



Fit Test Date Completed: _____

Muscular Strength and Endurance Test

Push-up Test

Number Completed: _____ Result: _____

Curl-up Test

Number Completed: _____ Result: _____

Wall Sit Test

Length for Right Leg: _____ sec. Result: _____

Length for Left Leg: _____ sec. Result: _____

Flexibility Test

Sit and Reach

Inches Reached: _____ in. Result: _____

Cardiorespiratory Testing

3 Minute Step Test

Recovery Heart Rate: _____ Result: _____

Push-up Test

The push-up test measures upper-body endurance, specifically of the pectoralis muscles, triceps, and anterior deltoids. Due to common variations in upper-body strength between men and women, women should be assessed while performing a modified push-up. The push-up is not only useful as an evaluation tool for measuring upper-body strength and endurance, but is also a prime activity for developing and maintaining upper-body muscular fitness.

Table 3
Fitness Categories for the Push-up by Age and Sex

Category	Age (years)									
	20–29		30–39		40–49		50–59		60–69	
	M	W	M	W	M	W	M	W	M	W
Excellent	36	30	30	27	25	24	21	21	18	14
Very good	29–35	21–29	22–29	20–26	17–24	15–23	13–20	11–20	11–17	12–16
Good	22–28	15–20	17–21	13–19	13–16	11–14	10–12	7–10	8–10	5–11
Fair	17–21	10–14	12–16	8–12	10–12	5–10	7–9	2–6	5–7	2–4
Needs improvement	16	9	11	7	9	4	6	1	4	1

Note: M = Men; W = Women

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Single-Leg Wall Sit Test

This is a simple test of lower body muscular strength and endurance, requiring the subject to hold a sitting position while leaning against a wall, on one leg, for as long as possible. There is the similar [wall squat test](#) performed with both legs on the ground.

Ratings for Single Leg Wall Sit Test

rating	males (seconds)	females (seconds)
excellent	>100	> 60
good	75-100	45-60
average	50-75	35-45
below average	25-50	20-35
very poor	< 25	< 20

Curl-up Test

The curl-up test is used to measure abdominal strength and endurance. Like the push-up test, this test requires the participant to perform to fatigue. The curl-up is preferred over the full sit-up because it is a more reliable indicator of abdominal strength and endurance and is much safer for the exerciser. The full sit-up requires additional recruitment of the hip flexors, which places increased loads across the lumbar spine. Many participants are also inclined to pull on the neck in an effort to generate momentum during a full sit-up, potentially increasing the risk for injury in the cervical region. Most participants will be able to perform the curl-up test unless they suffer from low-back problems. The curl-up test is an easy and inexpensive method of evaluating abdominal strength and endurance.

Table 5
Norms for Curl-up Test (Women)

Rating	% Rating	Age (years)					
		18–25	26–35	36–45	46–55	56–65	66+
Excellent	100	91	70	74	73	63	54
	95	76	60	60	57	55	41
	90	68	54	54	48	44	34
Good	85	64	50	48	44	42	33
	80	61	46	44	40	38	32
	75	58	44	42	37	35	31
Above average	70	57	41	38	36	32	29
	65	54	40	36	35	30	28
	60	51	37	35	33	27	26
Average	55	48	36	32	32	25	25
	50	44	34	31	31	24	22
	45	41	33	30	30	23	21
Below average	40	38	32	28	28	22	20
	35	37	30	24	27	20	18
	30	34	28	23	25	18	16
Poor	25	33	26	22	23	15	13
	20	32	24	20	21	12	11
	15	28	22	19	19	11	10
Very poor	10	25	20	16	13	8	9
	5	24	17	14	9	7	8
	0	11	7	4	2	1	0

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Table 4
Norms for Curl-up Test (Men)

Rating	% Rating	Age (years)					
		18–25	26–35	36–45	46–55	56–65	66+
Excellent	100	99	80	79	78	77	66
	95	83	68	65	68	63	55
	90	77	62	60	61	56	50
Good	85	72	58	57	57	53	44
	80	66	56	52	53	49	40
	75	61	53	48	52	48	38
Above average	70	57	52	45	51	46	35
	65	54	46	44	47	43	32
	60	52	44	43	44	41	31
Average	55	49	41	39	41	39	30
	50	46	38	36	39	36	27
	45	43	37	33	36	33	26
Below average	40	41	36	32	33	32	24
	35	40	34	31	32	31	23
	30	37	33	29	29	28	22
Poor	25	35	32	28	25	25	21
	20	33	30	25	24	24	19
	15	29	26	24	21	21	15
Very poor	10	27	21	21	16	20	12
	5	23	17	13	11	17	10
	0	14	7	6	6	5	5

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Sit-and-Reach Test

The sit-and-reach test is used to assess low-back and hip-joint flexibility. Due to the possibility of injury to the low back and hamstrings, participants should refrain from fast, jerky movements during this assessment. Instead, they should perform the test trials slowly and with control. Participants with a history of low-back dysfunction and/or pain should avoid performing this test.

Table 18

Norms for Trunk-Flexibility Test Fitness Categories (inches)

Ages	MEN						Ages	WOMEN					
	18-25	26-35	36-45	46-55	56-65	>65		18-25	26-35	36-45	46-55	56-65	>65
% Rating							% Rating						
90	22	21	21	19	17	17	90	24	23	22	21	20	20
80	20	19	19	17	15	15	80	22	21	21	20	19	18
70	19	17	17	15	13	13	70	21	20	19	18	17	17
60	18	17	16	14	13	12	60	20	20	18	17	16	17
50	17	15	15	13	11	10	50	19	19	17	16	15	15
40	15	14	13	11	9	9	40	18	17	16	14	14	14
30	14	13	13	10	9	8	30	17	16	15	14	13	13
20	13	11	11	9	7	7	20	16	15	14	12	11	11
10	11	9	7	6	5	4	10	14	13	12	10	9	9

The following may be used as descriptors for the percentile rankings: Well above average (90), above average (70), average (50), below average (30), and well below average (10).

Cardiorespiratory Testing

3 Minute Step Test – Instructions and Norms Chart

Figure 1
Three-minute step test—stepping cycle



Equipment:

- ♦ 12-inch (30.5 cm) step
- ♦ Stopwatch
- ♦ Metronome
- ♦ Stethoscope (optional)

Pre-test procedure:

- ♦ After explaining the purpose of the YMCA submaximal step test, set the metronome to a cadence of 96 “clicks” per minute, which represents 24 steps cycles/minute (or 96 foot placements).
- ✓ Describe and demonstrate the four-part stepping motion (“up,” “up,” “down,” “down”).
- ✓ Either foot can lead the step sequence.
- ✓ Permit a short practice to allow participants to familiarize themselves with the cadence.
- ♦ The goal of the test is to step up and down on a 12-inch riser for three minutes (Figure 1).

- ♦ Explain to the participant that heart rate will be measured through palpation (or auscultation) for one full minute upon completion of the test, counting the number of beats during that first minute of recovery. It is important for the participant to sit down immediately following the test and remain quiet to allow the instructor to accurately assess heart rate.

Test protocol and administration:

- ♦ On the instructor’s cue, the participant begins stepping and the stopwatch is started.
- ♦ The instructor can coach the initial steps to make sure the participant is keeping pace with the metronome. Cue the time remaining to allow the participant to stay on task.
- ♦ At the three-minute mark, the test is stopped and the participant immediately sits down. Count the participant’s heart rate (HR) for one entire minute.
 - ✓ The test score is based on the fact that the immediate post-exercise HR will decrease throughout the minute cycle.
 - ✓ It is important that the HR check begin within five seconds of test completion. (Placing a stethoscope to the participant’s chest enhances the tester’s ability to count the actual heartbeats. In some cases, the participant may be uncomfortable with this procedure, in which case a radial pulse check will also suffice.)
- ♦ The participant’s one-minute post-exercise HR is recorded.
- ♦ Encourage a three- to five-minute cool-down followed by stretching of the lower extremities. The participant may experience post-exercise dizziness or other signs of distress if no cool-down is performed (i.e., blood pooling in the extremities and accelerated HR).
- ♦ Classify the participant’s score using Table 1 or 2 and record the values.
- ♦ Continue to observe the participant, as negative symptoms can arise post-exercise.

For those who score “below average” to “very poor,” it will be necessary to be conservative in the initial exercise program. Keeping exercise duration and intensity to a minimum will be important. For those who score “above average” to “excellent,” it would be appropriate to focus on exercise duration as well as intensity.

Table 1

Post-exercise Heart Rate Norms for YMCA Submaximal Step Test (Men)

Rating	% Rating	Age					
		18–25	26–35	36–45	46–55	56–65	66+
Excellent	100	50	51	49	56	60	59
	95	71	70	70	77	71	74
	90	76	76	76	82	77	81
Good	85	79	79	80	87	86	87
	80	82	83	84	89	91	91
	75	84	85	88	93	94	92
Above average	70	88	88	92	95	97	94
	65	90	91	95	99	99	97
	60	93	94	98	101	100	102
Average	55	95	96	100	103	103	104
	50	97	100	101	107	105	106
	45	100	102	105	111	109	110
Below average	40	102	104	108	113	111	114
	35	105	108	111	117	115	116
	30	107	110	113	119	117	118
Poor	25	111	114	116	121	119	121
	20	114	118	119	124	123	123
	15	119	121	124	126	128	126
Very poor	10	124	126	130	131	131	130
	5	132	134	138	139	136	136
	0	157	161	163	159	154	151

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Table 2

Post-exercise Heart Rate Norms for YMCA Submaximal Step Test (Women)

Rating	% Rating	Age (years)					
		18–25	26–35	36–45	46–55	56–65	66+
Excellent	100	52	58	51	63	60	70
	95	75	74	77	85	83	85
	90	81	80	84	91	92	92
Good	85	85	85	89	95	97	96
	80	89	89	92	98	100	98
	75	93	92	96	101	103	101
Above average	70	96	95	100	104	106	104
	65	98	98	102	107	109	108
	60	102	101	104	110	111	111
Average	55	104	104	107	113	113	116
	50	108	107	109	115	116	120
	45	110	110	112	118	118	121
Below average	40	113	113	115	120	119	123
	35	116	116	118	121	123	125
	30	120	119	120	124	127	126
Poor	25	122	122	124	126	129	128
	20	126	126	128	128	131	129
	15	131	129	132	132	135	133
Very poor	10	135	134	137	137	141	135
	5	143	141	142	143	147	145
	0	169	171	169	171	174	155

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