Before taking any of the cardiorespiratory endurance assessment tests, refer to the fitness prerequisites and cautions given in Table 3.2. Choose one of the following three tests presented in this lab:

- 1-mile walk test
- 3-minute step test
- 1.5-mile run-walk test

For best results, don’t exercise strenuously or consume caffeine the day of the test, and don’t smoke or eat a heavy meal within about 3 hours of the test.

### The 1-Mile Walk Test

#### Equipment
1. A track or course that provides a measurement of 1 mile
2. A stopwatch, clock, or watch with a second hand
3. A weight scale

#### Preparation
Measure your body weight (in pounds) before taking the test.

Body weight: _________ lb

#### Instructions
1. Warm up before taking the test. Do some walking, easy jogging, or calisthenics and some stretching exercises.
2. Cover the 1-mile course as quickly as possible. Walk at a pace that is brisk but comfortable. You must raise your heart rate above 120 beats per minute (bpm).
3. As soon as you complete the distance, note your time and take your pulse for 10 seconds.

   Walking time: _________ min _________ sec
   10-second pulse count: _________ beats

4. Cool down after the test by walking slowly for several minutes.

#### Determining Maximal Oxygen Consumption
1. Convert your 10-second pulse count into a value for exercise heart rate by multiplying it by 6.

   Exercise heart rate: \( \text{10-sec pulse count} \times 6 = \) _________ bpm

2. Convert your walking time from minutes and seconds to a decimal figure. For example, a time of 14 minutes and 45 seconds would be 14 + (45/60), or 14.75 minutes.

   Walking time: _________ min + ( _________ sec ÷ 60 sec/min) = _________ min

3. Insert values for your age, gender, weight, walking time, and exercise heart rate in the following equation, where

   \( W = \) your weight (in pounds)
   \( A = \) your age (in years)
   \( G = \) your gender (male = 1; female = 0)
   \( T = \) your time to complete the 1-mile course (in minutes)
   \( H = \) your exercise heart rate (in beats per minute)

   \[ \dot{V}O_2\text{max} = 132.853 - (0.0769 \times W) - (0.3877 \times A) + (6.315 \times G) - (3.2649 \times T) - (0.1565 \times H) \]
For example, a 20-year-old, 190-pound male with a time of 14.75 minutes and an exercise heart rate of 152 bpm would calculate maximal oxygen consumption as follows:

\[ \dot{V}O_{2\text{max}} = 132.853 - (0.0769 \times 190) - (0.3877 \times 20) + (6.315 \times 1) - (3.2649 \times 14.75) - (0.1565 \times 152) \]

\[ \dot{V}O_{2\text{max}} = 45 \text{ ml/kg/min} \]

4. Copy this value for \( \dot{V}O_{2\text{max}} \) into the appropriate place in the chart on the final page of this lab.

The 3-Minute Step Test

**Equipment**
1. A step, bench, or bleacher step that is 16.25 inches from ground level
2. A stopwatch, clock, or watch with a second hand
3. A metronome

**Preparation**
Practice stepping up onto and down from the step before you begin the test. Each step has four beats: up-up-down-down. Males should perform the test with the metronome set for a rate of 96 beats per minute, or 24 steps per minute. Females should set the metronome at 88 beats per minute, or 22 steps per minute.

**Instructions**
1. Warm up before taking the test. Do some walking, easy jogging, and stretching exercises.
2. Set the metronome at the proper rate. Your instructor or a partner can call out starting and stopping times; otherwise, have a clock or watch within easy viewing during the test.
3. Begin the test and continue to step at the correct pace for 3 minutes.
4. Stop after 3 minutes. Remain standing and count your pulse for the 15-second period from 5 to 20 seconds into recovery.
   15-second pulse count: ___________ beats
5. Cool down after the test by walking slowly for several minutes.

**Determining Maximal Oxygen Consumption**
1. Convert your 15-second pulse count to a value for recovery heart rate by multiplying by 4.
   Recovery heart rate: \( \frac{\text{15-sec pulse count}}{4} = \) ________ bpm
2. Insert your recovery heart rate in the equation below, where
   \( H = \) recovery heart rate (in beats per minute)
   Males: \( \dot{V}O_{2\text{max}} = 111.33 - (0.42 \times H) \)
   Females: \( \dot{V}O_{2\text{max}} = 65.81 - (0.1847 \times H) \)

   For example, a man with a recovery heart rate of 162 bpm would calculate maximal oxygen consumption as follows:

   \[ \dot{V}O_{2\text{max}} = 111.33 - (0.42 \times 162) = 43 \text{ ml/kg/min} \]

   Males: \( \dot{V}O_{2\text{max}} = 111.33 - (0.42 \times \) ________ = ________ ml/kg/min
   Females: \( \dot{V}O_{2\text{max}} = 65.81 - (0.1847 \times \) ________ = ________ ml/kg/min
3. Copy this value for \( \dot{V}O_{2\text{max}} \) into the appropriate place in the chart on the final page of this lab.
The 1.5-Mile Run-Walk Test

Equipment
1. A running track or course that is flat and provides exact measurements of up to 1.5 miles
2. A stopwatch, clock, or watch with a second hand

Preparation
You may want to practice pacing yourself prior to taking the test to avoid going too fast at the start and becoming prematurely fatigued. Allow yourself a day or two to recover from your practice run before taking the test.

Instructions
1. Warm up before taking the test. Do some walking, easy jogging, and stretching exercises.
2. Try to cover the distance as fast as possible without overexerting yourself. If possible, monitor your own time, or have someone call out your time at various intervals of the test to determine whether your pace is correct.
3. Record the amount of time, in minutes and seconds, it takes you to complete the 1.5-mile distance.
   Running-walking time: ____________ min ____________ sec
4. Cool down after the test by walking or jogging slowly for about 5 minutes.

Determining Maximal Oxygen Consumption
1. Convert your running time from minutes and seconds to a decimal figure. For example, a time of 14 minutes and 25 seconds would be 14 + (25/60), or 14.4 minutes.
   Running-walking time: _______ min + ( _______ sec ÷ 60 sec/min) = _______ min
2. Insert your running time into the equation below, where:
   \[ \text{VO}_2\text{max} = (483 ÷ T) + 3.5 \]
   For example, a person who completes 1.5 miles in 14.4 minutes would calculate maximal oxygen consumption as follows:
   \[ \text{VO}_2\text{max} = (483 ÷ 14.4) + 3.5 = 37 \text{ ml/kg/min} \]
   \[ \text{VO}_2\text{max} = (483 ÷ \frac{\text{run-walk time (min)}}{T}) + 3.5 = _______ \text{ ml/kg/min} \]
3. Copy this value for \text{VO}_2\text{max} into the appropriate place in the chart on the final page of this lab.

Rating Your Cardiovascular Fitness
Record your \text{VO}_2\text{max} score(s) and the corresponding fitness rating from the table below.

<table>
<thead>
<tr>
<th>Women</th>
<th>Very Poor</th>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Excellent</th>
<th>Superior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: 18–29</td>
<td>Below 31.6</td>
<td>31.6–35.4</td>
<td>35.5–39.4</td>
<td>39.5–43.9</td>
<td>44.0–50.1</td>
<td>Above 50.1</td>
</tr>
<tr>
<td>30–39</td>
<td>Below 29.9</td>
<td>29.9–33.7</td>
<td>33.8–36.7</td>
<td>36.8–40.9</td>
<td>41.0–46.8</td>
<td>Above 46.8</td>
</tr>
<tr>
<td>40–49</td>
<td>Below 28.0</td>
<td>28.0–31.5</td>
<td>31.6–35.0</td>
<td>35.1–38.8</td>
<td>38.9–43.1</td>
<td>Above 45.1</td>
</tr>
<tr>
<td>50–59</td>
<td>Below 25.5</td>
<td>25.5–28.6</td>
<td>28.7–31.3</td>
<td>31.4–35.1</td>
<td>35.2–39.8</td>
<td>Above 39.8</td>
</tr>
<tr>
<td>60–69</td>
<td>Below 23.7</td>
<td>23.7–26.5</td>
<td>26.6–29.0</td>
<td>29.1–32.2</td>
<td>32.3–36.8</td>
<td>Above 36.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Men</th>
<th>Very Poor</th>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Excellent</th>
<th>Superior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: 18–29</td>
<td>Below 38.1</td>
<td>38.1–42.1</td>
<td>42.2–45.6</td>
<td>45.7–51.0</td>
<td>51.1–56.1</td>
<td>Above 56.1</td>
</tr>
<tr>
<td>30–39</td>
<td>Below 36.7</td>
<td>36.7–40.9</td>
<td>41.0–44.3</td>
<td>44.4–48.8</td>
<td>48.9–54.2</td>
<td>Above 54.2</td>
</tr>
<tr>
<td>40–49</td>
<td>Below 34.6</td>
<td>34.6–38.3</td>
<td>38.4–42.3</td>
<td>42.4–46.7</td>
<td>46.8–52.8</td>
<td>Above 52.8</td>
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<td>50–59</td>
<td>Below 31.1</td>
<td>31.1–35.1</td>
<td>35.2–38.2</td>
<td>38.3–43.2</td>
<td>43.3–49.6</td>
<td>Above 49.6</td>
</tr>
<tr>
<td>60–69</td>
<td>Below 27.4</td>
<td>27.4–31.3</td>
<td>31.4–34.9</td>
<td>35.0–39.4</td>
<td>39.5–46.0</td>
<td>Above 46.0</td>
</tr>
</tbody>
</table>

SOURCE: Ratings based on norms from The Cooper Institute of Aerobic Research, Dallas, Texas; from The Physical Fitness Specialist Manual, Revised 2002. Used with permission.
Using Your Results

How did you score? Are you surprised by your rating for cardiovascular fitness? Are you satisfied with your current rating?

If you’re not satisfied, set a realistic goal for improvement: __________________________________________________

Are you satisfied with your current level of cardiovascular fitness as evidenced in your daily life—your ability to walk, run, bicycle, climb stairs, do yard work, engage in recreational activities?

If you’re not satisfied, set some realistic goals for improvement, such as completing a 5K run or 25-mile bike ride:

What should you do next? Enter the results of this lab in the Preprogram Assessment column in Appendix D. If you’ve set goals for improvement, begin planning your cardiorespiratory endurance exercise program by completing the plan in Lab 3.2. After several weeks of your program, complete this lab again, and enter the results in the Postprogram Assessment column of Appendix D. How do the results compare? (Remember, it’s best to compare VO₂max scores for the same test.)

<table>
<thead>
<tr>
<th>Test</th>
<th>VO₂max</th>
<th>Cardiovascular Fitness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-mile walk test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-minute step test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5-mile run-walk test</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>