

Marysville Division of Fire

Physical Fitness Program

July 1, 2009 – June 30, 2010



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Marysville Division of Fire PHYSICAL FITNESS PROGRAM

Section 1 Program Background

Pursuant to Article 37, Section 1 of the Collective Bargaining Agreement in effect from July 1, 2009 through June 30, 2010 IAFF has developed its mandatory, non-punitive physical fitness program. The mandatory portion requires members to participate in the program.

Section 2 Program Overview

The Fitness Program is designed to address the issue of good health and physical fitness for Firefighter/EMTs. The objective of the program is to support and assist firefighters in the maintenance of good health and fitness by providing a periodic evaluation and assessment of their general physical condition.

The key to good health and fitness lies in lifestyle. There is not a great deal that others can do to improve a firefighter/EMTs level of health and fitness. Each employee has an individual responsibility to maintain a level of fitness that permits him/her to carry out job responsibilities and safely handle any situation that may arise. More importantly, Firefighter/EMTs have a responsibility to their families when it comes to day-to-day safety and longevity.

The acceptance of this responsibility involves a commitment from each firefighter/EMT. Unfortunately, good health and fitness do not “just happen”; therefore, personal goals must be established and effort must be put forth to achieve them. A fitness plan, which includes goals in the areas of diet, exercise, and weight control, will pay great dividends if carried out.

In order to accomplish the goals of this program, each shift will have an appointed “Peer Fitness Coordinator”. It is desirable that each Peer Fitness Coordinator receive Peer Fitness Trainer Certification, as available. The IAFF/IAFC Joint Task Force has approved this certification. After each evaluation, the trainer will go over the results with the individual on shift, and make recommendations for future fitness goals. These goals will be documented for review annually and maintained by the Peer Fitness Coordinator for each shift.

The ultimate goal of the health and fitness program is to develop and maintain a physically fit force capable of responding to, and effectively and safely carrying out their job responsibilities. All members of IAFF Local 3032 will participate in a mandatory, non-punitive Physical Fitness Program (PFP). The program requires all members of Local 3032, during their regularly scheduled duty hours to engage in some form of physical activity for a minimum of 30 minutes. Forty-hour personnel will participate in this manner every third duty day. This activity may include cardiovascular exercise, simple calisthenics, and/or weight training that contribute to the improved health and fitness level of the individual.

Section 3 Physical Fitness Testing

The physical fitness test/evaluation (PFT) is a six-event physical performance test used to assess muscular endurance and cardio-respiratory (CR) fitness. It is a simple way for a firefighter to measure his ability to effectively move his body by using his major muscle groups and CR systems. Performance on the PFT is strongly linked to the firefighter's fitness level and his ability to do fitness-related tasks. The PFT events will be the Bench Press, Leg Press, Flexibility, Push-up, Sit-up, and Gerkin Treadmill test utilizing the Cooper Standards (Section 8).

Firefighters should be allowed 10 minutes to recover between each event. Start to finish of the six events must not take more than one and a half hours. Firefighters must do all events in the one and a half hours to get a true muscular endurance/CR fitness evaluation. Under no circumstances is the PFT valid if a firefighter cannot begin and end all six events in one and a half hours or less.

The uniform for the semi-annual PFT is appropriate PT gear. The evaluation will not be performed in the duty uniform. Running shoes or equivalent will be worn. The location for the PFT is the Marysville Fire Dept. weight room.

Physical fitness assessment results will not be included as part of any Division of Fire performance plan.

Section 4 Physical Fitness Test Scheduling

Peer Fitness Coordinators (PFC) will administer the PFT on an annual basis to evaluate all members of the Marysville Division of Fire, regardless of age, gender, rank, status or job title, unless medically waived. An optional 2nd evaluation may also be conducted. The PFT evaluations will be done in the months of March (optional) and September (annual). If a member of the division wishes to be evaluated more often he/she may.

Section 5 Medical Deferrals

When an employee is requesting a medical deferral for any portion of the fitness evaluation, the employee will submit a letter from his/her personal physician as to the reason for the deferral. Minimum information this letter should include would consist of the following medical reason(s) for the deferral:

Is the illness or injury chronic or acute?

Acute – employee will recover with rehabilitation

Chronic – employee will never be able to perform a specific portion of the evaluation

If “Acute”, the individual will take that portion of the PFT not previously taken, when the injury has been rehabilitated or the illness cured. If “Chronic”, that station in the Fitness Evaluation will not be evaluated and will not be used to determine the overall fitness score.

Section 6 Fitness Ribbon

Any firefighter/EMT that attains or surpasses the 60th percentile in an average of all of the stations of the Physical Evaluation completed will be eligible to receive the fitness ribbon.

In addition to the fitness ribbon, the fitness star will also be awarded to all who attain or surpass the 80th percentile in an average of all areas tested. This level of fitness is referred to as the “Outstanding” level.

The Fitness Ribbon and Fitness Ribbon w/Star will be worn on the Class A uniform. This ribbon will rank in order of appearance on the uniform between the Medal of Merit and the Distinguished Service Award.

Section 7 Allocation of Time

The shift officer, on a daily basis, will approve the prescribed workout time so that the physical activity coincides with the priorities of the shift. When allowing personnel to work out during currently designated work hours (0730 to 1600), the shift officer will allow 60 minutes to complete the 30 minutes minimum physical activity required.

Personnel will change back into their duty uniform after working out. Some leeway shall be granted if personnel have finished their fitness activity and meals are ready. This leeway is intended for the firefighter to be able to eat a fresh/warm meal.

Personnel should be scheduled to work out during normal duty hours when practical. Personnel that normally work out for longer periods should be scheduled to work out after all the days mission requirements have been met. It is the responsibility of the shift officer and the peer fitness trainer to insure that all physical fitness training is properly performed and recorded.

The shift officer will have total control of scheduling physical fitness activities. The shift officer will make every attempt to insure that all personnel on duty are given the opportunity to perform their physical fitness activity. Requests for physical fitness activity time will not be unreasonably denied nor will unreasonable requests be approved. The shift officer will use the following as a guide to make scheduling decisions, prioritized as listed in the order below:

1. Fire and EMS runs will take precedence over all other activities.
2. Equipment Checks;
3. Station maintenance;
4. Fire and EMS training;
5. Mission specific extra duties; and,
6. Physical Fitness Training.

At no time will physical fitness activity be scheduled after 2100 hours. The shift officer will be responsible for insuring that every firefighter/EMT that works any part of his duty day (0700 to 2100) has time to take part in a minimum of 30 minutes of physical fitness activity. Performing physical fitness and utilizing it as a team building program, the shift Lieutenant may choose to utilize the time from 0700-0800 performing PT as a shift. This is permissible under the intent of this program, as long as those activities do not interrupt or slow turnout response times.

The shift officer (whenever possible) will insure that equipment assignments are covered for Local 3032 members who are working out, so they can complete an uninterrupted workout.

Section 8 Cooper Standards

MFPFT (revised 10/2006)

MARYSVILLE FIRE PHYSICAL FITNESS TEST

Gerkin Treadmill Protocol

You will be asked to walk on the treadmill belt as the treadmill speed is increased to 3 mph and then subsequently to 4.5 mph. Then gradually the grading will increase from 0% to 2%. This gradual increase in both the speed and grading will be done in each stage till either the individual reaches the target exercise heart rate (85% of the maximal heart rate), or until the individual shows sign of chest pain; shortness of breath or other physical symptoms that made him unable to continue to exercise. The test would then be stopped and individual will be rested to allow the heart rate and blood pressure to stabilize. The final stage of exercise that the individual is able to do will be documented to establish the aerobic capacity. The final stage recorded will be converted by the following table to establish VO_2 max. For more information on the Gerkin Protocol please consult the IAFF/IAFC *Fire Service Joint Labor/Management Wellness-Fitness Initiative*.



Protocol

1. The individual being evaluated is instructed to straddle the treadmill belt until it begins to move. At approximately one MPH, the individual is instructed to step onto the belt and the belt speed is increased to three MPH at 0% grade. The individual warms up at three MPH at 0% grade for three minutes. During the warm-up, the individual is informed that the evaluation is submaximal and will terminate once their heart rate exceeds the target exercise heart rate or 15 seconds. The individual is informed that the target heart rate is 85% of their predicted maximal heart rate. The individual is advised that the evaluation is a series of one-minute exercise stages, alternating between percent grade and speed (i.e., first minute percent grade is increased; second minute speed is increased, etc.). Inform the individual that if anytime during the evaluation they experience chest pain,

- light-headedness, ataxia (Loss of the ability to coordinate muscular movement), Nausea or clamminess, they should ask the evaluator to terminate the evaluation.
2. The individual is informed that the belt speed will gradually increase to the starting speed of 4.5 MPH and 0% grade, at which Stage 1 begins. The individual is permitted to walk or run whichever feels more comfortable.
 3. During the evaluation, the individual's heart rate is continuously monitored and the heart rate is recorded during the last quarter (15 seconds) of each stage. At the completion of the first minute (stage 1: 4.5 MPH @ 0% grade), the grade should be increased to 2%. Subsequently, after every odd minute the grade will be increased an additional 2%. After every even minute the speed will be increased 0.5 MPH. This will continue until the individual's heart rate exceeds their target heart rate or demonstrates any of the criteria for early termination of the treadmill evaluation.
 4. Once the individual's heart rate exceeds the target heart rate, the individual continues the evaluation for an additional 15 seconds. This 15-second period allows for the individual's heart rate to stabilize. During the stabilization period, the evaluation will remain at the stage where the target exercise heart rate is exceeded, with the speed or grade unchanged. If the heart rate does not return to or below the target heart rate the evaluation ends and the final evaluation stage will be recorded.
 5. If the evaluation is terminated early, the stage at which the evaluation is terminated and the reason for the termination is documented.
 6. Once the individual exceeds their target exercise heart rate or reaches the eleventh minute of the evaluation, the evaluation is ended and the final stage is recorded.
 7. The individual is instructed to remain on the treadmill for a cool-down period for a minimum of three minutes at three MPH, 0% grade. Continue to monitor the heart rate during the cool-down period. Record the heart rate after one minute of cool-down.
 8. Use the final stage and the conversion table to establish VO^2 max.
 9. Record the VO^2 max.

Allow for a cool-down and rest period of no more than 10 minutes prior to next test

SUBMAXIAL TREADMILL EVALUATION CONVERSION TABLE

MPH	Grade%	STAGE	TIME	CONVERTED VO2 max
3	0	warm-up	3-minutes	
4.5	0	1	4:00 / 1:00	31.15
4.5	2	2.1	4:15 / 1:15	32.55
		2.2	4:30 / 1:30	33.6
		2.3	4:45 / 1:45	34.65
		2.4	5:00 / 2:00	35.35
5	2	3.1	5:15 / 2:15	37.45
		3.2	5:30 / 2:30	39.55
		3.3	5:45 / 2:45	41.3
		3.4	6:00 / 3:00	43.4
5	4	4.1	6:15 / 3:15	44.1
		4.2	6:30 / 3:30	45.15
		4.3	6:45 / 3:45	46.2
		4.4	7:00 / 4:00	46.5
5.5	4	5.1	7:15 / 4:15	48.6
		5.2	7:30 / 4:30	50
		5.3	7:45 / 4:45	51.4
		5.4	8:00 / 5:00	52.8
5.5	6	6.1	8:15 / 5:15	53.9
		6.2	8:30 / 5:30	54.9
		6.3	8:45 / 5:45	56
		6.4	9:00 / 6:00	57
6	6	7.1	9:15 / 6:15	57.7
		7.2	9:30 / 6:30	58.8
		7.3	9:45 / 6:45	60.2
		7.4	10:00 / 7:00	61.2
6	8	8.1	10:15 / 7:15	62.3
		8.2	10:30 / 7:30	63.3
		8.3	10:45 / 7:45	64
		8.4	11:00 / 8:00	65
6.5	8	9.1	11:15 / 8:15	66.5
		9.2	11:30 / 8:30	68.2
		9.3	11:45 / 8:45	69
		9.4	12:00 / 9:00	70.7
6.5	10	10.1	12:15 / 9:15	72.1
		10.2	12:30 / 9:30	73.1
		10.3	12:45 / 9:45	73.8
		10.4	13:00 / 10:00	74.9
7	10	11.1	13:15 / 10:15	76.3
		11.2	13:30 / 10:30	77.7
		11.3	13:45 / 10:45	79.1
		11.4	14:00 / 11:00	80

Aerobic Capacity Equivalency Chart For Males

(Norms--Men 20-29)

(Norms--Men 30-39)

<u>% Ranking</u>	<u>Max VO2</u>	<u>Max VO2</u>
Outstanding		
100	58.79	58.86
95	53.97	52.53
90	51.35	50.36
85	49.64	48.20
80	48.20	46.75
Excellent		
75	46.99	45.31
70	46.75	44.59
65	45.31	43.87
60	44.23	42.42
Satisfactory		
55	43.87	41.58
50	42.49	40.98
45	42.42	39.53
40	40.98	38.86
Marginal		
35	40.26	38.09
30	39.53	37.37
25	38.09	36.65
20	37.13	35.35
Unsatisfactory		
15	36.65	34.00
10	34.48	32.53
5	31.57	30.87
0	<27.09	<26.54

Aerobic Capacity Equivalency Chart For Males

(Norms--Men 40-49)

(Norms--Men 50+)

<u>% Ranking</u>	<u>Max VO2</u>	<u>Max VO2</u>
Outstanding		
100	55.42	52.23
95	50.36	47.11
90	48.20	45.31
85	45.31	42.42
80	44.11	40.98
 Excellent		
75	43.89	39.53
70	41.75	38.45
65	40.98	37.61
60	39.89	36.65
 Satisfactory		
55	39.53	36.10
50	38.09	35.20
45	37.37	34.12
40	36.65	33.76
 Marginal		
35	35.56	32.48
30	35.13	32.31
25	33.76	31.06
20	33.04	30.15
 Unsatisfactory		
15	32.31	29.43
10	30.85	27.98
5	28.29	25.09
0	<24.15	<22.06

Aerobic Capacity Equivalency Chart For Females

(Norms--Female 20-29)

(Norms--Female 30-39)

<u>% Ranking</u>	<u>Max VO2</u>	<u>Max VO2</u>
Outstanding		
100	58.79	58.86
95	53.97	52.53
90	51.35	50.36
85	49.64	48.20
80	48.20	46.75
Excellent		
75	46.99	45.31
70	46.75	44.59
65	45.31	43.87
60	44.23	42.42
Satisfactory		
55	43.87	41.58
50	42.49	40.98
45	42.42	39.53
40	40.98	38.86
Marginal		
35	40.26	38.09
30	39.53	37.37
25	38.09	36.65
20	37.13	35.35
Unsatisfactory		
15	36.65	34.00
10	34.48	32.53
5	31.57	30.87
0	<27.09	<26.54

MFPFT

Muscular Endurance Testing

Push-up event

The push-up event measures the endurance of the chest, shoulder, and triceps muscles.

Equipment

One stopwatch is needed along with one clipboard and pen for each evaluator (if there is more than one being tested). The evaluator must have the following instructions in this chapter on how to conduct the event, and the scorecards for the individuals being tested.

Personnel

There must be one timekeeper. There must be one counter for each individual being tested. The timekeeper will call out the time at 30 seconds and every second for the last 10 seconds of the one-minute.

Procedures

Assume the front-leaning rest position by placing your hands where they are comfortable for you. Your feet may be together or up to 12 inches apart. When viewed from the side, your body should form a generally straight line from your shoulders to your ankles. Begin the push-up by bending your elbows and lowering your entire body as a single unit your upper arms are at least parallel to the ground. Then, return to the starting position by raising your entire body (as a single unit) until your arms are fully extended. Your body must remain ridged in a generally straight line and move as a unit while performing each repetition.

If you fail; to keep you body generally straight, to lower you whole body until your upper arms are at least parallel to the ground or to extend your arms completely, that repetition will not count, the scorer will repeat the number of the last correctly performed repetition. If you fail to perform the first ten push-ups correctly, the scorer will tell you to go to your knees and will explain to you what your mistakes are. You will then be sent to the end of the line to be retested. After the first ten push-ups have been performed and counted, no restarts are allowed. The test will continue, and any incorrectly performed push-ups will not be counted.

An altered, front-leaning rest position is the only authorized rest position. That is, you may sag in the middle or flex your back. When flexing your back, you may bend your knees, but not to such an extent that you are supporting most of your body weight with

your legs. If this occurs, your performance will be terminated. You may reposition your hands and/or feet during the event as long as they remain in contact with the ground at all times. **CORRECT PERFORMANCE IS IMPORTANT.** You will have one minute in which to do as many push-ups as you can.

Scorers' duties

Scorers must allow for differences in the body shape and structure of each individual. The scorer uses each individual's starting position as a guide throughout the event to evaluate each repetition. The scorer should talk to the individual before the event begins and have him/her do a few repetitions as a warm-up and reference to ensure he/she is doing the exercise correctly. There must be materials available to place between the ground and the individual's chest, if the individual so desires. This material is to be used as a reference point to ensure the individual's upper arms are at least parallel to the ground.

The scorer may either sit or kneel about three feet from the individual's shoulders at a 45-degree angle to the front. The scorer's head should be about even with the individual's shoulder when the latter is in the front-leaning rest position. The scorer counts out loud the number of correct repetitions completed and repeats the number of the last correct push-up if an incorrect one is done. Scorers tell the individuals what they do wrong as it occurs during the event.

When the individual completes the event, the scorer records the number of correctly performed repetitions, initials the scorecard, and returns it to the individual.

Allow up to five minutes rest prior to next test

Muscular Endurance: 1-Minute Push-Up--Male

<u>Percentile</u>	<u>AGE</u>				
	<u>20-29</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>60+</u>
Outstanding					
100	100	86	64	51	39
95	62	52	40	39	28
90	57	46	36	30	26
85	51	41	34	28	24
80	47	39	30	25	23
Excellent					
75	44	36	29	24	22
70	41	34	26	21	21
65	39	31	25	20	20
60	37	30	24	19	18
Satisfactory					
55	35	29	22	17	16
50	33	27	21	15	15
45	31	25	19	14	12
40	29	24	18	13	10
Marginal					
35	27	21	16	11	9
30	26	20	15	10	8
25	24	19	13	9	7
20	22	17	11	8	6
Unsatisfactory					
15	19	15	10	7	5
10	18	13	9	6	4
5	13	9	5	3	2

Muscular Endurance: 1-Minute Push-up--Female

<u>Percentile</u>	<u>20-29</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>60+</u>
Outstanding					
100	53	48	23	17	12
95	42	40	20	15	10
90	37	33	19	14	9
85	33	26	17	13	8
80	28	23	16	11	7
Excellent					
75	27	19	15	10	6
70	24	18	14	9	5
65	23	16	13	8	
60	21	15	12	7	4
Satisfactory					
55	19	14	11	6	
50	18	13	10	5	3
45	17	12	9	4	
40	15	11		3	2
Marginal					
35	14	10	8		
30	13	9	7	2	1
25	11				
20	10	8	6	1	
Unsatisfactory					
15	9	7	5	0	0
10	8	6	4		
5	6	4	1		
1	3	1	0		

MFPFT

Muscular Endurance Testing

Sit-up event

This event measures the endurance of the abdominal and hip-flexor muscles.

Equipment

One stopwatch is needed along with one clipboard and pen for each evaluator (if there is more than one being tested). The evaluator must have the following instructions in this chapter on how to conduct the event, and the scorecards for the individuals being tested.

Personnel

There must be one timekeeper. There must be one counter for each individual being tested. The timekeeper will call out the time at 30 seconds and every second for the last 10 seconds of the one-minute.

Procedures

Assume the starting position by lying on your back with your knees bent at a 90-degree angle. Your feet may be together or up to 12 inches apart. Another person will hold your ankles, or you can place your feet under a set of 80lb dumbbells. The heel of your foot is the only part

1. The subject starts by lying on his back, knees bent, heels flat on the floor and **hands crossed in front with fingers touching shoulders.**
2. Feet placed under a set of 80# dumbbells.
3. The subject then performs as many correct sit-ups as possible in one minute.

4. In the up position, the individual should touch his elbows to his knees and then return to a full lying position before starting the next sit-up.

5. Score is total number of correct sit-ups.

Allow up to five minutes rest prior to next test

Muscular Endurance: 1-Minute Sit-Up--Male

<u>Percentile</u>	<u>AGE</u>					
	<u><20</u>	<u>20-29</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>60+</u>
Outstanding						
100	>61	>55	>51	>47	>43	>39
95	61	55	51	47	43	39
90	55	51	48	43	39	35
85	53	49	45	40	36	31
80	51	47	43	39	35	30
Excellent						
75	50	46	42	37	33	28
70	48	45	41	36	31	26
65	48	44	40	35	30	24
60	46	42	39	34	28	22
Satisfactory						
55	45	41	37	32	27	21
50	44	40	36	31	26	20
45	42	39	35	30	25	19
40	41	38	34	29	24	19
Marginal						
35	39	37	33	28	22	18
30	38	35	32	27	21	17
25	37	35	31	26	20	16
20	36	33	30	24	19	15
Unsatisfactory						
15	34	32	28	22	17	13
10	33	30	26	20	15	10
5	27	27	23	17	12	7
1	<27	<27	<23	<17	<12	<7

Muscular Endurance: 1-Minute Sit-Up--Female

	<u>AGE</u>					
<u>Percentile</u>	<u><20</u>	<u>20-29</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>60+</u>
Outstanding						
100	>54	>51	>42	>38	>30	>28
95	54	51	42	38	30	28
90	53	48	40	34	29	26
85	49	45	37	32	26	20
80	46	44	35	29	24	17
Excellent						
75	40	42	33	28	22	15
70	38	41	32	27	22	13
65	37	39	30	25	21	12
60	36	38	29	24	20	11
Satisfactory						
55	35	37	28	23	19	10
50	34	35	27	22	17	8
45	34	34	26	21	16	8
40	32	32	25	20	14	6
Marginal						
35	31	31	24	19	12	5
30	30	30	22	17	12	4
25	29	28	21	16	11	4
20	28	27	20	14	10	3
Unsatisfactory						
15	27	24	18	13	7	2
10	26	23	15	10	6	1
5	25	19	11	7	5	1
1	<25	<18	<11	<7	<5	<1

Flexibility Evaluation

1. The individual is instructed to sit on the floor. The individual is instructed to place legs, fully extended, feet within the red area marked on the box. . The sit and reach box with sliding measurement guide is placed with the box flat against the feet.
2. The individual is instructed to extend arms fully in front of the body with the right hand overlaying the left hand, with the middle finger of each hand directly over each other, the front edge of the measuring device is even with the front of the box (15 inch mark).
3. The individual is then instructed to slowly exhale while stretching slowly forward, bending at the waist and pushing the measuring device with the middle fingers. During the stretch the legs are to remain together and fully extended and the hands are to remain overlaid. The stretch is momentary held and the distance (measurement) is obtained.
4. Instruct the individual to relax for 30 seconds. Once the individual has completed the 30-second recovery period begins the second evaluation. Repeat evaluation for the third time.
5. Record the furthest distance from the three trials.

Flexibility: Sit and Reach (Inches)---Male

<u>Percentile</u>	<u>AGE</u>					
	<u><20</u>	<u>20-29</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>60+</u>
Outstanding						
100	>23.5	>23	>22	>21.5	>20.5	>20.0
95	23.5	23.0	22.0	21.5	20.5	20.0
90	22.5	21.5	21.0	20.0	19.0	19.0
85	22.0	21.0	20.0	19.5	18.5	18.0
80	22.0	20.5	19.5	18.5	17.5	17.5
Excellent						
75	21.5	20.0	19.0	18.0	17.0	16.5
70	20.5	19.5	18.5	17.5	16.5	15.5
65	19.5	19.0	18.0	17.0	16.0	15.0
60	19.0	18.5	17.5	16.5	15.5	14.5
Satisfactory						
55	18.5	18.0	17.0	16.0	15.0	14.0
50	18.0	17.5	16.5	15.5	14.5	13.5
45	17.0	17.0	16.0	15.0	14.0	13.0
40	16.5	16.5	15.5	14.5	13.5	12.5
Marginal						
35	16.0	16.0	15.0	14.0	12.5	12.0
30	15.5	15.5	14.5	13.5	12.0	11.5
25	14.0	15.0	14.0	12.5	11.0	10.5
20	13.0	14.5	13.0	12.0	10.5	10.0
Unsatisfactory						
15	12.0	13.5	12.0	11.0	9.5	9.0
10	10.5	12.5	11.0	10.0	8.5	8.0
5	9.5	10.5	9.5	8.5	7.0	6.0
1	<9.5	<10.5	<9.5	<8.5	<7.0	<6.0

Flexibility: Sit and Reach (Inches)---Female

	<u>AGE</u>					
<u>Percentile</u>	<u><20</u>	<u>20-29</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>60+</u>
Outstanding						
100	>24.5	>24.5	>24.0	>23.0	>23.0	>23.0
95	24.5	24.0	24.0	22.5	23.0	23.0
90	24.5	24.0	22.5	21.5	21.5	21.5
85	22.5	23.0	22.0	21.0	21.0	19.5
80	22.0	22.5	21.5	20.5	20.5	19.0
Excellent						
75	22.0	22.0	21.0	20.0	20.0	18.0
70	22.0	21.5	20.5	19.5	19.5	17.5
65	21.5	21.0	20.0	19.0	19.0	17.5
60	21.0	20.5	20.0	19.0	18.5	17.0
Satisfactory						
55	21.0	20.0	19.5	18.5	18.0	17.0
50	21.0	20.0	19.0	18.0	17.5	16.5
45	20.5	19.5	18.5	18.0	17.0	16.0
40	20.0	19.0	18.0	17.5	16.5	15.5
Marginal						
35	20.0	19.0	17.5	17.0	16.0	15.0
30	19.5	18.5	17.0	16.5	15.5	14.5
25	19.0	18.0	16.5	16.0	15.0	13.5
20	18.5	17.0	16.0	15.0	14.5	13.0
Unsatisfactory						
15	18.0	16.5	15.5	14.0	14.0	11.5
10	14.5	15.5	14.0	13.0	13.0	11.5
5	14.5	14.0	12.0	10.5	12.5	9.0
1	<14.5	<14.0	<12.0	<10.5	<12.5	<9.0

Strength Testing

Concept: Maximum strength testing involves forcing a muscle group to exert a maximum force. Use of weight equipment allows the exerciser to vary the workload to get an accurate measure.

1 RM Bench and Leg Press

Muscular strength is defined as the amount of tension a muscle can exhibit in one maximal contraction. Two strength tests that go through the full range of motion, which correlates well with a total body strength criterion, are the one repetition maximum bench press and leg press. The equipment required includes either a barbell set and bench or a universal gym with a bench press station.

Procedure

1. Estimate the weight that an individual can press in one maximum effort.
2. For the bench press, load the weights to about one-half of the estimated maximum weight or the following: **Male**- 2/3-body weight and **Female** - ½ body weight. For the leg press, load the weights for both males and females to body weight.
3. Instruct the individual to press this weight once for an easy warm-up.
4. Increase the loading of the weights in ten pound or more increments to maximum. If barbells are used, five-pound increments are recommended, as the individual gets closer to the maximum. Instruct the person to lift each additional weight increment for one repetition and then load the next increment. The first three to four repetitions serve as warm-up lifts in order to prevent muscle injury and to prepare the person for a maximal lift on the fifth or sixth effort.
5. The Score for this test is the maximum number of pounds lifted in one repetition.

Muscular endurance testing must use a standardized time frame to control the endurance effort. Since this is to establish what your 1-rep max is, the participant will have 2-3 minutes in between their attempts. This is a form of strength testing that requires rigid adherence of proper form to be accurate. The participant will lower the barbell down and

touch his/or her chest and proceed to extend arms to the starting position. **“DO NOT BOUNCE THE BARBELL OFF YOUR CHEST”!** **“ALSO YOUR BOTTOM MUST REMAIN IN CONTACT WITH THE BENCH AT ALL TIMES”!**

“ON THE LEG PRESS THE PARTICIPANTS LEGS MUST GO TO AT LEAST 90 DEGREES TO BE CONSIDERED A GOOD LIFT”

Absolute Strength: 1-Repetition Maximum Bench Press -- Male

(Bench Press weight ratio = Weight pushed in lbs ~ Body weight in lbs.)

<u>Percentile</u>	<u>AGE</u>					
	<u><20</u>	<u>20-29</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>60+</u>
Outstanding						
100	>1.76	>1.63	>1.35	>1.20	>1.05	>.94
95	1.76	1.63	1.35	1.20	1.05	0.94
90	1.46	1.48	1.24	1.10	0.97	0.89
85	1.38	1.37	1.17	1.04	0.93	0.84
80	1.34	1.32	1.12	1.00	0.90	0.82
Excellent						
75	1.29	1.26	1.08	0.96	0.87	0.79
70	1.24	1.22	1.04	0.93	0.84	0.77
65	1.23	1.18	1.01	0.90	0.81	0.74
60	1.19	1.14	0.98	0.88	0.79	0.72
Satisfactory						
55	1.16	1.10	0.96	0.86	0.77	0.70
50	1.13	1.06	0.93	0.84	0.75	0.68
45	1.10	1.03	0.90	0.82	0.73	0.67
40	1.06	0.99	0.88	0.80	0.71	0.65
Marginal						
35	1.01	0.96	0.86	0.78	0.70	0.65
30	0.96	0.93	0.83	0.76	0.68	0.63
25	0.93	0.90	0.81	0.74	0.66	0.60
20	0.89	0.88	0.78	0.72	0.63	0.57
Unsatisfactory						
15	0.86	0.84	0.75	0.69	0.60	0.56
10	0.81	0.80	0.71	0.65	0.57	0.53
5	0.76	0.72	0.65	0.59	0.53	0.49
1	<.76	<.72	<.65	<.59	<.53	<.49

Absolute Strength: 1-Repetition Maximum Leg Press -- Female

(Bench Press weight ratio = Weight pushed in lbs ~ Body weight in lbs.)

	<u>AGE</u>					
<u>Percentile</u>	<u><20</u>	<u>20-29</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>60+</u>
Outstanding						
100	>1.88	>1.98	>1.68	>1.57	>1.43	>1.43
95	1.88	1.98	1.68	1.57	1.43	1.43
90	1.85	1.82	1.62	1.48	1.37	1.32
85	1.81	1.76	1.52	1.40	1.31	1.25
80	1.71	1.68	1.47	1.37	1.25	1.18
Excellent						
75	1.69	1.65	1.42	1.33	1.20	1.16
70	1.65	1.58	1.39	1.29	1.17	1.13
65	1.62	1.53	1.36	1.27	1.12	1.08
60	1.59	1.50	1.33	1.23	1.10	1.04
Satisfactory						
55	1.51	1.47	1.31	1.20	1.08	0.99
50	1.45	1.44	1.27	1.18	1.05	0.99
45	1.42	1.40	1.24	1.15	1.02	0.97
40	1.38	1.37	1.21	1.13	0.99	0.93
Marginal						
35	1.33	1.32	1.18	1.11	0.97	0.90
30	1.29	1.27	1.15	1.08	0.95	0.90
25	1.25	1.26	1.12	1.06	0.92	0.86
20	1.22	1.22	1.09	1.02	0.88	0.85
Unsatisfactory						
15	1.19	1.18	1.05	0.97	0.84	0.80
10	1.09	1.14	1.00	0.94	0.78	0.72
5	1.06	0.99	0.96	0.85	0.72	0.63
1	<1.06	<.99	<.96	<.85	<.72	<.63

Absolute Strength: 1-Repetition Maximum Leg Press -- Male

(Leg Press weight ratio = Weight pushed in lbs ~ Body weight in lbs.)

	<u>AGE</u>					
<u>Percentile</u>	<u><20</u>	<u>20-29</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>60+</u>
Outstanding						
100	>2.82	>2.40	>2.20	>2.02	>1.90	>1.80
95	2.82	2.40	2.20	2.02	1.90	1.80
90	2.53	2.27	2.07	1.92	1.80	1.73
85	2.40	2.18	1.99	1.86	1.75	1.68
80	2.28	2.13	1.93	1.82	1.71	1.62
Excellent						
75	2.18	2.09	1.89	1.78	1.68	1.58
70	2.15	2.05	1.85	1.74	1.64	1.56
65	2.10	2.01	1.81	1.71	1.61	1.52
60	2.04	1.97	1.77	1.68	1.58	1.49
Satisfactory						
55	2.01	1.94	1.74	1.65	1.55	1.46
50	1.95	1.91	1.71	1.62	1.52	1.43
45	1.93	1.87	1.68	1.59	1.50	1.40
40	1.90	1.83	1.65	1.57	1.46	1.38
Marginal						
35	1.89	1.78	1.62	1.54	1.42	1.34
30	1.82	1.74	1.59	1.51	1.39	1.30
25	1.80	1.68	1.56	1.48	1.36	1.27
20	1.70	1.63	1.52	1.44	1.32	1.25
Unsatisfactory						
15	1.61	1.58	1.48	1.40	1.28	1.21
10	1.57	1.51	1.43	1.35	1.22	1.16
5	1.46	1.42	1.34	1.27	1.15	1.08
1	<1.46	<1.42	<1.34	<1.27	<1.15	<1.08

Absolute Strength: 1-Repetition Maximum Bench Press -- Female

(Leg Press weight ratio = Weight pushed in lbs ~ Body weight in lbs.)

Percentile	<u>AGE</u>					
	<u><20</u>	<u>20-29</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>60+</u>
Outstanding						
100	>.88	>1.01	>.82	>.77	>.68	>.72
95	0.88	1.01	0.82	0.77	0.68	0.72
90	0.83	0.90	0.76	0.71	0.61	0.64
85	0.81	0.83	0.72	0.66	0.57	0.59
80	0.77	0.80	0.70	0.62	0.55	0.54
Excellent						
75	0.76	0.77	0.65	0.60	0.53	0.53
70	0.64	0.74	0.63	0.57	0.52	0.51
65	0.70	0.72	0.62	0.55	0.50	0.48
60	0.65	0.70	0.60	0.54	0.48	0.46
Satisfactory						
55	0.64	0.68	0.58	0.53	0.47	0.46
50	0.63	0.65	0.57	0.52	0.46	0.45
45	0.60	0.63	0.55	0.51	0.45	0.44
40	0.57	0.59	0.53	0.50	0.44	0.43
Marginal						
35	0.56	0.58	0.52	0.48	0.43	0.41
30	0.56	0.56	0.51	0.47	0.42	0.40
25	0.55	0.53	0.49	0.45	0.41	0.39
20	0.53	0.51	0.47	0.43	0.39	0.39
Unsatisfactory						
15	0.52	0.50	0.45	0.42	0.38	0.36
10	0.5	0.48	0.42	0.38	0.37	0.33
5	0.41	0.436	0.39	0.35	0.305	0.26
1	<.41	<.436	<.39	<.35	<.305	<.26

