psychosis. This may occur if the marijuana contains higher levels of THC.

Development of a tolerance to marijuana resulting in the need for greater amounts in order to feel any effects. This may also contribute to psychological dependence.

Explain that the harmful health effects of marijuana use may include rapid and irregular heartbeat, short-term memory loss, shortened attention span, a weakened immune system, fatigue, and a higher risk of lung cancer. In extreme cases, marijuana abuse can result in paranoia and psychosis. Similar to alcohol, marijuana abuse can affect driving ability. As with any illegal drug, marijuana is not tested for safety and purity. It may contain pesticides and molds and may be mixed with other dangerous drugs.

Explain that because of all the effects marijuana has on the mind, the body, and the ability to learn, its use may be particularly harmful to young people, since they are still maturing physically, sexually, and mentally. Marijuana’s effects may prevent you from becoming a healthy, normal adult.

2. Cocaine, Crack, and Bazuco

Explain that cocaine hydrochloride (Cocaine, Coke, Peruvian Marching Powder, C, Snow, Flake, Rock, White, Blow, Nose Candy) comes from the leaves of the coca bush and is an illegal drug that looks like white crystalline powder. It is often diluted with other ingredients and then inhaled through the nose, injected, or smoked.

Explain that cocaine is a stimulant that affects the nervous system, providing short bursts of euphoria, a feeling of excitement, increased blood pressure and pulse rate, and alertness. People often use it to increase mental activity and to offset drowsiness, fatigue, or as an appetite suppressant; however, the intense high of cocaine is followed by an intense low. Repeated abuse of cocaine can result in a strong physical and psychological dependency. The body will ignore all other drives, including hunger, in its drive for cocaine.
Explain that regular use can lead to hallucinations of touch, taste, sound, or smell. Tolerance develops rapidly with repeated use. As the effects of cocaine wear off, the user feels exhausted, depressed, and sometimes paranoid, similar to the crashing of amphetamines. Cocaine is considered to be one of the most potentially addictive drugs.

Explain that cocaine stimulates the central nervous system. Immediate effects include dilated pupils and elevated blood pressure, heart rate, respiratory rate, and body temperature. Occasional use results in a stuffy nose, while chronic use decays the mucous membranes of the nose. Injecting cocaine, or any drug, with a shared needle may spread AIDS, hepatitis, and other diseases. Cocaine produces both psychological and physical dependency.

Explain that dealers cut cocaine with other substances, usually table sugar, mannitol, lactose, dextrose, and other drugs (PCP, lidocaine, amphetamines). Strychnine, a poison, has been found in cocaine; talc, which damages the lungs, is also often used. Occasional use of cocaine can lead to heavy, uncontrollable use, with the dependence becoming so strong that users will not quit even when cocaine severely damages their lives. When users do quit, they may not experience strong physical withdrawal symptoms, but they become depressed and irritable, are tired but unable to sleep, and constantly crave the drug.

Explain that crack (Crack, Freebase Rocks, Rock) looks like brown pellets or crystalline rocks that resemble lumpy soap and is often packaged in small vials. It is smoked. Bazuco is a drug similar to crack. Both of these drugs are illegal.

Explain that crack is street cocaine commonly processed with boiling water and baking soda, which produces a very pure form of cocaine. The effects and the risk of addiction to crack are so great, however, that it is like a completely different drug. It is many, many times more dangerous than cocaine hydrochloride. Its effects are felt within 10 seconds. Cocaine in this form creates a very intense high and a fast, strong addiction. The user also experiences an incredible low after the high has worn off, often throwing him or her into a deep depression. To offset this depression, the user then smokes more crack, which starts the compulsive cycle that leads to a severe dependency. The only person who benefits from this vicious cycle is the drug dealer who now has a desperate customer in constant need of his or her product.
Explain that the physical side effects of crack include dilated pupils, increased pulse rate, elevated blood pressure, insomnia, loss of appetite, hallucinations of touch, paranoia, and seizures. A major concern with crack is that dependency is almost immediate. The first experience is often very pleasurable. Then the extreme low afterward is a strong motivator to use the drug again right away, this time to relieve bad feelings. Users of crack are addicted before they know it, turning their lives upside down.

Explain that bazuco, another form of cocaine, is equally if not more dangerous and addictive than crack. Its use originated in Colombia and other South American countries and has now made its way to the United States. It is made from the intermediate step between the coca leaf and the cocaine hydrochloride, called cocaine sulfate. It is mixed with a number of other substances, among them marijuana, methaqualone, and acetone. Its effects are similar to those of crack, as are its dangers and its quick addiction.

Explain that the use of any type of cocaine can cause death by disrupting the brain’s control of the heart and respiration.

3. Amphetamines and Methamphetamine (Speed)

Explain that amphetamines (Speed, Bennies, Glass, Uppers, Ups, Black Beauties, Pep Pills, Copilots, Bumblebees, White Crosses, Benzedrine, Dextedrine, Footballs, Biphentine) look like capsules, pills, or tablets. Methamphetamines (Crank, Crystal, Meth, Crystal Meth, Methedrine, Ice) can be in the form of a white powder, pills, or a rock that resembles blue paraffin. Forms of both drugs are used medically to treat obesity, narcolepsy, and hyperactivity in children.

a. Amphetamines

Explain that similar to cocaine, amphetamines are stimulants. They stimulate the nervous system, increasing physical activity, energy, mental alertness, and self-confidence, and producing euphoria. Medically, amphetamines are used to treat obesity, narcolepsy, and hyperactivity in children. For example, the amphetamine Ritalin is used to stimulate the brain center that helps hyperactive children sit still and pay attention.

Explain that as a drug of abuse, amphetamines are often referred to as “speed.” Many people abuse amphetamines to increase energy and alertness, and in some cases to combat fatigue brought on by use of alcohol, marijuana, or depressants. The body builds up tolerance to amphetamines, however, and greater and greater doses are required to achieve the same effects. Addiction may become severe.
Explain that medically, amphetamines are taken orally, but many abusers inject the drug directly into a vein, increasing the risk of overdose and infection. Needles shared to inject the drug can spread hepatitis and HIV. After an injection of amphetamines, the user experiences an intense, short-lived euphoria. An addict may inject the drug several times a day for several days feeling little need for food or sleep. Mental depression and overwhelming fatigue follow abuse, which may cause the abuser to turn to amphetamines again for relief.

Explain that in addition to fatigue and depression, the other side effects of amphetamine abuse include extreme anxiety, temporary mental illness, and malnutrition. High doses can cause hallucinations, increased body temperature, high blood pressure, convulsions, kidney failure, lack of oxygen, bleeding of the brain, and death. Withdrawal symptoms include irritability, depression, disorientation, long periods of sleep, and not caring about anything.

b. Methamphetamine

Explain that methamphetamine is a nervous system stimulant similar to amphetamines that is used medically in much the same way as amphetamines. This drug is abused to produce heightened awareness, alertness, and self-confidence. A smokable form of methamphetamine is “ice.” Like crack, it produces an intense high without the use of needles and is extremely addictive. Abuse of methamphetamine may result in bizarre behavior, sleeplessness, depression, high blood pressure, increased body temperature, convulsions, heart problems, seizures, and strokes.

Explain that methcathinone, also called “cat” and “star,” is a designer drug similar to methamphetamine that can cause paranoia, slurred speech, tremors, extreme weight loss, and sleeplessness.

4. Barbiturates, Methaqualones, and Tranquilizers

Explain that barbiturates (Downers, Barbs, Blue Devils, Red Devils, Yellow Jacket, Yellows, Nembutal, Seconal, Amytal, Tuinals, Luminal, Amytal, Pentothal, Phenobarbital) look like red, yellow, blue, or red and blue capsules. Methaqualones (Ludes, Quaaludes, Quads, Sopors, Sopes, 714s) look like tablets. Tranquilizers (Valium, Librium, Equanil, Miltown, Serax, Tranxene, Thorazine) look like tablets or capsules.
a. Barbiturates

Explain that barbiturates are a group of depressant drugs that include phenobarbital (goofballs), pentobarbital (yellow jackets), amobarbital (blue devils), and secobarbital (red devils). They lower body temperature and blood pressure, slow breathing and heart rate, and as such, have many medical uses. For example, doctors prescribe phenobarbital to reduce the frequency of convulsions in epileptics. Barbiturates are also used medically as an anesthetic and to treat insomnia. The effects of barbiturates vary from person to person and even change within one person from one use to the next.

Explain that when abused, the symptoms they produce are similar to those of alcohol. Small amounts can produce calmness and relaxed muscles, but larger doses cause slurred speech and staggering walk. Like alcohol, they distort perception and slow reaction time, which can cause serious accidents like car crashes. Very large doses can cause respiratory depression, coma, and death.

Explain that signs of barbiturate abuse include fatigue, blurred vision, confused or slurred speech, lack of coordination and balance, a reduction of mental and physical activity, and decreased breathing. Abusers will often act like they are drunk, but there will be no smell of alcohol. Long-term abuse may result in double vision, depression, and forgetfulness.

Explain that signs of an overdose of barbiturates include dilated pupils, a rapid pulse, shallow breathing, and clammy skin. An overdose can cause coma and death. Because barbiturates cause confusion and forgetfulness, accidental death occurs when a person has taken barbiturates, becomes confused, forgets, and takes more barbiturates. Accidental poisoning occurs when barbiturates are combined with alcohol. Withdrawal symptoms include anxiety, insomnia, tremors, delirium, and convulsions.

Explain that barbiturate abusers often become extremely depressed, tired, and hopeless. They may reach for the rest of the bottle to “end it all” when in this mental state, or they may become confused, forget how many pills they have taken, and accidentally overdose. For this reason, barbiturates are one of the leading causes of drug-related deaths. The combination of barbiturates and alcohol can multiply the effects of both drugs, thereby multiplying the risks. This multiplication of the effects of two separate drugs when taken together is called the synergistic effect. It can be fatal.
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<td>b. Methaqualone</td>
<td>Explain that methaqualone production has been banned in the United States since 1984 due to its widespread misuse and minimal medical value. Abusers take it to produce a feeling of elation; however, its side effects are headaches, nosebleeds, dizziness, loss of coordination, and leg and arm pain. Tolerance and psychological dependence can develop when used regularly. Using methaqualone with alcohol is known as “luding out” and can cause death.</td>
<td>Show slide(s) 148</td>
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<td>c. Tranquilizers</td>
<td>Explain that tranquilizers are used medically to treat anxiety, insomnia, and convulsions. It is very easy to become both physically and psychologically dependent on them. When mixed with alcohol, they can cause death.</td>
<td>Show slide(s) 149</td>
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<td>5. Narcotics</td>
<td>Explain that most narcotics are opiates, which come from the seed pods of opium poppies. Many are used medically to relieve pain and treat insomnia. Narcotics abuse initially produces a feeling of euphoria that is often followed by drowsiness, nausea, and vomiting. Users also may experience constricted pupils, watery eyes, and itching. An overdose may produce slow and shallow breathing, clammy skin, convulsions, coma, and death. Tolerance develops rapidly and dependence is likely. The use of contaminated syringes to inject certain kinds of narcotics may result in diseases such as AIDS and hepatitis. Narcotics include opium, codeine, morphine, and heroin. Other types of opiates include Percocet, Percodan, Tussionex, Fentanyl, Darvon, Talwin, and Lomotil and come as tablets, capsules, or liquids.</td>
<td>Show slide(s) 150-151</td>
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<tr>
<td>a. Opium</td>
<td>Explain that opium (Paregoric, Dover’s Powder, Parepectolin) can look like dark brown chunks or a powder. It comes from a specific type of poppy, generally grown in the Middle East. Opium is one of the weaker narcotics, but it has side effects that make it undesirable as a medication, including slowed heart rate, breathing, and mental abilities, and loss of appetite.</td>
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<td>b. Codeine</td>
<td>Explain that codeine comes in different drugs such as Empirin, Tylenol, and certain cough medicines. It is either a dark liquid varying in thickness or comes in capsules or tablets. Similar to opium, codeine is one of the weakest narcotics. Doctors prescribe it for coughs and pain relief.</td>
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<td>c. Morphine</td>
<td>Explain that morphine (Pectoral Syrup) is an opium derivative, and comes in the form of white crystals, hypodermic tablets, and injectable solutions. Morphine is a very strong painkiller, but because it is also very addictive, it is used in medicine only for severe cases, such as in the later stages of terminal cancer when patients are in extreme pain. Unfortunately, as a drug of abuse, morphine usually results in addiction. Withdrawal from it has painful and severe effects, and getting an addict off the drug generally requires the help of a professional.</td>
<td>Show slide(s) 154</td>
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<tr>
<td>d. Heroin and Methadone</td>
<td>Explain that heroin (Smack, Horse, Junk, Harry, H, Brown, Black Tar, Antifreeze) looks like a white to dark brown powder or a tar-like substance. Methadone Hydrochloride (Dolophine, Methadose, Methadone) comes in the form of a solution. Explain that heroin is a concentrated form of morphine and is so addictive that it is illegal in the United States even for medical use. Unfortunately, it is the most abused narcotic in this country, and its use is on the rise as of the late 1990s. Users of heroin often start by sniffing or smoking the drug in powdered form. Because tolerance develops quickly, they often turn to “mainlining,” the practice of injecting a heroin solution into their veins to intensify the drug’s effects. Explain that heroin dulls the senses, easing tensions, fears, and worries. A stupor follows that lasts for several hours in which hunger and thirst are reduced. After 12 to 16 hours without heroin, the user will experience severe withdrawal symptoms, including sweating, shaking, chills, nausea, diarrhea, abdominal pain, leg cramps, and severe mental and emotional pain. To relieve these symptoms, the user must take another dose of the drug. People addicted to heroin often die young, some from overdoses caused by unreliable drugs, others because they cannot distinguish between safe and dangerous doses. Explain that signs of an overdose include shallow and slow breathing, clammy skin, and convulsions. An overdose can result in coma and death. When addicted, a person must have more of the drug to keep from experiencing withdrawal symptoms, which are severe and can include panic, shaking, chills, sweating, cramps, and nausea.</td>
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<td>6. Hallucinogens</td>
<td>Explain that <strong>hallucinogens</strong> alter the physical senses, producing visions, sounds, and smells that are not real, and distorting the concepts of time and space in the user’s mind. Because these drugs confuse fact and fantasy, a user may become irrational and resort to violence or suicide to avoid an imagined situation or attacker. Hallucinogens are not physically addictive, but users often become psychologically dependent on these drugs.</td>
<td>Show slide(s) 162-165</td>
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<td>a. Lysergic Acid</td>
<td>Explain that lysergic acid diethylamide (LSD, Acid, White Lightning, Blue Heaven, Sugar Cubes, Microdot, Twenty-Five, Sid, Bart Simpsons, Barrels, Tabs, Blotter, L, Liquid, Liquid A, Microdots, Mind Detergent, Orange Cubes, Hits, Paper Acid, Sugar, Sunshine, Ticket, Wedding Bells, and Windowpane) can come as brightly colored tablets, imprinted blotter paper, thin squares of gelatin, or as a clear liquid. Explain that a “trip” from an average dose of LSD can last as long as eight to 10 hours. LSD’s effects are unpredictable, tolerance to it develops quickly, and its use frequently results in psychological dependence.</td>
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<td>Diethylamide (acid)</td>
<td>Explain that LSD is a powerful hallucinogen that scrambles and confuses the senses. A tiny drop taken with sugar or food can cause a person to trip or experience false visions, smells, and sounds for hours. Sensations may be confused and feelings may change rapidly. Music may appear as colors and colors as flavors or odors. Some people say these experiences are exciting; others say they are nightmares. Those having a bad trip may take dangerous or irrational actions to escape from this imaginary situation. In addition to these affects, LSD can cause nausea, vomiting, and misinterpretations of time and distance. Some people experience flashbacks of LSD’s effects days, weeks, and years after the original trip. An overdose of LSD can result in psychosis, accidental death, and suicide.</td>
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<td>b. Phencyclidine</td>
<td>Explain that phencyclidine hydrochloride (PCP, Angel Dust, Hog, Superjoint, Busy Bee, Green Tea Leaves, DOA [dead on arrival]) can be in the form of a liquid, capsules, white crystalline powder, or pills. Of the various types of hallucinogens, only PCP has a medical use as a tranquilizer for animals.</td>
<td>Show slide(s) 168-170</td>
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<td>Hydrochloride</td>
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5-9-21
The neocortex is the section of the brain that controls the intellect and keeps instincts in check. The effects of PCP are unpredictable, and users frequently report a sense of distance and alienation from the world and others. Sometimes a user may feel drunk, but at other times the same dose may cause depression, paranoia, hallucinations, and suicidal thoughts. Time and movement are slowed down; muscular coordination worsens; senses are dulled; and speech is blocked and incoherent.

Explain that PCP stays in the system for a long time. Chronic users report persistent memory problems and speech difficulties as well as psychological and behavioral changes. Some of these effects may last six months to a year following prolonged daily use. Mood disorders such as depression and anxiety also occur, and users may exhibit paranoid and violent behavior. In fact, many deaths attributed to PCP do not occur from the drug itself, but from accidents, like falling from high places, drowning, or car wrecks, which are related to the behavior PCP produces. Large doses of PCP can cause convulsions and coma, heart and lung failure, or ruptured blood vessels in the brain. Treatment for an overdose is very difficult and requires hospitalization.

Explain that PCP, used as a tranquilizer for animals, can cause frightening hallucinations when used by humans. Abuse can result in seizures, coma, and death or in violent, unpredictable behavior. Some abusers have committed murder and suicide.

c. Psilocybin (Mushrooms, Shrooms) and Mescaline (Mesc, Buttons, Cactus)

Explain that two other hallucinogens are psilocybin, produced from a type of mushroom, and mescaline, produced from a type of cactus. Similar to other hallucinogens, use of these drugs can cause hallucinations, perception problems, nausea, vomiting, and, in extreme cases, mental illness, suicide, or accidental death. Mescaline effects, while compared to a mild LSD trip, are often accompanied by sweating and severe abdominal cramps. Eating mushrooms poses another danger because many mushrooms look alike and some are poisonous enough to cause death.

7. Inhalants (Air Blast)

Explain that inhalants are toxic chemicals like glue, freon, nail polish, spray paint, and gasoline that are huffed (sprayed into a cloth and held over the mouth and nose) or bagged (sniffed from a bag, bottle, or can) to achieve a brief, mild euphoria. All of these products contain labels warning against inhaling their fumes because of the hazards involved. Some inhalants used medically are also abused, such as amyl nitrate, which relieves heart pain, and nitrous oxide, which relieves anxiety.
Explain that risks involved with inhaling these chemicals include nausea; dizziness; vomiting; headaches; unconsciousness; pneumonia; permanent brain and nerve damage; bleeding of the brain; eventual liver, brain, and kidney cancer; and death due to heart failure and suffocation. Effects of inhalants are unpredictable and depend on what chemical or chemicals are inhaled and how much. Brain damage and death may result after only one use depending on the inhalants involved.

8. Ecstasy (XTC, Love Drug)
Explain that ecstasy (MBDB, MDE, MDEA, and 2CB) is a “designer drug” that closely resembles cocaine. It produces euphoria that lasts several hours, heightens pleasure, and may even produce hallucinations in high doses. Ecstasy is taken orally and may cause mood swings, overly friendly behavior, insomnia, anxiety, and nausea. In extreme cases, abuse may result in seizure and death.

9. Rohypnol (Roofies, Forget Pill, Date-Rape Pill)
Explain that rohypnol (GHB; includes G, Liquid Ecstasy, Somatomax, Scoop, Georgia Home Boy, and Grievous Bodily Harm) is used legally as a medical sedative in Europe and Latin America. As a drug of abuse, it is called roofies, the forget pill, and the date-rape pill. At first, it produces an alcoholic type of high, but then heavy sedation and short-term memory loss that lasts up to eight hours. It earned its reputation as the date-rape pill by being slipped into the drinks of females, who were taken advantage of in a state of sedation brought on by the drug and then unable to remember exactly what happened to them. In addition to the drawback just discussed, dangers of abusing rohypnol include impaired motor skills and slow respiration.

F. Steroids
Explain that although anabolic steroids are available only by prescription in the United States, many steroid supplements are available over the counter and are marketed under several names. Steroids and steroid supplements are often taken to increase performance in sports. Some people take them to develop muscles. Abusers of steroids take many times the recommended dosages in an effort to bulk up. Steroid abuse has been increasing in recent years, especially among middle-school students. Steroid use has been associated with chemical dependence and withdrawal syndrome. Athletes who turn to steroids risk withdrawal syndrome and permanent damage to their bodies.

G. Tobacco
Explain that many people hold the view that experimentation with or use of tobacco is normal or acceptable behavior. However, the use of tobacco often progresses to further drug abuses. Accordingly, some experts attach the term gateway to this substance. Use of drugs such as cocaine and heroin is unusual in those who have not previously used tobacco.

5-9-23
Explain that the hazards of tobacco include cancer and other diseases; it can also have ill effects on others. As awareness of these ill effects reaches new heights, more and more Americans are joining forces to fight tobacco abuse every day.

Show slide(s) 189

Explain that in addition to smoking cigarettes, pipes, or cigars, people who use tobacco products can also do so orally in the forms of chewing tobacco (by placing a wad between the cheek and teeth and sucking on it) and snuff (by placing a pinch between the lower lip and teeth).

Show slide(s) 190

Explain that three major components make up tobacco, each having their own ill effects. One such component, tar, causes a variety of cancers and contributes to emphysema and other respiratory problems. For this reason, people often choose to smoke low-tar cigarettes, but even low-tar cigarettes can be unsafe because smokers often smoke more while using these brands. Carbon monoxide, also found in tobacco, restricts the oxygen-carrying capacity of the blood, and can often cause insufficient heart operation. **Nicotine**, the substance in tobacco believed to cause dependency, is absorbed into the bloodstream, reaching the heart and brain within a few seconds of the onset of smoking.

Note: Nicotine in its pure state is a toxic poison and is also used in insecticides.

Show slide(s) 191-195

Explain that some of the diseases associated with long-term tobacco smoking include chronic bronchitis, emphysema, coronary heart disease, and lung cancer. Lung cancer is the leading cause of death among women today. Cigarette smoking is a major independent risk factor for heart attacks (sometimes fatal) in both men and women. Pipe and cigar smokers are more prone to dying from cancer of the mouth and throat than nonsmokers. Smoking also reduces the effectiveness of prescription and over-the-counter medications.

Note: Infections, especially pneumonia and acute bronchitis, are twice as common in young children whose parents smoke than in children with nonsmoking parents.

Show slide(s) 196-197

Explain that although chewing tobacco and snuff are not smoked, they increase the risk of disease and damage to the delicate lining of the mouth and throat. As a result, individuals who use these products are more likely than nonusers to develop mouth cancer, throat cancer, and gum disease. Chewing tobacco and snuff can also contribute to heart disease and strokes. The harmful effects of one can of snuff are equal to that of about 60 cigarettes.

Show slide(s) 198
Explain that despite the labels required by federal law warning individuals about the hazardous effects of using tobacco products, use continues.

Explain that recent research has indicated that nonsmokers who breathe in second-hand smoke (smoke that escapes from the burning end of a cigarette as well as the smoke exhaled by the smoker) can have an increased risk of lung cancer, heart disease, and respiratory disorders. Inhaling second-hand smoke makes the heart beat faster, the blood pressure go up, and the level of carbon monoxide in the blood increase. Smoke from an idling cigarette contains even more tar and nicotine than an inhaled one, in addition to more cadmium, a substance which has been related to hypertension, chronic bronchitis, and emphysema.

Explain that as the public becomes more aware of the dangers of inhaling second-hand smoke, the legislation protecting the rights of nonsmokers continues to increase. Smoking is increasingly being banned in both public and private places.

1. The Chemicals in Tobacco Smoke
   Explain that with each puff on a cigarette, cigar, or pipe, a smoker inhales over 4,000 different chemicals. Of these 4,000 chemicals, at least 1,000 are known to be dangerous. Table 9.1 lists some of the harmful chemicals found in cigarette smoke. Among all the dangerous substances, nicotine, tar, and carbon monoxide can be identified as the most deadly ones found in tobacco smoke.

2. Nicotine and Addiction
   Explain that the drug in tobacco that may act as a stimulant and cause addiction is nicotine. A stimulant is a drug that speeds up the activities of the central nervous system, the heart, and other organs. In its pure form, nicotine is one of the strongest poisons known. Taken in large amounts, nicotine can kill people by paralyzing their breathing muscles. Smokers usually take in small amounts of nicotine. However, over several years the effects of much smaller amounts on the body are numerous and severe.

   Explain that when tobacco is smoked, nicotine enters the lungs, where it is immediately absorbed into the bloodstream. Seconds later, the nicotine reaches the brain. Chemical changes begin to take place. Nicotine causes the heart to beat faster, the skin temperature to drop, and the blood pressure to rise. Nicotine constricts blood vessels, which cuts down on the blood flow to hands and feet. Beginning smokers usually feel the effects of nicotine poisoning with their first inhalation. These effects include rapid pulse, clammy skin, nausea, dizziness, and tingling in the hands and feet. Nicotine and cigarettes have many adverse effects on the body, as shown in Figure 9.3.
Explain that the degree of reaction varies from person to person, depending on the person’s tolerance to nicotine. The effects of nicotine poisoning stop as soon as tolerance to nicotine develops. Tolerance can develop in new smokers after the second or third cigarette. The smoker begins to experience a “lift,” a physical reaction to the chemicals in nicotine. As tolerance builds, however, the user may need more and more tobacco to produce the same feeling. The Surgeon General, the country’s highest medical authority, has called nicotine an addicting drug, just like heroin and cocaine.

Explain that in a short time, tobacco users develop an addiction to nicotine. A tobacco addict who goes without tobacco for a short time may experience nicotine withdrawal. Nicotine withdrawal is a reaction to the lack of nicotine in the body, which causes symptoms such as headache, irritability, restlessness, increased coughing, nausea, vomiting, a general feeling of illness, and intense cravings for tobacco. Withdrawal effects may begin as soon as two hours after the last cigarette. Physical craving for a cigarette reaches a peak in the first 24 hours.

Explain that tobacco users also suffer psychological withdrawal symptoms when they stop smoking. They feel emotionally and mentally uncomfortable without tobacco. By using tobacco at certain times—when under stress, for example—tobacco users actually condition themselves to rely on tobacco whenever a stressful situation arises. When tobacco users go without tobacco, they may feel unable to handle stress. Many tobacco users begin to depend on tobacco at particular times of the day, such as when they awaken or after they finish a meal. Others begin to depend on tobacco in social or work situations, such as parties or meetings.

a. Tar

Explain that the dark, sticky mixture of chemicals that is formed when tobacco burns is known as tar. Smokers can see evidence of this substance on their fingers and teeth, which turn brown when tar sticks to them. The tar also sticks to the cells of the respiratory system, where it damages the delicate cells that line the respiratory tract. The cells have tiny hair-like structures, or cilia. The cilia beat back and forth and sweep dust and other foreign particles away from the lungs. If the cilia are damaged, foreign particles can enter the lungs, leading to disease.
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<td>Explain that the tar in tobacco smoke contains hundreds of chemical carcinogens, or cancer-causing agents. Cancer of the lungs, throat, and mouth are caused by the inhalation of tar in tobacco smoke.</td>
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<td><strong>b. Carbon Monoxide</strong></td>
<td>Explain that carbon monoxide is a poisonous, colorless, odorless gas that is found in cigarette smoke. You may be familiar with the dangers of carbon monoxide. Deaths that result from leaving a car engine running in a closed area are caused by carbon monoxide poisoning.</td>
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<td>Explain that carbon monoxide has a greater attraction for the oxygen-carrying molecules (hemoglobin) in the red blood cells than oxygen does. When carbon monoxide is inhaled, it takes the place of, or displaces, large amounts of oxygen from hemoglobin. The more carbon monoxide present in the blood, the less oxygen in the blood. Carbon monoxide also makes it hard for the oxygen that is left in the blood to get to the muscles and organs. When a person smokes, the heart works harder but accomplishes less. Because their blood contains too little oxygen to function properly, smokers often experience shortness of breath when they are active.</td>
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<td><strong>3. Chemicals in Smokeless Tobacco</strong></td>
<td>Explain that most tobacco users smoke cigarettes, cigars, or pipes. And yet there has been an increase, especially among teenage boys, in the use of smokeless tobacco. Smokeless tobacco is tobacco that is chewed or sniffed through the nose. Some people who use smokeless tobacco think that the products are safe because no smoke is produced or inhaled. What they may not realize is that smokeless tobacco contains many of the same harmful chemicals found in tobacco smoke, including the highly addictive drug nicotine.</td>
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<td>Explain that there are two different kinds of smokeless tobacco products. Chewing tobacco is poor-quality tobacco leaves mixed with molasses or honey and placed between the cheek and gums. Snuff is finely ground tobacco that may be held between the lower lip and teeth or sniffed through the nose. One can of snuff delivers as much nicotine as 60 cigarettes. The nicotine in chewing tobacco enters the bloodstream through the membranes of the mouth. The nicotine in snuff gets into the body through the membranes of either the mouth or the nose. After it has entered the body, nicotine from smokeless tobacco has the same effects as nicotine from cigarettes.</td>
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H. Conclusion

Explain that when drugs are properly used, they can cure illness and save lives. When abused, however, drugs and alcohol can destroy lives and cause death. It is important to understand that, although people often abuse drugs and alcohol to find happiness and fulfillment, these substances only create more problems and unhappiness. To keep from falling into the trap of drug and alcohol abuse, stay smart, strong, and active. Say no. Recognize the different drugs that are abused in our society and what affect they have on people’s health and lives. Understand the dangers of alcohol abuse, not only to the drinker but to family and friends. You can set an example of an informed, drug-free individual.

III. APPLICATION

A. Review Questions

1. What is the difference between drug use, misuse, and abuse?

2. List three risks associated with the use of alcohol.

3. Is there any “safe” cigarette? Why or why not?

4. Define the term gateway.

IV. EVALUATION

A. Test

Q.1. Which of these statements describes both a drug and a controlled substance?

A. It is a chemical that causes a physical or behavioral change.

B. It is considered harmful and usually subject to legal restriction.

C. It has a medical use and is usually addictive.

D. Its manufacture or sale is illegal.

Q.2. Which term is used to refer to taking a legal drug for medical reasons but not as recommended or prescribed?

A. Drug use

B. Drug misuse

C. Drug addiction

D. Drug abuse
| Q.3. What is the most widely used and abused drug in the United States? | A. Marijuana  
B. Cocaine  
C. Nicotine  
D. Alcohol |
|---|---|
| Q.4. Which of these drugs is a depressant? | A. Nicotine  
B. Cocaine  
C. Alcohol  
D. Amphetamines |
| Q.5. What is the leading cause of deaths among 15- to 24-year olds? | A. Drug overdose  
B. Accidents caused by drinking and driving  
C. Suicide while under the influence of drugs or alcohol  
D. Homicides resulting from drug or alcohol |
| Q.6. What term associated with alcohol and tobacco refers to the fact that their use often leads to further drug abuse? | A. Corridor  
B. Portal  
C. Gateway  
D. Window |
| Q.7. What term is used to refer to the condition where the body builds a resistance to a drug, causing a need for larger amounts for the same effect? | A. Addiction  
B. Tolerance  
C. Dependence  
D. Subsistence |
| Q.8. What condition results when the body develops a resistance to a drug and needs the drug to function normally? | A. Abuse  
B. Misuse  
C. Tolerance  
D. Dependence |
| Q.9. What organ of the body develops cirrhosis, a disease in which heavy alcohol consumption produces scar tissue? | A. Brain  
B. Esophagus  
C. Liver  
D. Heart |
Q.10. Approximately what percent of car crashes involving teenagers are related to alcohol use?

A. 35
B. 50
C. 75
D. 90

Q.11. What term is used to refer to the interaction of drugs and subsequent increase in the effects of each?

A. Synergism
B. Conversion
C. Hypersensitivity
D. Interface

Q.12. A blood alcohol concentration (BAC) of _______ percent is legally drunk in all states.

A. 0.5
B. 0.75
C. 0.08
D. 0.1

Q.13. All of the following statements describe marijuana except which one?

A. Its main psychoactive substance, THC, stays in body fat for at least one month.
B. Sometimes it contains dangerous substances like pesticides and molds, even PCP.
C. It boosts physical activity, energy, mental alertness, and self-confidence.
D. Marijuana’s chemicals distort hearing, taste, touch, smell, and the sense of time and space.

Q.14. Which of these drugs is incorrectly paired with its medicinal use?

A. Marijuana: cancer treatment nausea
B. Narcotics: pain relief and insomnia
C. Amphetamine: convulsions
D. Codeine: coughs and pain relief

Q.15. How can cocaine cause death?

A. Disrupts the brain’s control of the heart and breathing
B. Damages renal blood vessels, causing kidney failure
C. Poisons the liver and keeps it from filtering the blood
D. Ruptures the blood vessels in the brain, causing uncontrollable bleeding
### Q.16. If a drug, drink, or other substance speeds up the activity of the mind or body, it is considered to be a _______.

A. depressant  
B. **stimulant**  
C. narcotic  
D. steroid

### Q.17. Which of these substances is a leading cause of death because a user often becomes tired, hopeless, depressed, and sometimes confused enough to accidentally overdose?

A. Narcotics  
B. Amphetamines  
C. Alcohol  
D. **Barbiturates**

### Q.18. Which of these symptoms are associated with heroin overdose?

A. Hallucinations, high blood pressure, kidney failure, bleeding of the brain  
B. Anxiety, tremors, delirium  
C. **Slow, shallow breathing, clammy skin, convulsions**  
D. Paranoia, seizure, high blood pressure

### Q.19. Which of these drugs puts the user in a state of sedation and short-term memory loss lasting up to eight hours?

A. Phencyclidine hydrochloride, “angel dust”  
B. Heroin, “smack”  
C. Methamphetamines, “crystal meth”  
D. **Rohypnol, the “date rape” pill**

### Q.20. Which of these substances is/are available only by prescription in the U.S., though often appearing in over-the-counter supplements?

A. **Steroids**  
B. Morphine  
C. Heroin  
D. Barbiturates

### Q.21. Which of these is the drug in tobacco that may act as a stimulant and cause addiction?

A. Butylamine  
B. THC  
C. **Nicotine**  
D. Phenol
Q.22. Which of these statements about second-hand smoke is NOT correct?
A. Breathing second-hand smoke increases the risk of lung cancer and heart disease.
B. **Second-hand smoke is defined as smoke from a burning cigarette but not the smoke exhaled by the smoker.**
C. Smoke from an idling cigarette has even more tar and nicotine than inhaled smoke.
D. Children of smokers have twice as much pneumonia and bronchitis as children of non-smoking parents.

Q.23. Which of these substances is NOT one of the three most deadly ones in tobacco smoke?
A. Nicotine
B. Carbon monoxide
C. Tar
D. **Acetone**

Q.24. Which of these possible withdrawal symptoms is incorrectly paired with its drug?
A. Nicotine: headache, nausea, vomiting, irritability
B. **Barbiturates: depression, disorientation, long periods of sleep**
C. Heroin: cramps, sweating, panic, chills, nausea
D. Cocaine: depression, irritability, constant craving for the drug, fatigue, insomnia

Q.25. How does the tar in burned tobacco harm the body?
A. It displaces the oxygen from the red blood cells and interferes with the blood supply to the muscles and organs.
B. It constricts the blood vessels, cutting down on the blood flow to the hands and feet.
C. It collects in the liver where it causes scarring and interferes with the liver’s filtering of toxins from the body.
D. **It sticks to the cilia in the lungs so they cannot block harmful particles.**

Q.26. Crack cocaine is so highly addictive that a first-timer user has a one in _______ chance of becoming an addict.
A. three
B. five
C. seven
D. ten
Q.27. Which of these statements about alcohol intoxication is NOT accurate?

A. A drinker’s BAC can increase even after the person passes out.
B. People who are intoxicated will pass out before drinking a fatal amount.
C. First-time drinkers can die from alcohol poisoning.
D. Severe intoxication can cause death because the heart and breathing stop.

Q.28. BAC measures the number of milligrams of ethanol per _______ milliliters of blood.

A. 10
B. 100
C. 1000
D. 10,000

Q.29. What acronym is used to refer to the process of determining what to do when faced with riding with a driver who has been drinking?

A. REACT
B. DEFINE
C. SOLVE
D. DECIDE

Q.30. What is another term used for substance dependency?

A. Tolerance
B. Synergism
C. Addiction
D. Susceptibility
OUTLINE OF INSTRUCTION

I. INTRODUCTION

A. Establish contact.
   1. Introduce the topic for this lesson: “First Aid for Emergency and Nonemergency Situations.”

B. Establish readiness.
   1. Motivating statements
      Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.
   2. Lesson overview
      In this lesson, you will learn first aid procedures and how to apply them. You will learn what kinds of situations call for first aid, life-saving emergency skills, and first aid treatment for a wide variety of injuries, including shock, fractures, strains and sprains, burns, wounds, bruises, poisoning, heat- and cold-related injuries, bites, stings, and poisons.

INSTRUCTOR ACTIVITY

Ensure the NS1 DVD is in the DVD player with the label facing up.

Get the cadets ready to learn.

Trainee motivation

Learning incentives

Bring out the importance of the material being presented.
## OUTLINE OF INSTRUCTION

### II. PRESENTATION

Direct cadets to follow this discussion from Unit V, *Wellness, Fitness, and First Aid.*

### A. Introduction

Explain that most people encounter at least one situation requiring the use of first aid at some time in their lives. Whether a friend falls when rollerblading and breaks an arm or your younger brother cuts himself on broken glass and requires stitches, someone should administer first aid until the injured person receives proper medical attention. That someone can be you if you acquire basic first aid knowledge of what to do and what not to do in different accident situations. Remember that first aid may mean the difference between life and death, permanent and temporary disability, or long- and short-term recovery for an accident victim.

Explain that in addition to the first aid taught in this chapter, consider taking a first aid class from a qualified instructor. Many schools, hospitals, and fire departments offer first aid classes that provide demonstrations and hands-on experience with medical models of victims. Hands-on training is especially important before actually performing mouth-to-mouth resuscitation and *cardiopulmonary resuscitation* (CPR), both of which can be hazardous to a victim if performed improperly.

### B. The Need for First Aid/Your Response

1. **Definition of First Aid**
   
   Explain that **first aid** is the immediate care given to an injured or ill individual to keep him or her alive or stop further damage until qualified medical treatment can be administered. It is caring for people involved in accidents, catastrophes, and natural disasters such as hurricanes, tornadoes, and earthquakes. First aid includes dealing with the situation, the person, and the injury, as well as encouraging the victim and showing a willingness to help.

2. **Good Samaritan Law**
   
   Explain that the **Good Samaritan Law** is designed to protect the rescuer and encourage people to assist others in distress by granting the rescuer immunity against lawsuits. This law protects people from lawsuits as long as the rescuer is acting in good faith, without compensation and administers first aid correctly and without malicious misconduct or gross negligence.

### INSTRUCTOR ACTIVITY

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3. First Aid Kit

Explain that administering first aid is easier with a first aid kit. It is a good idea to keep one in your house and car and take one along on camping trips and hikes. A well-stocked first aid kit contains an assortment of bandages, Band-Aids, tape, aspirin or aspirin substitutes, antiseptic cream and cleanser, safety pins, scissors, tweezers, cotton, and tissues. To protect against infectious diseases, include rubber gloves and face shields in the kit. Rubber gloves will keep you from coming into contact with blood and body fluids, and face shields will allow you to give mouth-to-mouth resuscitation and CPR without direct contact.

a. Evaluating the Victim

Explain that when you encounter an injured person, you must evaluate that person to determine what kind of first aid, if any, is needed. This preliminary check of the person follows a series of steps designed to pinpoint and correct the most serious health risks first and then continue with less life-threatening problems. These steps are explained in more detail later in this lesson. Basically, check for breathing and heartbeat first; severe bleeding second; signs of shock third; and finally for broken bones, burns, and head injuries. Depending on what problems your evaluation of an accident victim reveals, perform the life-saving steps in a sequence that parallels this evaluation sequence:

1. Open the airway
2. Assess breathing
3. Assess circulation

Explain that when evaluating a conscious victim, ask the victim if you can help and get consent to provide first aid; then get as much information as possible about the situation and how the victim feels. If the victim is unconscious and others witnessed the accident, get as much information from the witnesses as possible. Check the victim for medical alert identification. Many people with heart disease, epilepsy, diabetes, and allergies to medications wear medical alert identification bracelets or necklaces that can give you a clue as to their medical condition.
Have someone at the scene dial 911 for emergency medical services (EMS). If you are alone and the victim’s condition is life-threatening, give first aid first, and then call 911. When calling 911, calmly state your name and exact location, the telephone number from which you are calling, details of what has happened, and the condition of the victim or victims. A dispatcher will route your call to the appropriate service—either the EMS, police department, fire department, or a combination of these services.

Explain that other important rules to follow at the scene of an accident include the following:

- Remain calm but act quickly. This will reassure the victim and help him or her to remain calm as well.

- Do not move an injured person. If the person has a neck or spine injury or broken bones, moving him or her could worsen the condition. Only move a victim if there is potential danger in remaining at the accident location. If you must move the victim for this reason, pull him or her in a straight line from the shoulders, keeping the head and body in line. Support the head and pull the victim as short a distance as possible.

- If there is more than one injured person at an accident scene, evaluate them quickly; then help the most seriously injured first. For example, help the person with severe bleeding before you help the person with a broken arm.

b. The Life-Saving Steps

Explain that the following steps identify evaluation procedures and specify treatment if necessary.

1. **Check to see if the victim is conscious.**
   a. Ask in a loud but calm voice, “Are you okay?”
   b. Gently shake or tap the victim on the shoulder.
   c. Watch for response. If the victim does not respond, go to Step 2.
   d. If the victim is conscious, ask where he or she feels different than usual or where it hurts. Go to Step 3.
e. If the victim is conscious but is choking and cannot talk, stop the evaluation and begin treatment for clearing the airway of a conscious victim.

2. Check for breathing and heartbeat.
   a. Look for rise and fall of the victim’s chest.
   b. Listen for breathing by placing your ear about one inch from the victim’s mouth and nose.
   c. Feel for breathing by placing your hand or cheek about one inch from the victim’s mouth and nose.
   d. At the same time, check for a pulse in the victim’s neck.
   e. If there is a pulse but no breathing, stop the evaluation and begin treatment to restore the breathing.
   f. If there is no pulse, stop the evaluation and begin CPR.

3. Check for bleeding.
   a. Look for spurts of blood and blood-soaked clothing.
   b. Look for entry and exit wounds.
   c. If bleeding is present, stop the evaluation and begin treatment for stopping the bleeding.

4. Check for the following signs of shock:
   a. Sweaty, but cool skin
   b. Paleness
   c. Restlessness or nervousness

5-10-5
d. Thirst
e. Loss of blood
f. Confusion
g. Faster than normal breathing rate
h. Blotchy or bluish skin
i. Vomiting or nausea.

Explain that if any of these signs are present, discontinue the evaluation and treat for shock. Show slide(s) 43-50

5. Check for fractures (broken bones).
   a. Check for the following signs of neck or back injury:
      • Pain or tenderness of neck or back area
      • Wounds of neck or back area
      • Paralysis.
   b. Ask the victim if he or she can move.
   c. Touch the victim’s arms and legs and ask whether he or she can feel it.
   d. If you suspect a neck or back injury, immobilize the victim by doing the following:
      • Tell the victim not to move.
      • If you suspect a back injury, place padding under the natural arch of the lower back.
• If you suspect a neck injury, place padding under the victim’s neck and place objects such as rocks or shoes on both sides of the head.

e. Check the victim’s arms or legs for fractures or broken bones. Signs are as follows:
   • Swelling
   • Discoloration
   • Unusual angle or position of arm or leg
   • Bones sticking through the skin.

Explain that if you suspect a fracture, stop the evaluation and begin treatment for fractures. Show slide(s) 51-56

6. Check for burns. If you find burns, cover them with a clean dry cloth.

7. Check for head injury. Some possible signs of head injury are as follows:
   a. Pupils of eyes unequal size
   b. Fluid from ear(s), nose, or mouth, or wounds to the head or face
   c. Slurred speech
   d. Confusion
   e. Sleepiness
   f. Loss of memory or consciousness
   g. Staggering when walking
   h. Headache
   i. Dizziness
j. Vomiting
k. Paralysis
l. Convulsion or twitching.

Explain that when first aid is administered correctly and in a timely manner, it could mean the difference between life and death for the victim.

Explain that if a head injury is suspected, keep the person awake. Watch the victim for signs that would require restoring breathing or treating for shock.

(1) *Call the Emergency Number*

Call or send someone to call for an ambulance. Calling your emergency number is often the most important thing you can do in an emergency. It is often critical to get professional medical help on the scene as soon as possible. In many communities, you can dial 911 for help in any type of emergency; otherwise, dial your local police or sheriff for medical emergencies, or dial 0, the operator, for assistance. Be prepared to follow these steps:

1. Speak slowly and clearly.

2. Identify yourself and the phone number from which you are calling.

3. Give the exact location of the accident. Give the town, street name, and number. If you are calling at night, describe the building.

4. Describe what has happened. Give essential details about the victim(s), the situation, and any treatments you have given.

5. Ask for advice. Let the person on the other end ask you questions and tell you what to do until help arrives. Take notes, if necessary.

6. Don’t hang up first. The person on the other end may have more questions or advice for you. And they might want you to stay on the phone with them until help arrives. Whatever the case, let the other person hang up first.
c. When to Call 911 or Your Local Emergency Number

**Call for an ambulance if the victim:**

- Is or becomes unconscious
- Has trouble breathing
- Has persistent chest pain or pressure
- Is bleeding severely
- Has persistent pain or pressure in the abdomen
- Is vomiting
- Has seizures, slurred speech, or persistent severe headache
- Appears to have been poisoned
- Has injuries to the head, neck, or back
- Has possible broken bones.

**Also call if there is:**

- A fire or explosion
- A downed electrical wire
- Swiftly moving or rapidly rising water
- Poisonous gas present
- A vehicle collision.

**Show slide(s) 65-67**

**Show slide(s) 68-70**
C. The First Life-Saving Steps

Explain that in emergency situations, the people involved may find it difficult to remain calm and think clearly. In the midst of this confusion, one simple trick you can use to remind yourself of the first and most important problems to check for and steps to take are the letters ABC.

- **A** stands for airway. Is the victim’s airway blocked? If so, clear the airway.
- **B** stands for breathing. Is the victim breathing? If not, restore breathing.
- **C** stands for circulation. Is the victim’s heart beating? If not, restore the heartbeat.

1. Clearing the Airway of a Conscious Victim

   Explain that choking occurs when a person inhales something into the airway leading to the lungs, blocking the airway off and preventing breathing. In many choking cases, people inhale particles of food while eating. In an accident, injured people may choke on dirt, broken teeth, or dentures.

   Explain that a person whose airway is completely blocked off cannot make any sound because no air is getting to the vocal cords. If a person can speak or cough, some air is getting through to the vocal cords and lungs, and you should let the person try to clear the airway on his or her own. If the person can make no sound and indicates choking by grabbing the throat, the best method to clear the person’s airway is the **Heimlich maneuver**, shown in Figure 10.1. After performing the Heimlich maneuver, be sure the victim seeks professional medical help.

   Explain that to perform the Heimlich maneuver on a choking victim, follow these steps:

   1. Stand behind the victim and wrap your arms around the victim’s waist.

   2. Make a fist with one hand and place the thumb side of the fist against the victim’s abdomen slightly above the navel and well below the breastbone. Grasp the fist with the other hand.

   3. Give six to ten quick backward and upward thrusts; repeat this until the airway is clear.

   Explain that for an exceptionally overweight person or pregnant woman, use the same procedure, except place the fist in the middle of the breastbone.

   Show slide(s) 77-79
Explain that if you are the victim of an airway obstruction and no one is around to help, lean forward over a railing, sink, or the back of a chair, as shown in Figure 10.2, and thrust yourself down until you dislodge the obstruction.

Note: Don’t slap the victim’s back. This could make matters worse. For more information about the Heimlich maneuver, check out http://www.heimlichinstitute.org/howtodo.html.

2. Clearing the Airway of an Unconscious Victim

Explain that if a person is unconscious and you know that individual has an obstructed airway, perform the following maneuver with the victim lying on his or her back. Figure 10.3 shows the position for this action.

1. Kneel astride the victim’s thighs. Place the heel of one hand against the victim’s abdomen, slightly above the navel, but well below the victim’s breastbone, with your fingers pointing toward the victim’s head.

2. Place your other hand on top of your first hand and press into the abdomen with a quick forward and upward thrust. Repeat this six to 10 times.

3. Open the victim’s mouth and sweep out any foreign matter using a hooked finger. Be careful not to push anything down the throat.

Explain that for an obese individual or a woman in the advanced stages of pregnancy, use the following procedure:

1. Kneel to the side of the victim’s body. Locate the lower edge of the victim’s ribs and run the fingers up along the rib cage to the notch where the ribs meet the breastbone.

2. Place the heel of the hand two finger widths above the notch and place the other hand over the first, interlocking the fingers.

3. Position your shoulders over your hands and, with the elbows locked, press down 1 1/2 to 2 inches, 6 to 10 times.

4. Open the victim’s mouth and sweep out any foreign matter using a hooked finger. Be careful not to push anything down the throat.
3. Restoring the Breathing

Explain that if you discover a victim who is not breathing, it is necessary to start breathing for the victim by forcing oxygen into his or her lungs as soon as possible. This process, called rescue breathing or mouth-to-mouth resuscitation, can prevent brain damage and death. Applying this first aid step will most likely start the victim breathing independently; if not, continue it until you are replaced by a qualified person or medical help arrives. When you are giving mouth-to-mouth resuscitation to a victim, you are a life-support system! Figure 10.4 shows the basic position for applying mouth-to-mouth resuscitation.

Explain that the following steps describe how to give mouth-to-mouth resuscitation to adults. Procedures that are different for infants and small children are italicized.

1. Roll the victim gently over if he or she is not already facing up. Open the mouth and check to see if it is clear. Using a hooked finger, sweep out anything you find in the mouth, being careful not to push anything down the throat.

2. Tilt the victim’s head back sharply by pressing down on the forehead and lifting on the jaw. This straightens out the passageway to the victim’s lungs. For infants and small children, do not tilt the head back. Instead, place a finger under the chin and lift it slightly.

3. Keeping the victim’s head tilted sharply back, pinch the nose closed, cover the victim’s mouth completely with your mouth, and give the victim two full breaths, as shown in Figure 10.5. For infants and small children, do not pinch the nose closed. Instead, cover both the mouth and nose with your mouth and give small, slow, gentle breaths. Each breath should last 1 to 1 1/2 seconds. Pause between breaths to let the air come out of the victim and to breathe in yourself. If the victim’s chest does not rise when you breathe into his or her lungs, reposition the head slightly farther back and repeat the breaths. If the victim’s chest still does not rise, perform abdominal thrusts to clear the airway as described in the previous section, “Clearing the Airway of an Unconscious Victim”; then repeat the breaths.

See Figure 10.4, Page 317
Show slide(s) 96-99

Show slide(s) 100-116

See Figure 10.5, Page 318
### Cardiopulmonary Resuscitation (CPR)

4. **Cardiopulmonary Resuscitation (CPR)**

   Explain that as in mouth-to-mouth resuscitation, when you perform *cardiopulmonary resuscitation (CPR)*, you are a life-support system for the victim. CPR is a first aid procedure performed to restore breathing and heartbeat. It is a combination of mouth-to-mouth resuscitation and a procedure known as closed chest heart massage. Mouth-to-mouth resuscitation supplies oxygen to the lungs, while the closed chest heart massage manually pumps blood through the victim’s body, circulating it to the heart and brain. These actions help keep the heart and brain alive until the heartbeat is restored or medical help arrives.

   Explain that CPR can be performed by a single rescuer or by more than one rescuer because CPR can be tiring and is easier if two rescuers are available. The CPR procedures discussed in this lesson are for a single rescuer. Before beginning CPR, you should turn the victim face up, clear the airway, give two full breaths as described in mouth-to-mouth resuscitation, and check for a pulse. Only proceed if there is no pulse, and therefore, no heartbeat present.

   **a. Performing CPR on an Adult**

   Explain that to perform CPR on an adult, follow these steps:

   1. With the middle and index fingers of the hand nearest the victim’s legs, locate the lower edge of the rib cage on the side of the victim’s chest closest to you.
2. Slide your fingers up the edge of the rib cage to the notch at the lower end of the breastbone. Place your middle finger in the notch and the index finger next to it on the lower end of the breastbone.

3. Place the heel of the hand nearest the victim’s head on the breastbone next to the index finger of the hand used to find the notch.

4. Place the heel of the hand used to find the notch directly on top of the heel of the other hand. Only let the heel of your hand touch the victim’s chest; keep your fingers lifted off of the victim’s chest. If you place your hands correctly, they will be positioned slightly above the lowest part of the breastbone, known as the xiphoid process. Avoid pressing on the xiphoid process because it breaks easily.

5. Position your shoulders over your hands, with elbows locked and arms straight.

6. Press down on the breastbone 1 1/2 to 2 inches at a very quick, continuous rate. This squeezes the victim’s heart against the spine and forces blood through the body.

7. While compressing, count aloud “one and two and three and four . . .” until you get to 15. It should take you about ten seconds to do 15 compressions. Push down as you say the number and release the pressure as you say “and.” Compress up and down smoothly without removing your hands from the chest.

8. After the 15th compression, give the victim two full breaths. Be sure to pinch the nose closed and tilt the victim’s head back to straighten the airway. Then return to the chest compression.

9. When you complete four cycles of 15 chest compressions and two breaths, check for a pulse again. If there is no pulse, continue CPR.

b. Performing CPR on an Infant

   Explain that performing CPR on an infant is slightly different than performing it on an adult. Show slide(s) 136-142
   Follow these steps:

   1. Place your hand closest to the infant’s head gently on the infant’s forehead and leave it there throughout the procedure.
2. Place the middle and ring fingers of the hand nearest the infant’s legs on the infant’s breastbone about one finger width below the infant’s nipples.

3. Give five compressions with those two fingers at a rapid pace, pushing the chest down about 1/2 to 1 inch.

4. Follow the five compressions with one breath as described in the italicized text in Step 3 of mouth-to-mouth resuscitation. Rapidly repeat the five compressions and one breath 20 times a minute until breathing and heartbeat resume.

c. Performing CPR on a Child

1. As with an adult, find the notched center of the child’s ribcage with the hand closest to the child’s legs. Measure two finger widths above the notch using the other hand, and then place the heel of the hand used to find the notch on the child’s breastbone above the two fingers.

2. Place the hand that you used to measure two finger widths gently on the child’s forehead and leave it there throughout the rest of the procedure.

3. Using the heel of your hand and keeping your fingers off of the child’s chest, give five compressions 1 to 11/2 inches deep, followed by one breath as described in the italicized text in Step 3 of mouth-to-mouth resuscitation. Repeat this sequence 12 times a minute until breathing and heartbeat resume.

4. Heart Attacks

   Explain that a heart attack occurs when the blood supply to part of the heart muscle is severely reduced or stopped. This happens when one of the coronary arteries (the arteries that supply blood to the heart muscle) is blocked by an obstruction or a spasm. Common signs and symptoms of a heart attack include the following:

   • Uncomfortable pressure, fullness, squeezing, or pain in the center of the chest that lasts more than a few minutes or that goes away and comes back

   • Pain spreading to the shoulders, neck, or arms

Show slide(s) 143-148

Show slide(s) 149-152
• Chest discomfort with lightheadedness, fainting, sweating, nausea, or shortness of breath.

Explain that when a person’s heart stops beating, the victim is said to be in **cardiac arrest**. CPR can keep the individual alive. If a person has a heart attack, call emergency medical services (EMS). Monitor the ABCs and give CPR as necessary.

5. Stroke

Explain that a **stroke** occurs when blood vessels that deliver oxygen-rich blood to the brain rupture or when a blood clot forms and blocks the flow of blood in the brain. Common signs and symptoms of a stroke include the following:

- Paralysis on one side of the body
- Blurred or decreased vision; pupils of unequal size
- Problems speaking, slurred speech
- Difficulty breathing
- Mental confusion
- Dizziness or loss of balance
- Sudden, severe, or unexplained headache
- Loss of consciousness.

Explain that if a person has a stroke, call EMS. Lay the victim down on one side and cover with blanket. Monitor the ABCs and give CPR as necessary.

Note: To learn more about strokes, check out [www.strokeassociation.org](http://www.strokeassociation.org) to see the American Stroke Association website.
6. Automated External Defibrillators (AED)

Explain that recently there has been a breakthrough in how emergency medical technicians (EMTs) treat victims of sudden cardiac arrest. The automated external defibrillator (AED) is a device that uses a computer chip to analyze the heart rhythm and determines whether a shock is needed. This device allows victims suffering a sudden cardiac arrest a greatly improved chance of survival. Because of the ease of operation, people can be trained in AED use in a few hours, and some say the techniques are easier to learn than CPR. Many AEDs offer voice prompts, which provide operators with clear and concise instructions. Most AEDs have only three buttons: On/Off, Analyze, and Shock. Many airlines have installed AEDs on all their planes, and several cities are locating them in areas where there are large concentrations of people, such as malls, arenas, and stadiums.

D. Controlling Bleeding

Explain that in an accident situation, you may encounter injured persons bleeding from wounds such as scrapes, cuts, or punctures as well as tears or gashes in the skin. The deeper a wound is, the more serious it becomes. Minor wounds to the outer layer of skin do not bleed heavily but still require cleaning to avoid infection. Deeper wounds in which arteries and veins are cut can be life threatening. These kinds of wounds may involve great loss of blood, and blood may often pulse or spurt out of the wound. Severe bleeding, or hemorrhage, can result in shock or death if not treated promptly. It is essential to stop the loss of blood in these cases. If a victim loses too much blood, even CPR will not keep the person alive because there will not be enough blood to deliver oxygen from the lungs to the body.

1. Types of Bleeding

Explain that there are three types of bleeding you may encounter in an emergency situation:

- **Arterial bleeding.** Blood loss from an artery. Characterized by bright red blood that spurts with each heartbeat, arterial blood loss is severe and hard to control. Give it first priority for treatment.

- **Venous bleeding.** Blood loss from a vein. Venous bleeding is characterized by a steady flow of dark blood.

- **Capillary bleeding.** Blood loss from the capillaries (the smallest blood vessels); usually characterized by a slow flow of blood.

Show slide(s) 165-171

Show slide(s) 172-178

Show slide(s) 179-181

5-10-17
Explain that first aid treatment in all of these cases includes stopping the flow of blood and preventing infection.

2. Direct Pressure

Explain that in most cases, applying continuous, direct pressure to a wound is the best way to control bleeding. To apply direct pressure, place a dressing over the wound and apply pressure to the dressing, as shown in Figure 10.7. A dressing should be:

- As sterile as possible (If a sterile dressing is not available, use a clean cloth—a washcloth, towel, or handkerchief)
- Larger than the wound
- Thick, soft, and compressible so pressure is evenly distributed over the wound
- Lint free.

Explain that if a clean cloth or gauze is not available, use clothing, your bare hands, or your fingers—whatever is the cleanest. Continue applying pressure and the bleeding should begin to slow or stop within 30 minutes.

3. Stopping Infection

Explain that even the slightest wound requires immediate cleansing. The best way to clean wounds is to wash them with soap and water. At home, use water from the faucet. On a hike, use water from a canteen or the clear running water of a stream. If available, use an antiseptic cleanser instead of soap. Wait until the skin around the wound dries and then put on a bandage. If available, apply an antiseptic cream to the wound before bandaging it.

Explain that for a minor wound, cleaning and bandaging it is probably all that is required. Deep wounds, wounds made by animal or human bites, and wounds contaminated by dirt, rust, or other items require medical treatment. Clean and bandage these wounds, and get medical assistance as soon as possible. If a wound contains glass or other objects stuck into the flesh, do not remove them unless they wash out of the wound easily.
### OUTLINE OF INSTRUCTION

4. **Controlling Bleeding to Extremities**

   Explain that in most cases, direct pressure is the best way to stop bleeding of wounds to the extremities (arms and legs). As you apply direct pressure, keep the injured limb elevated above the heart to slow the flow of blood out of the body. After initially applying direct pressure, you may want to apply a **pressure bandage** by wrapping a bandage snugly around the limb, using overlapping turns with a roll of gauze. Do not tie the pressure bandage so tightly that it restricts blood flow to the lower part of the limb. If fingertips or toes appear bluish or if there is no pulse below the dressing, loosen the material used to secure the dressing immediately. After you apply a pressure bandage, only qualified medical personnel should remove it.

   **a. Pressure Points**
   
   Explain that in the case of severe bleeding that does not slow or stop using direct pressure, finger pressure may be applied to the **pressure point** on the injured limb between the wound and the heart. Pressure points, shown in Figure 10.8, are locations on the body where arteries are close to the surface. By applying pressure at these points, you slow or stop the flow of blood through the artery.
   
   Explain that as with mouth-to-mouth resuscitation and CPR, it is better to have first aid training on pressure points before actually using this technique to stop bleeding. If done incorrectly, you may damage healthy tissue fed by the artery you are constricting.

   **b. Tourniquet**
   
   Explain that if heavy blood loss continues, as from amputation, it may be necessary to use a **tourniquet**.
   
   Caution: Because a tourniquet is a constricting band that stops the flow of blood below it, it can kill the limb to which it is applied; therefore, only use a tourniquet if no other method works to stop the bleeding and you believe the injured person’s life is in danger.
   
   Explain that to apply a tourniquet, follow these steps:

   1. Fold a cloth until it is approximately two inches wide and long enough to go around the injured limb (see Figure 10.9).
   
   2. Tie the material in a loop and position it two to four inches above the wound, but not over a joint.

   **INSTRUCTOR ACTIVITY**

   Show slide(s) 192-196

   See Figure 10.8, Page 322

   Show slide(s) 197-199

   Show slide(s) 200-201

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   See Figure 10.9, Page 323

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3. Pass a rigid object, such as a stick, under the tourniquet loop and twist it until the bleeding stops (see Figure 10.10).

4. Tie off the end of the stick with another piece of cloth or string to prevent it from unwinding (see Figure 10.11).

5. Mark the victim’s forehead with a “T” to alert medical personnel that you have applied a tourniquet.

Explain that if it is necessary to cover the victim with a blanket, do not cover the tourniquet to make it easier for medical personnel to spot. After you apply a tourniquet, do not loosen or remove it. As with a pressure dressing, only qualified medical personnel should remove a tourniquet.

Note: Remember, use a tourniquet only as a last resort when all other attempts to stop the bleeding fail.

5. Controlling Bleeding to the Head and Torso

Explain that there are different way to control head and torso bleeding. This section details how to use the methods.

a. Scalp Injuries

Explain that for wounds to the scalp, use a pressure dressing. If brain tissue is exposed, tie the dressing loosely over the wound. Do not press the brain tissue back into the open wound.

b. Facial Injuries

Explain that control bleeding from facial wounds by using a pressure bandage. Position the victim to prevent him or her from breathing blood. Victims who have sustained a severe blow to the head should be kept under close observation as they may have brain damage and could require rescue breathing.

c. Chest Injuries

Explain that a chest injury may result in an open chest wound, which could lead to air leaking from a lung and the collapse of a lung. If conscious, have the victim breathe out and apply some material such as plastic wrap or foil to the wound. Bind a pressure bandage tightly to the wound to prevent leakage of air and slow down blood loss. Have the victim sit up, if possible, or lay that person on the injured side.
d. Abdominal Injuries  
Explain that when an open abdominal wound has exposed visceral (internal) organs, cover the abdomen loosely with dressings. Do not force the organs back into the body cavity and do not give victims with abdominal wounds any food or water.  

E. Treating for Shock and Immobilizing Fractures  
Explain that whenever you treat someone for a severe injury, you must also treat for shock—even if the injured person shows no signs of it—since shock can follow all major injuries. By treating for shock, you lessen its severity. If left untreated, shock can become life threatening. There are cases of people who died from shock even though their injuries would not have killed them; therefore, knowing how to deal with shock is a very important part of first aid.

Explain that after treating for shock, take care of broken bones or suspected broken bones. If there is a question of whether or not a bone is broken, treat it as if it were broken. Follow the first aid procedures for splinting a fracture carefully because more damage can occur if a fracture is handled improperly.

1. Shock  
Explain that shock from an injury is different from electric shock, although it can be brought on by electric shock, as well as blood loss, burns, psychological trauma, heart attack, and other injuries involving pain. Shock disrupts circulation. In an attempt to correct damage from an injury and to protect its blood supply, the body routes blood away from outer tissues to organs inside the body. This may keep adequate blood, and therefore oxygen, from reaching the brain. In severe cases, the injured person can lose consciousness and blood supply to vital organs like the heart, causing death. Shock usually occurs within the first hour after a severe injury. How severe shock becomes depends upon several factors including the type of injury, how much blood is lost, and characteristics of the injured person’s nervous system. Increased pain, rough handling, delayed treatment, and emotional reactions such as fear and panic can worsen shock.

a. Signs of Shock  
Explain that when a victim is in shock, the skin is pale or bluish and cold to the touch. For a victim with dark skin, check the color of the mucous membranes on the inside of the mouth or under the eyelids, or check under the nail beds. The skin may be clammy from perspiration. Other signs that may develop in the early stages of shock include the following:

- Restlessness or nervousness
• Thirst
• Bleeding
• Confusion or loss of awareness
• Breathing rapidly
• Nausea and/or vomiting
• Blotchy or bluish skin around the mouth and lips
• Fainting.

Explain that fainting, or blacking out, is a mild form of shock caused by a lack of blood to the brain. Fright, bad news, breathing polluted air, or standing too long can result in fainting. Before fainting occurs, a shock victim may turn pale, shake, or suddenly fall to the ground.

b. Treating Shock

Explain that procedures for treating shock include improving circulation of the blood, ensuring an adequate supply of oxygen, and maintaining normal body temperature. To treat a victim for shock, follow these steps:

1. Position the victim on his or her back, unless a sitting position allows easier breathing. If the victim is vomiting, position that person on the side to let fluid drain from the mouth.

2. Elevate the victim’s feet higher than the heart, unless the victim has an abdominal or chest wound or an unsplinted leg fracture.

3. Loosen clothing that may bind around the neck and waist.

4. Keep the victim from becoming cold or overheating.
5. Reassure the victim and do not give him or her any food or drink; however, if you know that help is not going to arrive for over an hour, give the victim small amounts of fluids at room temperature every 15 minutes. Add an eighth of a teaspoon of salt, if available, to each half glass of fluid. This will help the victim retain more fluids in his or her system.

2. Fractures

Explain that bone fractures resulting from falls are common injuries. A closed or simple fracture is a break in the bone that does not penetrate the skin. An open or compound fracture occurs if the sharp edges of a splintered bone have cut through the skin. Both types of fractures are shown in Figure 10.12.

Explain that in the case of an open fracture, it is obvious that a bone is broken. In the case of a closed fracture, indications of a broken bone include swelling, discoloration, and unusual positioning of the limb in question.

a. Do’s and Don’ts

Explain that when treating fractures, what you do is important, and what you don’t do is equally as important.

- Do call for medical assistance immediately
- Do keep the victim from moving
- Do treat for shock while waiting for medical assistance
- Don’t try to set the bone
- Don’t put the victim in a car to rush him or her to a hospital as that is the easiest way of turning a closed fracture into an open one
- Don’t give stimulants if there is severe bleeding.

b. Splints

Explain that the most important action to take when dealing with a fracture is to immobilize the injured bone to prevent further damage. The best way to immobilize bones is with a splint, shown in Figure 10.13.

See Figure 10.12, Page 326
Show slide(s) 237-241

See Figure 10.12, Page 326
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See Figure 10.13, Page 326
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Explain that for open fractures, control the bleeding before splinting. Keep the exposed bone moist by covering it with a moist, sterile dressing. The rules of splinting are as follows:

1. Pad all splinting material. Make splints from sticks, boards, cardboard, rolled newspaper, or any other unbendable material.

2. Splint the broken leg or arm in the position in which you found it. Do not try to straighten or reposition the fracture. In most cases, support an arm from above and below and a leg from the sides.

3. Use splinting material that is long enough to immobilize the joint above and below the break. For example, immobilize the ankle and the knee for a fracture in the vicinity of the calf.

4. Tie the splints above and below the suspected fracture. Make two ties above and two below the break. Never make a tie directly over the break.

5. Tie all knots on the outside of the splints.

6. Check that circulation is not restricted by splints tied too tightly.

Explain that if no splinting material is available, immobilize a leg fracture by placing padding between the injured leg and the uninjured leg and tying them together. Using the uninjured leg as the splint, draw two ties above and two below the suspected break.

c. Slings

Explain that for arm fractures in which the entire arm is not splinted, use a sling (see Figure 10.14) to support the weight of the arm. If necessary, pin the victim’s shirttail up to serve as a field expedient sling.

3. Joint Injuries

Explain that joint injuries occur when excess stress or strain is placed on the joint. This can happen during normal activities such as walking or running and is common in sports activities. Dislocations and sprains are the most common joint injuries.
a. Dislocations

Explain that a dislocation occurs when a joint comes apart and stays apart with the bone ends no longer in contact. The shoulders, elbows, fingers, hips, kneecaps, and ankles are the joints most frequently affected. Dislocations have signs and symptoms similar to those of a fracture: severe pain, swelling, and the inability of the victim to move the injured joint. The main sign of a dislocation is deformity; its appearance will be different from that of a comparable uninjured joint. The procedures for treating a dislocation include the following:

1. Do not try to set the joint. Immobilize and support the injured joint as if treating for a fracture.

2. Use the RICE procedures (discussed later in this lesson).

3. Seek medical attention.

b. Sprain

Explain that a sprain is an injury to a joint in which the ligaments and other tissues are damaged by violent stretching or twisting. Attempts to move or use the joint increase the pain. The skin about the joint may be discolored because of bleeding from torn tissues. It is often difficult to distinguish between a severe sprain and a fracture, because their signs and symptoms are similar. If you are not sure whether an injury is a sprain or a fracture, treat it like a fracture. It is better to immobilize a sprain than to take the chance of a victim sustaining further damage from an unsplinted closed fracture. Treatment for a sprain consists of Rest, Ice, Compression, and Elevation (RICE). Seek medical attention.

4. Muscle Injuries

Explain that muscle injuries are as common as joint injuries. These can be very painful and need treatment as soon as possible after the injury occurs. The most common muscle injury is a strain.

a. Strain

Explain that a muscle strain, or muscle pull, occurs when a muscle is stretched beyond its normal range of motion, resulting in the muscle tearing. Signs and symptoms include: sharp pain, extreme tenderness when the area is touched, slight swelling, and difficulty moving or using the affected part. When treating for strain use RICE.
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<tr>
<td>5. RICE: Procedures for Bone, Joint, and Muscle Injuries</td>
<td>Explain that as discussed earlier in this lesson, RICE is the acronym for the first aid procedures—rest, ice, compression, and elevation—for bone, joint, and muscle injuries. What is done in the first 48–72 hours following such an injury can greatly affect the recovery.</td>
<td>Show slide(s) 274-281</td>
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<tr>
<td>1. <strong>Rest.</strong> Injuries heal faster if rested. Rest means the victim stays off the injured part.</td>
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<td>2. <strong>Ice.</strong> An ice pack should be applied to the injured area for 20–30 minutes every two to three hours during the first 24–48 hours. When the skin becomes numb, remove the ice pack.</td>
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<td>3. <strong>Compression.</strong> Compression of the injured area may squeeze some fluid and debris out of the injury site. Compression limits the ability of the skin and of other tissues to expand. Applying compression may be the most important step in preventing swelling. The victim should wear an elastic bandage continuously for 18–24 hours.</td>
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<td>4. <strong>Elevation.</strong> Gravity has an important effect on swelling. The force of gravity pulls blood and other tissue to the lower parts of the body. After fluids get to your hands or feet, they have nowhere else to go; therefore, those parts of the body tend to swell the most. Elevating the injured areas, in combination with ice and compression, limits circulation to that area, which in turn helps limit internal bleeding and minimize swelling. Whenever possible, elevate the injured part above the level of the heart for the first 24 hours after an injury.</td>
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<tr>
<td>1. <strong>Burns.</strong></td>
<td>Explain that there are several types and degrees of burns that require different treatments.</td>
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<tr>
<td>1. <strong>Burns</strong></td>
<td>Heat, electricity, and chemicals can produce different burn injuries with their severity depending upon the burn’s depth, size, and location. Burns can be painful and may result in shock and infection. They can be very serious if they are spread over a large area of the body, there are other injuries involved, or the victim is very young or very old.</td>
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5-10-26
a. Degrees of Burns

Explain that for burns caused by sources of heat, there are different categories of degrees (first, second, or third) based on the burn’s depth. The deeper the burn, the more severe and the higher the degree the burn is. All electrical burns are third degree.

(1) Characteristics of First-Degree Burns

Explain that there are several characteristics of first-degree burns.

- Least severe
- Injury to only the top layer of skin
- Reddening of the skin
- Mild swelling
- Pain due to irritated nerve endings
- Quick and complete healing if properly treated
- Caused by brief contact with hot objects, brief exposure to hot water or steam, and overexposure to sun (light sunburn) or wind.

(2) Characteristics of Second-Degree Burns

Explain that there are several characteristics of second-degree burns:

- Involve deeper layers of skin
- Cause skin to turn red and/or mottled
- Appear moist and oozing from the loss of fluid through damaged skin layers
- Produce blisters and swelling
- Is usually the most painful type of burn because nerve endings are still intact even though tissue damage is severe
- May cause shock due to extensive loss of fluid from the burned skin, especially if burns cover a large area

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• Should heal within two weeks with little or no scarring if properly treated

• Caused by a deep sunburn, prolonged contact with hot objects, scalding, and flash burns from flammable liquids suddenly bursting into flame.

(3) *Characteristics of Third-Degree Burns*

Explain that the specific characteristics of third-degree burns are as follows:

• Deepest and most severe type of burn

• May look white or charred (may appear to be a second-degree burn at first)

• Results in deep tissue destruction, reaching all layers of the skin and sometimes even structures below the skin

• Often cause little or no pain because nerve endings are destroyed

• Often cause shock

• Will be covered by scar tissue after healed

• Caused by immersion in extremely hot water, prolonged contact with flames, and electric shock.

b. Treatment of Heat Burns

Treat heat burns based on their degree; therefore, before treating a burn, determine its degree and treat accordingly. When deciding the degree of a burn, in addition to the previous descriptions, it may help to know the source of the burn and/or how hot the source was, as well as how long the victim was exposed to it. If a victim appears to have a combination of burns of different degrees, determine the degree of the most burned part—usually in the middle of the burned area—and treat for that degree. If you are not sure about the degree of a burn, treat it as a third-degree burn.

Keep in mind that the goal of burn treatment is to relieve the victim’s pain, prevent him or her from going into shock, and prevent infection of the burned area.
(1) Treating First-Degree Burns

Explain that to treat first-degree burns, follow these steps:

1. Loosen tight clothing and remove jewelry from the burned area before it swells. Have the victim put his or her jewelry in a safe place after removal.

2. Cool the burned part with water by either holding it under cold, running water, pouring cold water over it, immersing it in cold water, or applying cold wet compresses to it. Cooling the burn with water helps remove heat from the skin, relieves pain and swelling, and cleans the injury. Continue this cooling treatment for between five and 15 minutes until the pain subsides.

3. Gently pat the burned area dry with a clean cloth.

4. Cover the injury with a sterile bandage or clean cloth to keep air off of it, thereby reducing pain, and to provide protection against infection. Keep the bandage loose to keep pressure off of the injury.

5. After a first-degree burn is completely cooled, especially a sunburn, use a lotion or moisturizer to relieve pain and prevent drying of the skin.

(2) Treating Second-Degree Burns

Explain that to treat second-degree burns, follow these steps:

1. For second-degree burns, follow steps one through four for treating first-degree burns. If you use running water to cool the injured part, ensure the water is not so forceful that blisters on the burned skin are broken.

2. Elevate the burned part.

3. Ensure the victim drinks plenty of liquids to avoid dehydration.

4. Seek medical treatment for second-degree burns to the face, hands, feet, or genitals or that are more than two to three inches in diameter.
Note: For extensive second-degree burns, monitor the victim for signs of shock and treat accordingly until he or she receives medical treatment. See the previous section, “Treating for Shock and Immobilizing Fractures,” for signs and treatment of shock. For second-degree burns to the face, especially if accompanied by smoke inhalation, the victim may have respiratory burns that can lead to swelling and blockage of his or her airway. Monitor the victim’s breathing and treat accordingly until he or she receives medical treatment.

(3) Treating Third-Degree Burns

Explain that to treat third-degree burns, follow these steps:

1. Remove the victim from the source of heat if he or she is still in contact with it. (See the following section for removing a victim from a source of electricity.)

2. Call for emergency medical services (EMS). All third-degree burns require medical treatment regardless of their size. Until the victim receives treatment, follow Steps 3 through 9.

3. Ensure that the victim is breathing. If not, begin mouth-to-mouth resuscitation.

4. Remove any clothing that is still smoldering to stop further burning. If the victim is wearing jewelry that is near or on a burned area, remove it if it comes off easily. Place the jewelry in the victim’s pocket, purse, and so on, if available. If not, reassure the victim that you will give his or her jewelry to emergency medical personnel when they arrive.

5. If necessary, expose the burned area by cutting and gently lifting away any clothing. If any cloth sticks to the burn, leave it in place.

Note: If you are in a chemically contaminated area, do not expose the burned area; simply apply a dressing over the victim’s clothing.

6. Cover the burned area loosely with cool moist compresses, sterile bandages, or clean cloth.

Note: Unlike treatment for first- and second-degree burns, do not cool a third-degree burn with water because this can increase the risk of shock.
7. Elevate the burned part.

8. Treat the victim for shock. Pay special attention to the victim’s body temperature, which can change rapidly due to the skin being burned.

9. Monitor breathing of victims with burns to the face and burns resulting from fire accompanied by smoke inhalation. Treat accordingly.

(4) Don’ts When Treating Burns

Explain that it is important to know what to do when treating burns, but it is equally as important to know what not to do. The following list details actions that should never be done when treating burns.

- Do not put butter, oil, or grease on a burn; these ointments can keep heat in the burn and cause more damage, as well as increase the chance of infection.

- Do not use cotton or cottony bandages on burns as they may stick to the injury.

- Do not put ice or ice water on a burn; this can result in frostbite and cause more damage to the skin.

- Do not break any blisters that have formed; blisters help protect against infection.

- Do not put pressure on a burn.

- Do not try to remove stuck clothing, debris, or loosened skin from a burn.

- Do not try to clean a wound with soap, alcohol, or any other antiseptic product; only water should be used and only on first- and second-degree burns.

- Do not let a victim walk on burned feet even if he or she tells you it does not hurt; third-degree burns can cause little pain because nerve endings are destroyed, but damage is severe and pressure from walking will only increase it.

c. Prevention of Heat Burns

Explain that there are many things you can do to prevent heat burns, including the following:
• Use caution when handling matches and starting a fire, particularly with a flammable liquid.

• If you have young brothers and sisters, store matches out of their reach.

• Use caution around hot liquids, steam, and heating and cooking equipment.

• Ensure hot tap water is not scalding before stepping into a tub or shower or putting your hands under a running faucet.

• Ensure your home has a fire extinguisher and smoke alarms.

• Never use water on an electrical fire; use a chemical fire extinguisher.

• If anyone in your household smokes, remind them not to smoke in bed.

• Keep a box of baking soda in the kitchen to smother grease fires.

• Turn pot handles on the stove so they are not sticking out where someone may bump them in passing.

• For electric cookware, do not let cords hang off the counter, where they can be caught and pull the cookware off as well.

• If a pilot light goes out on a gas appliance, make sure all burners and the stove are turned off and ventilate the area before relighting it or before using electrical switches, which make tiny sparks.

• Do not leave flammable items (such as newspapers or dishcloths) near the fireplace or on or near the stove.

• Turn off space heaters before going to sleep or leaving the house.

• Know what actions to take if a fire starts in your home and practice them with family members.
d. Treatment of Electrical Burns

Explain that although an electrical shock will often produce only a minor mark on the skin, the injury can be a serious, deep-tissue burn, so treat all electrical burns as third degree. The current from an electrical shock passing through a victim’s body can also result in unconsciousness and may slow or stop his or her breathing and/or heartbeat; therefore, treat electrical shock as a potentially life-threatening injury.

Explain that if you believe a person has been electrocuted, assess the situation first, before touching the victim. He or she may still be in contact with the electrical current, and if you touch him or her, you could become a victim of electrical shock as well. Follow these steps to avoid a double accident and provide first aid treatment:

1. If the victim is still in contact with the source of electricity, stop the current. Shut off the electrical current by unplugging a cord, removing a fuse from the fuse box, or turning off the circuit breaker, as appropriate. Remember that in many cases, just turning off a wall or appliance switch does not stop the electrical flow. Even though you have shut off the electrical current, to be completely safe, move the victim away from the electrical source before continuing. Proceed to step 3.

   If you cannot turn off the electricity or you are outside and the shock is due to a downed power line, either call the power company yourself if you have a phone near you, or if there are other people around, have someone else call the power company. Meanwhile, since it may take you less time to separate the victim from the current than to wait for the power to be cut off, proceed to step 2. Or, if you are alone and/or there is no phone readily available in this situation, proceed to step 2.

2. Separate the victim from the source of electrical current (see Figure 10.15). Push the victim off of or away from the source of electricity—or push the source of electricity off of or away from the victim—using a dry nonconducting material (wood, plastic, cardboard) like a broom, stick, or chair. If available, also stand on something dry and nonconducting, like newspaper or a rubber mat, as you disengage the victim.

   If pushing does not work, use a dry rope or dry clothing to lift or drag the victim off of or away from the source of electricity. This method works better if there are two rescuers: one to lift the victim off and the other to push the electrical source away.

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Special Precaution: If the ground is wet, do not attempt to move a victim in contact with an electrical current. Water conducts electricity, and you can be electrocuted as well. In this case, the current must be stopped before you can administer first aid.

3. Check the victim’s breathing and pulse. Be prepared to administer mouth-to-mouth resuscitation or cardiopulmonary resuscitation (CPR) if the victim’s breathing is shallow or nonexistent or his or her pulse is dangerously slow or nonexistent.

4. After you are sure the victim is breathing, take the time to call EMS if you or someone else has not already done so.

5. Check the victim for two burn sites—one where the electricity entered the body and one where it exited the body. Treat the burns by following steps 4 through 9 for treating third-degree burns, including treating for shock and monitoring breathing.

Note: About 1,000 people die each year in the United States from electrical shock.

e. Prevention of Electrical Burns

Explain that electrical burns can be prevented if you know what to do. How to prevent electrical burns:

- Do not use electrical appliances in the tub, while showering, or in or near swimming pools.
- Do not use electrical equipment outdoors if it is raining or the ground is wet.
- Ensure electrical equipment you use outdoors is made for outdoor use, with three-way ground plugs and heavier wiring.
- Ensure outdoor electrical outlets have weatherproof covers.
- If you have very young brothers or sisters, ensure there are child safety plugs in all electrical outlets.
- Do not overload an outlet by plugging in several appliances in a “piggyback” fashion (see Figure 10.16).
• Do not use electrical appliances or equipment that have exposed wiring or frayed cords or that overheat or create sparks.

• Do not climb trees that have wires running through or near them.

• Look for overhead wires before using long tools like tree trimmers, pool skimmers, or ladders.

• Stay inside during electrical storms; keep away from windows; do not use appliances or the phone, because lightning can travel through wires; and do not take a shower or bath, because lightning can also travel through pipes.

• If you are caught outside during an electrical storm, avoid trees, poles, and metal objects; find low ground and crouch down.

f. Treatment of Chemical Burns

Explain that chemical burns occur when the skin or eyes come in contact with liquid or dry chemicals that are caustic or irritating. You may have products around your house, such as rust and paint removers and drain and cement cleaners, that contain acids designed to eat away certain materials and bases (also called alkalis) used to cut through grease. If used carelessly or improperly, these products may also do the same to your clothes and skin.

Explain that the seriousness of a chemical burn depends on the:

• Length of time the chemical is in contact with the skin or eyes

• Concentration of the chemical; the more concentrated, the more damaging

• Temperature of the product containing the chemical; the higher the temperature, the quicker the damage.

Explain that treatment of chemical burns involves stopping the chemical action immediately by removing the chemical from the skin or eyes and by removing contaminated clothing that can transmit absorbed chemicals to the skin. Treatment will vary depending on the type of chemical involved, so if there are first aid instructions on the label of the chemical product causing the burn, follow those instructions. If not, use the following basic guidelines for treatment.
Explain that to treat chemical burns to the skin, follow these steps:

1. Depending on the extent of chemical coverage on the victim or in the area, consider wearing gloves and/or safety goggles, if available, to protect yourself from chemical injuries while assisting the victim.

2. Remove any contaminated jewelry or clothing from the victim, including shoes and socks where chemicals can collect.

3. Remove the chemical from the skin.

   For liquid chemicals, flush them from the contaminated skin with large amounts of cool running water for at least 15 minutes.

   For dry chemicals, brush them off the skin using a clean, dry cloth. Take care to keep the chemicals from blowing into your eyes or the victim’s eyes and avoid brushing the chemicals onto your own skin. Then, if large amounts of water are available, flush the contaminated area for at least 15 minutes. If large amounts of water are not available, do not apply any water to the contaminated area because small amounts of water can react with dry chemicals causing more burning.

   Note: If the victim says he or she feels the burning has intensified after you have finished flushing the contaminated area, flush for several more minutes, or longer, as necessary.

4. Cover the burned area loosely with dry, clean bandages or cloths.

5. Minor chemical burns generally heal without further treatment; however, call EMS for:
   - Any chemical burn to the face, hands, feet, genitals, or joints
   - Second-degree chemical burns over two to three inches in diameter
   - All third-degree chemical burns
   - If there is a *systemic* reaction to the chemical burn and/or chemical exposure.

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Note: For extensive or severe chemical burns, monitor the victim for signs of shock and treat accordingly until he or she receives medical treatment. For a victim with chemical burns to the face or who may have inhaled chemicals, monitor his or her breathing in case of possible respiratory burns and swelling. Treat accordingly until medical help arrives.

(2) Treating Chemical Burns to the Eyes

Explain that to treat chemical burns to the eyes, follow these steps:

1. Position the victim’s head so that the injured eye is lower than the uninjured eye. This will prevent the chemical from getting into the uninjured eye (see Figure 10.17). If both eyes are injured, proceed to Step 2.

2. If there is only one injured eye, hold the eyelids of the injured eye open and flush with water from the inner corner of the eye (closest to the nose) to the outer corner (closest to the ear). Flush for at least 15 minutes. If both eyes are injured, flush both at the same time.

3. To keep the victim from moving his or her injured eye(s), have the victim close both eyes, then cover them with cloth pads or gauze taped loosely into place. Because eyes move together, both eyes must be closed and covered to keep the injured eye still.

4. Call EMS or transport the victim to the emergency room.

(3) Don’ts When Treating Chemical Burns

Explain that follow the don’ts listed earlier in this lesson in “Don’ts When Treating Burns.” In addition, do not put any other chemicals on a chemical burn in an attempt to neutralize the chemical causing the burn—for example, putting an acid on an alkali and vice versa.

g. Prevention of Chemical Burns

Explain that chemical burns can be prevented, if you know what to do. To help prevent chemical burns:

- Before using any chemical product, read the label—including precautions or warnings—then follow the instructions for use.

- If you have younger brothers or sisters, ensure chemical products are stored out of their reach.
• Use chemical products in a well-ventilated area.

• Do not mix different chemical products; they may react with each other, causing hazardous conditions. For example, mixing bleach and ammonia results in dangerous fumes.

• To avoid confusion and accidental misuse of chemical products, leave them in their original containers with their labels intact.

G. First Aid for Poisons, Wounds, and Bruises

Explain that whenever there are small children left alone in the kitchen, accidents can happen, especially when cleaning products are left out in the open. The first part of this section introduces the treatment and prevention of injury from poisons. As an addition to your first aid abilities, the lesson ends with a discussion of different types of wounds and their treatment, as well as the treatment of bruises.

1. Poisons

Explain that as consumers, we buy more than a quarter of a million different household products, including materials used in and around the house for medication, cleaning, cosmetic purposes, exterminating insects, and killing weeds. These items are valuable in the house and for yard maintenance, but misuse, especially when products are used in inappropriate applications or quantities, can cause illness, injury, and even death.

Explain that each year more than 6,000 people die and an estimated 300,000 suffer disabling illnesses as a result of unintentional poisoning by solid and liquid substances. Poisonings can happen to anyone, at any time, in any situation. Poisonings at home, however, can be prevented. Although child-resistant packaging has greatly reduced the number of fatalities among children less than five years of age, parents, grandparents, and other caregivers must still be cautious. Following label directions for all products, including medication dosages and the proper storage of potentially toxic products, are important precautions to heed.

• Poisonings from solids and liquids such as drugs, medicines, poisonous houseplants, and commonly recognized poisons caused 6,300 deaths in the home in 1998 alone.

• An additional 500 deaths in the home in 1998 were due to poisonings from gases and vapors such as carbon monoxide.
• These deaths are not all among children. Another age group at risk is adults age 25 through 44. Many adults are unintentionally poisoned when they do not follow label directions on medications or household chemicals.

Explain that poisoning is the effect of one or more harmful substances on the body. Poisons can be inhaled or ingested. Fortunately, most poisonings happen with products of low toxicity or with amounts so small, severe poisoning rarely occurs; however, the potential for severe or fatal poisoning is always present.

a. Inhaled Poisons

Explain that inhaled poisoning occurs when a person breathes a poisonous substance into his or her lungs. Inhaled poisons include the following:

• Smoke

• Gas used in outdoor cooking equipment and appliances in homes and recreational vehicles

• Hazardous fumes from household products such as paint and paint thinners, gasoline, solvents, and glues, as well as from chemicals used in industrial processes

• Carbon monoxide, which is always produced by wood, coal, and charcoal fires and by gasoline engines, can also be produced by gas, oil, and kerosene appliances such as furnaces, space heaters, water heaters, and stoves.

Explain that carbon monoxide, in particular, is a very dangerous poisonous substance, because it is odorless, colorless, and tasteless, making it difficult to detect. When a person inhales carbon monoxide, it replaces oxygen in the blood, which results in oxygen starvation throughout the body. Exposure to low amounts of carbon monoxide can cause flulike symptoms; continued exposure can cause permanent brain, nerve, and heart damage; exposure to very high concentrations can kill a person in a few minutes.
Explain that running a car engine in a closed garage, using a charcoal grill indoors, and burning a fire in a fireplace with a blocked chimney can all result in carbon monoxide poisoning. In addition, because carbon monoxide forms when there is a lack of oxygen resulting in incomplete fuel combustion, operating fuel-burning equipment without an adequate supply of oxygen (proper ventilation) can result in carbon monoxide poisoning. For example, hundreds of people in the United States each year suffer carbon monoxide injuries from using portable heaters, lanterns, and camping stoves inside tents, campers, and vehicles.

(1) Symptoms of Inhaled Poisoning

Explain that symptoms of inhaled poisoning may not show up immediately. If you suspect inhalation poisoning, keep the victim under observation. If you know the victim has inhaled a poisonous chemical, get medical help whether or not symptoms are present. Symptoms will vary depending on the type and amount of poison inhaled but can include any of the following:

- Dizziness
- Weakness
- Drowsiness
- Headache
- Mental confusion
- Breathing difficulties
- Heartbeat irregularities
- Unusual breath odor
- Discoloration of the lips and mucous membranes
- Nausea
- Vomiting

Show slide(s) 419-422
• Rashes or burns on the skin

• Unconsciousness.

(2) Treatment for Inhaled Poisons

Explain that before rushing in to rescue a victim in a smoke-, gas-, or fume-filled environment, quickly assess the situation so that you do not end up a victim as well. If the poisonous substance is overwhelming and the danger to you is too great, do not attempt to rescue the victim unless you have been trained for rescue in this type of situation. Immediately call EMS and stay clear of danger.

Explain that however, if after assessing the situation you believe you can safely remove the victim from the poisonous environment, do so by following these steps.

1. If you are alone, call for help first before attempting the rescue. This will notify others of the situation; a precaution that will ensure help is on its way in case you are also overcome by the poison.

2. Take several deep breaths of fresh air, then take a final deep breath and hold it as you go in. If available, a damp cloth held over your nose and mouth is a good safety precaution.

Note: Do not use light switches, light a match, or use any other equipment or appliance that produces flames or sparks while you are in a gas or fume-filled area.

3. If you can see fumes or smoke, keep your head out of them. For example, fumes from car exhaust are heavy and settle near the floor, so keep your head above them; but in the case of smoke, which rises, keep your head below it.

4. Move the victim out into the fresh air. If for some reason this is not possible, open doors and windows to ventilate the area, returning out into the fresh air as necessary to ensure your safety. Do not administer first aid until you and the victim are out of the hazardous environment or the area is ventilated.
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<td>Explain that check the victim’s airway, breathing, and circulation (ABCs) and perform mouth-to-mouth resuscitation and CPR as necessary. After you are sure the victim is breathing, call the EMS if you or someone else has not already done so. Even if the victim seems fine after he or she is in fresh air, call for medical help as symptoms may show up later. While you are waiting for medical help, treat the victim for any burns he or she may have suffered and monitor for shock.</td>
<td>Show slide(s) 432-434</td>
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<td>b. Oral Poisoning</td>
<td>Explain that oral poisoning occurs when a harmful substance, such as a common household cleaning product, is swallowed. First aid for oral poisoning depends on the substance swallowed.</td>
<td>Show slide(s) 435</td>
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<tr>
<td>(1) Symptoms of Oral Poisoning</td>
<td>Explain that symptoms and signs will vary depending on the type and amount of poison inhaled but can include any of the following:</td>
<td>Show slide(s) 436</td>
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<td>• Abdominal pain and cramping</td>
<td>• Nausea or vomiting</td>
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<td>• Diarrhea</td>
<td>• Burns, odor, and stains around and in mouth</td>
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<td>• Drowsiness or unconsciousness</td>
<td>• Poison containers nearby.</td>
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<td>(2) Treatment for Oral Poisons</td>
<td>Explain the procedures for treating oral poisoning:</td>
<td>Show slide(s) 437-445</td>
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<tr>
<td>1. Determine critical information:</td>
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<td>• Age and size of victim</td>
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<tr>
<td>• What was swallowed</td>
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<tr>
<td>• How much was swallowed</td>
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• When it was swallowed.

2. If a corrosive or caustic substance was swallowed, immediately dilute it by having the victim drink at least one or two eight-ounce glasses of water or milk.

3. For a responsive victim, call a poison control center immediately. More than 70 percent of poisonings can be treated through instructions taken over the telephone from a poison control center.

4. For an unresponsive victim, or if the poison control center number is unknown, call EMS and monitor the ABCs.

5. Place the victim on his or her left side to position the end of the stomach where it enters the small intestine straight up. Gravity will delay advancement of the poison into the small intestine, where absorption into the victim’s circulatory system is faster.

6. Induce vomiting only if a poison control center or physician advises it. Inducing must be done within 30 minutes of swallowing.

7. Save poison containers, plants, and so on to help medical personnel identify the poison.

2. Wounds

   Explain that wounds are soft tissue injuries that break the skin. Generally, they can be classified as follows:

   • Scrapses (abrasions) are caused by sliding contact between the skin and a rough surface. They are generally shallow injuries with little bleeding.

   • Cuts (incisions) are straight, even wounds made with sharp objects like knives or razor blades.

   • Tears (lacerations) are caused by objects with sharp, irregular edges or by exerted force that leaves jagged, torn tissue.

   • Punctures are caused by pointed objects such as pins and nails that make small holes in tissue, often with little bleeding.
Explain that all wounds can be minor or serious depending upon their size, depth, location, and source. Minor wounds involve only the outer skin layer. They stop bleeding in a few minutes on their own or with gentle pressure and can be treated with just first aid. Serious wounds require first aid followed by medical treatment. Consider a wound serious if the following characteristics are evident:

- The skin is cut or torn all the way through so that it gapes open
- Fat, muscle, or tendons are visible
- Bleeding is heavy and does not slow or stop after applying pressure for 15 to 20 minutes
- Soil or other debris cannot be washed from the wound
- There is loss of function such as the inability to move a cut finger
- It is on the face; even a small wound may leave a scar
- It is on the bottom of the foot
- Its source is a rusty or dirty object, or an animal or human bite.

Explain that some extremely serious injuries that generally contain a combination of the four kinds of wounds and always require immediate medical attention are amputations, avulsions, and crushing injuries. They are generally the result of motor vehicle or industrial machinery accidents or explosions.

- An **amputation** is the complete removal of an extremity, such as a finger or leg.
- An **avulsion** is tissue torn from or pulled away from and hanging off of the body. This type of injury may also result from an animal bite.

- **Crushing injuries** occur when parts of the body are caught between heavy objects or when the body is thrown against a heavy object or vice versa. In addition to wounds, crushing injuries include bone fractures, as well as possible injuries to internal organs and internal bleeding.
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<tr>
<td>a. Treatment of Wounds</td>
<td>Clean a minor wound by flushing it with cool water and washing it with mild soap. Dry it thoroughly with a clean cloth, apply a thin layer of antibiotic ointment to keep the wound moist and protect against infection, and cover it with a bandage to keep it clean. Change the bandage whenever it gets wet or dirty, and consider leaving the bandage off at night when sleeping because exposure to air also helps the healing process. Contact a doctor if the wound does not appear to be healing after several days or shows signs of infection like redness, draining, or swelling. Explain that for any wound caused by a rusty or dirty object or an animal bite, ask if the victim has had a tetanus shot within the past 10 years. If not, suggest that he or she get one to guard against tetanus infection. Explain that for extremely serious injuries such as amputations, avulsions, or crushing injuries, call EMS, control the bleeding, monitor breathing, treat for shock, and provide comfort to the victim until medical help arrives. Remember that tourniquets should only be used in extreme, life-threatening situations, and pressure points should only be used if you are trained to do so.</td>
<td>Show slide(s) 466-467 Show slide(s) 468 Show slide(s) 469-471</td>
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<tr>
<td>3. Bruises</td>
<td>Explain that bruises are injuries that discolor but do not break the skin tissue. They can be caused by a fall, a blow, or bumping into something. Though sometimes very ugly and lasting for several weeks, they are usually not very serious. Wrap ice or an ice pack in a clean towel and apply it to the bruise. To reduce swelling, elevate the bruised part for 20 to 30 minutes if the injury is mild or for a few hours if it is severe. Seek medical attention if swelling increases unusually, pain increases, the bruise site appears deformed, or there is an inability to move a body part associated with the bruise.</td>
<td>Show slide(s) 472-475</td>
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<td>H. Heat Injuries</td>
<td>Explain that 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 accident. Explain that 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.</td>
<td>Show slide(s) 476-477 Show slide(s) 478</td>
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</table>
Explain that heat injuries can occur when people are exposed to high temperatures and high humidity. When it is hot, your body cools itself by perspiring; sweat evaporates to carry 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, which 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.

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

a. Factors to Consider

Therefore, because 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.

Explain that 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.

2. Types of Heat Injuries

Explain that overheating of the body progresses through 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.
a. Heat Cramps

Explain that 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. To treat heat cramps:

1. Move the victim to a shady area, or improvise shade.
2. Loosen the victim’s clothing.
3. Slowly give the victim large amounts of cool water.
4. Monitor the victim and give more water as needed.
5. Seek medical aid if cramps continue.

b. Heat Exhaustion

Explain that 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. The symptoms of heat exhaustion are as follows:

- Heavy sweating
- Weakness or faintness
- Dizziness or drowsiness
- Cool, pale, moist skin
- Headaches
- Loss of appetite
- Heat cramps

Show slide(s) 496-497
Show slide(s) 498-500
• Nausea with or without vomiting
• Confusion
• Chills
• Rapid breathing and pulse
• Body temperature above normal but below 102°F.

Treat heat exhaustion as follows: Show slide(s) 501-504

1. Move the victim to a cool, shady area, or improvise shade.
2. Loosen the victim’s clothing.
3. Pour water on or apply cold, wet cloth to the skin. Fan the victim if it is a hot day.
4. Have the victim slowly drink at least one quart of water.
5. Elevate the victim’s legs.
6. Monitor the victim until symptoms are gone. If symptoms continue, seek medical aid.
7. If possible, keep the victim from participating in heavy activity for the rest of the day.

c. Heatstroke Explain that 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. Because 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.

Explain the symptoms of heatstroke are as follows: Show slide(s) 505-507

Show slide(s) 508
• 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.

Treat victims of heatstroke as follows:

1. Move the victim to a cool, shady area, or improvise shade.

2. Loosen the victim’s clothing. Remove any outer garments and protective clothing.

3. Pour water on the victim or immerse in water, and fan the victim so sweat can evaporate. If you cannot immerse the victim, massage the arms and legs with cool water.

4. If the victim is conscious, have him or her slowly drink at least one quart of water.

5. Seek medical aid and transport the victim to a medical facility as soon as possible. Perform any necessary life-saving measures.

3. Prevention of Heat Injuries

Explain that you can prevent heat injuries by taking just 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.

Show slide(s) 512-513
**OUTLINE OF INSTRUCTION**

**TEXTBOOK CONTENT**

**INSTRUCTOR ACTIVITY**

Explain that 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.

<table>
<thead>
<tr>
<th>I. Cold Weather Injuries</th>
<th>Explain that it is common to think that people are susceptible to cold weather injuries only in areas where snow and frost are present. If you are not prepared, prolonged exposure to low temperatures, wind or moisture—whether it be on a ski slope or in a stranded car—can result in cold-related injuries such as <strong>frostbite</strong> and <strong>hypothermia</strong>, no matter where you live.</th>
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<tr>
<th>1. Factors to Consider</th>
<th>Explain that when thinking about cold weather injuries, there are several factors you need to consider. These factors include weather, stress, clothing, physical makeup, psychological factors, and more. This section discusses these factors.</th>
</tr>
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<tr>
<th>a. Weather</th>
<th>Explain that low temperature, high humidity, precipitation, and high wind may affect the loss of body heat. Wind chill (the temperature of both the wind speed and air temperature combined) speeds up the loss of body heat and may aggravate cold injuries. By studying the wind chill chart shown in Figure 10.19, you can determine the chilling effect that wind speed has on temperature.</th>
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<tr>
<th>b. Stress</th>
<th>Explain that when in a stressful situation, people are more likely to experience fear, fatigue, dehydration, and lack of nutrition. These factors increase the possibility of cold injury.</th>
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<tr>
<th>c. Clothing</th>
<th>Explain that when outside during cold weather, you should wear several layers of loose-fitting clothing and dress as lightly as the weather permits. This reduces the danger of excessive perspiration followed by a chill. It is better if the body is slightly cold and producing heat rather than overly warm and sweltering toward dehydration. Wet clothing adds to the possibility of cold injury.</th>
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<th>d. Physical Makeup</th>
<th>Explain that physical fatigue leads to inactivity, personal neglect, carelessness, and less heat production. These, in turn, increase the risk of cold injury. Individuals who have had a cold injury before have a higher risk of being injured again.</th>
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Show slide(s) 514-515

Show slide(s) 516-517

Show slide(s) 518

See Figure 10.19, Page 348

Show slide(s) 519-522

Show slide(s) 523

Show slide(s) 524-525

Show slide(s) 526
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<tr>
<td>e. Psychological Factors</td>
<td>Explain that mental fatigue and fear lessen the body’s ability to rewarm itself and thus increase the possibility of cold injury. Depressed or unresponsive individuals are also at a higher risk of cold injury because they are less active and tend to be careless about protecting themselves.</td>
<td>Show slide(s) 527</td>
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<tr>
<td>f. Other Factors</td>
<td>Explain that individuals are also at risk of cold injury if they are</td>
<td>Show slide(s) 528-530</td>
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<td></td>
<td>• In contact with the ground for an extended period</td>
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<td>• Immobile for long periods of time, such as while riding in a crowded vehicle</td>
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<td>• Standing in water</td>
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<td>• Out in the cold for days without being warmed</td>
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<td>• Deprived of an adequate diet and rest</td>
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<td></td>
<td>• Careless about personal hygiene.</td>
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2. Types of Cold Injuries

Explain that people exposed to severe cold can suffer from the following conditions: frostbite, immersion foot/trench foot, hypothermia, snow blindness, and dehydration.

a. Frostbite

Explain that frostbite is the most common injury resulting from exposure to the cold. Ice crystals form in body tissues exposed to temperatures below freezing. The crystals restrict blood flow to the injured parts and are like daggers that puncture cell membranes as they grow larger. Body parts most easily frostbitten are the cheeks, nose, ears, chin, forehead, wrists, hands, and feet. People suffering from frostbite may not realize it because the injured part may be numb from the cold.

Explain that there are different degrees of frostbite depending on the extent of tissue damage. A *superficial* cold injury can usually be characterized by numbness and tingling or “pins and needles” sensations. It involves the skin and the tissue just beneath the skin. Deep frostbite, on the other hand, involves freezing of the *subcutaneous* tissue and possibly even muscle and bone. With a deep cold injury, victims are often unaware of a problem until the affected part feels like a stump or block of wood. Severe frostbite may result in infection or gangrene and may require surgical removal of the injured part.

Show slide(s) 534-538
(1) **Signs of Frostbite**

Explain that signs of superficial frostbite, as shown in Figure 10.20, include the following:

- Redness of the skin on light-skinned individuals; grayish coloring of the skin on dark-skinned individuals
- Blisters appearing in 24 to 36 hours
- Sloughing of the skin.

Explain that signs of deep frostbite include the following:

- Signs of superficial frostbite
- Painless or numb unthawed skin that is pale-yellowish and waxy looking
- Frozen, swollen tissue that is similar to wood to the touch
- Blisters in 12 to 36 hours.

(2) **Treatment of Frostbite**

Treat superficial frostbite as follows:

1. Move the victim out of the cold and wind.
2. Keep the victim warm; rewarm the affected parts gently and slowly. Explain to the victim that he or she will experience pain when warmth restores feeling to the injured part.
   - Cover cheeks, ears, and nose with the victim’s and/or your hands
   - Put the victim’s fingertips under his or her armpits
   - Place the victim’s feet under the clothing of another person next to that person’s belly.
3. **Insulate** injured parts by covering them with a blanket or dry clothing.
4. Loosen tight clothing and remove wet clothing.

5. Encourage the victim to exercise carefully, avoiding further injury.


Explain that deep frostbite is very serious and requires extra care to reduce or avoid losing all or parts of the fingers, toes, hands, or feet. If possible, transport the victim to a hospital or contact emergency medical services immediately; it is preferable that deep frostbite injuries be rewarmed under medical supervision. If this is not possible, rewarmed the injured parts, protect them from refreezing, and seek medical help as soon as possible.

(3) The Don’ts of Treating Frostbite

Explain that although there are many things you can do to help a frostbite victim, there are also several things you should not do.

- Do not attempt to thaw the affected part if you believe you cannot keep it warm until the victim receives medical treatment. It is extremely dangerous for an injured part to refreeze after warming. It is less dangerous to leave the part frozen than to warm it and have it refreeze.

- Avoid having the victim walk on frostbitten feet, especially if they thaw. If the victim must walk, it is less dangerous while his or her feet are frozen.

- Do not rub the injured part with snow or apply cold water packs.

- Do not warm the injured part by massage; ice crystals in the tissues will damage more cells when rubbed.

- Do not expose the injured part to open fire; the frozen part may burn because of lack of feeling.

- Do not have the victim move the injured part to increase circulation.

- Do not break any blisters.

- Do not use ointments or other medications.
• Do not let the victim use alcohol or tobacco. Alcohol reduces the body’s resistance to cold, and tobacco decreases blood circulation.

b. Immersion Foot/Trench Foot

Explain that immersion foot and trench foot result from long exposure of the feet to wet conditions at temperatures between approximately 32° and 50°F. Keeping your feet in damp or wet socks and shoes or tightly laced boots for long periods of time may affect circulation and contribute to injury. Inactivity also increases the risk of immersion foot/trench foot. This injury can be very serious, leading to loss of toes or parts of the feet.

(1) Signs of Immersion Foot and Trench Foot

Explain that symptoms of immersion foot/trench foot in the primary stage include affected parts that are cold, numb, and painless. These parts may then begin to feel hot with burning and shooting pains. In the advanced stage of immersion foot/trench foot, the pulse decreases and the skin becomes pale with a bluish cast. Redness, blistering, swelling, heat, hemorrhages, and gangrene may follow.

(2) Treatment of Immersion Foot and Trench Foot

Treat immersion foot/trench foot as follows:

1. Gradually rewarm the affected foot by exposure to warm air. Explain to the victim that he or she may experience pain and burning when you rewarm the foot.
   • Do not massage or moisten skin
   • Do not apply ice
   • Do not expose injured parts to open fire or other sources of heat; warm the affected area by covering with loose, dry clothing or other coverings instead.

2. Protect the affected foot from trauma or infection.

3. Elevate the foot to relieve swelling.

4. Dry the foot thoroughly; avoid walking.

c. Hypothermia

Explain that hypothermia is a general cooling of the body to a temperature below 95°F caused by continued exposure to low or rapidly dropping temperatures, cold moisture or wind, snow, or ice. With hypothermia, the body loses heat faster than it can produce it. Inadequate insulation, fatigue, poor physical condition, dehydration, faulty blood circulation, alcohol, trauma, and immersion in cold water can bring on this condition. People at high risk of hypothermia include infants, older people, people with limited mobility due to illness or other medical conditions, very thin people, and people with heart and lung problems.

Explain that remember, cold weather affects the body slowly and almost without notice. Even when well protected by clothing, a person may suffer cold injuries if exposed to low temperatures for long periods of time. As the body cools, it goes through several stages of discomfort and problems.

1) Signs of Hypothermia

Explain that the signs of hypothermia include the following:

- Shivering or trembling, which will eventually stop as body temperature drops (indicates mild hypothermia)
- Cold skin
- Weakness
- Dizziness
- Uncoordinated movements and slurred speech
- Low body temperature; in severe hypothermia, 90°F or below
- Stiff or rigid muscles
- Decreasing pulse and breathing rate
- Unconsciousness
• Shock, coma, and death—all of which may result as body temperature drops and the body freezes.

(2) *Treatment of Hypothermia*

Explain that except in the most severe cases, the treatment for hypothermia is directed toward rewarming the body evenly and without delay. Treat mild hypothermia as follows:

1. Rewarm the victim slowly.
   - If possible, move the victim inside, remove any wet clothing, and cover him or her with blankets. Avoid warming the victim quickly with hot baths, electric blankets, or heat lamps.
   - If you cannot move the victim inside, remove any wet clothing and rewarm him or her beside a campfire or using the body heat from another person.

2. Keep the victim dry and protected with clothing, blankets, towels, a sleeping bag, or even newspapers.

3. Keep the victim awake.

4. Do not raise the victim’s feet or legs because blood in the extremities is colder than in the rest of the body and may further chill the body’s core.

5. Give the victim warm liquids gradually. Do not give the victim alcohol. Do not force liquids on an unconscious victim.

6. Be prepared to start basic life-support measures.

7. Seek medical treatment immediately.
Explain that treating a person with severe hypothermia is extremely dangerous because of the possibility of shock and disturbances of the heartbeat while rewarming. If possible, as you begin to rewarm the victim, transport him or her to a hospital or contact EMS immediately. If this is not possible, treat the victim gently because the heart is weak when the body is cold. Stabilize the victim’s body temperature by keeping him or her from losing more body heat and continue to keep the victim warm until you can get him or her medical treatment.

**d. Snow Blindness**

Explain that snow blindness is the effect the glare from an ice field, or snowfield, has on the eyes. It is more likely to occur in hazy, cloudy weather because people tend to protect their eyes when the sun is shining and believe protection is unnecessary on cloudy days. If a person waits until he or she feels discomfort or pain to use protective eyewear, a deep burn of the eyes may have already occurred.

1. **Signs of Snow Blindness**

   Explain that there are several signs of snow blindness:
   
   - A sensation of grit in the eyes
   - Pain in and over the eyes made worse with eye movement
   - Watery and red eyes
   - Headache
   - Increased pain with exposure to light.

2. **Treatment of Snow Blindness**

   Treat snow blindness as follows:
   
   1. Cover the eyes with a dark cloth to discourage painful eye movement.
   2. Try to give the eyes complete rest without exposure to light. If this is not possible, protect the eyes with dark bandages or very dark glasses.
   3. Seek medical treatment. In most cases, once exposure to sunlight stops, the eyes heal in a few days without permanent damage.
e. Dehydration

Explain that dehydration from cold weather occurs when the body loses too much fluid, salt, and minerals. As mentioned in the previous lesson, you can lose large amounts of fluid and salt through sweating. This loss creates an imbalance of fluids, and dehydration occurs when fluids are not replaced.

Explain that dehydration can occur in both hot and cold climates. In cold weather, sweat evaporates quickly and heavy layers of clothing absorb it, making dehydration more difficult to detect because the signs of sweating are less noticeable; therefore, the danger of dehydration during strenuous cold weather activities can become a serious problem. The symptoms of cold weather dehydration are similar to those of heat exhaustion. Treat dehydration as follows:

1. Move the victim out of the wind and cold, and keep him or her warm.

2. Loosen the victim’s clothes to promote circulation.

3. Ensure the victim receives proper fluid replacement, rest, and prompt medical treatment.

3. Prevention of Cold Injuries

Explain that you can prevent many cold weather injuries by taking proper care and precautions when participating in cold weather activities. Be sure to receive adequate nutrition, hot meals, and warm fluids. Get enough rest. Practice good hygiene. Wear the right clothing and protective gear. Do not forget to protect your eyes, ears, and face. Wear layers of clothing so you can remove outer layers if you begin to perspire. Avoid tight clothes that interfere with circulation. Replace or remove any clothing that gets wet as soon as possible.

Explain that you may not feel cold injuries because of cold’s numbing effect, so always try to go out in cold weather with a partner. You can check each other for signs of injury. Exercise and keep active to maintain steady circulation and improve resistance to the cold. Many cold weather injuries can be avoided by planning ahead, staying alert, and using common sense.
J. Bites, Stings, and Poisonous Hazards

Explain that with so many outdoor activities to participate in, such as hiking, camping, bicycle riding, skateboarding, and skiing, it is common to come across emergencies involving bites, stings, and poisonous hazards. It is estimated that one of every two Americans will be bitten at some time by an animal. Dogs are responsible for about 80 percent of all animal-bite injuries. Additionally, bee, wasp, and other types of insect stings can be not only painful but also fatal if the person is allergic. Depending on where you live, the type of first aid you need to know for snakebites and plants will vary. Knowing what to do when in the outdoors can mean the difference between life and death.

1. Snakebites

Explain that if you spend much of your time outdoors, it may be common for you to come across snakes; however, your chances of snakebites are remote if you remain alert and careful. There are both poisonous and nonpoisonous snakes, so the severity of a snakebite depends on whether the snake is poisonous or not. Beyond that, the severity of snakebites depends on the type of snake, the location of the bite, and the amount and type of venom injected.

a. Types of Snakes

Explain that there are approximately 130 different varieties of nonpoisonous snakes in the United States. They have oval-shaped heads and round pupils. Unlike pit vipers, nonpoisonous snakes do not have sensory pits with which to sense the body heat of their prey.

Explain that poisonous snakes exist throughout the world, primarily in tropical to moderate climates. In the United States, there are four kinds of native poisonous snakes. Three of these four—the rattlesnake, copperhead, and cottonmouth (water moccasin)—are pit vipers.

Explain that pit vipers in other parts of the world include the bushmaster and fer-de-lance in Central and South America, the tropical rattlesnake in Central America, and the Malayan pit viper in eastern Asia. These snakes are shown in Figure 10.21.

Show slide(s) 584-588

Show slide(s) 589

Show slide(s) 590-591

Show slide(s) 592-593

See Figure 10.21, Page 355

Show slide(s) 594-595
Explain that pit vipers have slitlike pupils; flat, triangular-shaped heads; small, deep, heat-sensing pits between their nostrils and eyes; and in most cases, hemotoxic venom. When a pit viper bites, it injects this venom from sacs through long, hollow fangs. This produces a severe burning pain, along with discoloration and swelling around the fang marks. The hemotoxin destroys blood cells, which causes the discoloration of the skin. Blisters and numbness in the affected area follow this reaction. Pit viper bites attack the circulatory system, possibly causing weakness, rapid pulse, and shortness of breath, as well as nausea, vomiting, and shock.

Explain that corals, cobras, kraits, and mambas belong to the cobra family (see Figure 10.22). The coral snake is the only one native to the United States. Rings of red, yellow, and black color encircle its body. Although other nonpoisonous snakes have the same colors, only the coral snake has a red ring next to a yellow ring. The cobra, found in Africa and Asia, forms a hood with its neck when on the defensive. The krait, found in India and Southeast Asia, is brightly banded; the mamba in Africa is either almost black or green.

Explain that these snakes look very different, but all four inject their venom—a neurotoxin—through short, grooved fangs leaving a characteristic bite pattern, shown in Figure 10.23. There is minimal pain and swelling compared to a pit viper bite, but because their powerful venom affects the central nervous system, it can cause blurred vision, drooping eyelids, slurred speech, drowsiness, and increased salivation and sweating. Nausea, vomiting, shock, respiratory difficulty, paralysis, convulsions, and coma develop if the bite is not treated promptly.

Explain that sea snakes are found in warm water areas of the Pacific and Indian Oceans. They have small heads, thick bodies, and tails flattened along the sides. Their fangs are only one-quarter inch long, but their venom is very poisonous.

b. Types of Venoms

Explain that basically, venoms are categorized as neurotoxins that affect the nervous system and can cause death by paralysis, hemotoxins that digest tissue including blood cells, or cardiotoxins that affect the heart directly.
c. Treating Snakebites

Explain that snakebites are rarely fatal if treated within an hour or two of injury, but they can cause pain and illness and may severely damage a bitten hand or foot. Although snakes do not always inject venom, all snakes may carry tetanus (lockjaw); therefore, anyone bitten by a snake, whether poisonous or nonpoisonous, should receive immediate medical attention.

Explain that one of the most important parts of treating snakebites is identifying the type of snake making the bite. The type of antivenin used in medical treatment of snakebites varies depending upon the type of venom injected. If you can identify the type of snake causing the injury, let EMS know when you call for help or phone the information ahead to the hospital if you plan to transport the victim yourself. If you cannot identify the snake, try to kill it without risk to yourself or delaying first aid; then show it to emergency medical personnel or take it to the hospital for identification along with the victim.

Explain that to treat snakebites, follow these steps:

1. Get the victim away from the snake.
2. Reassure and keep the victim quiet and still. This will keep circulation to a minimum and keep the venom from spreading.
3. Immobilize the affected part in a position below the level of the heart.
4. Remove rings, bracelets, watches, and other jewelry from any affected limb. In case of swelling, this will make the victim more comfortable and will keep the affected limb from losing blood flow.
5. Wash the bite thoroughly with soap and water. Do not apply any ointments.
6. Place an icepack or freeze pack, if available, over the area of the bite. Do not place ice directly on the skin or wrap the limb with ice. You are only trying to cool the bite area, not freeze it.
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<thead>
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<th>OUTLINE OF INSTRUCTION</th>
<th>TEXTBOOK CONTENT</th>
<th>INSTRUCTOR ACTIVITY</th>
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<tr>
<td>7. For bites to the arms, legs, hands, or feet, apply constricting bands two to four inches away from the bite (see Figure 10.24). For an arm or leg bite, place one band above and one below the bite. For a hand or foot bite, place one band above the wrist or ankle. To ensure a band is not too tight, you should be able to insert a finger between the band and the skin.</td>
<td>See Figure 10.24, Page 357</td>
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<tr>
<td>8. If swelling from the bite reaches the band, tie another band a few inches farther away from the bite and the old band; then remove the old band.</td>
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<td>9. Do not give the victim any food, alcohol, tobacco, medication, or drinks with caffeine.</td>
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<td>10. Seek medical aid immediately.</td>
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<tr>
<td>d. Prevention of Snakebites</td>
<td>Explain that most snakes are shy and passive. Unless they are injured or disturbed, they tend to avoid contact with humans. You can prevent snakebites by using caution and common sense. If you are working outside clearing dense undergrowth, wear gloves, long sleeves, long pants, and boots for protection. When hiking in the wilderness, wear boots and long pants. Try to walk in open areas or stay on established paths. Look where you are stepping or placing a hand if climbing or pushing away tree limbs. Check before sitting on a rock or fallen tree. If possible, stay away from brush, rocks, and undergrowth. If you must handle a snake, even a freshly killed one, use a long tool or stick.</td>
<td>Show slide(s) 628-629</td>
</tr>
<tr>
<td>2. Human and Animal Bites</td>
<td>Explain that mouths of people and animals are full of bacteria, so human and animal bites that break the skin spread germs and may result in serious infection and disease. A person bitten by a diseased animal may come down with tetanus, rabies, and various types of fevers. If you think an animal is carrying a disease, notify the proper authorities to have it captured.</td>
<td>Show slide(s) 630-632</td>
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<td>Explain that to treat a victim of an animal bite, follow these steps:</td>
<td>Show slide(s) 633-636</td>
<td></td>
</tr>
<tr>
<td>1. If bleeding is severe, control it first, before continuing with other first aid. Refer to the section on Controlling Bleeding for procedures to control bleeding.</td>
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<tr>
<td>2. Cleanse the wound thoroughly with soap or a detergent solution and water. Continue to cleanse and flush the wound with water for five minutes.</td>
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3. If there is minor bleeding, cover the wound with gauze or a clean cloth, press firmly on the wound, and if possible, raise the injury above the level of the victim’s heart.

4. When minor bleeding stops, cover the wound with a sterile dressing and secure the dressing in place.

5. Immobilize an injured arm or leg.

6. Seek medical assistance as soon as possible.

3. Insect Bites and Stings

Explain that in the outdoors, you may come in contact with various types of biting and stinging insects, including bees, mosquitoes, ticks, fleas, and spiders. Most of these insect bites and stings result in minor reactions, such as itching, redness, swelling, and irritation; however, scorpions and certain spiders can inject powerful poisons when they bite, and some people may have an allergic reaction to an insect bite or sting, particularly made by bees or wasps. In these cases, seek medical treatment immediately.

Explain that the black widow, brown recluse, tarantulas, and scorpions, shown in Figure 10.25, are some of the more harmful insects you may encounter. Venom from the black widow is neurotoxic and may cause stomach and muscle cramps, breathing difficulties, nausea, sweating, vomiting, and convulsions. Tarantula venom is basically neurotoxic and may produce symptoms similar to those of a black widow bite, but in some cases can affect the heart and may digest tissue, producing a severe local wound. The brown recluse spider can produce severe tissue damage around the bite, possibly leading to gangrene. Although stings from certain types of scorpions are painful but not dangerous, some can cause nausea, fever, stomach cramps, and possibly convulsions and shock.

Explain that in most cases, bee and wasp stings produce minimal swelling, pain, redness, itching, and burning at the site of the sting. Multiple stings may cause headaches, fever, muscle cramps, and drowsiness. Symptoms from an allergic reaction may include the following:

- Extreme pain at the site of the sting
- Itching and hives
• Weakness
• Anxiety
• Headache
• Breathing difficulties
• Nausea and vomiting
• Diarrhea
• Collapse, shock, and even death from a serious allergic reaction.

Explain that take the following basic first aid measures regardless of what caused the bite or sting:

1. Remove any stinger left in the skin by scraping the skin’s surface with a fingernail or knife. Do not squeeze the stinger because it may inject more venom.

2. For tick bites, remove the tick with your fingers if it will come off the skin easily. Do not pull the tick off if it will not come easily; this may leave the head of the tick in the skin which can cause infection. Instead, cover the tick with Vaseline or thick oil to make it let go and then remove it.

3. Wash the area of the bite/sting with soap and water. Apply an antiseptic, if available, to minimize the chances for infection.

4. Use an icepack or cold compresses on the site of the bite/sting to help reduce swelling. Do not apply the ice directly to the skin.

5. Apply calamine lotion or a baking soda and water paste to the bite to relieve pain and itching.

6. Treat more serious allergic reactions as you would snakebites.

Show slide(s) 647-653
• Apply constricting bands above and below the site
• Be prepared to perform basic life-support measures
• To positively identify the insect, attempt to capture it without putting yourself at risk
• Seek medical aid right away.

7. If signs of infection such as pus, red streaks leading away from the bite, swollen glands, or fever occur within hours or several days after an insect bite, immediately seek medical attention.

a. Prevention of Insect Bites and Stings

Wear insect repellent when biting insects are present outside. Reapply repellent every few hours when participating in activities that cause heavy perspiration. Wear appropriate protective clothing when hiking or camping in the wilderness or working in a yard, garden, or other woody or overgrown area.

4. Poisonous Plants

Explain that most plants are harmless, but a few can cause allergic reactions on contact. For example, plants of the poison ivy group, including poison oak and poison sumac, produce an oily substance that irritates the skin of many people. Reactions to this substance include a rash characterized by redness, blisters, swelling, and intense burning and itching, as well as headaches and fever. Although the rash usually begins within a few hours after contact, it may appear 24 to 48 hours later.

Explain that in general, treat someone who has come in contact with a poisonous plant as follows:

1. Remove contaminated clothing. Set it aside to be washed.

2. Wash all exposed areas of the skin thoroughly with soap and water, then apply rubbing alcohol.

3. Apply calamine or other soothing skin lotion to relieve itching and burning. Avoid covering the rash with a dressing.
OUTLINE OF INSTRUCTION

4. Seek medical treatment if a severe rash occurs, if the rash is on the face or mouth and may interfere with breathing, or if there is a known history of allergic reactions.

a. Prevention of Exposure to Poisonous Plants

Explain that become familiar with what poison ivy and other poisonous plants look like so you can recognize a poisonous plant and avoid contacting it. The following are other precautions you should take to limit your exposure to poisonous plants:

• Dress appropriately when participating in outdoor activities
• Avoid areas where you aware that poisonous plants grow
• Do not eat plants or parts of plants that you do not recognize
• Do not put grass, twigs, stems, or leaves in your mouth.

J. Conclusion

Explain that first aid is the help you give an injured person until qualified medical personnel arrive and can give treatment. The type of first aid an individual requires depends on his or her injuries. You determine those injuries by carefully and quickly evaluating the person. In doing so, you follow a sequence that deals with the most life-threatening problems first—breathing and heartbeat, then bleeding, then other injuries—shock, broken bones, burns, and head injuries.

Explain that remember that while it is important to administer first aid as quickly as possible in most cases, some rescue situations require careful assessment before you jump in to save someone. You don’t want to become a victim yourself. Remaining calm, thinking logically and clearly, and knowing what steps to take will help you successfully perform first aid.

Explain that being able to adjust to new environments and protect yourself from harmful conditions is very important when you participate in outdoor activities. Extreme temperatures and humidity; animal, snake, and insect bites; and poisonous plants can harm you if you don’t take precautions. Be aware of potential hazards, know how to treat nature-related injuries, and exercise common sense. If you do, you can cope successfully with the environment and enjoy your time in the great outdoors.
III. APPLICATION

A. Review Questions

1. What is the Good Samaritan Law?

2. Why is it important to have rubber gloves and a face shield in your first aid kit?

3. What are the ABCs of lifesaving steps?

4. What are the common signs of a stroke?

5. What are the three types of bleeding?

6. What is something you should not do when treating a fracture?

7. What are the signs of shock?

8. What are the three types of burns?

9. What are common types of inhaled poisons?

10. What are the types of heat injuries?

11. How do you treat hypothermia?

12. What are the symptoms of an allergic reaction to an insect bite or sting?

IV. EVALUATION

A. Test

Administer test at senior naval science instructor’s discretion.
Q.1. The Good Samaritan law protects primarily which of these groups?  
A. People who do not provide assistance to accident victims  
B. **People who, acting in good faith, administer first aid correctly**  
C. People whose accidents cause harm to bystanders  
D. People who are employed as emergency workers

Q.2. For which of these reasons should first aid kits contain face shields?  
A. To increase the effectiveness of mouth-to-mouth resuscitation and CPR  
B. To keep debris away from the victim’s eyes and breathing passages  
C. **To protect the rescuer against infectious diseases**  
D. To aid vision in accidents where there is heavy smoke

Q.3. Which of these sets correctly corresponds to the ABCs of emergency priorities?  
A. Assessment, bleeding, consciousness  
B. Airway, bleeding, communication  
C. Assessment, broken bones, circulation  
D. **Airway, breathing, circulation**

Q.4. Which of these instructions describes the Heimlich maneuver?  
A. Stand behind the victim, position your fists above his or her navel, and give quick backward and upward thrusts.  
B. With the reclining victim’s head tilted back, pinch the nostrils together, completely cover the mouth with yours, and give two full breaths.  
C. On a reclining victim, with the heels of your hands, press his or her breastbone down 1.5-2 inches at a quick continuous rate.  
D. Stand on a dry, non-conducting piece of material, and push the victim off the source of electricity using a broom or chair.

Q.5. Where should you place your fingers to feel for a pulse in the carotid artery?  
A. On the inside of the wrist  
B. **Alongside the Adam’s apple in the neck**  
C. At the junction of the thigh and the torso  
D. At the lower temple beside the ear

Q.6. Slurred speech, blurred vision, paralysis on one side of the body, and sudden, severe headache are common symptoms of _______.  
A. cardiac arrest  
B. shock  
C. poisoning  
D. **stroke**

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### OUTLINE OF INSTRUCTION

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer Options</th>
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</table>
| Q.7. What type of bleeding is characterized by steadily flowing dark blood? | A. Hemorrhage  
B. Arterial  
C. Venous  
D. Capillary |
| Q.8. If you apply continuous direct pressure to treat bleeding, within how many minutes should the bleeding begin to slow? | A. 5  
B. 15  
C. 20  
D. 30 |
| Q.9. Pressure points are places on the body where major arteries are close to the skin surface and pass ______. | A. over one of the larger muscles  
B. over a bone  
C. near the union of the extremities and the torso  
D. near the major organs that the arteries nourish |
| Q.10. What is the preferred way to position victims suffering from shock? | A. Standing, with support, to improve circulation  
B. Reclining, with head slightly higher than the rest of the body  
C. Sitting, with head lowered between the knees  
D. Lying on the back, with feet higher than the heart |
| Q.11. Which one of these directions for treating fractures cannot be completed correctly with the words “Do not”? | A. ______ try to set the bone.  
B. ______ put the victim in a car to hurry to the hospital.  
C. ______ splint the fracture in the position in which you found it.  
D. ______ allow the victim to move. |
| Q.12. Which of these statements about shock is NOT correct? | A. Someone can die of shock even if his or her injuries would not have been fatal.  
B. Signs of shock include unusual stillness, very slow breathing, and dry, flushed skin.  
C. Someone treated for a severe injury should always also be treated for shock, even in the absence of symptoms.  
D. Shock harms the body by disrupting circulation and preventing adequate blood flow to the brain. |
Q.13. For maximum recovery from a muscle, joint, or bone injury, apply an ice pack for _______ minutes every two to three hours for the first 2-3 days after the injury.

A. 5-10  
B. 10-15  
C. 15-20  
D. 20-30

Q.14. Burns are classified as first, second, or third degree according to which of these factors?

A. Depth of the burn  
B. Size of the affected area  
C. Source of the burn  
D. Distance from the heart and lungs

Q.15. Which of these statements about burns contains an error?

A. All electrical burns are classified as third degree.  
B. Second degree burns, which look moist and ooze fluids, are often the most painful type of burn.  
C. Burns from sunburn are always classified as first degree burns.  
D. Third degree burns often cause shock but little or no pain.

Q.16. All of the following are actions that should never be done when treating burns, except which one?

A. Putting ice or ice water on a burn  
B. Elevating the burned part  
C. Treating a burn with butter, oil, grease, or ointment  
D. Using cotton or cottony bandages on a burn

Q.17. Which of these should be the first action after separating a victim from the source of an electrical current?

A. Call the EMS.  
B. Treat the two burn sites as third degree burns.  
C. Treat the victim for shock.  
D. Make sure the victim is breathing.

Q.18. Which one of these statements about carbon monoxide is NOT correct?

A. It produces a strong, noxious odor, but exposure to it in high concentrations can kill a person in a few minutes.  
B. It is produced by charcoal, wood, and coal fires, by gasoline engines, and by gas, oil, and kerosene appliances.  
C. When it is inhaled, it replaces oxygen in the blood and starves the body of oxygen.  
D. Common ways that people are exposed to it include using portable heaters, lanterns, and camp stoves inside tents and campers.

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Q.19. Which of these steps should you perform first in attempting to help a victim of inhalation poisoning?
A. Move the victim into the fresh air or ventilate the area.
B. Take several deep breaths and hold your breath as you go into the poisonous environment.
C. Make sure you have help, or call for help.
D. Check the victim’s airway, breathing, and circulation.

Q.20. Select the statement about oral poisoning that is correct.
A. If the victim has swallowed a corrosive substance, induce vomiting immediately.
B. By giving instructions over the telephone, a poison control center can usually treat most poisonings.
C. Make sure the poison victim is sitting straight up throughout the treatment period.
D. Vomiting can be effective for up to one hour after the ingestion of the poison.

Q.21. A person with a wound caused by a rusty or dirty object, or an animal is at risk for ______ unless he or she has had a shot within the past 10 years.
A. meningitis
B. polio
C. tetanus
D. Rabies

Q.22. If the clothing of soldiers and athletes provides ______ so that air can circulate, heat injuries are less likely to occur.
A. ventilation
B. hydration
C. insulation
D. condensation

Q.23. Which of these symptoms of heat stroke is least common?
A. Fast, weak pulse
B. Sweaty, clammy skin
C. Mental confusion
D. Dizziness, nausea, and vomiting

Q.24. Which of these actions is NOT recommended for treating hypothermia?
A. Removing wet clothing and placing the victim beside a campfire or against another person
B. Keeping the victim awake
C. Giving the victim warm liquids gradually, excluding alcohol
D. Warming the victim in a hot bath or electric blanket
Q.25. In which of these conditions do ice crystals form in body tissues after exposure to freezing temperatures?

A. Frostbite
B. Hypothermia
C. Immersion/trench foot
D. Cold injury dehydration

Q.26. Which of these symptoms or treatments does NOT apply to both frostbite and immersion/trench foot?

A. The injuries result from exposure to temperatures below freezing.
B. Redness and blistering may appear on the skin.
C. The victim should be warned that he or she will feel pain as the affected tissue is rewarmed.
D. The affected part should be warmed gradually by being covered with loose dry material.

Q.27. Rattlesnakes, copperheads, and cottonmouths may be identified by all of the following physical traits, except which one?

A. Slit-like pupils
B. Deep pits between their nostrils and eyes
C. Round heads
D. Long, hollow fangs

Q.28. Which one of these treatments for bites or stings is NOT correct?

A. To treat an animal bite, first take care of the bleeding, cleanse the wound with soap and water, then flush the wound with water for five minutes.
B. To treat a bee or wasp sting, remove any remaining part of the stinger by scraping the skin with a knife or fingernail.
C. To remove a tick that you cannot pull off easily with your fingers, put Vaseline over the tick and wait for it to let go.
D. To treat a snakebite to the arms, legs, feet, or hands, tie a tourniquet between the bite and the victim’s heart.

Q.29. All of these reactions to an insect bite or sting generally indicate an allergic reaction, except which one?

A. Hives
B. Itching and redness
C. Difficulty breathing
D. Nausea and vomiting
Q.30. Which one of these statements about heat injuries does NOT contain an error?

A. In high temperatures, people who work outside are susceptible to dehydration, but not people who are outside exercising.
B. Since salt is also lost through perspiration, you should consume extra salt in hot weather.
C. **High humidity increases the risk of dehydration because sweat does not evaporate as rapidly.**
D. In heat exhaustion, large amounts of fluids are lost, causing less blood flow to vital organs and resulting in a type of stroke.