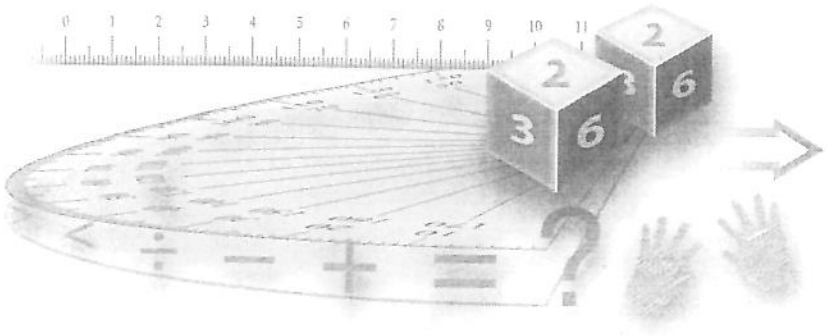

RATE
Project 47

Your unique exercise program

Most adolescents realize the value of exercise. Books and magazine articles that promote fitness, as well as advertisements for exercise equipment, health club memberships, and exercise videos, are common. While many students exercise regularly through sports and dance, many others express an interest in developing a personal exercise program. That is what this project encourages them to do.

Goal

Students will work in pairs or groups of three to design an exercise program. They will explain the program they develop to the class and write a brief description of it. On completion of the project, students will be encouraged to commit themselves to their exercise programs. *Suggested time:* Two to three class periods.

Math Skills to Highlight

1. Using a stopwatch to take a pulse
2. Determining a target heart rate
3. Finding the percentage of a number
4. Rounding to the nearest whole number
5. Using technology in problem solving

Special Materials/Equipment

Stopwatches; calculators; fitness magazines and books. *Optional:* Computers with Internet access.

Development

Ask your students what they do for exercise, and their answers may run from participating in sports, dance, and gymnastics to simply working out at home or in a gym. Ask students why they exercise, and you will likely receive equally diverse answers, from keeping healthy to staying slim to building muscles.

A cautionary note: Before starting this project, check with your school's nurse and your students' gym teacher regarding any students who, because of medical reasons, are restricted from participating in physical activities. Most students who are restricted in some way will tell you. Occasionally there is one who will not because he or she wants to participate. Privately remind students who are restricted not to attempt any workouts that violate their doctor's advice. Because of its focus on fitness, you may want to invite your students' gym teacher to work with you on this project.

- Begin this project by explaining that students will work in pairs or groups of three to develop an exercise program. In setting up partners or groups, consider allowing friends to work together. Friends often have similar interests for exercising and will more likely work out together after they have developed their program.
- Distribute copies of Student Guide 47.1, and review the information with your students. Point out that the guide contains a list of exercises students may consider in developing their programs. There are many more, of course, and you should encourage students to consult reference books and magazine articles about fitness and exercise. Students may also consult online sources.
- Discuss the value of aerobic exercises that cause the heart to beat faster for an extended period (at least twenty minutes). Aerobic exercises strengthen the cardiovascular and circulatory systems and promote general fitness. Jogging, rope skipping, cross-country skiing, swimming,

ice-skating, basketball, hiking, dancing, and brisk walking are good examples of aerobic exercises.

- Hand out copies of Data Sheet 47.2, "Your Training Range." Review the information with your students, and discuss the importance of exercising within the target zones as noted on the sheet. If necessary, review how to find the percentage of a number and rounding to the nearest whole number, which students will need to do to determine their own training range.
- Plan to spend a period in the library so that students may conduct research on various exercises. Prior to beginning this project, ask your librarian to reserve books and magazines on fitness and exercise. The Internet is also a good source of information.
- Emphasize the importance of developing an exercise program that is reasonable and suited to the person. *Also note this caution:* Students who do not exercise regularly should consult with their doctor before embarking on any exercise program. During exercise, if students feel that they are becoming fatigued or light-headed or are having trouble catching their breath, they should slow down.
- Encourage students to commit themselves to their exercise routine.
- Note that charting one's progress can be an important part of an exercise program. Although this is not a requirement of the project, encourage your students to keep a record of the progress they make in their exercise program. Recording progress enables students to see how they are improving and provides continuous motivation. An exercise chart may be little more than a dated log that shows the progress toward goals. Mention that it often takes time to achieve fitness goals, and students should not be discouraged by what may seem to be slow progress in the beginning of an exercise program.
- Remind students to write a description of their exercise plan, and be prepared to share their plan orally with others.

Wrap-Up

Conduct a discussion in which students describe their exercise plans. Also, display their written descriptions.

Extension

About three months after the completion of the project, ask your students to evaluate the exercise plan they developed. Have they met their goals? Have they increased the level of activity? Have they expanded their exercise plan to include other forms of exercise? Have they given up? If yes, why?

Name Project Due Date

STUDENT GUIDE 47.1

Your Unique Exercise Program

Situation/Problem

You and your partner or group will develop an exercise program. You will explain your program to the class, and write a brief description of it. You are encouraged to commit yourself to your program.

Possible Strategies

1. Choose exercises that you enjoy.
2. In developing your program, specify the types of exercises, the number of workouts per week, and the length of time for each workout.

Special Considerations

- There are many activities you might include in an exercise program. The following is just a partial list. Consult exercise and fitness books, as well as Web sites, for more:

  Basketball

  Baseball

Your Unique Exercise Program *(Cont'd.)*

Softball

Weight training

Volleyball

Jogging

Dancing (especially aerobic dancing)

Calisthenics (such as sit-ups, push-ups, squats)

Exercise videos

Ice-skating

In-line skating

Cycling

Hiking

Walking (briskly)

Swimming

Hockey (field, street, or ice)

Soccer

Tennis

Cross-country skiing

Downhill skiing

Snowboarding

You may find it necessary to research some of the activities you are considering.

- Most fitness experts suggest a workout plan of at least three sessions a week for at least twenty minutes of steady activity (not including a warm-up and cool-down period). A program of three to four sessions a week of forty-five to sixty minutes per session of steady exercise is considered to be a vigorous program.
- You might develop a program in which you alternate some exercises with the seasons. For example, if you live in a part of the country that receives a lot of snow in the winter, you might substitute cross-country skiing for jogging (which you would do during the late spring, summer, and early fall). Similarly, if you have access to ice in the winter, you might substitute ice-skating for in-line skating. If you live near the shore or belong to a community pool, you might swim in the summer.

Your Unique Exercise Program *(Cont'd.)*

- As you consider which exercises to include in your program, also consider your fitness goals. For example, your fitness goals might include:

  Losing or gaining weight

  Reducing or increasing your measurements

  Improving your strength, energy, or stamina

  Reducing stress

  Improving your general health and sense of well-being

- A necessary part of any exercise program is safety. Choose exercises that are suited to you. Avoid selecting exercises that are too difficult or too demanding. Be willing to start at low levels of exertion and build your endurance. For example, if you seldom jog, do not select a three-mile run as the most important part of your exercise program. Start with a quarter-mile walk or slow jog around the school track and gradually improve your stamina.
- If you have not worked out regularly, are recovering from an illness, or suffer from a serious condition, consult your doctor before beginning any exercise program. In addition, keep the following points in mind:

  Always warm up before exercising by stretching. Going lightly through the motions you will use while exercising is a good way to warm up.

  Always cool down after exercise by walking around for a few minutes. This allows your body to ease back to normal. Never just plop down on a chair while your body is still breathing hard.

  Drink plenty of liquids, preferably water.

  If you feel you are becoming fatigued or light-headed, or experience pain, stop exercising. These are signs you are pushing your body beyond its safety zone.

- A good guide for safe exercise is to work out within your training range. This range represents a safe zone where your workout is effective but not overly strenuous to your body. By going beyond your training range, you risk hurting yourself. Consult Data Sheet 47.2 to determine and monitor your training range.
- Write a description of your exercise program to share with others, and be prepared to discuss it with the class.
- Plan to work out regularly with your partners. Try to arrange a schedule so that you can work out together. (Working out with friends usually makes it easier to maintain a fitness program.)

To Be Submitted

The description of your exercise program.

Name _____

DATA SHEET 47.2

Your Training Range

Your training range (or target heart rate) gives you a safety zone while exercising. It is based on your age and heartbeats per minute. It is called a training range because it enables you to zero in on a level of exercise that is right for you.

Your Training Range

This example assumes an average fifteen-year-old student.

Always start at	220	beats per minute
Subtract your age	−15	
	205	beats per minute

Maximum safe heart rate = 205 beats per minute.

For a fifteen-year-old student, even one in good physical condition, going beyond 205 heartbeats per minute can be dangerous. The American College of Sports Medicine recommends that you calculate both 55% and 90% of your maximum safe heart rate to find the low and high end of your *training range.*

Multiply: 205 × 0.55 = 112.75. Round to 113 beats per minute. This is the low end of the range for a fifteen-year-old person. Exercising at this rate would result in a light workout. For people who have not exercised regularly during the past few months, exercising near the low end of the range is practical. As their conditioning improves, they can safely increase the level of activity and increase their heart rate.

Multiply: 205 × 0.9 = 184.5. Round to 185 beats per minute. This is the high end of the range. Exercising at this rate would result in a heavy workout.

The training range for an average fifteen-year-old student is between 113 and 185 heart beats per minute.

Your Training Range *(Cont'd.)*

Taking Your Pulse

You can keep track of your heart rate if you know how to take your pulse. Here is what to do:

1. Using your first two fingers (index and middle; no thumbs), press lightly on your carotid artery, which is located on the right side of your neck, straight down from the corner of your right eye. The artery is just under your chin. Gently put your fingers beneath your chin and feel for the pulse. You may need to move your fingers around a little, but the carotid is simple to find for most people.
2. Using a stopwatch or the second hand of a wristwatch, count the number of beats you feel for 10 seconds. This is your 10-second heart rate.
3. Since there are 60 seconds in a minute, multiply your 10-second heart rate by 6 to find your heart rate per minute.

Do not take anyone else's pulse, or let anyone else take yours. Keeping track of his or her pulse and heart rate is something each individual must do to avoid any confusion or mistakes.

Putting the Numbers Together

After finding your training range, take your pulse for 10-second periods several times throughout your workout. Multiply the number of beats times 6 to find your heart rate per minute. It should fall within your training range. If it is near the low end of the zone and you do not feel tired or out of breath, you can increase the level of your workout. If your heart rate per minute is near the top of your range, you should be careful not to exceed it. Of course, if you are becoming tired or having trouble catching your breath at any point during the workout, slow down.