Strangely enough, the concept of cooperative games grew out of the Vietnam War experience in the 1970s. Cooperative games are the opposite of war and competition. In these games, you have fun by playing for all you are worth, and everyone wins by cooperating with each other. Even when games are arranged so that teams compete, winning is not emphasized. Sometimes members of the opposite team have been known to change sides and try to help the losing team! The fun is in the play, not in the winning.
Lesson 3.1

Health and Wellness Benefits

Lesson Objectives
After reading this lesson, you should be able to
1. Describe some hypokinetic conditions.
2. List some benefits of physical activity that contribute to health and wellness.
3. Explain, using examples, how physical activity is related to hyperkinetic conditions.

Lesson Vocabulary
activity neurosis (p. 47), atherosclerosis (p. 43), blood pressure (p. 44), diabetes (p. 45), diastolic blood pressure (p. 44), eating disorders (p. 47), heart attack (p. 43), hyperkinetic conditions (p. 47), hypertension (p. 44), osteoporosis (p. 46), risk factor (p. 43), stroke (p. 44), systolic blood pressure (p. 44)

Prior to 1900 the leading cause of death was pneumonia. Many of the other leading causes of death were from infections caused by bacteria or viruses. Modern science found cures or vaccinations for many of these conditions, and now in the 21st century these diseases are no longer the leading health problems. Diseases such as heart disease (#1), cancer (#2), and stroke (#3) are now considered the leading health threats. These and many other diseases are considered to be hypokinetic conditions because they are caused in part from sedentary living. In this lesson you will learn more about how physical activity reduces your risk of hypokinetic conditions and increases your personal wellness.

Hypokinetic Diseases and Conditions
Sedentary living costs our nation $150 billion each year because of increased need for health care and loss of productivity. Approximately 250,000 people die prematurely because they are inactive. Reports of major health organizations, including the Office of the Surgeon Gen-er, indicate that regular physical activity is one of the best ways of reducing illness and increasing wellness in our society. Sometimes teenagers feel that these statistics are not relevant to them; they think illness happens only to old people. As you will see next, many hypokinetic diseases are now prevalent among teens and many teens are not active enough to resist these conditions.

Cardiovascular Diseases
Did you know that cardiovascular disease has been the leading cause of death in the United States each year since 1920? Cardiovascular disease is a primary or contributing cause of 60 percent of all deaths in our country. Currently about one in every four Americans has one or more forms of cardiovascular disease.

People get cardiovascular disease for many reasons, each one called a risk factor. The more risk factors you have, the more chance you have of getting a disease. Two kinds of risk factors exist: primary (most important) and secondary (less important). Sedentary, or inactive, living is one primary risk factor, so cardiovascular disease is considered a hypokinetic condition. Other primary risk factors that contribute to heart disease include smoking, high blood pressure, high fat levels in the blood, having too much body fat, or having diabetes. Secondary risk factors include stressful living and excessive alcohol use.

Various conditions are considered to be cardiovascular diseases. Coronary artery disease is a cardiovascular disease that is the number one cause of early death. Coronary artery disease exists when the arteries in your heart become clogged. Arteries are like pipelines that carry blood from the heart to all parts of your body. Clogging of the arteries is called atherosclerosis. It occurs when substances including fats, such as cholesterol, build up on the inside walls of the arteries. This build-up narrows the openings through the arteries. As a result, the heart must work harder to pump blood. Atherosclerosis can begin early in life but typically develops with age.

A heart attack occurs when the blood supply into or within the heart is severely reduced or cut off. As a result, an area of the heart muscle can die. The main reasons for heart attacks are arteries blocked by atherosclerosis, blood clots in narrowed arteries, spasms in the muscle of the artery, or a combination of these causes. During a heart attack, the heart may beat
abnormally or even stop beating. Medicines are often used to stabilize the heartbeat of someone in distress. Also, cardiopulmonary resuscitation (CPR) often is done to restore circulation of oxygen when the heart stops beating.

Stroke is another form of cardiovascular disease. It is the third leading cause of early death and occurs when oxygen in the blood supply to the brain is severely reduced or cut off. A blood clot or atherosclerosis can block any artery that supplies blood to the brain, causing a stroke. A stroke also can occur when an artery to the brain bursts. Because a stroke damages the brain, it can affect a person’s ability to move, think, and speak. Some strokes are severe enough to cause death.

Each time your heart beats, it forces blood through your arteries, causing the blood to push against the artery walls. This force of blood against your artery walls is called blood pressure. When the doctor checks your blood pressure, he or she looks for two readings. The pressure in your arteries immediately after the heart beats—called systolic blood pressure—is the higher of the two readings. Your diastolic blood pressure is the lower of the two numbers and is the pressure in the artery just before the next beat of the heart. High blood pressure is sometimes referred to as hypertension. It is a condition in which blood pressure is consistently higher than normal. It is not considered a leading cause of death as are coronary heart disease and stroke, but it is a primary risk factor for both of these conditions as well as many others. High blood pressure is a hypokinetic condition because regular physical activity is one way to help lower blood pressure. You can see the range of normal blood pressure in table 3.1. The table also shows the blood pressures for prehypertension, a new category that has recently been added. People in this range have higher than normal blood pressure and should start to take precautions to prevent even higher blood pressure. There are three stages of high blood pressure with stage 1 being the least severe and stage 3 the most severe. It is important to take your blood pressure when you are rested and relaxed. While a long-term effect of regular exercise is a decrease in blood pressure, involvement in exercise immediately before taking blood pressure will cause it to be higher than normal. Your blood pressure is also affected when you are excited or anxious.

Compare the clear artery on the left with the partially blocked artery on the right.
The figure on this page illustrates some of the ways that regular physical activity reduces the risk of cardiovascular disease. An active person has arteries in the heart that are healthy and more likely to be free from atherosclerosis (see small pictures in the figure). The active person also has healthy arteries in the brain as well as in the muscles and other body organs, has a strong heart muscle capable of pumping adequate blood to the body, has fit blood low in fats such as cholesterol, and has blood pressure in the healthy range. Regular physical activity not only reduces risk of heart attack and stroke, it is often prescribed by medical doctors to help people recovering from these conditions.

### Cancer

More than 100 different diseases characterized by the uncontrollable growth of abnormal cells are categorized as cancer. Cancer’s uncontrolled cells invade normal cells, steal their nutrition, and interfere with the cells’ normal functions.

Cancer is the second leading cause of death in the United States. When diagnosed early, many forms of cancer can be treated and even cured through surgery, chemical or radiation therapy, or medication. We know that the death rate from all forms of cancer is lower in active people than in inactive people. Certain forms of cancer, such as breast cancer and colon cancer, are considered hypokinetic conditions because people who are physically active are less likely to get them than people who are inactive. Many of the risk factors for heart disease are also risk factors for cancer. Getting regular physical exams is a good way to help prevent cancer. It is not clear why physical activity helps reduce the risk of cancer, but as shown in the figure one of the health benefits of activity is an immune system that is more capable of fighting diseases that invade the body.

### Diabetes

When a person’s body cannot regulate sugar levels, the person has a disease called diabetes. A person with diabetes will have excessively high blood sugar unless he or she gets medical assistance. Over time, diabetes can damage the blood vessels, heart, kidneys, and eyes. A very high level of sugar in the blood can cause coma and death. Several effective medical treatments exist to help diabetics regulate their blood sugar and lead normal lives.

One kind of diabetes—Type I—is not a hypokinetic condition. This condition is often hereditary and accounts for about 10 percent of all diabetics. Type I diabetics take insulin, a hormone made in the pancreas, to help control blood sugar levels.
The most common kind of diabetes—Type II—is a hypokinetic condition because people who are physically active are less likely to have it. As shown in the figure, active people are more likely to have blood with healthy sugar levels. Also, activity helps control body fat. Overfattness is considered to be a major risk factor for Type II diabetes. Diabetes has many of the same risk factors as heart disease.

**FIT FACTS**

Type II diabetes used to be called adult-onset diabetes because adults got it, not teens and children. The name adult-onset is no longer used because in recent years the disease has become common among youth. Physical activity can reduce risk of Type II diabetes by helping young people keep body fat levels in the healthy range and by helping the body regulate blood sugar levels more effectively.

**Obesity**

A condition in which a person has a high percentage of body fat—called obesity—often is the result of inactivity, although many other factors may contribute. Having too much body fat contributes to other diseases such as heart disease and diabetes. Since 1980 the incidence of obesity among teens in the United States has increased from 5% to 14%, an increase of almost 300%, and there is a similar upward trend in other developed nations. You will learn more about obesity in chapter 13.

**Osteoporosis**

When the structure of the bones deteriorates and the bones become weak, a condition called osteoporosis exists. Osteoporosis is most common among older people, but it has its beginnings in youth. You develop your greatest bone mass—also called your peak bone mass—when you are young. As illustrated in the figure on the preceding page, those who exercise regularly develop stronger bones than those who are sedentary. It is especially important to do physical activities that cause you to bear weight, such as in walking and running, and that stress the bones, such as resistance training. If you do the right kind of activity when you are young, you will build a higher peak bone mass. As a result, if you lose bone mass as you get older, you will have stronger bones than if you hadn’t exercised while young.

Lack of calcium in the diet, especially when a person is young, contributes to osteoporosis. Women are more likely to have osteoporosis than men because, as a result of hormonal changes that take place in women later in life, calcium absorption becomes less efficient. For bone health throughout life, good nutrition, regular activity, and proper medical attention are necessary.

**Other Hypokinetic Conditions**

Evidence suggests that regular physical activity can enhance the function of the immune system, helping the body resist infections such as the common cold and the flu. Moderate activity has been shown to help reduce symptoms of some forms of arthritis. Being active can also help people avoid depression or reduce symptoms of depression. One-third of all adults report that they often feel depressed.

**Physical Activity and Wellness**

As you can see, physical activity plays an important role in the prevention of hypokinetic diseases and conditions. Therefore, physical activity is important to good health. But remember—health is more than freedom from disease; it also means being positively healthy. Two components of positive health identified as important national goals by the Healthy People 2010 report are helping all people have a sense of well-being, and helping them have a high quality of life. Some of the benefits
of physical activity that contribute to these two factors are illustrated in the figure on the previous page.

**Hyperkinetic Conditions**

You’ve probably heard the saying, “too much of a good thing can be bad.” This saying can be true of physical activity. Just because some physical activity is good, more activity is not always better. In some cases people experience hyperkinetic conditions—health problems caused by doing too much physical activity.

**Overuse Injuries**

You learned in chapter 2 that overuse injuries occur when you do so much physical activity that your bones, muscles, or other tissues are damaged. It is easy to see that overuse injuries—for example, stress fractures, shin splints, and blisters—are a type of hyperkinetic condition.

**Activity Neurosis**

Neurosis is a condition that occurs when a person is overly concerned or fearful about something. Excessive fear of high places is one type of neurosis. People with an activity neurosis are overly concerned about getting enough exercise and are upset if they miss a regular workout. In addition, they often continue physical activity when they are sick or injured. Runners and bodybuilders are more likely than other exercisers to experience activity neurosis. It is interesting that the risk of getting a cold or the flu is reduced if you are a regular exerciser but those who do excessive exercise have increased risk of getting a cold or the flu. Even those who do not have activity neurosis should avoid doing excessive exercise and reduce or avoid exercise when they are sick.

**Body Image Disorder**

This disorder occurs when a person tries to achieve an ideal body by doing excessive exercise. The ideal body is unrealistic and distorted. Teenaged boys and young adult men with body image disorder perform excessive resistance training and sometimes use dangerous supplements or substances such as steroids. Teenaged girls and young women often strive for extreme thinness, which is unhealthful and unrealistic. Several of the eating disorders described in chapter 13 are associated with body image disorders. People with body image disorders often need the help of an expert to overcome their problem.

**Eating Disorders**

Several kinds of eating disorders result from an extreme desire to be abnormally thin. People with these conditions have dangerous eating habits and often resort to excessive activity to expend calories for fat loss. Eating disorders that abuse exercise are considered hyperkinetic conditions. You will learn more about eating disorders in chapter 13.

**Lesson Review**

1. What are three hypokinetic conditions? How can activity reduce the risk of getting these conditions?
2. What are some wellness benefits of physical activity?
3. How is physical activity related to hyperkinetic conditions? Give examples.
Self-Assessment

Healthy Back Test

Backache is a condition that is often caused by weak muscles. Use this self-assessment to test the muscles that help support your back. Each part focuses on a certain muscle group. If you do well on this assessment, you are likely to have a healthy back.

If possible, work with a partner. As you complete each test, note the points you earn on your record sheet. When you complete all six tests, add your points to get your total score. Then use table 3.2 on page 50 to determine your risk of back problems.

Single-Leg Lift (Supine)

1. Lie on your back on the floor. Lift your right leg off the floor as high as possible without bending either knee.

2. Repeat (this is a test not an exercise–there is a difference) using your left leg. Score 1 point if you can lift your right leg to a 90-degree angle to the floor. Score 1 additional point if you can lift your left leg to a 90-degree angle.

Knee to Chest

1. Lie on your back on the floor. Make sure your lower back is flat on the floor.

2. Keep your left leg straight and touching the floor. Bring your right knee up until you can hold it tightly against your chest. Grasp the back of the thigh.

3. Repeat using your left leg.

4. Score 1 point if you can keep your left leg touching the floor while you hold your right leg against your chest. Score 1 additional point if you can keep your right leg touching the floor while holding your left leg against your chest.
Single-Leg Lift (Prone)
1. Lie facedown on the floor. Lift your straight right leg as high as possible. Hold the position for a count of 10. Then lower your leg.
2. Repeat using your left leg.
3. Score 1 point if you can lift and hold your right leg 1 foot off the floor and hold the position for 10 counts. Score 1 point if you can lift your left leg 1 foot off the floor and hold for 10 counts.

Curl-Up
1. Lie on your back with your knees bent 90 degrees and your arms extended.
2. Curl up by rolling your head, shoulders, and upper back off the floor. Roll up only until your shoulder blades leave the floor.
3. Score 1 point if you can curl up with your arms held straight in front of you and hold the position for 10 seconds without having to lift your feet off the floor.
4. Score an additional point if you can curl up with your arms across your chest and hold the position for 10 seconds.

Trunk Lift and Hold
1. Lie facedown on a padded bench or a bleacher with a towel on it (16 to 18 inches high). Your upper body (from the waist up) should extend off the bench.
2. Have your partner hold your ankles.
3. Place one hand over the other on your forehead with the palms facing away and your elbows extended to the sides.
4. Start with the upper body lowered and with the hands and elbows on the floor. Lift up slowly so that the upper body is even with the bench. Hold the position for a count of 10.
5. Score 1 point if you can lift the trunk even with the bench. Score an additional point if you can hold the upper body even with the bench for a count of 10.
Back to Wall

1. Stand with your back to a wall so that your heels, buttocks, shoulders, and head are against the wall.
2. Try to press your lower back and neck against the wall without bending your knees or lifting your heels off the floor.
3. Have a partner try to place a hand between your back and the wall.
4. Score 2 points if you can press your back against the wall and hold it there for 10 seconds without bending your knees or moving your feet off the ground. Score 1 point if you can press your back against your partner’s hand.

<table>
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<td>Average risk</td>
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<tr>
<td>Above average risk</td>
<td>6-8</td>
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<tr>
<td>High risk</td>
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Lesson Objectives
After reading this lesson, you should be able to
1. Explain how good fitness helps your back work efficiently.
2. Describe some common posture problems.
3. List some biomechanical principles that will help you improve posture and avoid back problems.

Lesson Vocabulary
force (p. 53), kyphosis (p. 51), laws of motion (p. 53), lordosis (p. 51), ptosis (p. 51)

Healthy Back and Good Posture

Each year as many as 25 million Americans seek a doctor’s care for backache. According to some experts, next to the common cold, back pain is the leading medical complaint in the United States and will be experienced by 80 percent of all adults at some point in their lives. Although adults experience most of the back problems, young people do suffer from back pain. Studies show that back problems often begin early in life. In fact, recent evidence suggests that about one third of children in elementary school have had back pain and teens have almost as many back problems as adults. In this lesson you will learn how good fitness helps the back work efficiently. You will also learn how some back problems are related to poor posture.

Back Problems
Backache is considered a hypokinetic condition because weak and short muscles are linked to some types of back problems. Poor posture also is associated with muscles that are not strong or long enough. By building fit muscles to improve your posture, you can help reduce the risk of back pain and look your best. Even if you never experience back pain, a healthy back and good posture are important so that you can function more efficiently in your daily activities.

How does good fitness help the back operate efficiently? Your body parts are balanced like blocks on your legs. Your chest hangs from your spine and is balanced over your pelvis. Your head sits on top of your spine, balanced over the other blocks in the stack. Because your spine is flexible and can move back and forth, the pull of your muscles keeps your body parts balanced. You might recall from the discussion of biomechanical principles in chapter 2 that if your muscles on one side are weak and long, while your muscles on the opposite side are strong and short, your body parts are pulled off balance.

One back problem that often occurs among teens is lordosis, which is too much arch in the lower back. Lordosis, also called swayback, results when the abdominal muscles are weak and the hip flexor muscles (iliopsoas) are too strong and too short (see figure on the next page). Lordosis is a problem that can lead to backache.

Even people who are relatively fit in other areas can lack fitness in the muscles related to back problems. One reason for this lack of fitness is that sports and games often overdevelop some muscles and neglect others. It is not unusual for basketball players, gymnasts, band members, and other active people to have weak back and abdominal muscles and short hamstring and hip flexors.

Posture Problems
Just as strong, long muscles contribute to a healthy back, they also are important to good posture. In the center picture of the figure on the next page, you can see some of the common posture problems associated with poor fitness. In addition to lordosis, ptosis (protruding abdomen) and kyphosis (rounded back and shoulders) are among the most common posture problems. You might recognize some of these problems with your own posture or that of others. The picture at the left illustrates how short, weak muscles contribute to posture problems. The picture at the right shows you what good posture looks like and illustrates how long, strong muscles are necessary.

Knowing what constitutes good posture helps improve your own posture. Good posture helps you look good, helps prevent back problems, and helps you work and play more efficiently. In chapter 4 you will get the opportunity to learn more about your posture using the self-assessment. You will check to see whether you have any of the problems shown in the center picture.
Back and Posture Improvement and Maintenance

Think back to the Healthy Back Test you did in the self-assessment earlier in this chapter. How did you do? If you didn’t do well, avoid exercises that require you to arch your back or to lift inefficiently with your back muscles. Instead, use the Back Exercise Circuit in this chapter to help correct or prevent back problems. Because back problems are often related to poor posture, some exercises for improving posture have also been included. In addition, follow these biomechanical principles to help you improve your posture and avoid back problems:

- **Use the large muscles of the body when lifting.** Let the strong leg muscles, not the relatively weak back muscles, do the work.

- **When lifting, keep your weight (hips) low.** Squatting with the back straight and the hips tucked helps keep weight low and makes lifting safer.

- **Divide a load to make it easier to carry.** For example, carrying two small suitcases, one in each hand, is easier than carrying one larger suitcase in one hand. A backpack is an efficient way to carry books. It is best to carry the backpack using both straps rather than over one shoulder. Avoid overloading your backpack or book bag. If you must carry your books in your arms, carry some in each arm. If you do carry your books in one arm, change arms from time to time.

- **Avoid twisting while lifting.** If you have to turn while lifting, change the position of your feet. It is especially important to avoid twisting your spine as you are straightening or bending it.

- **Push or pull heavy objects rather than lift them.** Heavy lifting can cause injury. Pushing or pulling an object is more efficient than lifting it.

- **Avoid a bent-over position when sitting, standing, or lifting.** The levers of your body, such as your spine, do not work efficiently when you are bent over. When sitting in a chair, sit back in the seat and lean against the backrest. Do not work for long periods of time in a bent-over position.
### Benefits of Physical Activity

#### Lesson Review

1. How does good fitness help your back operate efficiently?
2. What are some common posture problems?
3. What are some biomechanical principles that will help you improve your posture and avoid back problems?

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### FIT Facts

Why is it best to lift with the back straight? Simply touching your toes with the legs straight and the upper body leaning forward at the waist creates a force equal to 450 pounds on the back muscles and causes compression of the bones of the low back equal to 500 pounds. Lifting a 50-pound weight with the legs straight while bending at the waist increases the force on the back muscles to 750 pounds and causes compression on the bones of the back equal to 850 pounds.

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### Taking Charge: Reducing Risk Factors

A risk factor is any action or condition that increases your chances of developing a disease. Some risk factors, such as your age, cannot be controlled or changed by you. Other uncontrollable risk factors, such as whether you are a male or female, are genetically controlled. Sometimes, you are able to control individual risk factors. For example, you can control your diet and physical activity. Your actions affect the probability of your getting a disease.

Brenda’s family took a trip to the mountains last summer. Plans were made to hike, raft the rivers, and ride bikes and horses. Unfortunately, Brenda’s mother did not get to enjoy all of the activities. “I never thought my mother had any health problems because she was always busy with work and taking care of the house. She never went to the doctor.”

But Brenda’s mother was a smoker. While she may have been “busy,” she didn’t really do much physical activity because she easily became short of breath.

Brenda’s mother found that she couldn’t keep up with the rest of the family. While hiking, she became so short of breath that she almost fainted. She fell far behind while trying to ride a bike. In the evenings, while the rest of the family did other things, Brenda’s mother went to bed.

When they returned home, Brenda’s mother went to her doctor. He recommended changes in her lifestyle. She was to stop smoking and get more exercise. He warned that she was at risk for heart disease and other health problems if she continued her present lifestyle.

**For Discussion**

What controllable risk factors for heart disease did Brenda’s mother have? What can she do to reduce her risk? What can you do to decrease your risk for heart disease? Fill out the questionnaire on the worksheet supplied by your teacher to learn more about Brenda’s mother’s risk factors as well as your own. Consider the information on page 54.

### Applying Biomechanical Principles

In chapter 2, you learned to avoid exercises that violate principles of biomechanics. These principles are based on laws of motion. In this chapter, you learned how to use biomechanical principles and laws of motion to move efficiently, to improve posture, and to avoid injury to your back. These principles and laws also apply when you use the body levers (the bones of the arms and legs) to apply force. For example, you apply force using the levers (leverage) when you throw or kick a ball and when you walk or run (see page 129). Efficient use of the body levers is also important in applying force when performing resistance exercises (see safety cautions in chapter 11), such as when you are putting the shot, throwing a javelin, or spiking a volleyball.
Self-Management Skill

Reducing Risk Factors

Of the 10 leading causes of death in our society, 6 can be considered hypokinetic conditions. Many of these conditions can be prevented if people change their lifestyles beginning early in life. You can take the following steps, even in your teen years, to reduce risk of hypokinetic conditions.

▶ Be able to identify important risk factors. If you are going to change your risks for disease you must be able to identify them. Use the questionnaire supplied by your teacher to identify your current risk factors. It is important that you continue to check your risk factors as you grow older because risk increases with age.

▶ Learn about your family history. Some risk factors are not in your control. Heredity is one of the factors over which you have no control. You can, however, check to see what diseases or conditions your parents or grandparents have had because you may inherit a tendency toward these conditions (for example, heart disease, diabetes, and some forms of cancer). If you have a family history of a disease, you will want to pay special attention to diseases over which you do have control.

▶ Take steps to change risk factors that are in your control. Your gender and your age are other factors that you cannot control. Factors such as physical activity, what you eat, the use of tobacco, the use of alcohol, and your stress levels are factors you can control. Taking steps to alter these risk factors is especially important.

▶ Take steps to change risk factors that are partially under your control. Your blood pressure, the fat levels in your blood, your body’s ability to regulate sugar, and your level of body fatness are all risk factors influenced by heredity but that can be modified with healthy lifestyle choices such as regular physical activity, proper eating, and proper medical care. If you have a family history of any of these risk factors, seek medical help and professional advice about how to make lifestyle changes to reduce your risk.

▶ Use the self-management skills you learn in this book to make lifelong changes. You will learn many self-management skills throughout this book. Use them to change the risk factors that you identify.
Activity 2

Back Exercise Circuit

You now know the importance of strong back muscles and good posture. The following exercises will help strengthen the muscles that support your back and improve your posture. You might want to include some of these exercises in your lifetime physical activity program.

Curl-Up

1. Lie on your back with your knees bent and your feet close to your buttocks.
2. Hold your hands and arms straight in front of you and curl your head and shoulders up only until your shoulder blades leave the floor.
3. Slowly roll back to the starting position. Repeat the exercise up to 10 times.

This exercise strengthens your abdominal muscles.

Trunk Lift (Table or Bench)

1. Lie facedown on a table (or bench). Slide forward until your upper body extends over the edge at the waist. With a partner holding your legs, allow the upper body to lower.
2. From the low position, lift your upper body until it is even with the edge of the table.

Caution: Do not lift any higher.

3. Lower to the beginning position. Repeat the exercise up to 10 times.

Safety Tip: As you do these exercises, move only as far as the directions specify.

This exercise helps strengthen your back muscles.
Double-Leg Lift (Table or Bench)

1. Lie facedown on a table (or bench) with your leg extending off the end. With a partner holding your upper body, lower the legs to the ground. If you have no partner, grasp under the edge of a table.

2. Lift your legs until they are even with the top of the table.

   **Caution:** Do not lift any higher. You might lift one leg at a time until you are able to lift both legs at once.

3. Lower to the starting position. Repeat the exercise up to 10 times.

This exercise strengthens your lower back and gluteus muscles.

Reverse Curl

1. Lie on your back. Bend your knees, placing your feet flat on the floor. Place your arms at your sides.

2. Lift your knees to your chest, raising your hips off the floor.

3. Return to the starting position. Repeat the exercise up to 10 times.

This exercise develops your abdominal muscles.

Knee to Chest

1. Lie on your back. Bend your right knee to your chest.

2. Grasp your thigh under the knee with your arms. Pull it down tightly against your chest. Keep your left leg flat on the floor.

3. Return to the beginning position. Repeat with your left leg.

4. Pull both thighs to your chest and hug them. Repeat the exercise up to 10 times.

This exercise helps prevent and correct lordosis and backaches.
3. Benefits of Physical Activity

Arm and Leg Lift

1. Lie facedown with your arms stretched in front of you.
2. Raise your right arm and then lower it. Raise your left arm and then lower it. Finally, raise both arms and then lower them.
3. Raise your right leg and then lower it. Raise your left leg and then lower it.
4. Raise your right arm and right leg and then lower them. Raise your left arm and left leg and then lower them.
5. Raise your left arm and your right leg and then lower them. Raise your right arm and left leg and then lower them.
6. Repeat all the steps up to 5 times.

Caution: Do not arch your back during this exercise.

Single-Leg Hang

1. Lie on your back on a table (or bench). Bend your knees to your chest.
2. Grasp your right leg under your knee with your arms. Lower your left leg so that your thigh remains on the table while your knee and the rest of your leg hang over the edge of the table. Have a partner push your left leg down if it comes up. Hold this position for several seconds.
3. Return to the starting position, and repeat the exercise with the other leg. Repeat the exercise 10 times with each leg.

This exercise stretches your iliopsoas (hip flexor) muscle.
Project

Conduct a survey. A recent study showed that approximately one in four adults does not participate in regular leisure-time physical activity. What percentage of students at your school participate in leisure-time physical activity? Conduct a survey to find out. You might also poll those who respond to your survey to find out why they do or do not exercise.

Chapter Review

Reviewing Concepts and Vocabulary

Number your paper from 1 to 8. Next to each number, write the letter of the best answer.

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<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
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<tr>
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<td>2. atherosclerosis</td>
<td>b. swayback</td>
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<td>3. hypertension</td>
<td>c. bones deteriorate and become weak</td>
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<td>d. protruding abdomen</td>
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<tr>
<td>5. diabetes</td>
<td>e. blood pressure is consistently higher than normal</td>
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<td>6. lordosis</td>
<td>f. rounded shoulders</td>
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<td>7. kyphosis</td>
<td>g. the body cannot regulate blood sugar level</td>
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<tr>
<td>8. ptosis</td>
<td>h. substances build up inside artery walls</td>
</tr>
</tbody>
</table>

Thinking Critically

Write a paragraph to answer the following question.

Why is inactivity a primary risk factor for many different diseases?

Unit Review on the Web

www.fitnessforlife.org/student/3/9

Unit I review materials are available on the Web at the address listed above.