

# LESSON 3



## The Benefits of Physical Activity



### Quick Write

Write a short paragraph describing how you would measure a person's fitness level. According to these criteria, would you consider yourself physically fit?



### Learn About

- the benefits of an active lifestyle
- increasing your level of fitness
- aerobic capacity, muscular strength and endurance, and flexibility: three elements of fitness
- setting fitness goals
- the three stages of exercise
- monitoring your progress
- sports safety
- avoiding performance-enhancing drugs (PEDs)

*"Lack of activity destroys the good condition of every human being, while movement and methodical physical exercise save it and preserve it."*

**Plato**, ancient Greek philosopher

### The Benefits of an Active Lifestyle

Physical fitness is an official and integral part of every Junior ROTC program. Physically fit cadets are more capable of serving their communities and nation. Air Force Junior ROTC provides a wellness program as a tool to help you achieve personal fitness goals and national standards calculated for student age and gender. The objective of every AFJROTC fitness program is to motivate cadets to lead active, healthy lifestyles in school and at home.

In 2008, the US government set a standard for young people to do 60 minutes or more of physical activity each day. In a 2013 survey, it appeared that the guidelines were not being met. The survey found that only 29 percent of high school students participated in such activity for 60 or more minutes a day.

A recent review of 14 studies conducted by the medical staff of Peak Fitness® found that physical activity and academic performance are closely linked. Physical activity benefits both your body and mind. Besides promoting your overall health, it helps you look and feel better. When these activities involve other people, you also get social benefits of interacting with other people your age.

Physical activity provides academic and emotional benefits. Being active lets you clear your mind and "burn off" stress. It also helps you feel good about yourself. The "Benefits of Physical Activity" box lists many of the physical, academic/emotional, and social benefits of physical activity.



## Vocabulary

- physical fitness
- physical activity
- exercise
- obese
- metabolism
- aerobic exercise
- anaerobic exercise
- sedentary
- aerobic capacity
- cross-training
- strength
- muscle strength
- muscle endurance
- flexibility
- pulse
- warm-up
- exertion
- cool-down
- sports conditioning
- dehydration
- anabolic steroids

## Physical Fitness and the Benefits of Physical Activity and Exercise

The terms *physical fitness*, *activity*, and *exercise* are closely related, but each has its own meaning. **Physical fitness** is *the ability to perform moderate to vigorous levels of activity, and to respond to physical demands without excessive fatigue.*

**Physical activity** is *any kind of movement that uses up energy.*

You use energy by exercising and playing sports. You also use energy by any movements that are part of an active lifestyle. This can include biking to the store, raking leaves, or walking up and down the stairs. **Exercise** is *a planned and organized session of physical activity that you do to improve or maintain your physical fitness.* How do you become fit? Every expert agrees it is done with regular exercise, sound nutrition, and an active lifestyle.

## Physical Activity and Weight Control

You can become healthier and have a more productive life by raising your level of fitness and maintaining your weight at the recommended range.

Currently, the number of overweight people in the US continues to grow. In 2012, the Center for Disease Control and Prevention (CDC) reported that about two-thirds of all Americans are considered overweight. More than 36 percent are obese. **Obese** is *having a body weight more than 20 percent greater than recommended for a person of a certain height.* Among teenagers (ages 12 to 19), more than a third are overweight or obese. This growth can be traced to people having inactive lifestyles and overeating.

It is important for all of us to be physically active and develop good eating habits in order to stay within a healthy weight range. Understanding your metabolism, the way the food you eat is converted into energy, can help you maintain a healthy weight.

**Metabolism** is the process by which your body gets energy from food. As we learned from the previous lesson on nutrition, food's energy value is measured in units of heat called calories. Your body needs to take in enough calories each day to function properly. If we consume too many calories, the additional calories must be burned through physical activity or they will be stored in the body as fat. By being physically active, your metabolic rate rises, and your body burns more calories than when it is at rest. The number of calories burned depends in part on the nature of the activity. When you stop being active, your metabolic rate slowly returns to normal. The good news is however, for several hours after being physically active, you will continue to burn more calories than you did before you began the activity. Table 3.4 shows how many calories are burned during common physical activities at both moderate and vigorous levels.

## Benefits of Physical Activity

### Physical Benefits

- Strengthen heart and lungs
- Strengthen bones
- Manage weight
- Control blood sugar
- Control blood pressure
- Increase strength and stamina
- Improve flexibility and muscle tone
- Improve balance, the feeling of stability and control over your body
- Develop coordination, the smooth and balanced movement of body parts at the same time
- Improve reaction time
- Increase body's defense to diseases
- Improve sleep

### Academic/Emotional Benefits

- Feel more alert and energetic
- Reduce stress
- Learn to focus on completing tasks, such as homework
- Learn new things
- Get a sense of accomplishment
- Lessen mental fatigue
- Build a positive self-image
- Increase self-confidence and self-esteem

### Social Benefits

- Engage in enjoyable activities
- Meet and interact with new people
- Use abilities to work with others as a team
- Get support from friends
- Share goals and achievements with others



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Table 3.4 Calories Used per Hour in Common Physical Activities

	Approximate Calories per 30 Minutes for a 154-lb Person <sup>1</sup>	Approximate Calories per Hour for a 154-lb Person <sup>1</sup>
<b>Moderate Physical Activity</b>		
Hiking	185	370
Light gardening/yard work	165	330
Dancing	165	330
Golf (walking and carrying clubs)	165	330
Bicycling (<10 mph)	145	290
Walking (3.5 mph)	140	280
Weightlifting (general light workout)	110	220
Stretching	90	180
<b>Vigorous Physical Activity</b>		
Running/jogging (5 mph)	295	590
Bicycling (>10 mph)	295	590
Swimming (slow freestyle laps)	255	510
Aerobics	240	480
Walking (4.5 mph)	230	460
Heavy yard work (chopping wood)	220	440
Weightlifting (vigorous effort)	220	440
Basketball (vigorous)	220	440

1. Calories burned per hour will be higher for persons who weigh more than 154 lbs (70 kg) and lower for persons who weigh less.  
Source: Adapted from Centers for Disease Control and Prevention: *Dietary Guidelines for Americans*.

## Increasing Your Level of Fitness

The first step to increasing your level of fitness is acknowledging 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 easy. Just look around. Instead of using elevators and escalators, take the stairs. Walk or ride a bike when possible, rather than asking your friends, parents, or guardians for a ride.

In addition to looking for everyday opportunities to put your body to work, plan regular exercise. Start in sessions of 10 to 15 minutes at a time. Gradually work up to about 60 minutes 5 to 7 days of the week. If you feel that you do not have time to spare, break down your activity into multiple shorter sessions during the day. Three 10-minute exercise sessions will provide the same benefit as one covering 30 minutes.

### Choosing the Right Activities

The second step is to choose activities that you enjoy and will give you the benefits you want. There are two main types of exercise: aerobic and anaerobic.

**Aerobic exercise** is *rhythmic, nonstop, and moderate to vigorous activity that requires large amounts of oxygen and improves the cardiorespiratory system*. Running, walking, 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, weightlifting, 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.

Technology has certainly made our lives simpler, easier, and more fun. Yet, technology 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 TV, playing games on a computer, or engaging in hours of social media conversation, instead of being outside playing. They send email or text messages 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. Compare that to the number of hours you spend doing something physically active. Compare the totals. Are you active most of the time or sedentary? **Sedentary** involves *a lot of sitting and very little exercise*. 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.

### **Aerobic Capacity, Muscular Strength and Endurance, and Flexibility: Three Elements of Fitness**

Exercise is used to develop fitness in four ways. One is aerobic capacity. Another is muscle strength and endurance. The other two ways are flexibility and body composition. We will cover the first three in this lesson, and the fourth, body composition, in Lesson 4. AFJROTC utilizes a tracking program based on the Presidential Fitness Challenge to help cadets track fitness level. Each cadet will establish a fitness baseline and then work

toward improvement over the school year. Once cadets establish their fitness baseline, instructors and cadets will be able to assess their improvement at the end of the school year. The physical fitness baseline for cadets is measured from five fitness activities:

- Curl-ups (or partial curl-ups)
- Shuttle Run
- Endurance run/walk
- Pull-ups
- V-sit reach (sit and reach)

## Aerobic Capacity

**Aerobic capacity** refers to *the ability of your heart and lungs to supply the muscles of your body with oxygen*. Heart and lung capacity is important in all kinds of exercise—running, biking, jumping rope, swimming, and walking. Measuring aerobic capacity, including how far you can run without stopping, or how long you can play basketball without tiring, are indicators of your heart and lung endurance. Learn to pace yourself so that you can walk or jog without stopping. The best way to build up heart and lung endurance is by doing moderate to vigorous exercise for at least 60 minutes on most days. This is called cardiovascular exercise because it raises your breathing and heart rates. This increase benefits your heart and the blood vessels that make up the cardiovascular system. Some cardiovascular improving 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 without stopping.
- **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. Gradually build up your ability until you can jump rope for 60 seconds without stopping.

It's also a good idea to vary your exercise routines. **Cross-training**, or *switching between different exercises* has benefits over doing one exercise all the time. Whatever exercises you choose, try to vary them equally, and don't overdo it. Cross-training can also help reduce boredom of doing one type of exercise over and over again. It can also help reduce the chance of injury by working different muscle groups instead of overusing one group, as may happen if your only exercise is running. Overuse of one muscle group can cause weakness in another area of the body, possibly resulting in injury. A good form of cross-training for someone who runs is to include weightlifting. Weightlifting provides muscular strength while running improves heart and lung endurance.

## Muscle Strength and Endurance

The ability of your muscles to exert a force is called **strength**. **Muscle strength** is the most force you can exert or weight you can lift at one time. **Muscle endurance** is the ability of a muscle to repeatedly exert a force over a prolonged period. The greater your muscle strength, the more force your muscles can exert. The greater your muscle endurance, the longer your muscles can exert force.

Three basic strengthening exercises help improve strength and endurance of your abdominal area and upper body. These include push-ups, curl-ups, and step-ups:



**Push-ups, curl-ups, and step-ups are three basic strengthening exercises.**

*All photos courtesy of Michael Wetzel/US Air Force JROTC*

- **Push-ups strengthen muscles in your arms and chest**—Lie face down 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.
- **Curl-ups 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.
- **Step-ups 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 high school-age students become interested in weight training because it's a good way to build muscle strength. You should start with lifting light weights multiple times. Make sure, however, that you learn from an expert, such as a fitness trainer or physical education teacher. Lifting weights properly prevents injury and provides the best chance for improvement.



Weight training is an important aspect of fitness that you should start during high school and continue throughout your life.

## Flexibility

The third step 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 3.11 shows how to measure the flexibility of muscles in your lower back and the back of your legs. 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. One tool used to measure flexibility is the V-sit reach testing as explained in Figure 3.11.

## Your Target Heart Rate

Finally, the Centers for Disease Control and Prevention (CDC) recommends that you monitor your heart rate during exercise to ensure you reach target heart rates. When you are exercising, you should increase your heart rate to at least 50 percent of your maximum rate to provide a benefit for your heart and lungs. The **pulse** (or heart rate) is *the regular expansion and contraction of an artery, caused by the heart pumping blood through the body*. The heart rate that will safely provide the greatest benefit when exercising is between 60 and 80 percent of your maximum rate. This is your target pulse rate (also known as target heart rate).



### Here's how you perform V-sit reach testing:

- A straight line two feet long is marked on the floor as the baseline.
- A measuring line four feet long is drawn perpendicular to the midpoint of the baseline extending two feet on each side and marked off in half-inches. The point where the baseline and measuring line intersect is the "0" point.
- Student removes shoes and sits on floor with measuring line between legs and soles of feet placed immediately behind baseline, heels 8 to 12 inches apart.
- With hands on top of each other, palms down, the student places them on measuring line.
- With the legs held flat by a partner, the student slowly reaches forward as far as possible, keeping fingers on the measuring line and feet flexed.
- After three practice tries, the student holds the fourth reach for three seconds while that distance is recorded.



*Courtesy of Michael Wetzel/US Air Force JROTC*

#### V-sit reach tip:

Participants are most flexible after a warm-up run. Best results may occur after performing a good warm-up.

**FIGURE 3.11**

### V-sit Reach Testing

**For moderate-intensity physical activity,** a person's target heart rate should be 50 to 70 percent of his or her maximum heart rate. This maximum rate is based on the person's age. An estimate of a person's maximum age-related heart rate can be obtained by subtracting the person's age from 220. For example, for a 16-year-old person, the estimated maximum age-related heart rate would be calculated as  $220 - 16 \text{ years} = 204$  beats per minute (bpm). The 50 percent and 70 percent levels would be:

- **50 percent level**— $204 \times 0.50 = 102$  bpm
- **70 percent level**— $204 \times 0.70 = 143$  bpm

**For vigorous-intensity physical activity**, a person’s target heart rate should be 70 to 85 percent of his or her maximum heart rate. To calculate this range, follow the same formula as used above, except change “50 and 70 percent” to “70 and 85 percent.” For example, for a 17-year-old person, the estimated maximum age-related heart rate would be calculated as  $220 - 17 \text{ years} = 203$  beats per minute (bpm). The 70 percent and 85 percent levels would be:

- **70 percent level**— $203 \times 0.70 = 142$  bpm
- **85 percent level**— $203 \times 0.85 = 173$  bpm

Thus, vigorous-intensity physical activity for a 17-year-old person will require that the heart rate remain between 142 and 173 bpm during physical activity.

### Measuring Your Heart Rate

The CDC recommends the following method to determine whether you are exercising within the heart rate target zone. You must stop exercising briefly to take your pulse. You can take the pulse at the neck, the wrist, or the chest. We recommend the wrist. You can feel the pulse on the artery of the wrist in line with the thumb. Place the tips of the index and middle fingers over the artery and press lightly. **Do not use the thumb.** Take a full 60-second count of the heartbeats, or take for 30 seconds and multiply by 2. Start the count on a beat, which is counted as “zero.” If this number falls between 102 and 143 beats per minute in the case of the 17-year-old person, he or she is active within the target range for moderate-intensity exercise.



Measuring pulse at the wrist.

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After two weeks, ask yourself, “Was my heart rate generally within the range of my target heart rate? Which forms of exercise produced the highest rate? The lowest?”

After reading this section and completing the physical activities described, you should have a clearer idea of your aerobic capacity, muscle strength and endurance, 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.

The role of heredity and overall health are also important in your physical abilities. For example, if you have asthma, you may become short of breath when exercising. If you have a physical impairment, you 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 specific fitness goals.

## Setting Fitness Goals

A personal fitness plan can help you achieve the level of fitness that will improve your general health and improve your endurance. However, a plan can become confusing. You may wonder which exercises or other physical activities will best help you reach your fitness goals. Maybe you're not sure how to do an exercise. You can, however, turn

to your instructor, a physical education teacher, or coach for help. 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 stay motivated. You can get an idea of how to proceed by looking at Table 3.5, which compares different types of activities for their benefits.

Whatever your fitness goals may be, try to do one or more forms of physical activity or exercise each day. Being fit and healthy means performing exercises that will improve endurance, flexibility, and strength. Setting goals is an important step in starting a fitness program. Keep in mind that the goals you set should be reasonable and realistic. Using the SMART system will help you set reachable goals.

### Example of Setting a SMART Goal

#### Specific:

Be able to run three miles

#### Measurable:

Log activity each week

#### Attainable:

Run/walk for 30 minutes three times a week

#### Results:

Run a 10-minute mile by the end of the month

#### Time Frame:

I want to be able to do this by the end of the month

Table 3.5 Rating Different Activities\*

Exercise	Muscle Strength and Endurance	Lung Strength and Endurance	Heart Strength and Endurance
Handball	High	High	High
Swimming	High	Medium	High
Jogging	Medium	High	High
Bicycling	Medium	High	High
Tennis	High	Medium	Medium
Brisk walking	Medium	High	High
Slow walking	Low	Medium	Medium
Softball	Medium	Low	Low
Weight training	High	High	Low

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

## Be Active Every Day

Even if you don't set specific fitness goals, you should look for opportunities to be active every day. Take time away from the computer or other mind-stimulating but sedentary activities in favor of activities requiring body movement. Take stairs instead of an elevator or escalator. Bike to a friend's house. Walk to the store (if it's safe). Do outdoor work like raking leaves or shoveling snow.

## Preparing an Activity Plan

If you feel confident enough to do your own fitness planning, a weekly activity outline like the one in Figure 3.12 can be helpful. A written plan will keep you on track and help you exercise consistently. There are two things to do when developing your plan. First, write down all of your scheduled physical activities or exercise sessions. These would include gym periods, team practices, and drill practice. Second, pencil in a variety of physical activities and exercises. Try to balance your schedule so that every day you have some activities listed, 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. You may also find that it is not that hard to stay active.

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Bike ride	Gym class	Basketball or jog after class	Gym class	Basketball or jog after class	Gym class	Soccer game
1 hr.	50 min.	40 min.	50 min.	40 min.	50 min.	1 hr.
	Soccer practice	Karate class	Soccer practice	Karate class	Walk home from school	Karate class
	2 hrs.	1 hr.	2 hrs.	1 hr.	20 min.	1 hr.
	Walk home from practice	Drill practice		Drill practice		
	20 min.	1 hr.		1 hr.		
<b>TOTAL</b>	<b>TOTAL</b>	<b>TOTAL</b>	<b>TOTAL</b>	<b>TOTAL</b>	<b>TOTAL</b>	<b>TOTAL</b>
<b>1 hr.</b>	<b>3 hr. 10 min.</b>	<b>2 hr. 40 min.</b>	<b>2 hr. 50 min.</b>	<b>2 hr. 40 min.</b>	<b>1 hr. 10 min.</b>	<b>2 hr.</b>

FIGURE 3.12

A Sample Weekly Activity Plan

## The Three Stages of Exercise

Every exercise program should have three stages: the beginning warm-up, the workout itself, and then the cool-down. Because all three stages are important, it's important not to skip any of them.

### 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 10 minutes. During this warm-up, your heart rate should gradually increase, and your body temperature should start to rise.

As the flow of blood to your muscles increases, they become more flexible, which makes them less prone to injury during exercise. You should begin a warm-up with gentle aerobic activities, such as a fast walk or light jogging, 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 or tissues. Figure 3.13 shows two typical stretching exercises. Some stretches are not good for your joints, so ask your instructor or teacher 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 softball or baseball, you might want to warm up by gently throwing the ball back and forth with a teammate. Then, do some light jogging and finally a variety of stretching exercises.

### Working Out

Once you have warmed up, you're ready to work out. Your workouts should start at a comfortable level of exertion, and then build up gradually. **Exertion** is *the act of strenuous exercise or effort*. 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 heart 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 a lot 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 45 to 60 minutes each session. Remember to aim for 60 minutes of physical activity on most days.

Different stretching exercises benefit different parts of the body. These exercises stretch calves and shoulders.

*How do you warm up before you exercise?*

### Calf Stretch

Lean against a wall for support, as shown, and place 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.



**Calf stretch.**

© Frank Herzog/Fotolia.com

### Shoulder Stretch

Stand with your feet shoulder width apart. Reach back with your left or right hand, trying to touch your spine. Use the opposite hand to gently put pressure by placing it on the elbow, as shown in photo. Gently apply pressure to stretch shoulder muscles. Alternate with other arm.



**Shoulder stretch.**

© Nicholas Piccillo/Fotolia.com

## FIGURE 3.13

### Stretching Exercises

- **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 frequency and intensity 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, monitoring your progress becomes important. Remember that change comes gradually. You can't expect to cut 30 seconds off your mile time after only a week of working out. Here are some suggestions for evaluating your progress.

- Keep an exercise log or journal, making performance notes after each workout.
- After four to six weeks of workouts, you should notice some improvement in your overall fitness. Depending on the exercises you have been doing, you should feel stronger. You should have more endurance and greater flexibility. You will probably also feel better overall, look more fit, and have more energy.
- If you see no significant change after six 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 heart 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 good physical fitness.
- Once you reach your fitness goals, you might consider setting new goals for yourself.

## Choosing the Right Activity

Think about the kinds of activities you enjoy most. There may be a number of individual or team sports that can provide personal satisfaction and a way to stay active, or one sport may suit your needs better than others. No matter what choice or choices you make, playing sports has many benefits.

### **Individual Sports**

Individual sports that you do on your own or with a friend, like biking, running, walking, swimming, golf, and skating have more time flexibility than team sports. You can do them whenever you feel like it, and you can do them for as long as

you wish. However, there are two major disadvantages of individual sports. You have to set your own time to do the activity and stick to it. You also have to motivate yourself to keep that schedule once set. Some people find it hard to stick to a plan if they have to do it on their own.

### Team Sports

You may prefer, as many young people do, organized team sports. In high school, there are many opportunities for team sports such as softball, baseball, soccer, basketball, volleyball, and football. Other team sports such as track, tennis, golf, swimming, and wrestling are also common. These require individual performances, but they contribute to a team's overall scores or match wins.

Although schools offer a variety of team sports, most of these sports are also offered through local recreation departments and community centers. Other youth programs through churches and synagogues offer sports, as do some sports and fitness centers.

Advantages of team sports are several. Many young people like the excitement of competition. You have the companionship and support of 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, having a schedule that requires several team practices and games after school every week and on weekends may interfere with family and school commitments. If these commitments prevent you from participating in team sports, individual sports may offer a better fitness alternative.



Playing sports provides an academic and emotional impact as well as a physical one. Playing sports raises your body temperature, which also has calming emotional effects. In addition, playing sports teaches the mind to focus on a game or competition rather than other worries and anxieties. This ability to focus may carry over to your academics if you use the same strategies learned from sports.

### Sports Conditioning

Whether you choose an individual sport or a team sport, you need to be physically fit to do your best. It takes time and effort to be in good physical condition for sports.

**Sports conditioning** is *regular physical activity or exercise to strengthen and condition muscles for a particular sport*. In addition, proper conditioning requires you to eat healthy, learn safety rules, and use the right kind of equipment. Whether you choose to participate in team or individual sports, it is important to work with a coach or sports trainer to develop a conditioning program for the sport in which you participate. The correct conditioning program will properly prepare you to get the most out of your sport or exercise.





**Living an active lifestyle helps you feel good about yourself.**

*Courtesy of Michael Wetzell/US Air Force JROTC*

### Sports and Nutrition

An important part of sports conditioning is having a balanced, nutritious diet. Just as you learned from the previous lesson, your choice of foods should include a wide variety that gives you energy but has a limited amount of fat. Here are some things to remember about your diet when conditioning:

- **Carbohydrates**—Your body needs extra energy to play sports. Fruits, vegetables, pasta, and whole-grain breads provide the needed carbohydrates as an energy source.
- **Vitamins and minerals**—If you play any sport actively, you'll need to get plenty of calcium, potassium fiber, magnesium, and vitamin E. 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.
- **Protein**—Athletes need protein, but no more than anyone else, as long as their diets include enough nutritious foods. Even though protein helps to build muscle tissue, it is only through exercise and training that you can fully develop your muscles.
- **Water**—If you play sports, your body will lose water through sweating. To maintain fluid balance, take in plenty of fluids during the activity, and drink several glasses of water or other fluid after practice or a game. Your goal is to avoid **dehydration**, *an excessive water loss from the body*, which can lead to dizziness, muscle cramps, and possible serious medical problems.

## Sports Safety

Whenever you exercise or participate in sports, you increase the risk of injury. To reduce that risk, you need to employ safe behavior; use safe, proper equipment; and know your physical limits.

### Safe Behavior

Many sports-related injuries can be prevented by always promoting safety:

- **Exercise where and when it's safe**—A soft, even surface is easier on your legs, knees, and feet. You should exercise with another person and avoid deserted places. Protect yourself during hot weather by drinking plenty of fluids, using sunscreen outdoors, and exercising in the cooler mornings or evenings.
- **Always warm up and cool down**—Gradually get your body ready to begin an exercise routine with a proper warm-up. Then, end your workout by cooling down.
- **Practice your sport regularly**—Practices, whether with a team, or with just a playing partner, help you maintain 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 risky actions. Try to stay calm and relaxed.

### Safe Equipment

Your clothing and equipment choices will affect your safety. Here are some examples of what you should do:

- **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, especially during the hours of darkness.
- **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 right protective gear for the sport you are playing.
- **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.

## Know Your Limits

When exercising or playing sports, it's important to recognize your limits. Exceeding your personal limits could lead to injury:

- **Listen to your body**—Exercise can cause discomfort, like mild loss of breath 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 trainer, school nurse, or doctor. Also, don't play sports if you're not feeling well.
- **Rest, Ice, Compress, and Elevate (RICE) injured areas**—Follow the RICE formula if you have a minor sports injury like a sprained ankle. First Aid will be covered in more detail in a later lesson.

## Avoiding Performance-Enhancing Drugs (PEDs)

According to the National Center for Drug Free Sport<sup>®</sup>, performance-enhancing drugs are any substance taken to perform better athletically. Some athletes from high school all the way through the professional ranks in sports have either experimented with or started regular use of PEDs. Although there are many forms of PEDs, one common drug used is **anabolic steroids**; these are *drugs that cause muscle tissue to develop at an abnormally fast rate*. PEDs provide the ability for athletes to perform at a higher level by increasing their strength, endurance, and recovery from injury. However, the use of these drugs is both dangerous and, in almost every sport, illegal. In addition, athletes who test positive and admit to having used these drugs eventually find their reputations and their ability to participate in sports are negatively affected.

Among the physical and medical side effects users of PEDs may experience are:

- 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
- Liver and brain cancers
- Facial hair growth in females and breast development in males

A complete list of PED side effects and health concerns can be found on the United States Anti-Doping Agency website: <http://www.usada.org/effects-peds/>.

Performance-enhancing drugs have no place in a healthy fitness plan. Besides damaging your body, they can destroy a potential career in athletics.

 **CHECKPOINTS**

## Lesson 3 Review

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

1. What are three examples of the academic/emotional benefits of physical activity?
2. Define physical activity.
3. Why does the body need calories?
4. What is the difference between aerobic exercise and anaerobic exercise?
5. Name two activities technology has replaced that once were part of our daily lives.
6. What is the downside of technology in terms of our general physical fitness?
7. Define aerobic capacity.
8. What is the best way to build up heart and lung endurance?
9. What is the difference between muscle strength and muscle endurance?
10. What should be a person's target heart rate for moderate-intensity physical activity?
11. List three activities that can help you achieve fitness goals.
12. What activity is rated highest in all three categories for achieving fitness if done for 30 minutes or more?
13. Why should you have a written physical activity plan?
14. What are the three stages of an exercise workout?
15. Why should you always have a cool-down stage when exercising?
16. What should you notice about your fitness progress after four to six weeks of workouts?
17. If you don't see a noticeable change of fitness after six weeks of workouts, what should you do?
18. What should you keep in mind when preparing an activity plan?
19. What is sports conditioning?
20. Define dehydration.
21. When you participate in sports, why is it important to practice regularly?
22. What three areas should you consider when exercising so that you stay within your physical limits?
23. What are performance-enhancing drugs (PEDs)?
24. What are three negative side effects of taking PEDs?

### APPLYING YOUR LEARNING

25. Create a weekly physical activity plan using Figure 3.12 as a guide. As part of your plan, write down what safety measures you would use for each activity to reduce your chance of injury.