COOPER 1.5-MILE RUN/WALK TEST

EQUIPMENT

- Measured 1.5-mile (2.4 km) distance, ideally on a 0.25-mile (400 m) track
- Physician’s scale, stadiometer, or equivalent electronic scale
- Stopwatch
- Individual and group data sheets
- Microsoft Excel or equivalent spreadsheet program

Figure 8.2 presents a traditional 440-yard or 0.25-mile track, in which each straightaway and curve is 110 yards long and half of each length is 55 yards. Distance traveled may differ slightly depending on the track; therefore, when performing timed distances, make sure to understand the various lengths on the track. For example, because a 400 m track is 2.5 yd (2.3 m) shorter than a 440-yard track, a subject performing a 1.5-mile run on a 400 m track must go 14 m (15 yd) beyond 6 laps to complete a mile and a half. Similarly, when

Figure 8.2  Dimensions for a 400 m (440 yd) track.
performing a 1-mile (1.6 km) Rockport test, one must go 9 m (9 yd) beyond 4 laps to complete a mile.

WARM-UP

As with any performance-based test, the subject should perform a structured warm-up to prepare for the assessment. As a rule, when working with athletes or other fit individuals, devote 5 min to general warm-up activity (e.g., jogging, cycling, jumping rope), then use 5 min for dynamic stretching (e.g., high knees, walking lunges, walking knee tucks, butt kicks, inchworms, power skips). With sedentary or untrained individuals, use less rigorous activities (e.g., leg swings, toe touches). After the warm-up, ensure that the subject clearly understands that the objective of the test is to complete the 1.5-mile (2.4 km) distance in as little time as possible. Here is a summary of steps to use when administering this test:

COOPER 1.5-MILE RUN/WALK TEST

Step 1: Measure the height and weight of each person being tested and record the results on their individual laboratory data sheets. Measure body mass to the nearest 0.01 kg and height to the nearest 0.1 cm.

Step 2: Have each subject complete a structured warm-up of about 10 min.

Step 3: Prior to starting the test, clearly explain that each individual should walk or run the 1.5-mile (2.4 km) distance as fast as possible.

Step 4: Start a stopwatch at the same time that the run/walk is initiated.

Step 5: When a subject completes the distance, his or her time should be recorded to the nearest second on the laboratory 8.1 individual data sheets.

Step 6: After completing the assessment, each tested individual should perform a cool-down consisting of slow walking followed by stretching.

Step 7: Use the equations presented on the individual data sheet to estimate each individual's VO$_2$max, then record the result.

QUESTION SET 8.1

1. What is the underlying physiological reason for the relationship found between field tests and laboratory measurements of aerobic power?

2. Based on your results, rank your aerobic fitness in relation to the norms and percentile ranks presented in tables 7.1 (p. 171) and 8.2.

3. How did your aerobic fitness results compare with the class averages?

4. Based on the class averages, how would you rate your classmates’ overall aerobic fitness?

5. What factors associated with this aerobic power test may result in variations in the values estimated for aerobic power?
Table 8.2  Percentile Ranks for 1.5-Mile Run/Walk Time (min:s)

<table>
<thead>
<tr>
<th>Age (y)</th>
<th>20–29</th>
<th>30–39</th>
<th>40–49</th>
<th>50–59</th>
<th>60–69</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
</tr>
</tbody>
</table>

Adapted, by permission, from Cooper Institute, Physical fitness assessments and norms for adults and law enforcement (Dallas, TX: The Cooper Institute). For more information: www.cooperinstitute.org.
Lab Activity 8.1  Individual Data Sheet

Name or ID number: _______________________________  Tester: __________________________

Sex:  M / F (circle one)  Age: __________ y  Location of Testing
Height: __________ in. __________ cm  Footwear
Weight: __________ lb __________ kg
Temperature: __________ °F __________ °C
Relative humidity: _______________________________ %
Barometric pressure: _________________ mmHg

Men
\[
\dot{V}O_2\text{max} (\text{ml} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}) = 91.736 - (0.1656 \times \frac{\text{body mass (kg)}}{\text{time (min)}}) - (2.767 \times \frac{\text{body mass (kg)}}{\text{time (min)}})
\]
\[
= \text{______________________________} \text{ml} \cdot \text{kg}^{-1} \cdot \text{min}^{-1} \text{(Equation 1)}
\]

\[
\dot{V}O_2\text{max} (\text{ml} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}) = 65.404 - (7.707 \times \frac{\text{sex}}{\text{body mass (kg)}}) - 0.159 \times \frac{\text{sex}}{\text{time (min)}} - 0.843 \times \frac{\text{sex}}{\text{time (min)}}
\]
\[
= \text{______________________________} \text{ml} \cdot \text{kg}^{-1} \cdot \text{min}^{-1} \text{(Equation 2)}
\]

Women
\[
\dot{V}O_2\text{max} (\text{ml} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}) = 88.020 - (0.1656 \times \frac{\text{body mass (kg)}}{\text{time (min)}}) - (2.767 \times \frac{\text{body mass (kg)}}{\text{time (min)}})
\]
\[
= \text{______________________________} \text{ml} \cdot \text{kg}^{-1} \cdot \text{min}^{-1} \text{(Equation 1)}
\]

\[
\dot{V}O_2\text{max} (\text{ml} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}) = 65.404 - (7.707 \times \frac{\text{sex}}{\text{body mass (kg)}}) - 0.159 \times \frac{\text{sex}}{\text{time (min)}} - 0.843 \times \frac{\text{sex}}{\text{time (min)}}
\]
\[
= \text{______________________________} \text{ml} \cdot \text{kg}^{-1} \cdot \text{min}^{-1} \text{(Equation 2)}
\]

Percentile rank: _________________

\dot{V}O_2\text{max} classification: _________________