



## SOUTH AUSTRALIAN METROPOLITAN FIRE SERVICE



### PHYSICAL APTITUDE TEST STAGE 1 AND 2

An operational firefighter needs to be fit to carry out a range of different tasks and deal with many varied incidents. To ensure fairness when selecting people to fulfil this role the South Australian Metropolitan Fire Service (MFS) must show a direct relationship between the level of fitness required and the physical demands of the job. To achieve this, the MFS has designed and developed a series of work related physical fitness and strength tests that reflect the nature of the physical work undertaken by operational fire fighters.

The purpose of this document is to provide the candidate with information on two components of the recruit selection process, the Physical Aptitude Test Stage 1 and the Physical Aptitude Test Stage 2.

#### ***Physical Aptitude Test - Stage 1***

The test used is the Australian Sports Commission 20 metre Shuttle Run Test. This test has been widely used in Australia by the AIS and by professional sporting bodies. This test has been adopted by all Australian firefighting agencies as a recruitment selection test. This test will establish whether the candidate possesses a sufficient level of cardio vascular fitness to be able to perform physically demanding firefighting tasks.

The Physical Aptitude Test Stage 1 is a progressive shuttle run test designed to measure aerobic fitness. The test gives an estimate of maximum oxygen uptake ( $VO_2$ ) which indicates how effectively the body is utilising oxygen.

The test requires applicants to run along a 20 metre running track in time with a recorded series of beeps. The test starts at a slow pace with the required running speed initially quite slow. Candidates should pace themselves so that their arrival at the end coincides with the single beep. A single beep signals the end of a shuttle. A triple beep signals the end of a level. At each new level there is an increase in running speed. The aim is to follow the increasing pace until the level of 9.6 is reached. Once the level of 9.6 has been achieved the candidate will have successfully passed the PAT 1 test.

Candidates must place one foot on or over the blue 20 metre line before returning to the other end. The next shuttle should not be commenced until the beep has sounded.

If a candidate fails to place one foot on or over the blue 20 metre line before returning or starts a shuttle before the beep has sounded then a referee will issue a yellow card warning. Once four yellow card warnings have been received, the test will be concluded.

There is a red line 2 metres before the 20 metre line. If the candidate fails to make this line before the beep has sounded then the referee will issue a red card warning. The shuttle still has to be completed. If the candidate fails to make the red line at the immediate next end before the beep, or at the same end for two beeps in a row, the test will be concluded. If after a red card warning has been received, the candidate makes the red line before the beep for two consecutive shuttles, then the initial red card warning will be rescinded.

### ***Physical Aptitude Test - Stage 2***

Both males and females undertake the same test to the same standard. The test consists of simulated on-the-job tasks and is therefore considered a valid indicator of the candidate's ability to successfully complete physically demanding tasks required by operational MFS firefighters at emergency incidents.

To ensure the tests are realistic, all of the events will be performed in full personal protective equipment including breathing apparatus, which will be provided. Where health and safety considerations permit, operational firefighting equipment will be utilised.

This test consists of 11 events performed in a continuous sequence. There will be no rest period between test events. The candidate must successfully complete all 11 events in 32 minutes or less.

The PAT 2 is conducted on a pass/fail basis. Failure on any one event or a total test time exceeding 32 minutes will constitute a failure and the candidate's application for employment will be considered unsuccessful.

The events in order are:

- Hose Hold
- Tunnel Crawl
- Casualty Rescue
- Ceiling Breach and Pull
- Ladder Raise, Extension and Lower
- Tower Climb and Descent
- Container Haul
- Forced Entry
- High Pressure Hose-Line Drag
- Equipment Carry
- Encapsulated Suit.

### **Hose Hold Test**

The test is designed to simulate the demands of the critical task of holding a 64 mm hose line against water pressure. This is a functional capacity test designed to test physical strength, core stability, balance and coordination.

The candidate will be required to hold and control a 64 mm hoseline under a pressure of 700 kPa for a period of 2 minutes after a familiarisation period of 1 minute at 500 kPa.

The water stream shall be directed between two bollards while remaining inside the marked square. The water stream will be required to be directed to the inside of each bollard and held for 30 seconds. The candidate will be directed to alternate between bollards every 30 seconds by the assessment supervisor.

### **Tunnel Crawl Test**

This test is designed to simulate the demands of the critical task of searching for a fire victim in limited visibility and in an unpredictable area. This is a functional capacity test designed to test the candidate's ability to work in a confined space.

For this test the candidate will wear Personal Protective Clothing and a Breathing Apparatus set with a restricted vision mask. The mask is not connected to the cylinder and normal air will be breathed.

The candidate will be required to crawl on their hands and knees through a tunnel maze navigating around, over and under obstacles. In addition the candidate will be required to locate and climb a short ladder and negotiate a down ramp.

During the assessment the candidate will wear a restricted vision facemask to simulate the limited visibility conditions encountered by firefighters.

### **Casualty Rescue Test**

This test is designed to simulate the demands of the critical task of removing a victim or injured person from a fire scene. This is a functional capacity test designed to test physical strength and demonstrate the ability to negotiate obstructions in order to complete a task successfully.

The candidate will be required to lift and drag a 75 kg dummy through a simulated fire scene, for a distance of 20 metres finishing outside the building. The candidate will place their arms under the arms of the dummy and lift whilst walking backwards dragging the dummy behind.

### **Ceiling Breach and Pull**

This event is designed to simulate the critical task of breaching and pulling down a ceiling to check for fire extension. This is a functional capacity test designed to test physical strength and demonstrate the ability to complete a task successfully.

The candidate, using a preventer (ceiling hook), will be required to push up an overhead weight of 27 kg 3 times and pull down an overhead weight of 36 kg 5 times. The candidate will be required to complete 4 sets.

### **Ladder Raise, Extension and Lower Test**

This test is designed to simulate the demands of the critical task of using an extension ladder at a fire scene and extending the ladder to a roof or a window opening. This is a functional capacity test designed to test physical strength, core stability, balance and coordination.

The test requires the candidate to raise a fixed aluminium extension ladder from the ground to an operational position. Holding the top rung of the ladder the candidate will lift the ladder until it is at arm's length. The candidate will then use a hand over hand method using each rung to 'walk' the ladder up until it rests against the wall.

After successfully completing the ladder raise, the candidate will proceed immediately to the second pre-positioned extension ladder. The candidate will extend the sliding section by pulling on the extension rope hand over hand until it hits the stop. The candidate will then lower the sliding section hand over hand in a controlled fashion and return the ladder to its original starting position.

The candidate will then be required to lower the ladder previously raised. The ladder must be lowered using a hand over hand method using each rung until returned to the ground.

### **Tower Climb And Descent**

This test aims to simulate the demands of the critical task of climbing multi-storey stairwells carrying essential firefighting equipment and performing associated tasks. This is a functional capacity test designed to test endurance, physical strength, the ability to undertake a task and vertigo.

For this exercise the candidate is required to climb 7 levels carrying a 13.5 kg high-rise pack. The candidate is then required to remove a coupling from the high-rise pack and connect the coupling to the hydrant riser. The candidate will then move to the edge of the tower, lean over and identify the 4 symbols as they appear at ground level.

The candidate is then required to return to the hydrant, disconnect the coupling, place it back in the high-rise pack and then descend the stairs with the assessment supervisor.

### **Container Haul**

This test is designed to simulate the demands of the critical task of using a rope line to lift essential firefighting equipment to a multi-storey fire scene. This is a functional capacity test designed to test physical strength and assess the candidate's ability to undertake a task.

The candidate must lift a 20 litre container from ground level to the second floor landing. A hand over hand method must be used to haul the container. The container must be lifted completely over the guardrail and placed on the landing.

After placing the container on the floor, the candidate will be required to lift it back over the guard-rail and then lower it back to ground level.

### **Forced Entry**

This event is designed to simulate the demands of the critical task of using force to open a locked door. This is a functional capacity test designed to test physical strength, core stability, balance and coordination.

The candidate will use a 4.5 kg sledgehammer to strike the measuring device in the target area until the buzzer is activated. This will activate when an accumulative force of 136 kg (300 lb) has been reached.

### **High Pressure Hose-Line Drag**

This test is designed to simulate the demands of the critical task of advancing a hose line from an appliance to the scene of a fire. This is a functional capacity test designed to test physical strength and assess the candidate's ability to undertake a task.

The candidate will be required to remove the high-pressure hose line from the appliance. Holding the branch they will then be required to drag the hose line along a marked route around obstacles, which will include a 90° turn around a drum, for a distance of 20 metres.

The branch shall be placed on the ground past a marked finish line. Keeping both feet behind the marked line, the hose will be pulled a further 10 metres until the white band on the hose is over the marked line.

### **Equipment Carry**

This test is designed to simulate the demands of the critical task of removing essential firefighting equipment from a firefighting appliance and carrying it to a fire scene. This is a functional capacity test designed to test physical strength and assess the ability to undertake a task.

The candidate is required to carry three pieces of appliance equipment, one item at a time, for a distance of 20 metres along a marked route and place the equipment in a marked square.

### **Encapsulated Suit Test**

This test is designed to simulate the demands of the critical task of wearing breathing apparatus and an encapsulated suit at hazardous material incidents. This is a functional capacity test designed to assess the candidate's ability to undertake a mundane task wearing an encapsulated suit working in conditions with high heat and humidity.

The candidate will be dressed in a Breathing Apparatus set, helmet and an encapsulated suit for a total period of 5 minutes. The temperature of the room will be set at approximately 36 °C. The candidate will be required to move 12 drums one at a time from one end of the room to the other in a 3 minute period and stacked in the area indicated using the same alternating pattern as displayed.

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**SOUTH AUSTRALIAN METROPOLITAN FIRE SERVICE**

**STRENGTH FITNESS AND STABILITY TRAINING  
RECOMMENDATIONS IN PREPARATION FOR PHYSICAL APTITUDE  
TESTING REQUIRED BY THE MFS AT RECRUIT ENTRY LEVEL**

**Gym Program**

	<b>Exercises</b>	<b>Sets</b>	<b>Repetitions</b>	<b>Weight</b>	<b>Technique</b>
1	Lunges	2	x 16	Dumb bells	Stand with one leg back and one forward, lower your body until there is 90 degrees behind your knees.
2	Fit ball leg curls	2	x 16	Body weight	Lay on floor with legs in the centre of the ball. Lift your hips until your body is flat then draw the ball in with your legs.
3	Standing one arm chest press	2	x 12	Use 1 cable low or adjustable pulley	Stand with the weight stack behind you. With cable handle in one hand press forward.
4	Lat pull down	2	x 12		Grab bar, look up at 45 degrees and pull bar to your chin, squeezing the shoulder blades.
5	Squats	2	x 16	Can use Dumb bells or bar	With a dumbbell in each hand, squat down keeping your knees behind your toes.
	Dead lifts	2	x 16	Bar bell	With bar in hands, push hips back, keeping your shins vertical and back rigid, lower the bar below your kneecap.
7	Standing shoulder press	1st set press vertical bar 2nd set dumbbells	x 12	Use bar bell vertically weight on top then dumb bells for 2nd set	One hand above the other hand grip and poke up toward ceiling. 2nd set Press D/Bs up.
8	Axe chop (oblique twist)	2	x 16	Use cable 1st set high pulley 2nd low	Weight stack at your side grab handle with out side arm 1st then inside then twist & pull
9	Ball push ups	2	x 16	Body weight	Legs on ball keeping body flat
10	Stepper machine	5 min+	Or stair running	Not holding on and preferably weighted	
11	Shuttle runs	15 min			

This program should only be delivered by a qualified gym instructor or personal trainer, as exercise has inherent risks of injury. The creator of this program, and the MFS, will not be held responsible for any injury or accident which may occur as a result of undergoing this program.