Aerobic Fitness Testing

Cooper Test
1.5 Mile Run
20-m Aerobic Shuttle
On-Mile Walk Test

Components of Training (Al Vermeil)

- Speed
- Elastic/Reactive/Strength
- Explosive/Strength
- Strength
- Work Capacity
- Evaluation/Testing

Order of development is from the base up.

Graph from “Champion Athletes”
Wilkie 1960

Sustaining 375 Watts for 30 minutes? Impressive!

This graph shows why most aerobic tests require you to work for a minimum of 6 minutes

Cooper Test
12 minute run or walk test

1.5 Mile Run

Equations to predict $\dot{V}O_2$ max

1: $\dot{V}O_2$ max = $88.02 + (3.716 \times \text{gender}) - (0.1656 \times \text{kg}) - (2.767 \times \text{time})$

Male = 1 Female = 0, time = decimal min

2: $\dot{V}O_2$ max = $(483/\text{time}) + 3.5$

SEE ± 5.0 ml/kg/min

Eqn 1: 80 kg, male, 9 mins $\Rightarrow$ 53.6 ml/kg.min

Eqn 2: 9 mins $\Rightarrow$ 57.2 ml/kg.min

Eqn 2 seems more accurate to me.

<table>
<thead>
<tr>
<th>Distance (Miles)</th>
<th>Laps (%4 Mile Track)</th>
<th>Predicted Maximal $\dot{V}O_2$ uptake (ml/kg/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.000</td>
<td>4</td>
<td>58.3</td>
</tr>
<tr>
<td>1.065</td>
<td>4½</td>
<td>30.0</td>
</tr>
<tr>
<td>1.125</td>
<td>5½</td>
<td>31.9</td>
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<tr>
<td>1.187</td>
<td>6½</td>
<td>33.8</td>
</tr>
<tr>
<td>1.250</td>
<td>7½</td>
<td>55.7</td>
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<td>1.317</td>
<td>8½</td>
<td>37.5</td>
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<tr>
<td>1.375</td>
<td>9½</td>
<td>39.2</td>
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<tr>
<td>1.437</td>
<td>10½</td>
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<tr>
<td>1.500</td>
<td>11½</td>
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<td>44.6</td>
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<tr>
<td>1.875</td>
<td>17½</td>
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<tr>
<td>1.937</td>
<td>18½</td>
<td>55.3</td>
</tr>
<tr>
<td>2.000</td>
<td>19½</td>
<td>57.0</td>
</tr>
</tbody>
</table>

Lab Manual is Accessed via eText

- The following tables are presented to show that classification tables are "population-specific".
- That is, what is "good" depends on the group tested and hence you will see considerable variation in terms of classification.
The document contains tables and text that are difficult to interpret due to the quality of the image. The tables appear to be related to aerobic power tests and VO2max norms, with data including age, VO2max values, and predictions for aerobic test performance. The text also mentions a Swedish classification compared to American female performance from a previous slide. The tables include data for both men and women, with age ranges and corresponding VO2max values. The tables are structured in a tabular format, with columns for age, VO2max predictions, and other relevant metrics.
Typical Canadian Values for VO\textsubscript{2} max

- **Male (20-39)** ≈ 44.1 ml/kg.min (≈11.5 mins)
- **Male (40-59)** ≈ 36.6 ml/kg.min (≈14.5 mins)
- **Male (60-69)** ≈ 27.6 ml/kg.min (≈17.5 mins)
- **Female (20-39)** ≈ 38.4 ml/kg.min (≈13.5 mins)
- **Female (40-59)** ≈ 31.2 ml/kg.min (≈16.5 mins)
- **Female (60-69)** ≈ 24.1 ml/kg.min (≈19 mins)

**Results from the 2007-2009 Canadian Health Measures Survey**

- by Margot Shields, Mark S. Tremblay, Manon Laviolette, Cora L. Craig, Ian Janssen and Sarah Connor Gorber

**One-Mile Walk Test**

- If you are unable to run you can try the **one-mile walk/jog test**

**Test Information**

- **Gender; Age (years); Mass; 10-Second Pulse Count; Walking Time (min:sec).**
- 10 second count multiplied by 6
- Convert min:sec to decimal (min + sec/60)
- VO\textsubscript{2} max = 132.853 – (0.0769 x body weight in pounds) – (0.3877 x age in years) + (6.315 x gender {males = 1, females = 0}) – (3.2649 x time in decimal minutes) – (0.1565 x exercise heart rate)

**5000m World Records**

(as of September 2008)

- **Male** (May 31, 2004):
  Kenenisa Bekele
  12:37.35
  (11.88 laps in 12 min)

- **Female** (June 15, 2007):
  Meseret Defar
  14:16.63
  (10.51 laps in 12 min)

**1.5 mile (2.4 km)**

- **World Record 2-km**
  - 4:44.8 male  5:25.4 female
- **World Record 3-km**
  - 7:20.7 male  8:06 female

- My estimate is that Hicham El Guerrouj would have completed the 1.5 mile in approximately 5:45.  Best female time approximately 6:35.