Do you get enough physical activity? Find out how you rate by taking the Health Inventory for Chapter 9 at health.glencoe.com.

**Foldables Study Organizer**

**Step 1**
Fold the sheet of paper in half along the short axis, then fold in half again. This forms four columns.

**Step 2**
Open the paper and refold it in half along the long axis, then fold in half again. This forms four rows.

**Step 3**
Unfold and draw lines along the folds.

**Step 4**
Label the chart as shown.

**Before You Read**

Make this Foldable to help you organize the information on physical activity, exercise, and physical fitness presented in Lesson 1. Begin with a plain sheet of 11” x 17” paper.

**As You Read**

In the appropriate section of the chart, write down definitions and examples of physical activity, exercise, and physical fitness, as well as the impact each has on your daily life.
The Benefits of Physical Activity

Physical Activity, Exercise, and Physical Fitness

The terms physical activity, exercise, and fitness are closely related, but each has a particular meaning. Physical activity refers to any kind of movement that uses up energy. Physical activity includes exercising and playing sports. It also includes the movements associated with an active lifestyle, such as biking to the store, raking leaves, and walking up and down the stairs. Exercise is a specifically planned and organized session of physical activity that you do to improve or maintain your physical fitness. By combining regular exercise with an active lifestyle and sound nutrition, you can be fit. Physical fitness is the ability to handle the physical demands of everyday life without becoming overly tired.

When you’re physically fit, you have enough energy to do the things you want to do, plus energy in reserve for the unexpected.

Quick Write
Describe in a sentence or two what it means to be physically fit.

Learn About...
• what it means to be physically fit.
• the benefits of physical activity.
• kinds of activities that will help you stay fit.

Vocabulary
• physical activity
• exercise
• physical fitness
• balance
• coordination
• aerobic exercise
• anaerobic exercise

Some forms of physical activity let you enjoy the company of other people while helping you stay in shape. What outdoor activities do you like?
Benefits of an Active Lifestyle

Physical activity benefits you in both body and mind. Besides promoting your overall health, physical activity helps you look and feel better. Since many physical activities involve other people, you’ll also get social benefits.

Physical activity provides mental and emotional benefits, too. Being active lets you clear your mind and “burn off” stress. In addition, the physical and social benefits that you get help you feel good about yourself as a person. Figure 9.1 shows some of the mental/emotional, physical, and social benefits of physical activity.

Increasing Your Level of Fitness

How can you increase your level of physical fitness? The first step toward physical fitness is to recognize that physical activity is important to your lifelong health and well-being. The next step is to move more! Make physical activity part of your daily life.
Becoming more active is as easy as seeing the opportunities for physical activity that are all around you. Instead of using elevators and escalators, take the stairs. Walk or ride a bike to the mall rather than asking your parents for a lift.

In addition to looking for everyday opportunities, plan regular sessions of exercise. Aim for at least three to five sessions a week. Start by exercising 10 to 15 minutes at a time and gradually work up to about 30 minutes or more. If you feel that you do not have time to spare, try breaking your physical activity down into smaller sessions during the day. Three 10-minute sessions provide the same benefit as one 30-minute activity.

Choosing the Right Activities

It is important to choose activities that give you the benefits you want. There are two main types of exercise: aerobic and anaerobic. **Aerobic exercise** is rhythmic, nonstop, moderate to vigorous activity that requires large amounts of oxygen and works the heart. Running, biking, and swimming are forms of aerobic exercise. **Anaerobic exercise** is intense physical activity that requires little oxygen but uses short bursts of energy. Sprinting and gymnastics are examples of anaerobic exercise.

Each type of exercise benefits the body in a particular way. You can combine both types of exercise to achieve optimum fitness. By choosing a variety of activities, you can receive the benefits of both types of exercise.

### Stress Management

**Relaxation Exercises**

Physical activity is an effective way to relieve stress and help you unwind. You might also do relaxation exercises to reduce feelings of stress. Here are some examples:

- **Lie on your back.** Make fists and tense your arms. Hold for a moment, then relax. In turn, tense and then relax your neck, shoulders, legs, feet, and abdomen.
- **Lie on your side, with both arms above your head.** Tense your whole body, then completely relax, letting your arms and legs fall where they may, as though you were a rag doll. Turn to your other side and repeat.

- **Sit quietly.** Close your eyes, take a slow, deep breath, and let it out slowly. Repeat two more times. Open your mouth, move your jaw to the right, and hold for a few seconds. Then move it to the left and hold. Repeat several times.

---

**Reading Check**

Categorize words. Sort these words into categories: biking, dancing, curl-ups, swimming, soccer, stretching, weightlifting, playing catch, tai chi, roller-blading. Add more words to each list.

---

**HEALTH SKILLS ACTIVITY**

Try each of these exercises. Did they reduce your body tension? Which exercise had the greatest effect?
Stay Active: A Key to Fitness

Technology has made life simpler, easier, and more fun. As wonderful as technology is, though, it has a downside. It has replaced many of the physical activities that were once part of daily life. People ride instead of walk. They use machines to do the work that used to be done by hand. They sit at home, watching sports on TV, instead of playing ball in the park. They send e-mail instead of walking over to a friend’s house.

Think about your own lifestyle. Estimate how many hours a week you watch television or sit at a computer screen. Now estimate the number of hours you spend doing something physically active. Compare the totals. Are you active most of the time or inactive? Because you know that physical activity and exercise are essential to fitness, this comparison may make you stop and think about how you spend your time.

Using complete sentences, answer the following questions on a sheet of paper.

Reviewing Terms and Facts
1. **Vocabulary** Define physical activity, exercise, and physical fitness.
2. **Explain** Using your own words, tell what it means to be physically fit.
3. **Identify** Give three examples of the mental/emotional benefits of physical activity and three examples of the social benefits.
4. **Compare** What is the difference between aerobic exercise and anaerobic exercise?

Thinking Critically
5. **Analyze** Would you describe yourself as physically fit? Think back to last week and write down your physical activities. What do you conclude from your list?
6. **Explain** How might staying fit help you manage stress? How has physical activity provided you with an outlet for tension or anger?

Applying Health Skills
7. **Practicing Healthful Behaviors** Survey classmates, family members, and adult friends who are physically active. Ask each person why he or she maintains an active lifestyle. Write down the answers and compare them to the benefits shown in Figure 9.1. Present your survey findings to the class.
Lesson 2

Endurance, Strength, and Flexibility

The Elements of Fitness

Exercise can be used to develop four elements of fitness: heart and lung endurance, muscle strength and endurance, body composition, and flexibility.

Heart and Lung Endurance

Endurance is your ability to engage in vigorous physical activity over time without tiring too easily or quickly. Heart and lung endurance refers to how effectively your heart and lungs work when you exercise and how quickly they return to normal when you stop. Heart and lung endurance is important in all kinds of exercise—biking, jumping rope, swimming, and playing ball. Figure 9.2 shows one way to measure heart and lung endurance. Before performing the test in Figure 9.2, practice walking or jogging for six to eight weeks and learn to pace yourself so that you can walk or jog continuously.

The best way to build up heart and lung endurance is through sustained moderate to vigorous exercise lasting at least 20 to 30 minutes, three to five times a week. This kind of physical activity is called cardiovascular exercise because it raises your breathing rate and heartbeat and benefits your cardiovascular system.

Quick Write

How would you measure a person’s fitness level? According to your criteria, are you physically fit?

Learn About...

- the four elements of physical fitness.
- ways to test your physical fitness.

Vocabulary

- heart and lung endurance
- cross-training
- muscle strength
- muscle endurance
- body composition
- flexibility

Swimming is an example of cardiovascular exercise.
**Figure 9.2**  
**Determining Heart and Lung Endurance**

For this test, you’ll see how far you can walk in 30 minutes or jog in 20 minutes.

1. **Team up with a partner.** Go to a track or running area with quarter-mile markers. Warm up with walking and gentle stretching exercises for 5 to 10 minutes.

2. **Walk for 30 minutes or jog for 20 minutes.** Have your partner record the distance that you cover. Cool down afterward by walking slowly and doing gentle stretching exercises.

3. **Switch roles and repeat the exercise.**

4. **Caution:** If you have a heart or lung disease, check with your doctor before attempting this test.

### Scoring (miles)

If you score within the range given for your age and gender, your heart and lung endurance is acceptable. If not, continue to practice walking or jogging until you can score in the acceptable range.

<table>
<thead>
<tr>
<th>Age</th>
<th>Females Walking</th>
<th>Females Jogging</th>
<th>Males Walking</th>
<th>Males Jogging</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>2–2.2</td>
<td>1.6–1.8</td>
<td>2.2–2.4</td>
<td>1.8–2.0</td>
</tr>
<tr>
<td>13</td>
<td>2–2.2</td>
<td>1.6–1.8</td>
<td>2.2–2.4</td>
<td>1.8–2.0</td>
</tr>
<tr>
<td>14</td>
<td>2–2.2</td>
<td>1.6–1.8</td>
<td>2.2–2.4</td>
<td>1.8–2.0</td>
</tr>
<tr>
<td>15</td>
<td>2–2.2</td>
<td>1.6–1.8</td>
<td>2.2–2.4</td>
<td>1.8–2.0</td>
</tr>
</tbody>
</table>


Some cardiovascular exercises are:

- **Walking/Jogging/Running.** Start off slowly, and then gradually increase your pace. Work up to a 30-minute walk, or alternate walking and jogging until you can jog or run for 20 minutes.

- **Swimming.** Swimming provides a total body workout. Gradually work up to 20 minutes of continuous swimming. Swim at a steady pace and vary your routine by using different strokes.

- **Jumping Rope.** As you jump, guard your joints against unnecessary strain by raising your feet just high enough to allow the rope to pass.

It’s a good idea to vary your exercise routines. *Switching between different exercises* is known as **cross-training** and has benefits over doing one exercise all the time. Whatever exercise you choose, don’t overdo it.

**Muscle Strength and Endurance**

The ability of your muscles to exert a force is called strength. **Muscle strength** measures *the most weight you can lift or the most force you can exert at one time*. **Muscle endurance** is the ability of a muscle to repeatedly exert a force over a prolonged period of time. The greater your muscle strength, the more force your muscles can exert. The greater your muscle endurance, the longer your muscles can exert their strength.
There are many ways to build and measure muscle strength (see Figures 9.3 and 9.4). Three basic strengthening exercises are push-ups, curl-ups, and step-ups.

- **Do push-ups to strengthen muscles in your arms and chest.** Lie facedown on the floor. Bend your arms and place your palms flat on the floor beneath your shoulders. Straighten your arms, pushing your entire body upward, and then lower your body to the floor. Repeat.

- **Do curl-ups to strengthen your abdominal muscles.** Lie on your back with your knees bent and your heels on the floor. Cross your arms over your chest. Curl your upper body forward so that both shoulder blades come off the floor. Uncurl and repeat.

- **Do step-ups to strengthen your leg muscles.** Step up onto a step with your left foot and then bring your right foot up. Step down with your left foot and bring the right foot down. Repeat, alternating between feet.

Many students your age become interested in weight training. Weight training is a good way to build muscle strength. Lift light weights multiple times, and make sure you learn from an expert, such as a fitness instructor.

---

**Hands-On Health**

**Your Target Pulse Rate**

Exercise should increase your heartbeat to at least 50 percent of your maximum rate to provide a benefit for your heart and lungs. The heartbeat rate that will safely provide the greatest benefit is between 60 and 80 percent of your maximum rate. This is your target pulse rate (also known as target heart rate). In this activity, you will find your target pulse rate.

### What You Will Need
- watch with a second hand

### What You Will Do
1. Determine your maximum heartbeat rate by subtracting your age from the number 220.
2. Multiply your maximum heartbeat rate by 60 percent and then by 80 percent.

<table>
<thead>
<tr>
<th>AGE</th>
<th>Maximum Pulse Rate</th>
<th>Target Pulse Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>208</td>
<td>125–166</td>
</tr>
<tr>
<td>13</td>
<td>207</td>
<td>124–166</td>
</tr>
<tr>
<td>14</td>
<td>206</td>
<td>124–165</td>
</tr>
<tr>
<td>15</td>
<td>205</td>
<td>123–164</td>
</tr>
</tbody>
</table>

Compare the range of your target pulse rate with those in the chart.

3. For the next two weeks, take your pulse while exercising. Write down the activity you are doing and your pulse rate.

### In Conclusion
Was your heartbeat rate generally within the range of your target pulse rate? Which activities produced the highest rate? The lowest?
**Figure 9.3**

**Determining Abdominal Muscle Strength and Endurance**

You can test the strength and endurance of your abdominal muscles by measuring your ability to do bent-knee curl-ups.

1. Team up with a partner.
2. Partner A lies on a mat with knees bent and feet flat on the floor. Partner B holds partner A’s feet.
3. Partner A curls up slowly with arms crossed over the chest, and chin tucked to the chest so that the head never touches the mat. The curl-up is completed when partner A’s shoulder blades return to the testing surface.
4. Partner A should do curl-ups at the rate of about 20 per minute, stopping when he or she can no longer continue, or has completed 60 curl-ups.
5. Partners A and B switch roles and repeat the exercise.

**Scoring (number completed)**

If you score within the range given for your age and gender, your abdominal strength and endurance is acceptable. If you do not score within the range, continue to practice your curl-ups until you can score in the acceptable range.

<table>
<thead>
<tr>
<th>Age</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>20–35</td>
<td>25–40</td>
</tr>
<tr>
<td>13</td>
<td>25–40</td>
<td>30–45</td>
</tr>
<tr>
<td>14</td>
<td>25–40</td>
<td>30–45</td>
</tr>
<tr>
<td>15</td>
<td>25–40</td>
<td>30–45</td>
</tr>
</tbody>
</table>


**Figure 9.4**

**Determining Upper Body Strength and Endurance**

You can test your upper body strength and endurance by measuring the time you can hang from a bar with your chin above the bar.

1. Team up with a partner.
2. Partner A grasps horizontal bar with palms facing away, and raises body to position where chin is above bar, elbows are flexed, and chest is close to the bar. Partner B spots Partner A and stops Partner A from swinging.
3. Partner B starts stopwatch. Partner A remains in position for as long as possible.
4. Watch is stopped when Partner A’s chin touches bar, head tilts backward, or chin falls below level of bar.
5. Partners A and B switch roles and repeat the exercise.

**Scoring (seconds)**

If you score within the range given for your age and gender, your upper body strength and endurance is acceptable. If you do not score within the range, continue to practice your static arm hang until you can score in the acceptable range.

<table>
<thead>
<tr>
<th>Age</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>7–14</td>
<td>7–14</td>
</tr>
<tr>
<td>13</td>
<td>7–14</td>
<td>12–20</td>
</tr>
<tr>
<td>14</td>
<td>7–14</td>
<td>12–20</td>
</tr>
<tr>
<td>15</td>
<td>7–14</td>
<td>12–20</td>
</tr>
</tbody>
</table>

Body Composition

A third element of fitness is body composition. **Body composition** is the ratio of body fat to lean body tissue, such as bone, muscle, and fluid. One way to measure body composition is to use the skinfold test. It involves pinching a fold of skin on your upper arm and on your calf. The fold is measured with an instrument called a skinfold caliper, and the two numbers are added together. Ask your fitness instructor about the skinfold test.

To maintain a healthy body composition, select nutritious, lower-calorie foods according to calculated energy expenditure (an estimate of how many calories your body burns), and participate in regular physical activity.

Flexibility

The fourth element of fitness, **flexibility**, is the ability of your body’s joints to move easily through a full range of motion. When you have good flexibility, you can easily bend, turn, and stretch your body. People with limited flexibility may move stiffly or strain parts of their body. **Figure 9.5** shows how to measure the flexibility of muscles in your lower back and the backs of your legs.

---

**Figure 9.5**

**Determining Flexibility**

Warm up with some light and easy stretches. When you take the test, move slowly and smoothly. Don’t strain your muscles.

1. Remove shoes and sit down in front of 12-inch-high box. There should be a ruler on top with the “zero” end against the edge nearest you. Extend both legs with feet flat against box. Arms should extend over ruler with one hand on top of the other.

2. Reach forward with hands along the ruler four times. Hold position of the fourth reach for at least one second.

3. Record number of inches your fingers reach on the ruler.

<table>
<thead>
<tr>
<th>Scoring</th>
<th>Females</th>
<th>Males</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reach beyond</td>
<td>Reach beyond</td>
<td>Acceptable</td>
<td></td>
</tr>
<tr>
<td>toes at least</td>
<td>toes at least</td>
<td>flexibility</td>
<td></td>
</tr>
<tr>
<td>1 inch</td>
<td>1 inch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannot reach</td>
<td>Cannot reach</td>
<td>Low flexibility</td>
<td></td>
</tr>
<tr>
<td>toes</td>
<td>toes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You can improve your flexibility through regular stretching, bending, and twisting exercises. Move slowly and gently, and improve the flexibility of different muscle groups gradually.

**Your Fitness Level**

After reading this lesson and completing the physical fitness tests described, you should have a clearer idea of your heart and lung endurance, muscle strength and endurance, body composition, and flexibility. Are you as physically fit as you should be? Are you as fit as you would like to be?

If you want to raise your level of physical fitness, you’ll need to set goals for yourself and then decide how to achieve these goals. Remember to consider your limits, though. Some people improve faster than others, and some people have a higher fitness potential than others.

Heredity and overall health both play important roles in a person’s physical abilities. For example, someone with asthma may become short of breath when exercising. A person with a physical impairment may not be able to participate in all activities. To develop a realistic plan that is right for you, check with your doctor before pursuing your fitness goals.

**Lesson 2 Review**

Using complete sentences, answer the following questions on a sheet of paper.

**Reviewing Terms and Facts**

1. **Vocabulary** Define *heart and lung endurance*. What is the best way to build heart and lung endurance?
2. **Compare** What is the difference between muscle strength and muscle endurance?
3. **Identify** Which part of your body is strengthened by curl-ups? By step-ups?
4. **Recall** What are the advantages of good flexibility?

**Thinking Critically**

5. **Apply** Your friend wants to improve her physical fitness. When she exercises, she rarely raises her heartbeat above 50 percent of her maximum heartbeat rate. What advice would you offer her? Why?
6. **Explain** How are strength, endurance, and flexibility related?

**Applying Health Skills**

7. **Advocacy** Look through magazines to find photos of people performing different types of physical activity or exercise. Cut them out and make a collage on a poster. Explain in captions how these activities contribute to these people’s overall physical fitness. Share your poster with the class.
Setting Fitness Goals

A Fitness Plan You Can Live With

Many people set out to improve their physical fitness through an exercise program. What factors might help to make an exercise program successful?

Developing a fitness plan can be confusing. You may wonder which activities will best help you reach your fitness goals. Maybe you’re not sure how to do an exercise. As a teen, you can turn to a fitness instructor, your physical education teacher, or a coach. Any of these experts can show you how to get started, what equipment to use, and how to exercise safely. An expert can also help you set fitness goals, stay motivated, and monitor your progress. Figure 9.6 compares different types of activities.

Figure 9.6

Rating Different Activities

The ratings in this chart show the benefits of activities done for 30 minutes or more.

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Flexibility</th>
<th>Muscle Strength and Endurance</th>
<th>Heart and Lung Endurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handball</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Swimming</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Jogging</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Bicycling</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Tennis</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Brisk walking</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Slow walking</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Softball</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Weight training</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>
Being Active Every Day

Whatever your fitness goals may be, try to do one or more forms of physical activity or exercise each day. Include a mixture of activities during the week, and vary your routine in order to develop different parts of your body.

To become fit and stay fit, you need different types of physical activity. Here are some ideas for developing an active lifestyle.

- **Daily activity.** Look for opportunities to be active every day. Take the stairs instead of the elevator. Bike to a friend’s home. Walk to the store. Rake leaves. Shovel snow. Wash and wax the car.

- **Aerobic exercise.** Aim to do at least 20 to 30 minutes of aerobic exercise 3 to 5 times a week. Swim laps. Join the track team. Take a brisk walk. Ride a stationary bike. Jump rope.

- **Sports, recreation, leisure activities.** Spend at least half an hour several times a week participating in activities that are fun and get your blood moving. Play soccer, racquetball, volleyball, or basketball. Hike a mountain trail. Take a dance class. Go skating or bowling.

**HEALTH SKILLS ACTIVITY**

**PRACTICING HEALTHFUL BEHAVIORS**

**Activities for Fitness**

You can achieve and maintain physical fitness by building a variety of activities into your lifestyle. When choosing the activities that work best for you, consider your options, interests, and the available facilities and equipment.

- **Daily activities.** What aspects of your daily life can you change in order to add more activity? Think about your journey to school, your after-school activities, and the chores you do at home.

- **Aerobic exercise.** You need three to five sessions a week. Think of activities that you enjoy and that would keep you motivated.

- **Sports, recreation, and leisure activities.** What are some fun ways to relax with your friends and be active at the same time? You may need to choose different activities for different seasons.

**ON YOUR OWN**

Divide a sheet of paper into three columns, one for each type of activity listed above. In each column, list at least two activities that interest you and that you might include in your personal fitness plan.
A Sample Weekly Activity Plan

A written plan will help you include a balance of activities in your weekly schedule.

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 Bike ride</td>
<td>30 Gym class</td>
<td>31 Basketball or jog</td>
<td>1 Gym class</td>
<td>2 Basketball or bike</td>
<td>3 Gym class</td>
<td>4 Soccer game</td>
</tr>
<tr>
<td>1 hr.</td>
<td>30 min.</td>
<td>after school 40 min.</td>
<td>30 min.</td>
<td>40 min.</td>
<td>30 min.</td>
<td>50 min.</td>
</tr>
<tr>
<td></td>
<td>1 hr.</td>
<td>Karate class 1 hr.</td>
<td>1 hr.</td>
<td>Walk home 20 min.</td>
<td>Walk home from school</td>
<td>1 hr.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total: 1 hour 40 min.</td>
<td>Total: 1 hour 30 min.</td>
<td>Total: 50 min.</td>
<td>Total: 1 hour 50 min.</td>
</tr>
</tbody>
</table>

Preparing an Activity Plan

To achieve your fitness goals, you may find it helpful to make a weekly physical activity plan like the one in Figure 9.7. A written plan will keep you on track and help you exercise consistently. To develop your plan, first write down all scheduled physical activities or exercise sessions, such as gym periods, team practices, and dance classes. Next, pencil in a variety of physical activities and exercises.

Try to balance your schedule so that every day contains some activities but no single day is overloaded. Also, be flexible, and include some choices. For example, you might write, “Jog or bike ride,” and then decide which activity you prefer when that day comes. Keep in mind that your activity plan should meet your personal fitness goals. Your friends’ goals and activities may differ from yours.

Exercise Stages

Your exercise workouts should have three stages: the beginning warm-up, the workout itself, and then the cool-down. Each of these stages is discussed on the following pages. Because all three stages are important, it’s wise not to skip any of them. Observing workout safety rules is a strategy for preventing accidental injuries during physical activities.
**Warming Up**

A **warm-up** is a period of low to moderate exercise to prepare your body for more vigorous activity. You should start every exercise session with a warm-up lasting about ten minutes. During this period, your heartbeat rate gradually increases, and your body temperature starts to rise. As the flow of blood to your muscles increases, they become more flexible, which makes them less prone to injury during exercise.

Begin a warm-up with gentle aerobic activities, such as a fast walk, followed by stretching exercises. When you stretch, move slowly and stretch the muscles little by little. Be careful not to overstretch or bounce as you stretch, which can damage body joints and tissues. **Figure 9.8** shows two typical stretching exercises. Some stretches are not good for your joints. Ask your fitness instructor for a good stretching routine.

Another way to warm up is to do the actual movements of your planned activity but at a slow and easy pace. For example, if you plan to play racquetball, you might warm up by gently hitting the ball back and forth with your opponent and then doing a variety of stretching exercises.

**Figure 9.8**

**Different stretching exercises benefit different parts of the body. The exercises in these pictures stretch calves and shoulders. How do you warm up before you exercise?**

- **Calf stretch**
  Stand near a wall, and lean toward it with your palms flat against the surface. Bend one leg, and keep the other leg extended. While keeping the heel of the extended leg on the ground, move your hips forward until you feel a stretch in the calf muscle.

- **Shoulder stretch**
  Lean against a wall for support, as shown. Keep your arms straight while moving your upper body downward. Keep your feet under your hips and your knees slightly bent.
Working Out

Once you have warmed up, you’re ready to work out. Your workouts should start off at a comfortable level of physical activity and build up gradually. Some guidelines for starting and increasing your workout program include:

- **Frequency.** Gradually increase the number of times you exercise per week. Start by exercising two or three times the first week and work your way up to exercising daily.

- **Intensity.** This refers to the difficulty of your physical activity or exercise session. The most common way of gauging intensity is in terms of heartbeat rate. You can usually increase intensity by speeding up—running faster, for example, or doing more sit-ups in less time. You can also increase intensity by making yourself work harder. For example, it’s harder to bike up a hill than along a flat road.

- **Duration.** Limit your workout sessions to about 10 to 15 minutes at first. Gradually increase the time until you’re exercising for about 30 to 45 minutes each session.

- **Order.** If you’re doing both aerobic and strength-building exercises during a workout session, perform the aerobic exercise first. Your muscles will work more smoothly after aerobic activity.

If you want to build on your workout, do it gradually. Change only one element at a time. For example, if you increase the duration of your workout, keep intensity and frequency the same.

Cooling Down

Just as a warm-up should precede your workout, a cool-down should follow it. A cool-down is a period of low to moderate exercise to prepare your body to end a workout session. Cooling down helps return blood circulation and body temperature to normal.

If you end a workout abruptly, your muscles may tighten up and you may feel faint or dizzy. To avoid such effects, slow your body down gradually. Continue the movements of your workout activity but at a slower, easier pace. A cool-down should last about ten minutes, and it should include gentle stretching exercises.
Monitoring Your Progress

As you work toward your fitness goals, you’ll want to monitor your progress. Remember that change comes gradually. Don’t expect to cut 30 seconds off your mile time after a week of working out. Here are some suggestions for monitoring your progress.

- Keep an exercise log or journal. Making performance notes after each workout will help you keep track of exercise sessions.
- After four to eight weeks of workouts, you should observe some improvement in your overall fitness. Depending on the exercises you’ve been doing, you should feel stronger, have more endurance, and have greater flexibility. You may also find that you feel better overall, look fitter, and have more energy.
- If you see no significant change after eight weeks, you need to evaluate the situation. Have you been exercising regularly? Do you need to modify your fitness goals?
- Another measure of fitness is your resting heartbeat rate, the number of times per minute your heart beats when your body is at rest. The average heartbeat rate ranges from 72 to 84 beats per minute. A resting heartbeat rate less than 72 is generally associated with physical fitness.
- Once you reach your fitness goals, consider setting new goals for yourself.

Lesson 3 Review

Using complete sentences, answer the following questions on a sheet of paper.

Reviewing Terms and Facts

1. **Summarize** What should you keep in mind when preparing an activity plan?
2. **Recall** What are the three stages of an exercise workout?
3. **Vocabulary** Define warm-up and cool-down. What are their similarities and differences?
4. **Explain** Why would it be unwise to skip the cool-down stage?

Thinking Critically

5. **Apply** What adjustments do you need to make in frequency, intensity, and time to meet your personal workout needs?
6. **Explain** Why is it important to set fitness goals before starting an exercise program?

Applying Health Skills

7. **Practicing Healthful Behaviors** Make a weekly activity plan like the one shown in Figure 9.7 on page 232. Exchange plans with another student and offer suggestions to each other.
Lesson 4

Staying Fit and Avoiding Injury

Choosing Sports Activities

To choose the right sports for you, consider the kinds of activities you enjoy most. While both individual and team sports provide personal satisfaction and a way to stay active, one sport may suit your needs better than others. Of course, many teens take part in both individual and team sports.

Individual Sports

Individual sports are physical activities that you can do on your own or with a friend. You don’t need to be part of a team to participate in individual sports. For example, biking, running, swimming, and skating are all sports you can do by yourself.

What are the advantages of individual sports? They are more flexible than team sports. You can do them whenever you feel like it, and you can do them for as long as you wish.

That’s also one possible disadvantage to individual sports. You have to find the time and the motivation to take part in your chosen sport. Some people find it hard to stick to a plan if they have to do it on their own.

Quick Write

Some people love playing team sports. Others prefer to exercise on their own. Many enjoy doing both. Which group do you fit in? Explain your preference.

Learn About...

• choosing sports activities that are right for you.
• preparing yourself to take part in sports.
• minimizing your risk of injury in sports.

Vocabulary

• individual sports
• team sports
• sports conditioning
• dehydration
• anabolic steroids

One advantage of individual sports is that you can set your own schedule. What are other advantages?
**Team Sports**

Many teens enjoy **team sports**—organized physical activities with specific rules in which groups of people play together against other groups. There are many different team sports to choose from, including baseball, soccer, basketball, volleyball, and football. Dual sports, requiring only two to four players, include tennis and racquetball. Team sports may be offered by

- schools.
- city or town recreation departments.
- community centers.
- teen clubs and organizations.
- sports and fitness centers.
- church and synagogue youth programs.

Playing on a team can be a positive and enjoyable experience. Many teens like the excitement of competition. Whether or not your team wins, you have the companionship and support of your teammates and coaches as you work together toward a common goal. Playing on a team also gives you an opportunity to develop communication and social skills. You learn about cooperation, compromise, and good sportsmanship.

Of course, team sports are not suitable for everyone. Some teens don’t like having a set schedule, which typically requires them to attend several practices and games a week, after school and on weekends. Perhaps their family circumstances prevent them from committing themselves to a team. For these people, individual sports offer a better fitness alternative.

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**Developing Good Character**

**Sportsmanship**

Being a good sport means treating others fairly and respectfully. It means playing by the rules and accepting both victory and defeat graciously. It can include helping a less-talented athlete by giving him or her pointers for a better game. What real-life examples can you think of that show good sportsmanship?

Team sports give you an opportunity to exercise, have fun, and make friends. What are other benefits of team sports?
Sports Conditioning

Whether you choose an individual sport or a team sport, you need to be physically fit to do your best. **Sports conditioning** is regular physical activity or exercise to strengthen and condition muscles for a particular sport. It takes time and effort. You’ll also need to eat healthful foods, learn safety rules, and obtain appropriate equipment.

Sports and Nutrition

An important part of sports conditioning is eating a balanced, nutritious diet. Your choices should include a variety of foods from the different food groups and a limited amount of fat. Here are other guidelines.

- **Get enough carbohydrates.** Your body needs extra energy to play sports. Fruits, vegetables, pasta, and whole-grain breads provide carbohydrates, an excellent energy source.

- **Get enough vitamins and minerals.** These nutrients are essential to a balanced diet and to sports conditioning. Calcium, for example, strengthens bones, while iron helps provide muscles with oxygen during physical activity.

- **Don’t eat too much protein.** Athletes need protein, but no more than anyone else, provided they are eating enough nutritious foods. Even though protein helps to build muscle tissue, it is only through exercise and training that you can develop your muscles.

- **Drink water!** If you play sports, your body will lose water through perspiration. To maintain fluid balance, drink a total of 9 to 13 glasses a day, especially when it is hot outside, and take a drink every 15 minutes. Your goal is to avoid dehydration, excessive water loss from the body, which can lead to dizziness, muscle cramps, and heatstroke.

These teens know the importance of avoiding dehydration. **How many glasses of water a day are recommended for athletes?**

**SPORTS DRINKS**

Sports drinks are advertised on TV and in magazines. The ads suggest that the drinks will improve athletic performance. Use your critical-thinking skills to interpret media messages and determine whether these claims are true. *Write a paragraph summarizing your conclusions.*
Safety First

Whenever you exercise or participate in sports, you increase your risk of injury. The three basic aspects of safety are safe behavior, safe and proper equipment, and knowing your limits.

Safe Behavior

Many sports-related injuries can be prevented by thinking ahead. Here are some tips.

• **Exercise where and when it’s safe.** A soft, even surface is easier on your legs, knees, and feet than a hard or uneven surface. Exercise with another person and avoid deserted places. Protect yourself during hot weather by exercising in the cooler mornings or evenings. Remember to wear sunscreen outdoors.

• **Always warm up and cool down.** Gradually get your body ready to begin exercising. End your workout by cooling down.

• **Practice your sport regularly.** Team practices help you maintain your physical fitness levels and help you and your teammates learn to work together effectively and safely.

• **Learn the proper techniques and rules of the game.** Following the rules and regulations of a sport promotes both safety and good sportsmanship.

• **Keep your emotions under control.** Anger or frustration can lead to unsafe or unwise actions. Try to stay calm and relaxed.

Safe Equipment

What you wear when you exercise or play sports is important to your safety. Here are some clothing and equipment guidelines.

• **Wear loose-fitting or stretchable clothes.** For some sports, clothing that fits loosely gives you freedom of movement and helps you stay cooler. For other sports, tight, stretchable clothes are more appropriate.

• **If you exercise outdoors, make yourself visible.** Wear light-colored and reflective clothing so you’ll be visible to drivers.

• **When exercising in cold weather, dress in layers.** You can easily add or remove layers as needed during your workout.

• **Wear protective equipment.** Different sports require protection for different parts of the body. Always wear the necessary gear.

• **Choose shoes carefully.** Shoes should fit properly, feel comfortable, provide adequate support, and be suitable for the activity you have chosen.

• **Select your equipment wisely.** Whether you’re picking skates, a helmet, or a baseball glove, take the time to make a wise choice.

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**Reading Check**

Investigate word parts. **Dehydration** uses the root word **hydrate**, the prefix **de-**, and the suffix **-tion**. Find each word part in a dictionary; then write your own definition.

*Protective equipment that is properly sized and correctly worn helps prevent injury. What protective gear is this hockey player wearing?*
Know Your Limits

When exercising or playing sports, it’s important to recognize your limits. Here are some suggestions that will help.

- **Listen to your body.** Exercise can cause discomfort, like mild breathlessness or tired muscles, but pain is not normal. If you’re feeling pain, your body is telling you to slow down, rest, or stop completely. If pain persists, see a doctor.

- **Stop if you get injured or feel ill.** If you get hurt while exercising or while playing in a game, don’t continue until someone checks you out. Consult a coach, fitness instructor, or doctor. Also, don’t play sports if you’re not feeling well.

- **Use the R.I.C.E. formula.** If you have a minor sports injury such as a sprained ankle, follow the Rest, Ice, Compression, Elevation formula. See Chapter 19 for details.

**HEALTH SKILLS ACTIVITY**

**Refusal Skills**

**Abstaining from Drugs**

Ben enjoys being part of his school’s traveling track team. In his last race, Ben came in second, a half step behind the lead runner. After the race, one of his teammates, Scott, came over and said, “You know, you could have won.” When Ben asked what he meant, Scott smiled and held up a small bottle. “These pills will increase your speed like you won’t believe!”

Ben wants to increase his speed, but he knows that taking a drug is not only cheating, it’s also dangerous. He uses his refusal skills to let Scott know how he feels.

**What would you do?**

Suppose you were Ben. Describe how you would apply the S.T.O.P. refusal skills in your conversation with Scott. With a partner, role-play the interaction between Ben and Scott.

**Say no in a firm voice.**

**Tell why not.**

**Offer other ideas.**

**Promptly leave.**

This teen was able to compete because she trained properly and knew her limits. What strategies help you know your limits?
Avoiding Harmful Substances

Anabolic steroids are drugs that cause muscle tissue to develop at an abnormally fast rate. Although steroids and certain other drugs may increase strength, the use of these drugs is both dangerous and illegal. Here are some of the side effects users may experience:

- Liver and brain cancers
- Weakening of tendons, leading to joint or tendon injuries
- Cardiovascular damage and high blood pressure, raising the risk of heart attack
- Mental and emotional effects, such as anxiety, severe mood swings, uncontrolled rage, and delusions
- Severe acne
- Trembling
- Bone damage
- Facial hair growth in females and breast development in males

Anabolic steroids and other performance-enhancing drugs have no place in a healthy fitness plan. Besides damaging your body, they can destroy your athletic career.

Using steroids can seriously damage a person’s health, even later in life. Avoid harmful substances to perform well and stay healthy.

Lesson 4 Review

Using complete sentences, answer the following questions on a sheet of paper.

Reviewing Terms and Facts

1. Vocabulary Explain the meaning of sports conditioning.
2. Explain What is dehydration? Why is it dangerous?
3. Give Examples List three ways to practice safe behavior in sports.
4. Recall What are the dangers of using anabolic steroids?

Thinking Critically

5. Suggest What advice would you give to a teammate who often misses practice or arrives late?

6. Analyze Carlton borrows his older brother’s protective gear and his sports shoes, even though his brother is much bigger. How is he risking injury?

Applying Health Skills

7. Accessing Information With a partner, make a list of all the places in your community that provide opportunities to join a sports team. Include on your list information about the hours they are open and fees they charge. Share your list with your classmates.
What does it mean to be a “good sport”? HINT: It’s not about how many points you put up on the scoreboard. Answer yes or no to the questions below, then use the scoring chart on the next page to grade yourself.

1. Do you shake hands with your opponent after a game?
2. If you know you’re out but the umpire calls you safe, do you tell the umpire the truth?
3. Do you talk trash?
4. Do you ever encourage kids standing on the sideline to join the game?
5. If your team is losing by a lot, do you still try your hardest on every play?
6. Do you yell at your teammates for making a mistake?
7. If you think the referee made a bad call, do you argue with him?
8. Do you arrive for practices and games on time?
9. If an opponent falls down, do you help him or her get up?
10. Did you ever write a thank-you note to your coach at the end of the season?
11. If a kid on the other team makes a good play, do you compliment him or her?
12. Have you ever donated your used sports gear to charity?
13. If you see trash on the playing field, do you pick it up?
14. If kids are arguing during a game, do you try to get them to stop?
15. Do you always play your hardest, but never so hard that you injure someone?
A Good Sport
With a Great Idea!

Mark Guterman of Short Hills, New Jersey, celebrated his bar mitzvah recently. (At age 13, a Jewish boy often celebrates a bar mitzvah, a ceremony to commemorate the acceptance of religious duty and adult responsibility.)

To show that he was ready for his bar mitzvah, Mark did something to help other people: He sent letters to friends and relatives asking if they could donate used sports equipment to kids in need.

Mark and his family collected hundreds of pieces of equipment, such as in-line skates, baseball mitts, skateboards, tennis rackets, and footballs. Then they gave all the equipment to kids at a homeless shelter and a foster home.

“It lit up their faces. They were thrilled,” says Mark. “It made me feel good to help. I wanted to give to people who are less fortunate than I am.”

Scoring Chart

Give yourself 1 point for every “yes” answer that you gave to questions 1, 2, 4, 5, 8, 9, 10, 11, 12, 13, 14, and 15.

Give yourself 1 point for every “no” answer that you gave to questions 3, 6, and 7.

See how you scored by using the bar graph below.

<table>
<thead>
<tr>
<th>POINTS</th>
<th>15</th>
<th>10</th>
<th>5</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-15</td>
<td>All-Star Good Sport</td>
<td>First-String Good Sport</td>
<td>Good Sport in Training</td>
<td>Get to work!</td>
</tr>
</tbody>
</table>

About Being a Good Sport

Imagine that you’re playing basketball. You take a shot and—wham! A player on the other team hits your arm so hard that you miss the shot. Amazingly, the referee does not call a foul. What would you do? Write down your thoughts in a brief paragraph. Then, as a class, discuss different options on what to do in this situation.
Model

Ryan and his twin sister Amber are getting ready to play in a neighborhood game of basketball. After their mom drops them off, Amber spends the first ten minutes warming up to prepare herself for exercise. She jogs slowly around the court a few times and then does some toe touches and other exercises to stretch her muscles. Ryan, however, is impatient to start playing. He grabs the basketball right away and starts dribbling it around the court. As he races toward the basket, Ryan suddenly clutches his left leg in pain; he has pulled his quadriceps and must sit out the game. Ryan promises himself he will be smarter next time.

Meanwhile, Amber has one of her best games. As she plays, she pays attention to her body’s signals. She keeps herself working moderately hard, but she is careful not to push herself too far. After playing for half an hour, Amber takes another ten minutes to walk around the court while she waits for their mom to pick her and Ryan up. This cool-down helps her body come back to normal gradually.
**Practice**

Form groups of two or three. Tell the members of your group about your favorite way to work out. You may name more than one type of exercise if you wish. Write your choice or choices at the top of a sheet of paper. Then, as a group, discuss each of the exercises you have named. Try to think of appropriate ways to warm up for that type of exercise and to cool down afterward. Write down the group’s ideas on your paper.

1. Did you think of at least one way to warm up and cool down for your favorite exercise?
2. Do you usually warm up and cool down when you do this activity? Why or why not?

**Apply/Assess**

Now that you know how to include warm-up and cool-down activities in a workout, use your knowledge to create your own workout plan. Use the chart below as a model. Fill in the activities you plan to do during each part of your workout. Include at least 10 minutes to warm up, 20 to 25 minutes to work out, and 10 minutes to cool down. If you include more than one type of activity in your workout, put aerobic activities before strength-building activities. Display your charts in the classroom.

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**Practicing Healthful Behaviors**

A healthy workout includes a warm-up and a cool-down period.

- A good warm-up should include about ten minutes of light exercise and gentle stretching.
- Ten minutes of moderate activity and gentle stretching is a good way to cool down.

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**Self-Check**

- Did my fitness plan include a warm-up and a cool-down?
- Did my fitness plan put aerobic activities before any strength-building activities?
- Did I make a realistic plan for a busy teen?
After You Read

Use your completed Foldable to review the information on physical activity, exercise, and physical fitness.

Reviewing Vocabulary and Concepts
On a sheet of paper, write the numbers 1–12. After each number, write the term from the list that best completes each sentence.

- heartbeat rate
- anaerobic
- muscle strength
- skinfold test
- intensity
- muscle endurance
- balance
- stretching exercises
- aerobic
- flexible
- coordination
- activity plan

Lesson 3
9. A weekly _________ can help you schedule your activities.
10. Warm-ups should start with light activity, followed by _________.
11. When developing an exercise program, consider the frequency, _________, duration, and order of your workouts.
12. The most common way to measure exercise intensity is by checking your _________.

Lesson 4
On a sheet of paper, write the numbers 13–15. After each number, write the letter of the answer that best completes each statement.

13. The advantage of individual sports is that
   a. it is more flexible than a team sport.
   b. you can do them whenever you wish.
   c. you can do them for as long as you wish.
   d. all of the above.

14. Good nutrition for athletes includes
   a. eating only high-protein foods.
   b. drinking a limited amount of water in order to prevent nausea.
   c. eating enough carbohydrates to give the body extra energy.
   d. cutting back on some minerals, especially calcium.

15. Many sports injuries can be prevented by
   a. becoming very emotional during competition so you don’t build up anger.
   b. skipping some team practices so you don’t overexert yourself.
   c. borrowing someone’s safety gear.
   d. wearing shoes that are suitable for the activity or sport.

Thinking Critically
Using complete sentences, answer the following questions on a sheet of paper.

16. Interpret Explain how being fit can improve the quality of your everyday life.
17. **Apply** If you decided to raise your level of physical fitness, how would you proceed? What factors would you consider?

18. **Analyze** Participation in individual sports requires self-discipline. Do you think someone who doesn’t have self-discipline can develop it? Why or why not?

19. **Explain** What actions can you take before, during, and after a game to protect yourself against a sports injury?

20. **Discuss** Your friend eats two steak sandwiches every day, claiming that protein develops muscles. What would you tell him?

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**Career Corner**

**Athletic Trainer** Athletes often consult athletic trainers for advice on fitness programs. These professionals help athletes maintain their physical fitness by supervising nutrition and exercise. They also treat sports injuries. Athletic trainers need at least one to two years of community college, vocational/technical school, or an apprenticeship. Find out more about this and other health careers by clicking on Career Corner at health.glencoe.com.

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**Baseball, football, basketball—these sports were all invented in the United States, right? Wrong. Of these three, only basketball was invented and first played in the United States. In 1891 a physical education teacher in Springfield, Massachusetts was asked to create a sport for students to play indoors during the cold New England winters. Using a soccer ball and two peach baskets attached to the balcony railing of the gym, he invented basketball. He wrote 13 rules for the game, taught them to his class, and the first game of basketball took place later that year. The new game required teamwork, quick reaction time, and endurance. Basketball caught on and was soon being played by YMCA, high-school, college, and professional teams across the United States. Today, it is the most popular indoor sport, with millions of fans crowding gyms and arenas to cheer their favorite teams. Millions more watch on television.

1. The author begins the passage with a question and answer in order to __________
   A. introduce the topic of basketball.
   B. inform readers about the rules of basketball.
   C. explain the difference between three sports.
   D. encourage readers to think about sports.

2. Which of the following best describes the organization of the second paragraph? __________
   A. presenting events in the order in which they occurred
   B. comparing sports as they developed
   C. explaining a problem and telling how to solve it
   D. ranking events in order of importance

3. Write a paragraph explaining the rules for playing a particular sport.