
Police Fitness Personnel of Ontario



CHAPTER 5

FITNESS APPRAISAL PROTOCOL AND STANDARDS

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.

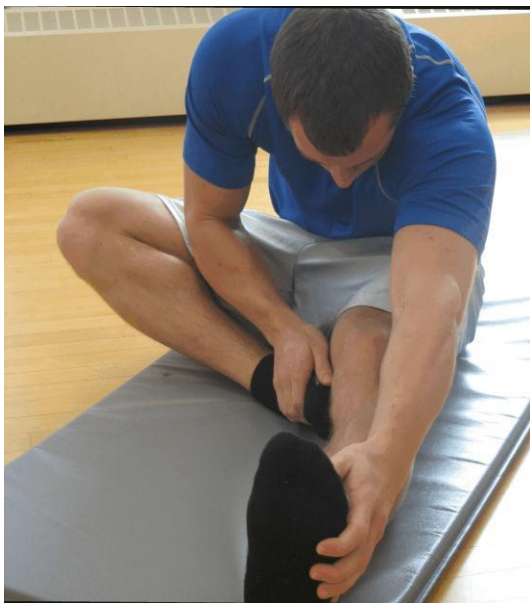


Figure 5.11. A Modified Hurdle Stretch is used as a static warm up stretch to prepare the participant for the sit and reach. Hold in a static stretch for 30 seconds each leg. Repeat twice.

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.

Gender	Age grouping	Time Range for average scores (min:sec)
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

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CHAPTER 6

TABLE OF RESULTS

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

SCORE	AGE 20-29	AGE 30-39	AGE 40-49	AGE 50-59	AGE 60+
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**

SCORE	AGE 20-29	AGE 30-39	AGE 40-49	AGE 50-59	AGE 60+
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**

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

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

SCORE	AGE 20-29	AGE 30-39	AGE 40-49	AGE 50-59	AGE 60+
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**

SCORE	AGE 20-29	AGE 30-39	AGE 40-49	AGE 50-59	AGE 60+
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**

SCORE	AGE 20-29	AGE 30-39	AGE 40-49	AGE 50-59	AGE 60+
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 7
1.5 MILE RUN – MALES

RESULTS AND SCORES

SCORE	AGE 20-29	AGE 30-34	AGE 35-39	AGE 40-49	AGE 50+
50	≤ 9:00	≤ 9:20	≤ 10:06	≤ 10:54	≤ 11:59
47.5	9:01-9:30	9:21-9:50	10:07-10:37	10:55-11:41	12:00-12:51
45	9:31-10:00	9:51-10:20	10:38-11:10	11:42-12:17	12:52-13:31
42.5	10:01-10:30	10:21-10:50	11:11-11:42	12:18-12:52	13:32-14:07
40	10:31-10:56	10:51-11:20	11:43-12:14	12:53-13:28	14:08-14:49
37.5	10:57-11:22	11:21-11:50	12:15-12:47	13:29-14:04	14:50-15:28
35	11:23-11:46	11:51-12:20	12:48-13:19	14:05-14:39	15:29-16:07
30	11:47-12:10	12:21-12:50	13:20-13:52	14:40-15:15	16:08-16:47
25	12:11-12:35	12:51-13:20	13:53-14:24	15:16-15:50	16:48-17:25
20	12:36-12:59	13:21-13:50	14:25-14:56	15:51-16:26	17:26-18:05
15	13:00-13:30	13:51-14:20	14:57-15:29	16:27-17:02	18:06-18:44
10	13:31-14:00	14:21-14:50	15:30-16:01	17:03-17:37	18:45-19:23
5	14:01-14:30	14:51-15:20	16:02-16:34	17:38-18:13	19:24-20:02

TABLE 8
1.5 MILE RUN – FEMALES
RESULTS AND SCORES

SCORE	AGE 20-29	AGE 30-34	AGE 35-39	AGE 40-49	AGE 50+
50	≤10:35	≤11:00	≤ 11:53	≤13:04	≤ 14:22
47.5	10:36-11:10	11:01-11:35	11:54-12:31	13:05-13:46	14:23-15:08
45	11:11-11:52	11:36-12:10	12:32-13:08	13:47-14:27	15:09-15:53
42.5	11:53-12:34	12:11-12:45	13:09-13:46	14:28-15:08	15:54-16:38
40	12:35-13:00	12:46-13:20	13:47-14:24	15:09-15:50	16:39-17:25
37.5	13:01-13:26	13:21-13:55	14:25-15:02	15:51-16:32	17:26-18:11
35	13:27-13:42	13:56-14:30	15:03-15:40	16:33-17:14	18:12-18:57
30	13:43-13:57	14:31-15:05	15:41-16:17	17:15-17:55	18:58-19:42
25	13:58-14:12	15:06-15:40	16:18-16:55	17:56-18:21	19:43-20:11
20	14:13-14:27	15:41-16:15	16:56-17:33	18:22-19:18	20:12-21:14
15	14:28-14:42	16:16-16:50	17:34-18:11	19:19-20:06	21:15-22:00
10	14:43-14:57	16:51-17:25	18:12-18:49	20:07-20:41	22:01-22:45
5	14:58-15:12	17:26-18:00	18:50-19:26	20:42-21:22	22:46-23:30