

# Cardiorespiratory Endurance

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## Classroom Lesson Plan 1: Cardiorespiratory Endurance Facts

This lesson describes the benefits of good cardiorespiratory endurance and methods to assess cardiorespiratory endurance. In addition, this lesson has students calculating maximal heart rate and determining resting heart rate.

### Performance Outcomes Related to AAHPERD Standards

S2.H2.L1, S2.H2.L2, S3.H1.L2, S3.H7.L1

### Fitness Education Framework Benchmarks

2.A.1, 2.A.2, 2.C.1, 2.E.2



**Academic Connection:** Connect with the biology teachers about their coverage of the cardiovascular and respiratory systems. Explore opportunities to work together to enrich students' experiences.

## Preparing the Lesson

### Lesson Objectives

1. Describe the health and wellness benefits of cardiorespiratory endurance
2. Explain how physical activity benefits the cardiovascular, respiratory, and muscle systems
3. Identify some methods you can use to assess your cardiorespiratory endurance
4. Calculate maximal heart rate and heart rate reserve

### Equipment

Presentation: Cardiorespiratory Endurance Facts, Worksheet: Cardiorespiratory Endurance Facts, Quiz: Cardiorespiratory Endurance Facts, LCD projector and laptop

Note: Students may need calculators (smartphones) for calculating maximal heart rate and heart rate reserve.

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## Key Terms

aerobic capacity, artery, cardiovascular system, cholesterol, fibrin, graded exercise test, high-density lipoprotein (HDL), lipoprotein, low-density lipoprotein (LDL), maximal oxygen uptake, respiratory system, vein

## Setup

Find a classroom or multipurpose area to set up your projector and computer.

Create a seating arrangement that works for you and the students.

## Delivering the Lesson

### Part 1. Lesson Launcher

The last chapter focused on moderate physical activities from the first level or step of the Physical Activity Pyramid. It also introduced you to the FIT formula for moderate physical activity.



**Check for Understanding:** What is the FIT formula for moderate physical activity for teens (answer: most days of the week, moderate activity equivalent in intensity to brisk walking [4-7 METs], 60 minutes)?

Over the next two weeks we will be discussing vigorous activities at the second and third steps of the Physical Activity Pyramid. Vigorous physical activities overload the heart muscle and the lungs and challenge the cardiovascular system to adapt to increased physical challenges. Knowing the benefits of cardiorespiratory endurance, methods to self-assess your cardiorespiratory endurance, and how to train your cardiorespiratory endurance may be among the most important knowledge and skills you can learn in order to live a full and healthy life.



**Check for Understanding:** What are some methods we have already used to self-assess cardiorespiratory endurance (answers: PACER, one-mile walk test)?

Today, we will discuss the benefits of cardiorespiratory endurance, describe some of the methods to assess cardiorespiratory endurance, and use techniques to determine maximal and resting heart rate.

**Option:** Stimulate student discussion about the topic using guiding questions such as:

- Why is cardiorespiratory endurance considered the most important fitness component?
- How does good cardiorespiratory endurance benefit the heart, blood, lungs, nerves, and cells?
- What are some ways to assess cardiorespiratory endurance?

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**Option:** Present the “Can You” questions using Presentation: Cardiorespiratory Endurance Facts and check students’ existing knowledge.

**Option:** Have students complete Quiz: Cardiorespiratory Endurance Facts as a pre-assessment of student knowledge.

### **Part 2. Lesson Focus**

Present the chapter content using Presentation: Cardiorespiratory Endurance Facts.

**Option:** Have students use their textbook to answer the “Can You” questions alone or in pairs. Allow students to work for 10 to 15 minutes before you bring them together to discuss the content.

### **Part 3. Classroom Activity**

Read the introductory paragraph on Worksheet: Cardiorespiratory Endurance Facts.

Have students complete Worksheet: Cardiorespiratory Endurance Facts on their own or in pairs. Make sure you provide time for students to estimate their resting heart rate. You will need to emphasize the importance of being quiet and not talking while people are estimating their resting heart rate.



**Check for Understanding:** You should visit students and perform radial pulse count checks to make sure they have located the pulse and are taking an accurate 15-second pulse count.



**Technology:** Use heart rate monitors or smartphones with heart rate applications.

### **Part 4. Reflection and Summary**

Revisit the “Can You” questions and summarize the key points:

1. Good cardiorespiratory endurance results in positive changes to the heart, lungs, blood vessels, blood, nerves, and cells.
2. The best measures of cardiorespiratory endurance require expensive equipment and specialized training, but good measures can be obtained using simple field self-assessments.
3. Determining your maximal heart rate, resting heart rate, and heart rate reserve is the first step to determining your training heart rate zone for building cardiorespiratory endurance.

Encourage students to review the self-assessment step test and one-mile run test in their textbook.

### **Part 5. Evaluate**

Have students place Worksheet: Cardiorespiratory Endurance Facts into their Fitness for Life portfolio. Check for completion and accuracy for questions 1, 2, and 3.

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**Option:** Have students take Worksheet: Cardiorespiratory Endurance Facts home and allow them a couple of days to get their true resting heart rate.

**Option:** Have students complete Quiz: Cardiorespiratory Endurance Facts.

### **Reinforcing the Lesson**

#### **Take It Home**

Encourage students to take Worksheet: Cardiorespiratory Endurance Facts home and allow them a couple of days to get their true resting heart rate. Have students complete Worksheet: Cardiorespiratory Endurance Facts with a parent or guardian.

#### **Supplemental Activities**

Have students complete a one-week log of resting heart rates and maximal heart rates. Instruct students to make a  $3 \times 8$  table with the days of the week as the second through eighth column headings. In the first column (row 2), place the heading "Resting heart rate," and in row 3 place the heading "Maximal heart rate (maxHR)." The goal is for students to try to take as many true resting heart rates (first thing before getting out of bed) as they can in a week. In addition, they need to record their highest heart rate achieved each day using 15-second radial pulse counts. Have students submit their data and provide a brief reflection about the process of recording resting and maximal heart rates (challenges, success, what they learned).