

# **Santa Clara County Fire Department**



## **Four-Month Pre-Academy Fitness Program**



## **Four-Month Pre-Academy Fitness Program**

The extensive benefits of enhanced fitness and health from a regular exercise program are well established. For firefighters, maintaining a high level of functional physical fitness is a critical necessity.

The Four-Month Pre-Academy Fitness Program is designed to help candidates begin a self-administered fitness program that will assist them to succeed in the academy should they be selected for appointment. The physical fitness program in the academy focuses on aerobic capacity, muscular strength, muscular endurance, flexibility and body composition. The intent of the pre-academy program is to increase physical conditioning and reduce the likelihood of injuries that could result in failure to complete the academy.

**Note:** It is recommended that individuals consult with their personal physician prior to beginning a physical fitness program. It is important that each candidate set realistic goals and adjust the level of the program according to their capabilities. In addition, those who choose to use this fitness program or any other program to prepare for the academy do so at their own risk. Any injuries incurred are the individual's responsibility and not that of Santa Clara County Fire Department.

### **Physical Fitness Program Overview**

1. Warm-up, Stretching
2. Cardiovascular Fitness Training
3. Strength Training
4. Cool-down, Stretching

#### **1. Warm-up, Stretching**

Regardless of fitness level, all exercise sessions should be preceded by an adequate warm-up. Five to ten minutes of very light cardiovascular exercise such as walking or stationary bike riding will help prepare the muscles and the cardiovascular system for the exercise session. If time does not allow a full stretching regimen, then several stretches, specific to the muscles to be exercised, should be performed. It is important that you do not stretch until you warm-up.

#### **2. Cardiovascular Fitness Training**

The running component of the program is designed to meet the minimal running standards at the fire academy. If you are new to running, you should ease into the program. If you're unable to jog at a slow pace continuously for 30 minutes, then you should begin your program by alternating five minutes of fast walking with five minutes of jogging for 30 minutes. Gradually increase your jogging time and decrease your walking time until you are able to maintain a consistent and comfortable jogging pace for 30 minutes. Always complete your workout with a five-minute slow-paced

## **Cardiovascular Fitness Training - continued**

cool-down and stretching of the calves, hamstrings, hip flexors and back. Candidates will become better prepared for the running requirements of the academy by training outdoors on variable terrain, as opposed to training exclusively on a treadmill. Many treadmills are padded, making them a good option if you are just beginning a cardiovascular program, are recovering from an injury, or are prone to injuries. However, the treadmill "pulls" the ground underneath your feet, and you do not contend with environmental conditions. Setting the treadmill at a 1% grade helps to simulate the effort of flat road running.

Before you begin a running program it is important to have a pair of high quality, durable running shoes. Running shoes are designed to absorb shock, provide arch support and motion control. Shoes designed for cross training or court sports are designed for other purposes and running long distances in them will likely result in injury.

While you are building up your running stamina, practice good running form:

1. Run tall with good posture. Your trunk will lean forward from the hips slightly, but try to keep your back straight and shoulders back to help expand your chest for more relaxed, deeper breathing.
2. Let your arms swing at a 90-degree angle between the chest and hipbone, not crossing them over your body. Your arm swing should complement your stride. Relax your wrist and hands. Do not clench your fists.
3. Power your stride from your thighs, hips, and buttocks muscles. Plant your heels on the ground first and roll onto your toes.
4. Stay relaxed.

When you can jog continuously for 30 minutes, you can begin the running portion of the Department's Four-Month Pre-Academy Fitness Program.

### **3. Strength Training**

The pre-academy strength training program utilizes basic calisthenics and your bodyweight. They are designed to increase muscular strength and endurance of the major muscle groups and abdominal muscles. These exercises will safely prepare you for the more vigorous academy fitness conditioning regimen. It is important that you adjust the level of activity according to your individual fitness level and gradually progress at your own pace with every workout.

### **4. Cool-down/Stretching**

The cool-down is just as important as the warm-up. Abrupt cessation of vigorous activity leads to pooling of the blood and sluggish circulation. It may contribute to cramping, soreness, or more serious problems. It is recommended that you complete

### **Cool-down/Stretching - continued**

your workout with a five minute slow-paced cool-down, and stretch for a minimum of ten minutes following your workouts. It is important to remember to stretch while your muscles are still warm.

### **Hydration recommendations:**

Thirst is not a reliable indication of fluid needs. Therefore, it is imperative that you make a conscious effort to drink fluids prior to, during, and following workouts to maintain performance and prevent heat illnesses.

The following is a general guideline for fluid replacement:

- 8-16 ounces prior to exercise;
- 8 ounces every 15 minutes during exercise; and
- 24 ounces for every pound of sweat lost following exercise.

Independent of exercise fluid requirements, it is recommended that individuals ingest at least eight cups of fluid a day. While plain water may be adequate for short exercise sessions, sports drinks containing the proper concentration of carbohydrates and electrolytes will help maintain performance and aide recovery for workouts of an hour or more.

### **Stretching Tips and Routine:**

1. Always warm-up for 5-10 minutes prior to stretching.  
Suggestions: stationary bike, running in place, Stairmaster, or treadmill.
2. At the beginning of a stretch, ease into a movement so that you feel a mild tension. Hold this level for 10-30 seconds and concentrate on relaxing. If something hurts, stop immediately. Stretching should feel good.
3. Try to stretch daily, before and after activity. This workout can take as little as 7-10 minutes, or as long as you'd like.

**SANTA CLARA COUNTY  
FIRE DEPARTMENT  
Program Design**

**Pre-Academy Fitness Program**

Warm Up	Intensity	Speed	Duration/Distance		Notes
Jump Rope/Light Aerobic			5 - 10 mins		
Dynamic Flexibility	Sets	Reps	Duration		Notes
Overhead Stretch	1	10			
Shoulder Stretch	1	10			
Rear Shoulder Stretch	1	10			
Dynamic Calf Stretch	1	10			
Dynamic Groin Stretch	1	10			
Hip Stretch	1	10			
Quad Stretch	1	10			
Modified Hurdler Stretch	1	10			
Cardio Training	Frequency	Dist/Cal	HR	Duration	Notes
Treadmill/Road Running	3-4/week	3-4 miles	80%	40 min	220 – Age*.80
Core & Balance Training	Sets	Reps	Duration		Notes
Front Plank	2	Static	1 min		
Left Side Plank	2	Static	30 sec		
Bridge	2	Static	1 min		
Right Side Plank	2	Static	30 sec		
Superman	2	Static	30 sec		
Strength Training	Sets	Reps	Weight		Notes
Push-ups	2	30	Body		
Curl-ups	2	30	Body		
Pull-ups	2	20	Body		
Leg Lifts	2	20	Body		
Lunges	2	30	Body		
Burpees	2	20	Body		
Static Cool Down Stretch	Sets	Reps	Duration		Notes
Standing Calf	2	4	20-30 sec		
Standing Hamstring	2	4	20-30 sec		
Dynamic Groin	2	4	20-30 sec		
Modified Hurdler Stretch	2	4	20-30 sec		

# Firefighter Candidate Self-Assessment

## Basic Guidelines

This information is provided to help candidates gauge the effectiveness of their pre-academy physical fitness preparation. The following are some fitness tests that serve as benchmark measurements for candidates to identify their current fitness levels prior to entering recruit training. Although there are presently no pass/fail standards, recruits whose fitness results are above average tend to have a greater likelihood of succeeding.

Dramatic improvements in fitness are possible in a four-month period of time. However, overly aggressive training can result in an increased susceptibility to injury, a high level of fatigue, or poor health upon entering the academy. Trying to do too much, too soon, or making up for missed workouts often leads to injury.

Many individuals are aware that their physical performance and health would benefit by a reduction of body fat and an increase in muscle. Often, substantial and sometimes ill-advised dietary changes are attempted in an effort to meet these goals. The candidate must remember that with increased training, there is an increased need in fuel and nutritional requirements. For most candidates, entry into the academy will continue this increase. Training programs emphasizing rapid and substantial weight loss prior to the academy may compromise a candidate's performance upon entry into the academy. For those attempting to reduce body fat prior to the academy, a fat loss of 1 – 1 ½ lbs per week is recommended. Eating well and maintaining energy levels should be the focus during the academy. Attempting to significantly reduce body weight during the academy is not recommended.

Inadequate cardiovascular fitness, despite having passed the CPAT, is one of the most common factors among unsuccessful candidates, and one that can be significantly improved by consistently following a proper exercise prescription. Individuals who are unable to run faster than 12 minutes on the 1½ mile run are especially advised to improve their cardiovascular fitness prior to starting the academy. This score indicates that the cardiovascular fitness of these candidates is inadequate to safely sustain common arduous firefighting tasks.

Muscular strength, muscular endurance and core strength are also contributing factors for the unsuccessful candidate. Low scores for the pull up, push up or curl up tests indicate the lack of strength required to complete and sustain the common arduous firefighting tasks and the need to train in these areas prior to beginning recruit training.

Another factor which has a tremendous impact on academy success is a recruit's overall orthopedic health and the status of any old injuries. Changes in training must be done gradually to allow the body to adapt and improve. Aggressive training can result in impressive and important improvements, but can also leave the candidate on the verge of a disabling injury when the additional stresses of academy training are implemented. It is beyond the scope and jurisdiction of this document to provide recommendations for individuals pertaining to these conditions. Individuals with orthopedic conditions

## **Firefighter Candidate Self-Assessment - *continued***

that have limited their performance in the recent past may consider consulting with their personal health care provider (MD, therapist, etc.) for specific recommendations on how to best prepare for the upcoming physical challenges of the academy. It is imperative that candidates be well rested, nourished, and old injuries have completely healed prior to starting the academy.

### **Pull-Ups**

Using a wide pronated grip on a horizontal bar (preferably a straight bar with a slight V at the ends), start from a straight hanging position; pull up until the chin is above the bar in a smooth controlled motion. Return down to a full hang until the arms are straight. Repeat the movements until no longer capable of pulling the chin above the bar. Do not rest between pull-ups, and count only completed pull-ups. This is a good test of upper body strength relative to body weight.

### **Curl-Ups**

This is a test of abdominal and core muscular endurance. This test must be done at a specific rate of 30 curl-ups per minute. Performing the curl-ups either faster or slower than this pace will not provide a valid measure. A metronome or audio tape set at 60 beats per minute is the most precise method to ensure an accurate pace. If they are not available, a reasonable alternative is to monitor a digital watch or clock with a sweep second hand. A partner can be used to assist with the counting and pacing and to hold the feet firmly. Start with the knees bent at a 45-degree angle, upper body straight on the floor, and hands cupped on the ears. Feet need to be held down firmly, either by a partner, or by putting them under an unmovable object. Begin by lifting the upper body up to a 45-degree angle only. The upper body should be kept straight and lifted in a smooth, controlled motion. Do not curl or flex the chin or shoulders. Return to the down position. Coordinate up and down movements to the beat of the metronome, or to the pace of one complete curl-up every two seconds. Repeat curl-ups until no longer capable of lifting the upper body to 45-degrees, or the cadence cannot be maintained for two to three curl-ups. Do not rest between curl-ups and count only the complete number of curl-ups that were performed at the proper cadence. The test is also considered complete if 90 curl-ups have been completed after three minutes.

### **Static Plank - Core Stabilization Test**

The purpose of this assessment is to evaluate the muscular endurance of the core stabilizer muscles of the trunk. The candidate will lie face down, keep shoulders elevated, supported by the elbows. Raise hips and legs off the floor, supporting the body on forearms and toes. Position elbows directly under the shoulders. Maintain straight body alignment from shoulder through hip, knee and ankle. The ankles should maintain a 90-degree angle, the scapula should stay stabilized, and the spine should remain in a neutral position for the duration of the assessment. Once the feet are in

### **Static Plank - Core Stabilization Test - continued**

position, the individual then extends the knees, lifting off the floor, while supporting the body from the forearms and toes. Contract the abdominals to support the back. The back should remain flat in the neutral position for the duration of the assessment. Once in position, start the stopwatch, and record the total time that body alignment can be maintained. The test is concluded when the candidate either reaches four minutes or is unable to maintain proper form.

### **Push-Ups**

This is a test of upper body muscular endurance. This test must be done at a specific pace of 40 push-ups per minute. Performing the push-ups either faster or slower than this pace will not provide a valid measure. Start at the up position with arms extended and back, legs, neck and head straight. Hands should be placed slightly wider than shoulder width and level with the shoulders. A metronome or audio tape set at 80 beats per minute is the most accurate method to ensure an accurate pace. If they are not available, a reasonable alternative is to monitor a digital watch or clock with a sweep second hand. A partner can assist in counting and monitoring pace and form. From the up position, lower the upper body until the chin is within five inches of the floor. A Dixie cup or a partner's fist can be used as a five-inch prop. Push back up to the starting position. Coordinate up and down movements to the beat of the metronome set at 80 beats per minute, or to the pace of 40 push-ups per minute. Both up and down movements should be done in a smooth, controlled movement with the lower and upper body, neck and head in alignment and moving in unison. Repeat push-ups at the proper cadence until the top position can no longer be reached or the cadence cannot be maintained for two to three push-ups. The test is also considered complete if a maximum score of 80 push-ups (two minutes) is achieved.

### **1 ½ Mile Run**

This is a standard test used to measure cardiovascular fitness. Six laps will be run as fast as possible around a 400 meter standard high school or college track. The results of this test are most valid when an all-out maximal effort is performed. *Therefore, it should be done only if the individual has been medically cleared for arduous physical activity.* Following a thorough warm-up of stretching and light activity, a one- or two-lap slow jog is recommended as a further warm-up and to survey the track for hazards. Begin from a standing start and progress to the most challenging pace that can be maintained for six complete laps. Record the time at the completion of the sixth lap and continue to jog or walk slowly for several minutes to cool down.

## Firefighter Candidate Self-Assessment

Candidate Name
Date of Birth
Height
Weight
Academy Date

Task	Trial Date	Number/Time	Trial Date	Number/Time
Static Plank				
Pull-ups				
Curl-ups				
Push-ups				
1 ½ Mile Run				

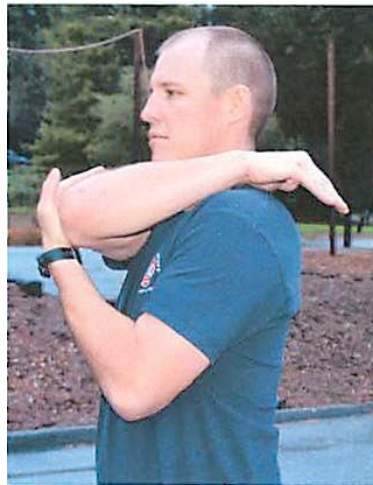
### Injury Status

As stated previously, a factor which has tremendous impact on academy success is the recruit's overall orthopedic health and status of any old injuries. Changes in training must be done gradually to allow the body to adapt and improve. Aggressive training can result in impressive and important improvements, but can also leave the candidate on the verge of a disabling injury when the additional stresses of academy training are implemented. It is imperative that candidates be well rested, nourished, and old injuries have completely healed prior to starting the academy.

Type of Injury	Assessment Date	Notes

## Dynamic Flexibility Stretches

Overhead Stretch



Shoulder Stretch

Rear Shoulder Stretch



Dynamic Calf Stretch

## Dynamic Flexibility Stretches *continued*



Dynamic Groin Stretch



Hip Stretch



Quad Stretch



Modified Hurdler Stretch

## Core and Balance Training

Front Plank



Side Plank



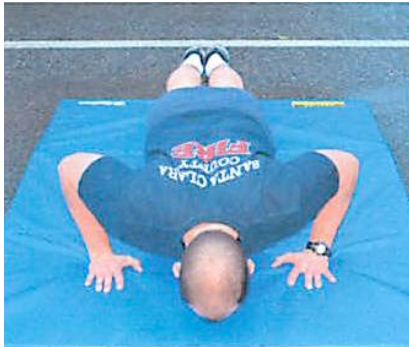
Bridge



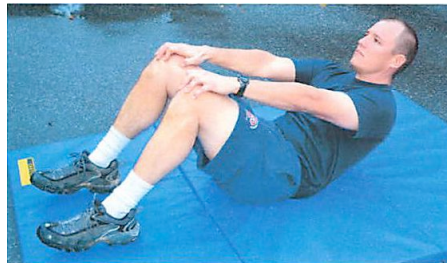
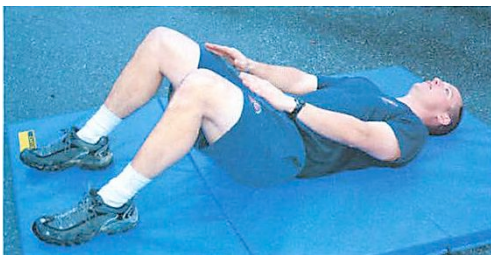
Superman



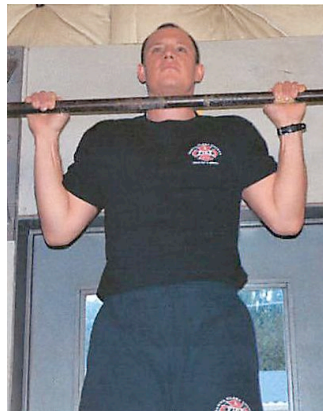
# Strength Training



Push-ups



Curl-ups



Pull-ups



Leg Lifts

## Strength Training *continued*

Lunges



Burpees



## Static Cool Down Stretches

Standing Hamstring



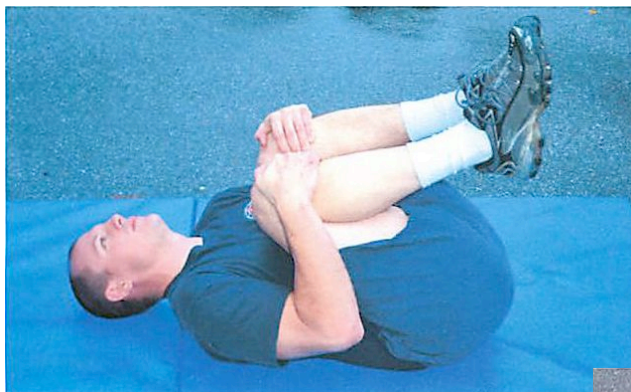
Standing Calf Stretch



Butterfly Stretch



Back Stretch



Torso Twist Stretch

