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# Police Fitness Personnel of Ontario



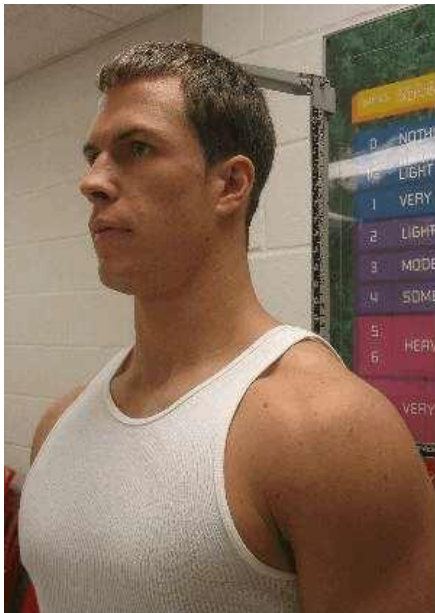
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## CHAPTER 5

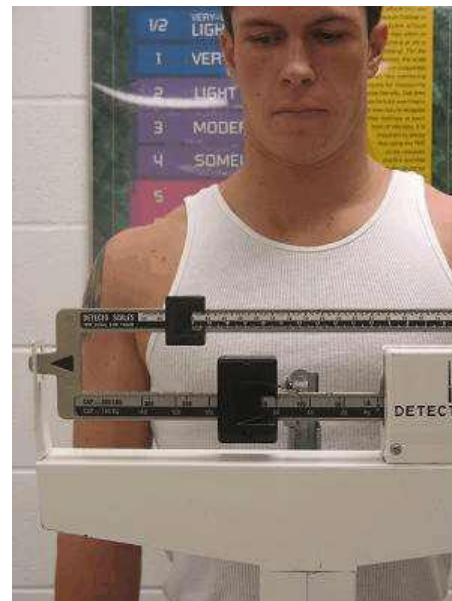
# FITNESS APPRAISAL PROTOCOL AND STANDARDS

## 5.1 Height measurement

To measure height, the CPFA should ask the client to stand erect with feet flat on a hard surface looking straight ahead, shoes off and back against the wall. At the time of measurement, instruct the client to take a deep breath in. OPFA should use a set square placed on the top of the client's head (depressing the hair) when taking the measurement to ensure the reading is accurate. Record the height from the floor to the level at which the set square was on the wall and record to the nearest 0.5 cm. Refer to Figure 5.1 below.



**Figure 5.1. Height measurement,** shoes off, scale on flat solid surface, measure to nearest 0.5 cm.



**Figure 5.2 Weight measurement,** without shoes measure to the nearest 0.1 kg.

## 5.2 Weight measurement

Clients should be in light clothing with shoes off when taking the weight measurement. Weight should be measured to the nearest 0.1 kg. Refer to Figure 5.2 above.

### **5.3 Waist Circumference**

Waist circumference (WC) is commonly used to assess abdominal obesity and has been established as a predictor of increased morbidity and mortality independent of body mass index (Janssen et. al., 2004) (Lean, 1995). Individuals with increased WC values are more likely to have hypertension, type 2 diabetes, dislipidemia and metabolic syndrome than individuals with normal WC values regardless of weight status (Janssen et. al., 2002). In addition, WC predicts the development of diabetes beyond that explained by commonly evaluated cardio metabolic risk factors including blood pressure, lipoproteins, glucose levels and body mass index (Janiszewski et. al., 2007).

“Waist circumference could be used in health programs to identify individuals who should seek and be offered weight management. Men with waist circumference of 94 cm and women with waist circumference of 80 cm should gain no further weight; men with waist circumference of >102 cm and women with waist circumference of >88 cm are at greater health risk” (Lean, 1995).

#### **Measurement of Waist Circumference**

Clear the client’s abdomen of all clothing and accessories. Position the client with feet together and arms crossed over the chest in a relaxed manner. Take a position to the right side of the client’s body on one knee.

Using the National Institute of Health (NIH) protocol (1998, U.S. Dept. of Health and Human Services, 1996), the waist circumference measurement should be taken at the top of the iliac crest. To find the landmark, palpate the upper right hipbone of the client until you locate the uppermost lateral border of the iliac crest. Draw a horizontal line at this landmark at the midline of the body.

Position the tape directly around the abdomen so that the inferior edge of the tape is at the level of the landmarked point. Use a cross-handed technique to bring the zero line of the tape in line with the measuring aspect of the tape. Ensure that the measuring tape is positioned in a horizontal plane around the abdomen. Apply tension to the tape to ensure it is snug, without causing indentation to the skin. At the end of a normal expiration, take the measurement to the nearest 0.5 cm.

### **5.4 Body Mass Index (BMI)**

To convert centimeters to meters for the BMI calculation, move the decimal place 2 spaces to the left. In the Heart Health Risk Assessment obesity can be determined by calculating BMI. To do this, OPFA need to measure the client’s height (cm) and weight (kg) and complete the following calculation:

**Formula 5.1 Body Mass Index**

$$\text{Body Mass Index} = \frac{\text{Body Weight (kg)}}{\text{Standing Height (m}^2\text{)}}$$

*Example:* Weight = 64.5 kg; Height = 178 cm

$$\text{BMI} = \frac{64.5 \text{ kg}}{(1.78 \text{ m})^2}$$

$$\text{BMI} = \frac{64.5 \text{ kg}}{3.1684 \text{ m}^2}$$

$$\text{BMI} = 20$$

BMI is the relationship between a person's height and weight. It does not tell you if your weight is made of fat or muscle. BMI can indicate a level of risk for the development of health problems. For the vast majority, a BMI score over 30 is considered high and a predictor of elevated health risk (refer to Table 5.1).

High BMI scores can also occur when a person has a high level of muscle mass. BMI scores less than 18.5 also suggest a health risk. For individuals with low scores they are not carrying enough adipose tissue for their height. Adequate amounts of adipose tissue or fat are needed for basic body function and health (e.g., warmth, non-compromised immune system, menstruation).

| <b>BMI</b> | <b>Risk of Developing Health Problems</b> |
|------------|---|
| <18.5      | Increased                                 |
| 18.5-24.9  | Least                                     |
| 25.0-29.9  | Increased                                 |
| 30.0-34.9  | High ( Mild Obesity )                     |
| 35.0-39.9  | Very high ( Moderate Obesity )            |
| >40.0      | Extremely high (Severe Obesity)           |

## 5.5 Resting Heart Rate

Participants must sit in a comfortable chair with arm supports, and rest with the feet flat on the floor for at least five minutes prior to the resting heart rate being measured. Heart rate may be measured using the stethoscope (placed either on the sternum or the second intercostal space on the left side) or by palpating the radial or carotid artery. Apply gentle pressure. Determine the resting pulse using a 15 second count.

In the event the resting heart rate is greater than 99 beats/minute, wait an additional five minutes and take the reading again. Participants should not be permitted to do the OPFA assessment if their resting heart rate is greater than 99 beats/minute after a second reading.

Explain to the participant that the heart rate is not within the range for which the test was designed. Refer the participant to their physician for medical clearance using the OPFA Physician Clearance (Appendices) and Assessment Results of a Qualified Physician (Appendices).

## 5.6 Resting Blood Pressure

Have the participant sit in chair, resting both feet on the floor and the left arm either on the arm of the chair or a flat surface, such as a tabletop. Apply the blood pressure cuff to the left arm but be sure to use a cuff that fits the client's arm when assessing blood pressure.



**Figure 5.3 Resting blood pressure determination & subject posture**

With the arm resting on a table and with the cuff 2 cm above antecubital space of elbow, stethoscope not touching cuff on most palpable or loudest pulses point of the brachial artery.

### **Procedure:**

Quickly inflate the cuff to 180mmHg. Release the valve slowly (2 mmHg per second); listening for the first sound (the systolic pressure) and for when there is no sound at all (the diastolic pressure). Fully deflate the cuff. A cuff that is too small for the client will artificially elevate the blood pressure reading while too large of a cuff on the arm will artificially lower the blood pressure reading.

To select the appropriate cuff size for your client, make sure 80% of the bladder encircles the arm (Heyward, 2002). Once the cuff has been selected, wrap the cuff firmly and smoothly around the left arm with the lower edge of the cuff 2-3 cm above the antecubital space. Position the stethoscope above the joint line if possible and make sure the entire diaphragm of the stethoscope is on the arm.

Record the systolic and diastolic pressure to the nearest two mmHg. In the event that *either* the resting systolic pressure is >144mmHg *or* the diastolic pressure is >94mmHg, wait five minutes. Have the participant sit quietly, and take the reading again after 5 minutes.

**Participants should not be permitted to do the OPFA test if:**

1. either reading is above the aforementioned ceilings after two readings
2. the individual is receiving medication for high blood pressure
3. the individual has been told that they have high blood pressure

If any of the above conditions exist, explain briefly that the blood pressure reading is not within the range for which the test was designed. Refer the participant to their physician for medical clearance using the OPFA Physician Clearance (Appendix D) and Physician's Medical Clearance (Appendix D).

# **PROTOCOLS OF OPFA TESTING COMPONENTS**

## **5.7 PUSH-UPS**

Push-ups are a test of muscular endurance (upper body – chest and triceps) which is defined as the ability of a muscle to perform repeated contractions over a period of time.

### **Procedure:**

It is imperative that the participant is well instructed in the correct performance of the push-up procedure prior to beginning the test. The push-ups are to be performed consecutively and without a time limit. Do not count incorrectly performed push-up.

### **The test is terminated when the participant:**

- has completed as many push-ups as possible without pausing
- is unable to maintain the proper push-up technique over 2 consecutive repetitions

### **Male Protocol:**

The participant lies on his stomach, legs together. His hands, pointing forward, are positioned under the shoulders. To begin the participant pushes up from the mat by fully straightening the elbows using the toes as the pivotal point.

The upper body must be kept in a straight line. The participant returns to the starting position, chin to the mat. Neither the stomach nor thighs should touch the mat. The participant may not flex the hip, strain forcibly and or hold their breath.



**Figure 5.4 Male Push Ups start position.** Toes on floor as pivots, feet together, hands under shoulder, fingers facing forward with stomach and thighs touching floor.



**Figure 5.5 Male Push Ups end position.** Toes remain on floor with hands under the shoulders. Fingers remain facing forward with shoulder, hips and knees aligned. There is no pause in motion at the top of the push up movement.



## Female Protocol:



**Figure 5.6 Female Push Ups start position.** Same as men's with hands under shoulders, fingers pointing straight ahead. Chest, hips and thighs flat on floor.



**Figure 5.7 Female Push Ups end position** showing full range of motion. Body shows rigid posture with the shoulders, hips and knees aligned. Hands remain under shoulders, fingers facing forward. Hands remain in neutral position. Knees remain on mat as pivot point.

The participant lies on her stomach with legs together. Her hands, pointing forward, are positioned under her shoulders. She then pushes up from the mat by fully straightening the elbows using the knees as the pivot point.

The upper body must be kept in a straight line. The participant returns to the starting position, chin to the mat. The stomach should not touch the mat. The participant **must** have the lower leg remain in contact with the mat, ankles plantar-flexed. The participant may not flex the hip, strain forcibly and hold their breath.



**Figure 5.8 Female Push Ups - Knees as pivot** for end point with feet in plantar-flexed position. (showing knee and foot weight bearing)

It is not acceptable for either males or females to have their feet against a wall or for a mat to be placed under their chin. See Chapter 6 for results.



## 5.8 Trunk Forward Flexion

Flexibility depends upon the elasticity of the muscles, tendons and ligaments and is the ability to bend without injury (Whitney et al., 1990). It is defined as the range of motion across a joint or series of joints. The trunk forward flexion test measures the flexibility of the hamstring and lower back muscles acting across the hip joint.

Flexibility depends upon the elasticity of the muscles, tendons and connecting tissue across the hip joint to be held in a stretched position statically, without bouncing or jerking. It also depends on core and muscle temperature, with warmer muscles, tendons and connective tissues achieving a greater range of motion. Therefore, flexibility testing should be completed soon after a cardiovascular test, when the body is the warmest.

The position of maximum flexion must be held for approximately two seconds. Advise the participant that lowering the head and exhaling will maximize the distance reached. Remind the participant that the knees cannot flex or the trial does not count. Both results are recorded with the higher result scored. Record both readings and record the maximum reading to the nearest 0.5 cm.

### Procedure:

Participant is seated, without shoes, with legs fully extended and the soles of the feet placed flat against the flexometer. The insoles of the left and right foot must be 6 inches apart. Keeping the knees fully extended, arms evenly stretched, and palms down, participants bends and reaches forward while slowly exhaling.

See Chapter 6 for results and scores.



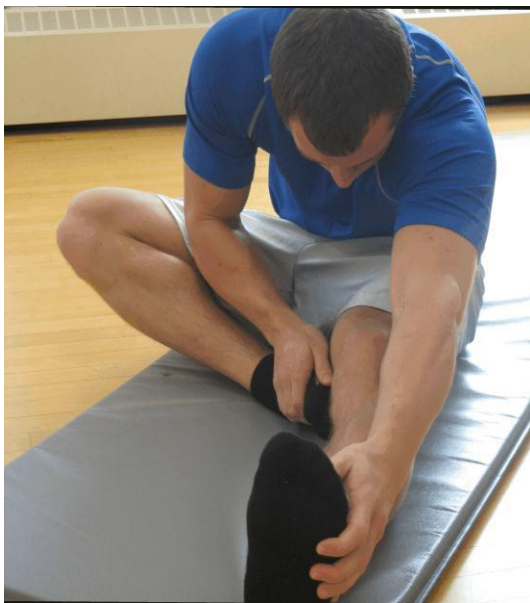
**Figure 5.9 Start point for Sit and Reach.** Hands together, fingers equally extended, knees remain fully extended without flexion through stretch. Extend the hands along the ruler (trunk flexion) as far forward as possible without bouncing or jerking in one smooth movement.

**Figure 5.10 End position for Sit and Reach.** While keeping legs down, exhale and hold at the end of range of motion for 2 seconds. Feet remain flat against upright supports and apart from center divider.



All flexibility tests show maximum results when the core temperature is raised at least 1 degree Celsius. Client scores are maximized if they test following a warm up.

Have participants follow a general warm up with a specific pretest static modified hurdle stretch on both legs before the trials of the actual sit and reach movement.



**Figure 5.11. A Modified Hurdle Stretch** is used as a static warm up stretch to prepare the participant for the sit and reach. Hold in a static stretch for 30 seconds each leg. Repeat twice.

## 5.9 Core Endurance Test

Back injury is one of the most common reasons for people to have to take time off of work. Those who work in the policing environment are also subject to back injury whether they are on the road in a vehicle or sitting at a computer writing reports. For this reason a back assessment was chosen as one of the components of the PIN test that would be added as of 2012. The assessment tool that was chosen was the modified Biering-Sorensen test that is endorsed by the Canadian Society for Exercise Physiology and used in the Canadian Physical Activity, Fitness and Lifestyle Approach (Appraisal).

The assessment is for those participants that are asymptomatic and pass the pre-screening for having no back problems. The participant has filled out their PAR-Q and have no restrictions.

Pre-screening:

The participant lies face down on a mat and performs a straight leg extension with the right leg and then the left. If there is no pain, then they are told to do the same movement but now have the opposing arm outstretched and lift the opposite leg at the same time. They only need to lift and return to starting position. If no pain is indicated then they proceed to the next movement.



**Figure 5.12 Pre-screening. Leg lift only**



**Figure 5.13 Pre-screening cont'd. Leg lift with opposite arm. Repeat on each side.**

### Equipment:

1. Stopwatch or clock with second hand.
2. Padded bench or flat surface that is at least 40 centimeters off the floor (with a mat on top of it).
3. Securing straps or a partner to hold the participant.

## Procedure:

The client lies face down on top of the bench with lower body on the bench. The iliac crest is positioned on the edge of the bench. The client needs to be secured by either the straps or a partner. Before starting the test the client is told to recruit their core muscles throughout the test. A towel may be placed under the ankles to add support. This may allow the calves to stay in a relaxed state.

Once the client is secured they raise up until they are parallel with their lower body. Their arms are placed across their chest with the hands on the opposing shoulders. The entire body forms one straight line with no rotation or lateral shifting. The client stays in this position as long as possible to a maximum of three minutes (180 seconds). They are allowed one warning to re-position themselves if they drop below parallel. Record the length of time that the test is performed.



**Figure 5.14** Correct body position



**Figure 5.15** Incorrect body position (one warning then test finished)



**Figure 5.16** Body position using straps



**Figure 5.17** Full body view using straps

**Cautions:**

1. Do not raise your head. It should be parallel with the floor.
2. Keep neck straight and neutral.
3. Do not arch your back.
4. Breathe normally.

See **Chapter 6** for results and scores

## **Aerobic Assessment Protocols**

There are four aerobic protocols included in the OPFA assessment which measure peak aerobic power as a fitness measure of cardiovascular health capacity. The purpose of aerobic fitness assessment is to measure health capacity in functional terms for the combined efficiency of the heart and lungs to deliver oxygenated blood to the working muscles. If your aerobic capacity is high, you are able to do more work stages of increasing demands, are more efficient at meeting your oxygen needs for a given level of work, while minimizing metabolic waste production and fatigue. Researchers have also found that peak aerobic power conditioning facilitates, not only foot chases and use of force situations but also helps officers cope with long shifts and the changing demands of the job (Wagner-Wisotzki, 2007).

### ***5.10 Mile and a Half Run (2.4 km)***

#### **Procedure:**

Prior to the Mile and a Half run (2.4 km run) have the participant warm up including appropriate stretching for leg muscles. For the test the participant is required to cover an accurately measured 1.5 mile (2.4 km) distance in as short a time as possible. The ideal location to conduct this test protocol is on a 400 meter track so that participants can be carefully monitored throughout the run. Time is recorded to the nearest second. A mile is 1,608 meters, and 1.5 miles 2,412 meters. OPFA should also assess the environmental conditions to be sure temperature and humidity is within occupational standards to minimize health risk of participants prior to starting the run. OPFA should also ensure an emergency action plan is in place should an emergency occur (e.g. appraisers should carry a cell phone and first aid kit to testing location) particularly if the track or run location is different than the fitness facility. The average run times are listed in Table 5.2.

| <b>Gender</b> | <b>Age grouping</b> | <b>Time Range for average scores (min:sec)</b> |
|---------------|---------------------|--|
| Male          | 20-29               | 10:57 to 11:22                                 |
| Female        | 20-29               | 13:01 to 13:26                                 |
| Male          | 30-34               | 11:21 to 11:50                                 |
| Female        | 30-34               | 13:21 to 13:55                                 |
| Male          | 35-39               | 12:15 to 12:47                                 |
| Female        | 35-39               | 14:25 to 15:02                                 |



Following the 2.4 km run, have the participant cool down by walking for an additional five minutes or so to help speed up the return of blood to the heart. OPFA should then assess recovery heart rates and recovery blood pressures twice within 30 minutes but not before the first 10 minutes of recovery to determine if recovery responses have been achieved and those assessed can be released. OPFA appraisers should look for:

- Recovery heart rates within 20 beats of the resting heart rate value or trending back down toward pre-screening cut offs (>99 bpm)
- Recovery blood pressures trending back down toward pre-screening cut offs (systolic >144 mmHg and diastolic >94 mmHg)

Record on *Ontario Police Fitness Award score sheet*.

### **5.11 20 Meter Shuttle Run**

#### **Procedure:**

The participant runs back and forth over a 20-metre course in time with taped audio signals. The time permitted to cover the 20 metres initially requires a very slow jog, which acts as a warm up then it is made progressively faster until the candidate is no longer able to keep up.

In each leg of the run warning lines, placed 2 metres from each of the 20-metre end lines, must be reached before the audio signal sounds. The participant is cautioned when he/she misses a warning line. The test is terminated when 2 consecutive warning lines are missed. Note what level the candidate leaves the run.

Following the shuttle run, OPFA should assess recovery heart rates and recovery blood pressures twice within 30 minutes but not before the first 10 minutes of recovery to determine if recovery responses have been achieved and those assessed can be released. OPFA should look for:

- Recovery heart rates within 20 beats of the resting heart rate value or trending back down toward pre-screening cut offs (>99 bpm).
- Recovery blood pressures trending back down toward pre-screening cut offs (systolic >144 mmHg and diastolic >94 mmHg).

See **Chapter 6** for results and scores. Record final results on **Ontario Police Fitness Award score sheet**



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# Police Fitness Personnel of Ontario



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## CHAPTER 6

## TABLE OF RESULTS

**TABLE 1  
MALE PUSH-UPS  
RESULTS AND SCORES**

| <b>SCORE</b> | <b>AGE 20-29</b> | <b>AGE 30-39</b> | <b>AGE 40-49</b> | <b>AGE 50-59</b> | <b>AGE 60+</b> |
|--------------|------------------|------------------|------------------|------------------|----------------|
| 20           | 49+              | 37+              | 31+              | 29+              | 28+            |
| 19           | 48               | 36               | 30               | 28               | 25-27          |
| 18           | 36-47            | 30-35            | 22-29            | 21-27            | 18-24          |
| 17           | 32-35            | 25-29            | 20-21            | 15-20            | 13-17          |
| 16           | 29-31            | 22-24            | 17-19            | 13-14            | 12             |
| 15           | 27-28            | 21               | 16               | 12               | 11             |
| 14           | 25-26            | 20               | 15               | 11               | 10             |
| 12           | 24               | 19               | 13-14            | 10               | 9              |
| 10           | 21-23            | 16-18            | 12               | 9                | 7-8            |
| 8            | 18-20            | 14-15            | 10-11            | 7-8              | 6              |
| 6            | 16-17            | 11-13            | 8-9              | 5-6              | 4-5            |
| 4            | 11-15            | 8-10             | 5-7              | 4                | 2-3            |
| 2            | 10               | 7                | 4                | 3                | 1              |

**TABLE 2  
FEMALE PUSH-UPS  
RESULTS AND SCORES**

| <b>SCORE</b> | <b>AGE 20-29</b> | <b>AGE 30-39</b> | <b>AGE 40-49</b> | <b>AGE 50-59</b> | <b>AGE 60+</b> |
|--------------|------------------|------------------|------------------|------------------|----------------|
| 20           | 38+              | 37+              | 33+              | 31+              | 31+            |
| 19           | 37               | 36               | 32               | 30               | 30             |
| 18           | 30-36            | 27-35            | 24-31            | 21-29            | 17-29          |
| 17           | 24-29            | 22-26            | 20-23            | 15-20            | 13-16          |
| 16           | 21-23            | 20-21            | 15-19            | 12-14            | 12             |
| 15           | 20               | 17-19            | 14               | 11               | 10-11          |
| 14           | 18-19            | 16               | 13               | 10               | 9              |
| 12           | 16-17            | 14-15            | 12               | 9                | 6-8            |
| 10           | 14-15            | 12-13            | 10-11            | 5-8              | 4-5            |
| 8            | 11-13            | 10-11            | 7-9              | 3-4              | 2-3            |
| 6            | 9-10             | 7-9              | 4-6              | 1-2              | 1              |
| 4            | 5-8              | 4-6              | 2-3              | ---              | ---            |
| 2            | 4                | 3                | 1                | ---              | ---            |

**TABLE 3  
MALE TRUNK FORWARD FLEXION  
RESULTS AND SCORES**

| <b>SCORE</b> | <b>AGE 20-29</b> | <b>AGE 30-39</b> | <b>AGE 40-49</b> | <b>AGE 50-59</b> | <b>AGE 60+</b> |
|--------------|------------------|------------------|------------------|------------------|----------------|
| <b>10</b>    | <b>45+</b>       | <b>44+</b>       | <b>41+</b>       | <b>42+</b>       | <b>45+</b>     |
| <b>9.5</b>   | <b>44</b>        | <b>43</b>        | <b>39-40</b>     | <b>40-41</b>     | <b>40-44</b>   |
| <b>9</b>     | <b>40-43</b>     | <b>38-42</b>     | <b>37-38</b>     | <b>37-39</b>     | <b>36-39</b>   |
| <b>8.5</b>   | <b>37-39</b>     | <b>35-37</b>     | <b>35-36</b>     | <b>35-36</b>     | <b>32-35</b>   |
| <b>8</b>     | <b>34-36</b>     | <b>33-34</b>     | <b>32-34</b>     | <b>33-34</b>     | <b>29-31</b>   |
| <b>7.5</b>   | <b>33</b>        | <b>32</b>        | <b>29-31</b>     | <b>30-32</b>     | <b>26-28</b>   |
| <b>7</b>     | <b>32</b>        | <b>31</b>        | <b>27-28</b>     | <b>27-29</b>     | <b>24-25</b>   |
| <b>6</b>     | <b>31</b>        | <b>29-30</b>     | <b>25-26</b>     | <b>25-26</b>     | <b>22-23</b>   |
| <b>5</b>     | <b>29-30</b>     | <b>27-28</b>     | <b>23-24</b>     | <b>22-24</b>     | <b>18-21</b>   |
| <b>4</b>     | <b>26-28</b>     | <b>24-26</b>     | <b>20-22</b>     | <b>18-21</b>     | <b>16-17</b>   |
| <b>3</b>     | <b>23-25</b>     | <b>21-23</b>     | <b>16-19</b>     | <b>15-17</b>     | <b>14-15</b>   |
| <b>2</b>     | <b>18-22</b>     | <b>17-20</b>     | <b>12-15</b>     | <b>12-14</b>     | <b>11-13</b>   |
| <b>1</b>     | <b>17</b>        | <b>16</b>        | <b>11</b>        | <b>11</b>        | <b>10</b>      |

**TABLE 4  
FEMALE TRUNK FORWARD FLEXION  
RESULTS AND SCORES**

| <b>SCORE</b> | <b>AGE 20-29</b> | <b>AGE 30-39</b> | <b>AGE 40-49</b> | <b>AGE 50-59</b> | <b>AGE 60+</b> |
|--------------|------------------|------------------|------------------|------------------|----------------|
| 10           | 46+              | 46+              | 44+              | 44+              | 41+            |
| 9.5          | 45               | 45               | 42-43            | 42-43            | 39-40          |
| 9            | 41-44            | 41-44            | 40-41            | 40-41            | 37-38          |
| 8.5          | 39-40            | 38-40            | 38-39            | 38-39            | 35-36          |
| 8            | 37-38            | 36-37            | 36-37            | 36-37            | 33-34          |
| 7.5          | 36               | 35               | 34-35            | 34-35            | 31-32          |
| 7            | 35               | 34               | 32-33            | 32-33            | 29-30          |
| 6            | 34               | 33               | 29-31            | 30-31            | 27-28          |
| 5            | 32-33            | 31-32            | 26-28            | 28-29            | 25-26          |
| 4            | 29-31            | 28-30            | 24-25            | 25-27            | 23-24          |
| 3            | 26-28            | 25-27            | 22-23            | 22-24            | 21-22          |
| 2            | 22-25            | 21-24            | 19-21            | 19-21            | 18-20          |
| 1            | 21               | 20               | 18               | 18               | 17             |

**TABLE 5  
MALE CORE ENDURANCE TEST  
RESULTS AND SCORES**

| <b>SCORE</b> | <b>AGE 20-29</b> | <b>AGE 30-39</b> | <b>AGE 40-49</b> | <b>AGE 50-59</b> | <b>AGE 60+</b> |
|--------------|------------------|------------------|------------------|------------------|----------------|
| 20           | 3:00             | 3:00             | 2:45-3:00        | 2:41-3:00        | 2:00-3:00      |
| 19           | 2:50-2:59        | 2:43-2:59        | 2:30-2:44        | 2:21-2:40        | 1:53-1:59      |
| 18           | 2:40-2:49        | 2:27-2:42        | 2:10-2:29        | 2:00-2:20        | 1:44-1:52      |
| 17           | 2:31-2:39        | 2:13-2:26        | 1:55-2:09        | 1:50-1:59        | 1:35-1:43      |
| 16           | 2:21-2:30        | 2:01-2:12        | 1:39-1:54        | 1:40-1:49        | 1:26-1:34      |
| 15           | 2:12-2:20        | 1:48-2:00        | 1:23-1:38        | 1:27-1:39        | 1:17-1:25      |
| 14           | 2:00-2:11        | 1:42-1:47        | 1:19-1:22        | 1:17-1:26        | 1:09-1:16      |
| 12           | 1:50-1:59        | 1:36-1:41        | 1:14-1:18        | 1:06-1:16        | 1:01-1:08      |
| 10           | 1:39-1:49        | 1:31-1:35        | 1:10-1:13        | 0:54-1:05        | 0:52-1:00      |
| 8            | 1:35-1:38        | 1:19-1:30        | 0:59-1:09        | 0:43-0:53        | 0:42-0:51      |
| 6            | 1:30-1:34        | 1:07-1:18        | 0:45-0:58        | 0:31-0:42        | 0:30-0:41      |
| 4            | 1:26-1:29        | 0:56-1:06        | 0:32-0:44        | 0:20-0:30        | 0:20-0:29      |
| 2            | ≤1:25            | ≤0:55            | ≤0:31            | ≤0:19            | ≤0:19          |

**TABLE 6  
FEMALE CORE ENDURANCE TEST  
RESULTS AND SCORES**

| <b>SCORE</b> | <b>AGE 20-29</b> | <b>AGE 30-39</b> | <b>AGE 40-49</b> | <b>AGE 50-59</b> | <b>AGE 60+</b> |
|--------------|------------------|------------------|------------------|------------------|----------------|
| 20           | 3:00             | 3:00             | 3:00             | 2:36-3:00        | 2:29-3:00      |
| 19           | 2:51-2:59        | 2:51-2:59        | 2:46-2:59        | 2:13-2:35        | 2:00-2:28      |
| 18           | 2:41-2:50        | 2:43-2:50        | 2:33-2:45        | 1:50-2:12        | 1:31-1:59      |
| 17           | 2:32-2:40        | 2:36-2:42        | 2:20-2:32        | 1:38-1:49        | 1:14-1:30      |
| 16           | 2:24-2:31        | 2:28-2:35        | 2:07-2:19        | 1:26-1:37        | 0:57-1:13      |
| 15           | 2:15-2:23        | 2:20-2:27        | 1:54-2:06        | 1:14-1:25        | 0:39-0:56      |
| 14           | 2:04-2:14        | 2:11-2:19        | 1:43-1:53        | 1:06-1:13        | 0:33-0:38      |
| 12           | 1:53-2:03        | 2:01-2:10        | 1:32-1:42        | 0:56-1:05        | 0:26-0:32      |
| 10           | 1:42-1:52        | 1:52-2:00        | 1:20-1:31        | 0:47-0:55        | 0:19-0:25      |
| 8            | 1:30-1:41        | 1:35-1:51        | 1:08-1:19        | 0:37-0:46        | 0:15-0:18      |
| 6            | 1:18-1:29        | 1:18-1:34        | 0:55-1:07        | 0:26-0:36        | 0:11-0:14      |
| 4            | 1:06-1:17        | 1:01-1:17        | 0:42-0:54        | 0:15-0:25        | 0:06-0:10      |
| 2            | ≤1:05            | ≤1:00            | ≤0:41            | ≤0:14            | ≤0:05          |



**TABLE 11**  
**SHUTTLE RUN – MALES/FEMALES**  
**RESULTS AND SCORES**

| SCORE | AGE 20-29 |       | AGE 30-34 |     | AGE 35-39 |       | AGE 40-49 |       | AGE 50+ |      |
|-------|-----------|-------|-----------|-----|-----------|-------|-----------|-------|---------|------|
|       | M         | F     | M         | F   | M         | F     | M         | F     | M       | F    |
| 50    | ≥12       | ≥9.5  | ≥11.5     | ≥9  | ≥10.5     | ≥8    | ≥9        | ≥6.5  | ≥7.5    | ≥5.5 |
| 47.5  | 11.5      | 9     | 11        | 8   | 10        | 7.5   | 8.5       | 6     | 7       | 5    |
| 45    | 11        | 8-8.5 | 10.5      | 7.5 | 9-9.5     | 7     | 7.5       | 5-5.5 | 6.5     | 4.5  |
| 42.5  | 10-10.5   | 7.5   | 9.5       | 7   | 8         | 6-6.5 | 7         | 4.5   | 5.5     | 4    |
| 40    | 9-9.5     | 7     | 8.5-9     | 6.5 | 7.5       | 5.5   | 6         | 4     | 5       | 3.5  |
| 37.5  | 8.5       | 6.5   | 8         | 6   | 7         | 5     | 5.5       | 3.5   | 4.5     | 2.5  |
| 35    | 8         | 6.0   | 7.5       | 5   | 6.5       | 4.5   | 5         | 3     | 4       | 2    |
| 30    | 7.5       | 5.5   | 7         | 4.5 | 6         | 4     | 4.5       | 2.5   | 3.5     | 1.5  |
| 25    | 7         | 5     | 6.5       | 4   | 5.5       | 3.5   | 4         | 2     | 3       | 1    |
| 20    | 6.5       | 4.5   | 6.0       | 3.5 | 5         | 3     | 3.5       | 1.5   | 2.5     | .5   |
| 15    | 6         | 4.0   | 5.5       | 3   | 4.5       | 2.5   | 3         | 1     | 2       | ---- |
| 10    | 5.5       | 3.5   | 5.0       | 2.5 | 4         | 2     | 2.5       | .5    | 1.5     | ---- |
| 5     | 5         | 3     | 4.5       | 2.0 | 3         | 1.5   | 2.0       | ----  | 1       | ---- |

**Note: Age 35-39 year old females, age 40-49 year old females, and age 50+ males and females must complete a minimum of level 2 to be scored.**