

Cardio Concepts

The goal for Cardio Concepts is to learn about Cardiovascular Fitness; the common diseases associated with the cardiovascular system; ways to prevent these diseases; your Target Heart Rate Zone; why your THRZ could differ from another person; exercises which put you in your THRZ; why you should work so that you are in your THRZ; how to use a Heart Rate monitor; and much more!

This unit will help you realize that fitness is personal. Your body, its needs and its functions are unique. While there are many basic similarities, each one of us is different. The exercises and activities we will learn will be the same for every person, but *how* that person works, and *how* their body responds to that work will be different.

You are on the road to becoming an adult. Part of the responsibility is learning to take care of your body. Today, we take another step towards giving your body the physical activity it needs. When you no longer take P.E. as a part of your daily schedule, be it an upperclassman here at RPCS, or as a working adult, you can remember why we need daily physical activity, and how to get it. According to the United States Department of Agriculture (www.MyPyramid.gov), physical activity is movement of the body that uses energy. In order for your body to reap the healthy benefits, the physical activity should be moderate to vigorous and last 30minutes a day, for an adult, and 60minutes a day for children and teenagers.¹

What does moderate and vigorous activity mean? Moderate activity includes walking briskly (3.5mph); hiking; gardening; dancing; golf (walking and carrying the clubs); bicycling (less than 10mph); and weight training (a generally light lift). Vigorous activity includes running/jogging (5mph); bicycling (more than 10mph); swimming (freestyle laps); aerobics; walking fast (4.5mph); heavy yard work (chopping wood); weight lifting; competitive basketball.² Remember, just because you are moving does not mean you are being physically active! Casual walking (shopping or walking to class) does not count. You need to exert energy so that your heart rate increases.



Included in this packet are Key Cardio Terms, Procedures for using the Polar Heart Rate monitor, a Heart Rate Monitor activity chart, and three worksheets you will complete over the course of the unit.

¹ www.MyPyramid.gov/pyramid/index.html

² www.MyPyramid.gov/pyramid/physical_activity.html

CARDIO CONCEPTS

Key Terms

Aerobic: exercising at a level of strain in which a person is sweating and is no more than slightly out of breath. The metabolism of muscles is receiving enough oxygen. It is generally believed that the aerobic heart rate zone is 60-80 percent of maximum heart rate. This level of exercise can be sustained for long periods of time.

Anaerobic: exercising at a heavy level of strain in which a person faces fatigue quickly. The muscles have to work with insufficient oxygen supply. Typically, this exercise intensity can only be sustained for short periods (e.g., sprinting).

Ballistic movement: done with a bouncing or bobbing movement designed to overlengthen the muscle...for elite athletes.

Cardiovascular Fitness: the ability of heart blood, lungs, and blood vessels to supply blood to body system.

Conditioning period: the main exercise portion of a workout with a training intensity level at a heart rate approximating 60-80% of the difference between resting and maximal heart rates.

Cool-Down: the tapering-off period after completion of the main conditioning bout, with activities such as slow jogging, walking, and stretching the major muscle groups. This should be done for a minimum of five minutes.

Duration: the amount of time required for each workout.

Exercise prescription: individualizing the exercise workout based on intensity, duration, frequency, and type of exercise.

Flexibility: considered to be the range of joint movement, however it takes long muscles to have range of joint movement so a practical definition is long muscles.

Frequency: the number of training sessions per week.

Heart Rate: the number of beats of the heart normally expressed as beats per minute.

Intensity: the degree of difficulty of the workout which is measured by heart rate(taking your pulse).

Karvonen Formula: mathematic formula used for estimating target heart rate zone, specifically, $(220 - \text{age}) - \text{RHR} \times \% + \text{RHR} = \text{Target Training Heart Rate Zone.}$ (We will be using 55% and 90% values in the formula).

Maximum heart rate: the highest number of times your heart can contract in one minute, which can be reached at maximum effort. This can be calculated by subtracting your age from 220. Thus, your maximum heart rate decreases with age.

Overload: a basic training principle which requires one to do more than what is comfortable in order to realize significant changes in fitness level.

Physical Fitness: the ability to work with vigor and pleasure without undue fatigue, with energy left for enjoying hobbies or recreational activities and for meeting unforeseen emergencies.

Pulse: the measure of the heart's mechanical work in the circulatory system or the number of times the heart sends blood into the expanding arteries, normally expressed as beats per minute.

Recovery Heart Rate: the heart rate measured at certain intervals after exercise, most often at one, three, and five minutes after completion.

Resting Heart Rate: the number of beats in one minute when you are at complete, uninterrupted rest. It is best taken when you first wake up in the morning before you lift your head from the pillow

Specificity: perform specific kinds of activity or exercise to build specific fitness areas. (i.e. cardiovascular fitness, flexibility, strength).

Static Stretching: done slowly, there is no bouncing movement, held for 10-15 seconds, safe for beginners.

Step Test: a heart rate recovery test used for assessing one's cardiorespiratory fitness.

Target Heart Rate Zone: the heart rate zone within which the heart should beat to achieve the desired physiological benefits. The appropriate target heart rate zone for physical exercise depends on what you are aiming for. Examples of possible heart rate zones are:

50 to 60% HRmax = moderate activity, sufficiently strenuous exercise.

60 to 70% HRmax = weight management, efficient fat burning zone

70 to 80% HRmax = aerobic training, improvement of endurance

80 to 100% HRmax = competitive training

Three segment workout: warm-up, vigorous conditioning, cool down.

Warm-Up: the exercise portion of the workout that is geared to preparing your body for a more vigorous exercise bout. Generally walking and doing exercises that stimulate the heart, lungs and muscles moderately and progressively are done during warm-up period. This should be done for 5-10 minutes prior to vigorous exercise.

At the end of the unit, please reflect on these questions.

1. How does using the heart rate monitor enhance your knowledge of exercise and personal fitness?
2. During which activity were you in your Zone the longest amount of time? Why do you think this happened?
3. Calculate the Target Heart Rate Zone of one of your parents.

Procedures for Using the Polar Heart Rate Monitor

Button Functions:

Blue button – Stops timer.
Exits the displayed mode.
Returns to the Time of Day screen.

Red Button - Starts measurement of heart rate.
Locks in your selection.
Records the laps.
Starts the recovery calculation.

Upper Right Button -Advances through the screens.
Increases the selected value.

Lower Right Button -Moves backward through the screens.
Reduces the selected value.

To set the watch to your Target Heart Rate Zone:

1. From the Time and Day screen, press the Upper Right Button two times. Your display will read "Options."
2. Enter the Options mode by pressing the Red Button two times. Your display will read "Limits", with two rows of numbers beneath it. These are the upper and lower limits of the zone.
3. Press the Red button one time. The upper limit will begin to flash.
4. Press the upper right button to increase the value of this number, or the lower right button to decrease the value of this number.
5. Once you have reached the number you want, press the Red button once to lock it. The lower number will begin flashing.
6. Press the upper right button to increase the value of this number, or the lower right button to decrease the value of this number.
7. Once you have reached the number you want, press the Red button once to lock it.
8. Hold down the Blue button to return to the Time of Day screen.

How to begin measuring heart rate:

1. Wet the electrodes on the transmitter and fit it around your chest. For best results, the transmitter should be in contact with the skin. Put the watch (receiver) on your wrist.
2. From the Time of Day screen, press and hold the Red button to start the heart rate measurement and recording. The stopwatch, displayed on the middle line, will start and within seconds the hear rate will appear on the bottom. The top line of

the display will calculate how much of your total elapsed exercise time you have spent in your target heart rate zone. The monitor will beep and the numbers on the lower line will flash if you are above or below the target zone settings.

How to stop measuring heart rate:

1. Press the blue button on time. Stopwatch and the recording stops, but the heart rate is still displayed.
2. Press the Blue button once to return to Time of Day screen.

How to recall data:

1. From Time of Day screen, press the Upper Right Button one time. Your screen will read "File".
2. Press the Red button twice. Your screen will read "In Zone". The middle row will show the time you spent in your target zone. The lower row will show your average heart rate during the exercise. (This will read the most recent file created. If another person has used the same HRM after you, but before you read your information, you will need to look for your specific file number. When that is the case, press the Red button once and use the Upper or Lower right buttons to scroll for your file.)
3. Press the Upper Right Button. Your screen will read "Above", and you will see the time you spent above your target zone.
4. Press the Upper Right Button. Your screen will read "Below", and you will see the time you spent below your target zone.
5. Return to Time of Day screen by pressing and holding the Blue button.

Cardiovascular Fitness DVD

1. How does the DVD define cardiovascular fitness?
2. What are the benefits of cardio fitness?
3. What does it take to have good cardio fitness?
4. What does aerobic mean?
5. What is the best test to see if you are fit?
6. What are the draw backs to this test?
7. What are some other ways you can test for cardiovascular fitness without a lot of equipment?
8. What is the FIT formula?
9. What is on the first level of the activity pyramid?
10. What is included in the second level of activity on the pyramid?
11. What should the frequency be of your work outs?
12. What should the intensity be?
13. How long should your work out be?

14. How do you determine maximal heart rate?

15. What are the 3 basic components of a cardio work out?

16. What are some tips for starting a program?