Proper nutrition has a major effect on the way your body performs. Eating healthful foods can help you grow stronger, give you energy, and improve your vision and reaction time—all of which can enhance your performance, whether you’re playing a sport, riding a bike, or studying for a test. So, while the decision you make about what to have for breakfast might not seem like a big deal, it goes a long way toward determining how well you’ll do for the rest of the day!

How can eating an apple help you catch a football?
Rate your physical activity and fitness habits. Take the Health Inventory for Chapter 3 at health.glencoe.com.

**Foldables Study Organizer**

Before You Read

Make this Foldable to record the information presented in Lesson 1 about the three elements of fitness. Begin with a plain sheet of 11” × 17” paper.

**Step 1**
Fold a sheet of paper into thirds along the short axis.

**Step 2**
Open and fold the bottom edge up to form a pocket. Glue the edges.

**Step 3**
Label each pocket as shown. Place an index card or quarter sheet of notebook paper into each pocket.

As You Read

Write down key points on each element of fitness on index cards or sheets of notebook paper cut into quarter sections. Store the cards in the appropriate pocket of your Foldable.
Physical Activity and You

You do many types of physical activity every day: running to catch the school bus, walking up a flight of stairs, doing chores. **Physical activity** is any kind of movement that causes your body to use energy. Participating in regular physical activity
- helps build and maintain healthy bones, muscles, and joints.
- helps control weight and reduce fat.
- helps keep blood pressure within a healthy range.

The ability to handle the physical work and play of everyday life without becoming tired is known as **fitness**. You can become more fit by exercising. **Exercise** is physical activity that is planned, structured, and repetitive and that improves or maintains personal fitness. Exercising regularly increases your energy level, allowing you to be more active during the day. Also, if you want to play a sport, exercising regularly can help you develop the skills you will need.

The Benefits of Physical Activity

Do you ever feel calmer about a situation after you’ve gone for a bike ride? Not only does physical activity improve your physical well-being, it can enhance mental/emotional and social health, too. **Figure 3.1** lists the benefits of physical activity.

**Physical activity is a way for people of all ages to stay fit and enjoy one another’s company. What activities do you think you will enjoy throughout your life?**
LESSON 1: PHYSICAL ACTIVITY AND HEALTH

Strength

The first element of fitness is strength, *the ability of your muscles to exert a force*. Strength is measured according to the most work your muscles can do at a given time. Building strength through physical activity enables you to lift heavy objects more easily with less chance of injury. It also makes it easier for you to develop skills for sports and other activities. **Figure 3.2** on page 56 shows three types of strength-building exercises.

**Benefits to Physical Health**
- Maintenance of a healthy weight
- Improved strength and flexibility
- Better performance of heart and lungs
- Higher energy level
- Decreased risk of certain diseases
- Stronger bones
- Greater freedom of movement
- Better coordination
- Better sleep

**Benefits to Social Health**
- Additional chances to meet new people
- Opportunities to share common goals with others
- Increased ability to interact and cooperate with others
- Opportunities to use talents to help others

**Benefits to Mental/Emotional Health**
- Enhanced self-confidence
- Sharpened mental alertness
- Reduced stress
- More relaxed attitude
- More enjoyment of free time

Being physically active enhances all aspects of your health.
The second element of fitness is endurance, the ability to perform vigorous physical activity without getting overly tired. There are two basic types of endurance. Heart and lung endurance is the measure of how effectively your heart and lungs work during moderate-to-vigorous physical activity or exercise. It is also a measure of how quickly your heartbeat and breathing return to normal when you stop exercising. Muscle endurance is the ability of a muscle to repeatedly exert a force over a prolonged period of time.
Two types of exercise can help build endurance: aerobic and anaerobic. **Aerobic** (ehr-ÖB-ik) exercise is rhythmic, nonstop, moderate-to-vigorous activity that requires large amounts of oxygen and works the heart. Aerobic exercises include walking, jogging, bicycling, swimming laps, and cross-country skiing. Doing aerobic exercises for a minimum of 20 minutes at least three times a week is the best way to build heart and lung endurance. **Anaerobic** (AN-ehr-oh-bik) exercise is intense physical activity that requires little oxygen but involves short bursts of energy. Weight lifting and sprinting are examples of anaerobic exercises. Such activities help build and maintain strength and muscle endurance.

**Flexibility**

Flexibility, the third element of fitness, is the ability to move joints fully and easily. Some people are naturally more flexible than others are. Nevertheless, you can increase your flexibility by doing regular, gentle stretching of muscles and joints. Improving your flexibility will help you feel more comfortable and reduce your risk of injury during strength or endurance training. Figure 3.3 shows two exercises that you can do to improve your flexibility.

**Figure 3.3**

**STRETCHING EXERCISES**

These exercises will stretch the muscles of your upper body and your legs.

Stand with your arms extended behind your back, hands clasped. Raise your arms until you feel tightness in your shoulders and chest. Hold for 20 seconds.

Stand close to a wall and lean toward it, placing your palms flat against it. Keep one leg bent and the other extended. Keeping the heel of the extended leg on the ground, move your hips forward until you feel a stretch in the calf muscle.
CHAPTER 3: PHYSICAL ACTIVITY AND FITNESS

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

Reviewing Terms and Facts

1. Vocabulary Define the term physical activity. Write a sentence explaining why it is important to your health.

2. List What are the three elements of fitness? Define each element.

3. Distinguish What is the difference between heart and lung endurance and muscle endurance?

Thinking Critically

4. Analyze Explain how the three parts of the health triangle may be linked through physical activity.

5. Explain Why should a good exercise program include several kinds of activities?

Applying Health Skills

6. Practicing Healthful Behaviors Ask a physical education teacher or another exercise professional to demonstrate a strength, endurance, or flexibility exercise. Demonstrate this exercise for your class, and explain its benefits.

Selecting the Right Exercises

To reach your fitness goals, plan a program that is convenient, affordable, and enjoyable. Think about the type of exercises that you would like to do, the equipment you will need, and when and where you will exercise. Your workouts should include a variety of physical activities to promote balanced fitness. Here are some ways to add physical activity to your life.

- Do a variety of aerobic exercises and/or active sports and recreational activities for at least 20 minutes, three to five times a week.
- Aim to do strength and flexibility exercises two or three times a week.
- Try not to spend more than half an hour at a time watching television or playing computer games. Staying active is important to good health.

Jogging is a form of aerobic exercise. What other out-of-school fitness activities promote fitness and health?
The Skeletal and Muscular Systems

Bones for Support, Muscles for Movement

You depend on your skeletal and muscular systems to support you and help you move. The skeletal system is the framework of bones and other tissues that supports the body. It is made up of 206 bones as well as many joints and connecting tissues. Your skeletal system gives your body structure and protects your internal organs.

Your muscles supply the power to move your body. The muscular system consists of tissues that move parts of the body and operate internal organs. The human body has more than 600 muscles.

The Skeletal System

Besides supporting and protecting your body, your bones also store calcium and other minerals and make blood cells. The places where two or more bones meet are called joints. Some joints are immovable, such as those in the skull. Others allow a wide range of movement.

Quick Write

Have you ever felt sore the day after you tried a new physical activity? Explain in a few sentences why you think this occurred.

Learn About...

- the functions of the skeletal and muscular systems.
- how bones and muscles work together to allow movement.
- how to keep your bones and muscles healthy.

Vocabulary

- skeletal system
- muscular system
- joint
- cartilage
- ligament
- tendon

Any physical activity requires that bones and muscles work smoothly together. How many bones and muscles does the human body have?
Figure 3.4 identifies some of the major bones in the skeletal system and describes several types of joints. Connecting tissues link bones to muscles so that the two can work together to move parts of the body. Each type of connecting tissue has a specific function. Cartilage allows joints to move easily, cushions bones, and supports soft tissues, such as those in the nose and ear. Ligaments hold bones in place at the joints; for example, in the knee and ankle. Tendons join muscle to muscle or muscle to bone. An example is the Achilles tendon, which attaches the calf muscle to the heel bone.

**Figure 3.4**

**THE SKELETAL SYSTEM**

Here are some of the major bones and joints of the skeletal system. The shoulder is what type of joint?

- **Pivot Joint**
  - The end of one bone rotates inside a ring formed by another.
  - The joint can move up and down and from side to side.
  - One pivot joint is located between the first two vertebrae, connecting the head to the neck.

- **Gliding Joint**
  - One part of a bone glides over another bone, allowing a small range of sideways movement.
  - The vertebrae in the back that protect the spinal cord are examples of gliding joints.

- **Ball-and-Socket Joint**
  - The ball-shaped head of one bone moves inside the cup-shaped socket of another.
  - The joint can move in all directions.
  - The hip is a ball-and-socket joint.

- **Hinge Joint**
  - This joint moves in only one direction, like a door hinge.
  - The knee and elbow are hinge joints.
The Muscular System

Muscle tissue responds to messages from the brain and contracts, or shortens, to cause movement. Smooth muscles, which include the muscles of internal organs and blood vessels, are involuntary; they move without your being aware of it. Cardiac muscle, found only in the heart, is also involuntary. Skeletal muscles, shown in Figure 3.5, are voluntary, or under your control.

Facial muscles (open and close eyes and mouth, aid in chewing, and make facial expressions)

- Trapezius (raises head)
- Sternomastoid (turns head)
- Deltoid (raises arm)
- Pectoralis major (moves arm)
- Biceps brachii (bends elbow)
- External oblique (aids breathing)

Skeletal muscles, shown in Figure 3.5, are voluntary, or under your control.

- Sartorius (flexes knee and hip)
- Quadriceps femoris (straightens leg)
- Extensor digitorum longus (extends toes)
- Tibialis anterior (flexes foot)

Triceps brachii (straightens arm)

- Latissimus dorsi (lowers arm)
- Gluteus maximus (extends thigh)
- Hamstring muscles (bend leg at knee)
- Biceps femoris (rotates knee and extends thigh)

LESSON 2: THE SKELETAL AND MUSCULAR SYSTEMS
Skeletal muscles work in pairs to move bones, as shown in Figure 3.6. Each member of the pair is connected to the bone that is to be moved. When one muscle contracts, the opposite muscle extends, or lengthens.

**Figure 3.6**

**Muscle Pairs**

Muscle pairs are said to work in opposition—to create movement, two muscles must perform opposite actions. *Try bending your arm and see if you can feel the muscles working.*

To bend the arm, muscles in the top part of the arm—especially the biceps brachii—contract, or shorten, pulling the bone of the forearm upward. At the same time, the triceps brachii—on the opposite side of the arm—must relax and extend, or lengthen.

To straighten the arm again, the biceps brachii relax. The triceps brachii now contract, pulling the arm into a straight line.
Caring for Your Skeletal and Muscular Systems

Keep your skeletal and muscular systems healthy by following these tips.

- **Participate in regular physical activity.** Exercises that build strength will make your bones and muscles stronger. Activities that build heart and lung endurance will strengthen the muscles in your heart and lungs. Exercises that increase flexibility will make it easier for you to move and can prevent some types of injuries.

- **Follow a nutritious eating plan.** Foods that are rich in calcium and vitamin D promote bone growth and strength. Carbohydrates will give your muscles energy, and foods high in protein will build muscle tissue.

- **Practice good posture.** Sit and stand in a correct but relaxed manner so that bones, joints, and muscles maintain proper alignment.

- **Lift objects carefully.** When lifting something heavy, keep your back straight and your knees bent.

- **Treat injuries quickly.** If you are injured, see a physician. Avoid putting stress on an injured body part.

To prevent backaches, make sure that your backpack is not overloaded and that you are using all the straps available for support.

**Lesson 2 Review**

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

**Reviewing Terms and Facts**

1. **Vocabulary** Define the terms *skeletal system* and *muscular system*, and explain how these systems work together.

2. **Explain** What are the three types of connecting tissue? What is the function of each type?

3. **Identify** Name the four types of joints, and describe the movement allowed by each.

**Thinking Critically**

4. **Analyze** Why do you think the human body has more muscles than bones?

5. **Interpret** Why do you think backaches may be caused by poor posture?

**Applying Health Skills**

6. **Accessing Information** At birth everyone has 350 bones, but adults have 206. Use resources at home and in your library to find out how bones develop and change as people grow. Write a paragraph explaining this change.
The Circulatory System

Your Heart and Blood Vessels

A healthy circulatory system is important to a lifetime of good health. The circulatory system is the group of organs and tissues that transport essential materials to body cells and remove their waste products. This system consists of the heart, the blood vessels, and the blood itself. Another name for the circulatory system is the cardiovascular system. Cardio- refers to the heart and -vascular means having to do with vessels.

An organ composed of cardiac muscle, the heart pumps blood throughout the network of blood vessels. The blood flows through three types of vessels—arteries, veins, and capillaries. The heart pumps blood into the arteries, the blood vessels that carry blood away from the heart to all parts of the body. The veins are the blood vessels that carry blood back to the heart from all parts of the body. Capillaries, the smallest blood vessels, provide body cells with blood and connect arteries with veins.

A pulse is produced by the regular contractions of the heart as it pumps blood throughout the body.
How Circulation Works

Two types of circulation are always at work in your body. **Pulmonary** (PUL·muh-nehr·ee) **circulation** carries the blood from the heart, through the lungs, and back to the heart. This stage of circulation allows the blood to become enriched with oxygen before it is sent throughout the body. **Systemic** (sis-TE-mik) **circulation** sends oxygen-rich blood to all the body tissues except the lungs. Figure 3.7 shows you how these two types of circulation work together to keep your body cells supplied with nutrients and free of waste products.

**FIGURE 3.7**

**PULMONARY AND SYSTEMIC CIRCULATION**

Oxygen-rich blood coming from the lungs is circulated through the heart and pumped to body tissues. This blood returns to the heart depleted of oxygen and is pumped to the lungs.

- **A** The **left atrium** receives oxygen-rich blood from the lungs and sends it to the **left ventricle**.
- **B** The **left ventricle** pumps oxygen-rich blood to the aorta, the body’s largest artery.
- **C** The aorta carries blood to branching arteries that take it to **capillaries**. Nutrients and oxygen travel through the walls of the capillaries to cells. The cells send back wastes such as carbon dioxide.
- **D** The capillaries deliver this low-oxygen blood to veins.
- **E** The veins carry the blood back to the **right atrium** of the heart.
- **F** The right atrium sends the blood to the **right ventricle**. This part of the heart sends the low-oxygen, high–carbon dioxide blood to the lungs.
- **G** In the lungs, carbon dioxide is removed from the blood and is exhaled out of the body. Oxygen is inhaled and added to the blood, and blood is sent back to the heart through the **pulmonary vein** to the left atrium. Then the process begins again.

**Reading Check**

Understand word parts. Investigate the words **circulatory** and **pulmonary**. What are their roots and suffixes? What does each mean?
What’s in Your Blood

The different parts of blood carry out several important functions in the body. Many of these functions involve transporting various substances through the body and protecting the body from harm. Over half of the volume of blood is plasma (PLAZ-muh), a yellowish fluid, the watery portion of blood. The rest of the volume of blood is made up of three kinds of cells: red blood cells, white blood cells, and cell fragments called platelets (PLAYT- luhts). The parts of the blood and their functions are described in Figure 3.8.

Blood Pressure

When you have a medical checkup, the nurse or doctor may take your blood pressure. Blood pressure is the force of blood pushing against the walls of the blood vessels. A blood pressure reading consists of two numbers, usually written in this way: 110/70. The first number is the pressure at its highest point, when the heart contracts and forces blood into the arteries. The second number is the lowest point of pressure, when the heart relaxes to refill with blood.

Figure 3.8

Parts of the Blood

Each element of the blood helps the body in a different way. How do white blood cells help you stay healthy?

**Platelets**
Platelets are the smallest type of blood cell. Platelets help blood to clot, or thicken, at the site of a wound.

**Plasma**
The three types of blood cells are suspended in plasma, a liquid that carries nutrients to cells. It also carries hormones, which are chemicals that regulate body processes. In addition, plasma transports wastes to the lungs and kidneys for removal.

**Red Blood Cells**
Red blood cells, which look like little disks or doughnuts, carry oxygen from the lungs to all body parts.

**White Blood Cells**
White blood cells fight infection in the body. Some white blood cells actually create substances that destroy foreign cells. Others find and devour disease-causing invaders such as viruses.
Lessons 3: The Circulatory System

Blood Types

All blood is not the same. The four types—A, B, AB, and O—are classified according to the type of red blood cells they contain. Some blood types are compatible, or able to coexist in one person’s body. Compatible blood types can be mixed safely. If blood types that are not compatible are combined, the red blood cells in one type of blood clump together and block the blood vessels. Figure 3.9 shows which blood types are compatible.

Blood may also contain a substance called an Rh factor. Most people are Rh-positive, meaning that their blood has this substance. Rh-negative blood does not contain this substance. People with Rh-positive blood can receive blood from people who are either Rh-positive or Rh-negative. People who are Rh-negative, however, can accept blood only from others who are Rh-negative.
Caring for Your Circulatory System

You can take action now to care for your circulatory system throughout your life. First, eat a balanced diet that is low in fats. Learn to manage stress—it can put a strain on your heart and blood vessels. Avoid smoking. The nicotine in tobacco narrows the blood vessels and prevents your blood from carrying oxygen effectively. Activities that build heart and lung endurance also benefit your circulatory system in the following ways:

- When you engage in aerobic activity, your heart, blood vessels, and blood become more efficient at delivering oxygen and nutrients to your muscles and other organs. After several weeks of regular aerobic activity, your heart can pump more blood each minute, and your muscle cells can use more oxygen.
- Moderate and vigorous physical activity may lower the levels of fatty materials in your blood and help keep your arteries free of fatty deposits.
- Regular participation in moderate and vigorous physical activities and exercise will help you maintain a healthy weight, allowing your heart to work efficiently.

These teens are keeping their circulatory systems healthy by enjoying a fast-paced sport. What other physical activities would benefit the circulatory system?

Lesson Review

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

Reviewing Terms and Facts

1. **Vocabulary** Define the term *circulatory system*.
2. **Distinguish** How do arteries, veins, and capillaries differ?
3. **Discuss** Name the two types of circulation. Why is each type important?
4. **Summarize** List the components of blood, and explain what each one does.

Thinking Critically

5. **Explain** Why do you think a blood pressure reading is taken during a medical checkup?
6. **Conclude** Why is it necessary for hospital workers to know patients’ blood types?

Applying Health Skills

7. **Analyzing Influences** Advertisers often emphasize the fact that certain types of food are good for your heart. Find print ads for two such products. Then decide whether each product really enhances the health of your heart, and explain how you came to that conclusion.
Developing a Personal Fitness Program

Fitness and Body Composition

You’ve learned that fitness is the ability to handle the physical work and play of everyday life without becoming tired. One factor that affects your overall fitness is your body composition. **Body composition** is the proportions of fat, bones, muscle, and fluid that make up body weight. Participation in regular physical activity increases the amount of muscle and decreases the amount of fat in your body, allowing you to become fit and stay healthy.

Achieving Your Fitness Goals

Now that you know how fitness can benefit your skeletal, muscular, and circulatory systems, you may want to start a fitness program. To do this, first think about your goals. Perhaps you want to increase your heart and lung endurance or develop specific skills for a sport. You may just want to feel healthier. If you set a specific goal, you’ll be more inspired to stick with your fitness program, and you’ll feel a sense of accomplishment when you reach that goal.
Working Out Safely

As you plan your fitness program, it is important to think about safety and know what precautions to take. First, dress appropriately for your workout. Loose-fitting clothing is usually best. If your workout takes you outdoors at night, wear light colors and reflective coverings so that others can see you better. For cold-weather workouts, dress in several thin layers of clothing. In hot weather, shorten your workouts and drink plenty of fluids. Always wear sunscreen to protect your skin.

Consider the best location and equipment for your workout. For example, soft, even surfaces are easier on your bones and muscles. Be careful when working out alone outdoors, especially at night or in a deserted place. If possible, work out with a friend. Consider your equipment carefully, too. Make sure that your shoes or skates provide good support and are comfortable. Always wear the protective gear that is appropriate for your activity.

If you get injured, treat the injury according to the R.I.C.E. formula: Rest, Ice, Compression, and Elevation. Stop your activity immediately and rest. Then use ice to keep swelling down and to ease any pain. Compression means putting pressure on the injured area to reduce swelling, as with a wrapped bandage. Elevation involves raising the injured part, also to reduce swelling.

Making a Schedule

A written schedule can help you stick to your fitness program. Write out a weekly plan that includes your school physical education classes and your activities before and after school. Then make a chart or calendar to remind yourself of what activities you’ve planned and when you’ll work out each day. Keep track of how often you work out and how long each session lasts. It’s satisfying to look back and see how much you’ve accomplished!

Be flexible when you make your schedule. Your goals and needs may change as your level of fitness increases. You may want to try new activities or take advantage of seasonal sports. In fact, varying your workouts will keep you interested in your program.
Elements of a Good Workout

A good workout consists of 20 to 30 minutes of moderate-to-vigorous physical activity. It should include a warm-up, the workout activity, and a cool-down. You may choose aerobic activities, strength-building activities, or both. If you are including both types of physical activity, work on strength training after the aerobic activity because your muscles will function more smoothly then.

Warm-Up and Cool-Down

Before you start your workout, you need to warm up your muscles. A **warm-up** routine is gentle exercise you do to prepare your muscles for moderate to vigorous activity. Include some stretching activities after your warm-up. When you have completed your workout, it is important to allow time for a cooling-down stage. The **cool-down** involves gentle exercises that let your body adjust to ending a workout. **Figure 3.10** illustrates the warming-up and cooling-down processes.

**Figure 3.10**

**WARMING UP AND COOLING DOWN**

By warming up and cooling down, you help to ensure a safe workout. **What else can you do to make your workouts safer?**

Your warm-up should take about ten minutes and consist of easy aerobic exercise. When you warm up, blood flows into your muscles so that they are more flexible. In addition, your heart rate increases gradually and safely.

Cool down after your workout so that your muscles don’t tighten. Cooling down also brings your circulation back to normal and lowers your body temperature. To cool down, continue the movements of your workout at a slower pace for about five to ten minutes. Follow this with about five minutes of stretching. Remember to drink plenty of fluids after exercising.

Do some light stretching after you have warmed up your muscles. It is also important to stretch after your cool-down to maintain or increase your flexibility. Stretch only to a point where you feel a gentle pull and hold the stretch for a count of 15 to 20 seconds. To prevent injury, avoid bouncing or jerking.

**Topic:** Fitness goals

For a link to more information on setting and reaching your fitness goals, go to [health.glencoe.com](http://health.glencoe.com).

**Activity:** Using the information provided at this link, create a written plan to improve your fitness level.
The F.I.T. Formula

Using the F.I.T. formula will help you meet your fitness goals. F.I.T. stands for the Frequency, Intensity, and length of Time of your workout sessions. Increase all of these factors over time.

- **Frequency** is *the number of days you work out each week.* At first, work out two or three days a week. Gradually increase your workouts to five days a week. Remember that you will probably want to vary your routine from day to day.

- **Intensity** means *how much energy you use when you work out.* There is an easy way to determine if the intensity of your workout is appropriate. If you are able to talk, you’re probably moving at the right pace. If you find you are out of breath and can’t talk, slow down. If you are able to sing while engaged in your activity, you may not be working hard enough.

- **Time** is how long each workout lasts. Begin by working out for about 20 minutes. Then gradually increase your physical activity to 30 to 45 minutes at each session.

Target Heart Rate

You can monitor the intensity of your workout by taking your pulse to see if you are in your target heart rate zone. Your target heart rate is the number of heartbeats per minute that you should aim for during moderate to vigorous activity to benefit your circulatory system the most. Figure 3.11 explains how to calculate the range of your target heart rate.

![Figure 3.11](image-url)  
**Figure 3.11**  
**Calculating Your Target Heart Rate**  
Knowing the range of your target heart rate can help you assess the intensity of a workout.

To see whether you are exercising within your target heart rate range during a workout, take your pulse for 6 seconds and multiply this number by 10 to get your pulse rate for one minute. (To take your pulse, place the first two fingers of one hand on the inside of the other wrist, or on either side of the neck, right below the jaw line. Don’t use your thumb, which has its own pulse.) Where does the number fall within your range?
Checking Your Progress

Once you’ve established your fitness program and started to follow your weekly schedule, take some time to think about what you’ve accomplished and where you are going. Is your program working for you? Do you need to make adjustments? Are you close to reaching your goals? The following tips can help you assess your program and monitor your progress.

If you’ve been working out for four to eight weeks, you should see some results. You may feel better, be more flexible, and have more heart and lung endurance and muscular endurance. Keeping a fitness log as you go will help you see how far you’ve come.

If you feel that you’re not any closer to your goal, think about whether you’ve been keeping to your schedule. If not, how can you make sure that you do? If you have kept to your schedule, you may need to reevaluate your goal. Is it realistic? Maybe you need more time than you thought.

A physical education teacher is a source of advice about how to set fitness goals. Talk to your physical education teacher about the goals you’d like to achieve.

Lesson 4 Review

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

Reviewing Terms and Facts
1. Vocabulary Define the term body composition.
2. Identify What are some safety issues you need to consider when you work out?
3. Explain What is the purpose of warm-up and cool-down periods?
4. Describe Explain the F.I.T. formula.
5. Discuss How is target heart rate related to the intensity of a workout?

Thinking Critically
6. Describe What would you advise a friend to do if he or she became injured while working out?

7. Justify Why is it important to be flexible when you plan a workout schedule?

Applying Health Skills
8. Advocacy Demonstrate ways to use health information to help others: Imagine that your friend starts a fitness program but loses interest after a week. What health information could you give to this friend to help him or her stick to the program?

9. Goal Setting List some ways you can engage in physical activities outside of school. From this list, choose an activity that you think you would enjoy and set a goal to participate in this activity regularly. Use the goal-setting steps to help you reach your goal.
Sports and Physical Wellness

Sports for Health

Starting and following a well thought-out program is a good way to achieve fitness. One way to remain fit is by playing sports. Some people play sports for fun. Others make a serious commitment to a sport, working hard to develop their skills.

What do you like about sports? Do you like the excitement of competing against another person or team? Do you enjoy mastering a new skill? Do you prefer one-on-one competition or the support of teammates? Do you enjoy competing at all? Think about these questions. Choose sports that you think will be fun. You’ll be more likely to get the greatest benefit out of a sport if you have a good time doing it.

Health behaviors and knowledge, including those related to fitness and sports, vary with age. Older adults may engage in low-impact activities and sports to prevent injuries. Younger generations may participate in more vigorous sports and activities.

Make a list of all the sports that you currently play or have played. Which ones do you enjoy the most? Are they individual or team sports? Do you think that they are activities you can continue throughout your life?

Before you sign up for a sport, carefully consider what you want from the experience. What might be reasons to get involved in some of the sports shown on these posters?
Individual and Team Sports

**Individual sports** are physical activities you can take part in by yourself or with another person, without being part of a team. Biking, hiking, swimming, running, surfing, skating, and horseback riding are all individual sports. You can set your own schedule and determine your own level of commitment in individual sports. You don’t have to be compared to anyone else, and you can establish the pace of the activity. However, you miss some of the mental/emotional, and social health benefits of playing on a team.

**Team sports** are organized physical activities with specific rules, played by opposing groups of people. Baseball, basketball, football, soccer, and volleyball are popular team sports. In team sports you have the companionship and encouragement of teammates and coaches. Playing against another team may push you to excel. Having to attend regularly scheduled practices can help you to become more responsible. However, some people may find that playing a team sport is too time-consuming.

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**HEALTH SKILLS ACTIVITY**

**DECISION MAKING**

**Balancing Your Activities**

Kate loves ballet, and she’s a good ice-skater. In seventh grade Kate discovered that she liked basketball too. She made the school team.

Now she has a problem, however. Seventh grade demands more homework time than Kate expected. Her grades are starting to slip. Also, because Kate is at basketball practice most afternoons and ballet class on the weekends, her sister feels as if she is doing more than her share of chores at home.

How can Kate solve her problem?

**What would you do?**

With a small group, role-play a family discussion of Kate’s situation. Then work through the steps of the decision-making process.

1. **State the situation.**
2. **List the options.**
3. **Weigh the possible outcomes.**
4. **Consider values.**
5. **Make a decision and act.**
6. **Evaluate your decision.**
Preventing Injuries

The following tips can help you avoid sports-related injuries.

- See a doctor for a physical exam before you participate in a sport.
- Warm up, stretch adequately, and cool down.
- Learn the proper techniques for your sport.
- Use the correct safety and protective equipment properly. See Figure 3.12 for a description of some of the gear that can help protect you.
- Observe safety rules during sports and other physical activities.
- Report any injury to your coach or teacher and to your parents.
- Don’t return to the sport until a health care professional says that you are well enough to play.

**Figure 3.12**

**Protective Equipment**

Different sports require different kinds of protective gear.

- Knee pads and elbow pads protect joints.
- An athletic cup protects the male groin area.
- Proper athletic footwear protects the feet and ankles.
- An athletic cup protects the male groin area.
- Shin guards protect the legs.
- Wrist guards protect the hands and wrists.
- A face mask protects the face from being hit by a ball or puck.
- A throat guard protects the throat.
- A helmet or other protective headgear protects the head.
- A padded chest protector keeps the torso from being injured.
- A mouth guard protects the teeth and jaw.
Sports Nutrition

If you play a sport, remember that you will need to keep your body supplied with additional energy. This need may require some changes in what you eat as well as when you eat.

What to Eat

When you play a sport, you may need more food to provide your body with the fuel it requires. Figure 3.13 identifies a variety of activities in terms of the calories they burn. If you play a more vigorous sport for a longer period of time, you may need to eat more. This added intake helps give you the energy you will need while you play. A good approach to providing your body with enough fuel is to choose a variety of foods from the five major food groups every day. A balanced diet will supply your body with what it needs for you to perform at your best.

You also need to make sure that you drink enough water when you play sports. If you don’t replace the water you lose by sweating, dehydration can occur. Dehydration is the *excessive loss of water from the body*. It can result in muscle cramps, heatstroke, and harm to some body systems. Don’t wait until you’re thirsty before you drink.

**Figure 3.13**

**SPORTS AND ENERGY USE**

If you do the activities shown here for the amount of time stated, you will burn about 150 calories. You can burn roughly the same number of calories by playing a less vigorous sport for a longer time or by playing a more intense sport for a shorter time.

<table>
<thead>
<tr>
<th>Less Vigorous, More Time</th>
<th>Activity</th>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volleyball</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Touch football</td>
<td>30–45</td>
</tr>
<tr>
<td></td>
<td>Shooting baskets</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Cycling 5 miles</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Swimming laps</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Wheelchair basketball</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Cycling 4 miles</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Running 1½ miles</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: Centers for Disease Control and Prevention
When to Eat

When you first take up a sport, you will have to consider how much energy you will need, when you will need it, and how your sport will affect your digestion. It is also important to make sure that you always have water available and drink it all day long. Here are a few more tips.

• Eat a light snack one to two hours before a sporting event. Foods like bananas, bagels, and fruit juices are good choices.
• Drink plenty of fluids before a game. A good guideline is 2 cups (16 ounces) of water about two hours before the event, followed by 2 cups of water about 15 minutes before the game.
• Continue to drink water during the game. This helps to control your body temperature and cool working muscles. Sports drinks can restore fluids and minerals to your body if you are involved in an activity that lasts for more than one hour.
• Refuel your body with a hearty, balanced meal after the game. Also, keep track of your weight before and after a game. For every pound that you have lost during the event, drink 2 cups of water.

Shaping Up Safely

If you want to play a sport regularly, you’ll need to get into shape for it. Training to get into shape is called conditioning. Different sports demand different levels of strength, endurance, and flexibility. For example, a gymnast needs strength, flexibility, muscle endurance, and balance to perform a variety of routines. Talk to a physical education teacher, a coach, or an athletic trainer to help you establish a conditioning routine.

You can get into shape for your sport with regular conditioning and good nutrition. However, too much exercise without enough rest can be harmful. Overtraining is exercising too hard or too often, without enough rest in between sessions. Signs of overtraining include an elevated resting heart rate, frequent illness, disturbed sleeping habits, and frequent muscle strain or injury. To avoid overtraining, take a day off from exercise every week. Alternate intense workout days with light ones. Every two months reduce your exercise frequency, intensity, and time for a week.

Sore Muscles

Sometimes you may feel stiff and sore after a workout. This soreness is caused by microscopic damage to muscle fibers. The small tears in the muscles fill with fluids and waste products. As the fibers heal, your muscles feel better.

Athletes should drink fluids before, during, and after sporting events.
Avoiding Harmful Substances

**Anabolic steroids** (a-nuh-BAH-lik STIR-oydz) are *synthetic compounds that cause muscle tissue to develop at an abnormally high rate*. Anabolic steroids, often referred to simply as *steroids*, have legitimate medical uses, such as in the treatment of some types of cancer. However, it is not only unfair but also illegal to use them to improve athletic performance. Anabolic steroids can also have many different side effects, including:

- weakening of tendons, possibly leading to joint or tendon injury.
- damage to the cardiovascular system, affecting heart rate and blood pressure and increasing the risk of a heart attack.
- bone damage because the bones can become more brittle.
- brain and liver cancer.
- harmful changes in sexual characteristics, including the growth of facial hair in females and breast development in males.
- the development of acne.
- increased irritability, anxiety, suspicion, or sudden rage.

To avoid overtraining, take one day a week off from working out. **What are some signs of overtraining?**

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**Lesson 5: Sports and Physical Wellness**

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

**Reviewing Terms and Facts**

1. **Vocabulary** Define the terms *individual sports* and *team sports*.
2. **Recall** What are three ways to avoid sports injuries?
3. **Describe** How much water should an athlete drink before a game?
4. **Vocabulary** Define the term *dehydration*, and discuss its effects.
5. **Apply** What is *overtraining*? What advice would you give to someone who is showing signs of overtraining?

**Thinking Critically**

6. **Evaluate** Describe your own thoughts and feelings about the benefits of individual sports compared to those of team sports.
7. **Predict** How might playing a sport throughout your life benefit your health?

**Applying Health Skills**

8. **Refusal Skills** With a classmate, write a skit in which an athlete is persistently pressured by a teammate to take anabolic steroids. Incorporate facts about steroid use into the athlete’s refusal.
Fitness Tips

Want to feel good, have fun, and stay healthy? Here are some tips from Judy Young, executive director of the National Association for Sport and Physical Education.

Get moving: Be physically active for at least an hour every day. Kick a soccer ball, take a walk with your family, go dancing with friends—whatever! Try new and varied activities so you work different muscles in your body.

Stick with it: Perform one of your daily physical activities for at least 10 minutes at a time. Increase the time as you get stronger.

Set limits: Don’t spend more than two hours a day playing computer games or watching TV.

Fuel up: Eat a nutritious, balanced diet that includes whole grains; fruits and vegetables; low-fat dairy products; and protein-rich foods such as lean meats or beans. Drink at least eight glasses of water every day.

Have fun: Exercise is more fun with a partner. Invite a friend or family member the next time you’re ready to get active.

The emphasis is on lifelong fitness habits, not competition.
It’s a sunny day, and 12-year-old Liza Parisaca is on the banks of Biscayne Bay in Miami, Florida. She pulls on a life vest over her T-shirt and cautiously climbs into the sailboat bobbing in the clear blue water. Today, the first-time sailor will learn how to tack, or change course, on the boat. “Ready?” asks the instructor. Liza nods her head. She steers the boat through the wind, and it changes direction smoothly. “I wasn’t really scared,” she says with a big grin.

This isn’t an end-of-summer sailing trip. It’s gym class at Riverside Elementary School.

Riverside is one of many schools around the country that have begun adding fun new activities to gym classes. In schools like Riverside, gym class is no longer about lining up and choosing teams. A new physical education (P.E.) movement is helping kids find activities they’ll enjoy so much that they’ll stay active for the rest of their lives. The activities include cycling, martial arts, dance, kickboxing, in-line skating, using treadmills, and even sailing and kayaking.

The goal is to teach children sports and workouts that they can enjoy outside of school.

**Time to Shape Up**

The movement comes in response to studies that show that young people are less active than ever before. According to a report released by the Institute of Medicine, American children and adults need much more physical activity. The report calls for at least an hour a day of some type of physical activity.

Unfortunately, most children do not even come close to meeting that standard. Fewer than one in four children gets even 20 minutes of vigorous activity on a daily basis. One in four young people receives no physical education in school, according to P.E. 4 Life, a group that promotes fitness for kids.

Young peoples’ general activity level peaks in 10th grade, then slowly declines all the way into adulthood. “We want them to find something they can enjoy doing for a lifetime,” says Dr. Jayne Greenberg, director of P.E. programs for the Miami-Dade County Schools in Florida.

Greenberg says the key to the new P.E. programs is that they work for all kids regardless of skill level. “Traditional P.E. programs tended to focus on competitive team sports and appeal mainly to the strongest athletes in the class,” she says. In the sailing unit at Riverside, even disabled children take a turn as skippers of the boat. Says Greenberg: “Kids should never have to feel like they aren’t good enough in their gym classes.”

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**About Fitness**

Turn the “Fitness Tips” into a personal checklist. Create a chart with the seven days of the week listed on the left and the five tips—or goals—listed on the bottom. For one week, check off the goals that you accomplish each day. Use this information to determine what physical activity goals you need to work on.
Model

During the summer Hayley decided that she wanted to be more active. She planned out what activities she would do and when. She went swimming at the community pool. She also went in-line skating and bicycling, and she asked her friends to play tennis. She was pleased with her progress at the end of the summer.

However, Hayley realized that the pool would close soon and that she would be unable to do a lot of her activities once it started getting dark earlier. After thinking and talking with her family and friends, Hayley decided to continue working toward her goal of adding physical activity to her life by working out to exercise videos after school.
**Practice**

When you set a goal, it is important to set up checkpoints so that you can evaluate your progress. This step will help you make adjustments for any obstacles that may arise. Read the situation below and write a paragraph explaining what you think Jared can do to meet his fitness goals. How might revisiting his checkpoints help him meet his goals?

After finding himself out of breath from running a mile in gym class, Jared has decided that he’d like to work to become more fit. He created a plan to reach this goal. The problem is that between homework, studying, and watching his younger brother in the afternoon, he hasn’t been able to find the time to work out.

**Apply/Assess**

Use the goal-setting steps to design a fitness program for yourself. When you set up your checkpoints, consider any issues that could prevent you from meeting your goal. For example, you might want to go jogging but live in an area where high or low temperatures discourage you from engaging in outdoor activities for part of the year. Brainstorm other ways to meet your goal. Exchange fitness programs with a classmate. Make suggestions for how your classmate can meet his or her goal when obstacles come up.

**Goal Setting**

1. Set a specific goal.
2. List the steps to reach your goal.
3. Get help from others.
4. Evaluate your progress.
5. Reward yourself.

**Self-Check**

- Did I use the goal-setting steps to design a fitness program?
- Did I come up with other ways to meet my goal when obstacles arose?
On a sheet of paper, write the numbers 8–13. Write True or False for each statement below. If the statement is false, change the underlined word or phrase to make it true.

**Lesson 3**

8. The group of organs that transports essential materials to body cells and removes waste is the nervous system.
9. The watery part of the blood is plasma.
10. Oxygen is carried from the lungs to other parts of the body by platelets.

**Lesson 4**

11. Gentle exercise that prepares your body for moderate to vigorous activity is a warm-up.
12. Gentle exercise that lets your body adjust to ending a workout is a target heart rate.
13. Intensity refers to the number of days you work out each week.

**Lesson 5**

On a sheet of paper, write the numbers 14–16. After each number, write the letter of the answer that best completes each statement.

14. Training to get into shape is called
   a. sports nutrition.
   b. conditioning.
   c. overtraining.
   d. dehydration.
15. If you have an elevated resting heart rate, are frequently ill, and experience disturbed sleeping patterns, you may be
   a. overtraining.
   b. dehydrated.
   c. malnourished.
   d. overconfident.
16. Anabolic steroids cause muscle tissue to
   a. maintain its flexibility.
   b. stop developing.
   c. develop at an abnormally high rate.
   d. perform at its best.
Thinking Critically

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

17. Explain How might staying fit help you cope with stress?

18. Integrate Describe how a program of regular exercise designed to improve strength, endurance, and flexibility can help the skeletal and muscular systems.

19. Apply Explain why you agree or disagree with this statement: “I have no control over the health of my circulatory system.”

20. Analyze If you play a sport, why might you want to continue a conditioning program even in the off-season?

Career Corner

Sports Medicine Are you interested in sports? Do you also have an interest in helping people get well? Put both interests together, and become a doctor who specializes in sports medicine. These professionals treat people with sports- or exercise-related injuries.

To enter this career, you’ll need a four-year college degree, four years of medical school, and one to seven years of residency training.

Learn more about this and other health careers by clicking on Career Corner at health.glencoe.com.

My dad and I went white-water rafting this summer and it was an experience I will never forget.

The first mile or so of the trip was easy since we just started in a slow-moving current to get used to paddling and to listen to the guide give us instructions. Then we approached the rapids and everything changed. I can’t explain the feeling of moving so fast down the rapids, with water rushing all around us while we tried to navigate. At one point our guide had to help me navigate through the “eye of the needle,” a difficult stretch of the rapids. I just missed hitting a rock, but I lost my balance for a moment and almost fell overboard. It was scary, but great, and the trip seemed to be over too soon.

Standardized Test Practice

Reading & Writing

Read the paragraphs below and then answer the questions.

My dad and I went white-water rafting this summer and it was an experience I will never forget.

The first mile or so of the trip was easy since we just started in a slow-moving current to get used to paddling and to listen to the guide give us instructions. Then we approached the rapids and everything changed. I can’t explain the feeling of moving so fast down the rapids, with water rushing all around us while we tried to navigate. At one point our guide had to help me navigate through the “eye of the needle,” a difficult stretch of the rapids. I just missed hitting a rock, but I lost my balance for a moment and almost fell overboard. It was scary, but great, and the trip seemed to be over too soon.

1. The mood of the letter writer can best be described as
   A. relieved.
   B. excited.
   C. nervous.
   D. mysterious.

2. From the information in the second paragraph, the reader can conclude that the writer found white-water rafting to be
   A. difficult.
   B. easy.
   C. boring.
   D. not for young people.

3. Write a paragraph describing how you feel when you participate in a sport or other physical activity that you enjoy.