2009/10
Career Firefighter Recruitment

Physical Assessment &
Challenge Test

An Overview &
Preparation Guide

Introduction

The information contained within this booklet will provide you details of the physical fitness testing you will be required to undertake in the recruitment process for a role as a career firefighter with CFA.

If you are to become a career firefighter with CFA, you must undertake practical and physical assessments that represent or simulate actual physical tasks undertaken by CFA career firefighters in the course of their duties.

The physical and practical assessments consist of the following and are undertaken at two separate stages of the recruitment process.

Stage 1

- Physical fitness test – Shuttle run

Stage 2

- Practical assessment – Recruit Firefighter Challenge

Physical fitness test – Shuttle run

CFA career firefighters require above average levels of aerobic and cardiovascular fitness to perform their role. The shuttle run is an accepted and validated method of assessing whether an applicant has the necessary level of aerobic and cardiovascular fitness for the job of a career firefighter.

The shuttle run consists of applicant's running back and forth over a measured distance of 20 meters at a steady pace set by recorded tones or beeps. The pace set by these tones increases each minute. At each tone the applicant is required to have passed or have met the 20 meter mark by placing one foot on or over the line, then turn and reach the other marker by then next tone.

As the assessment progresses through each minute, the time between each tone decreases requiring each applicant to run at an ever increasing pace.

To successfully complete this assessment the applicant is required to complete Level 9, shuttle 6; other wise known as 9.6. The successful completion of Level 9.6 will take a little under 9 minutes to complete and involve 78 single shuttles.

Precautions

A number of precautions should be considered before undertaking this assessment. The shuttle run may require you to push yourself relatively hard to maintain the running pace required by the test. If you are unfamiliar with aerobic exercise you should seek professional assistance and meet with your doctor for a clearance to exercise vigorously.

If on the day of the shuttle run you are suffering from any illness or injury or you are not in good health, you are advised not to undertake this assessment unless your doctor has given their permission.

On the day of the test

- Wear suitable athletic clothing with running shoes.
- Do not consume alcohol / drugs / cigarettes before the test.
- Do not participate in heavy or strenuous exercise the day prior to the test.
- Do not exercise on the day of the test other than an appropriate warm-up.
- Ensure you are well hydrated in the days prior and the day of the test.

Pass / Fail

You are required to place a foot either on or behind the 20 meter mark at the sound of each tone. If you fail to reach the 20 meter mark at the sound of the tone you are required to continue to the mark before turning at running back. If you fail to reach the 20 meter mark for two consecutive tones, you will be deemed to have failed the test.

- You are required to stay within your running lane at all times. An initial warning will be issued if you fail to comply.
- You will be disqualified if you cause a collision with another applicant.
- You will be disqualified if, at the discretion of the supervisor, you appear to be experiencing serious health difficulties.
- You are not permitted to begin the 20m shuttle prior to the tone sounding. An initial warning will be issued if you fail to comply.

Applicants can assess their own fitness levels by obtaining a copy of the shuttle run cassette or CD from the Australian Sports Commission, Publications Unit at www.ausport.gov.au

Practical Assessment –
Recruit Firefighter Challenge Test

Introduction

The recruit firefighter challenge is designed to test an applicant's endurance and ability to perform basic strenuous and simulated activities that fire fighter's must perform. The course is a series of 7 tasks, which are simulations of actual tasks performed on the job. To successfully complete the challenge test, applicants will require above average levels of aerobic fitness, muscular strength and endurance.

The tools, equipment and props used in the assessment have been chosen to provide a safe, consistent and valid measure of an applicant's physical abilities. For safety reasons, no running is permitted between tasks.

This is a timed event with each task having a pass / fail criteria. Two independent stop watches are used to record the time. The challenge assessor will keep the official time, whilst the second watch is used as a back up. The allowable time for the completion of the challenge test is 10 minutes 30 seconds.

Each task has a pass / fail criteria associated with its completion. Failure to complete any of the individual tasks or the whole course within the accepted timeframe will be deemed as a failure. Applicants are required to proceed as quickly as possibly without running from task to task. An instructor will guide the applicant through the challenge course and be present at each task.

What to wear

It is recommended that you wear a t-shirt, shorts/long pants (not jeans) under the protective clothing. In addition candidates should wear study work boots or hiking boots that are sturdy and non slip. Runners are permitted to be worn but can be prone to slipping when on wet areas.

In order to maintain consistency all protective gear will be supplied by CFA.

- CFA Structural gloves
- CFA Helmet
- CFA Turnout coat
- CFA Turnout over pants
- CFA Self Contained Breathing Apparatus

Task 1 – Tunnel Crawl

Purpose

This task is designed to simulate the task of moving and operating in a confined space. The task is intended to test the applicant's ability to operate in a confined space with no visibility and identify any potential for claustrophobia caused by either wearing a face mask or being in the tunnel itself.

Task

This task is not timed. The applicant will be wearing all CFA supplied protective equipment in addition to a self contained breathing apparatus complete with facemask. The applicant will not be able to see through the facemask but will be able to breathe fresh air normally.

The applicant is to crawl through a darkened tunnel and follow all instructions given. Throughout the task the applicant is not permitted to remove the facemask, breathing apparatus or helmet. You must move continuously unless instructed otherwise until exiting the tunnel where you will be guided by an instructor. The self contained breathing apparatus face mask will be removed at the completion of this task.

Pass / Fail Criteria

Applicants who:

- Remove their facemask,
- Remove their helmet or any other piece of protective equipment,
- Do not move through the tunnel in a continuous fashion,
- Fail to follow instructions,
- Require assistance to be removed from the tunnel,

Will be deemed to have failed this task.

Task 2 – Container Haul

Purpose

This task is designed to simulate the demands of climbing stairs and hauling critical firefighting equipment vertically over several floors using a rope line. This is a functional capacity test designed to test the applicants lower and upper body strength and their aerobic capacity.

This task will also assess the applicant's ability to complete a task whilst working at a height and lift an object in a controlled manner.

Task

After completion of the tunnel crawl the applicant is to proceed directly up the internal stairwell to the 2nd landing. A rope will be in position attached to a 20Kg container which the applicant will need to haul aloft.

The applicant will haul, hand over hand in a controlled manner, the container up the side wall of the building and then lift the container over the railing and place it onto the ground. Whilst hauling the container aloft, the applicant's hands and head must be over the rail (outside the building) so that visual contact is maintained with the container at all times.

Pass / Fail Criteria

Applicants who:

- Fail to haul the container aloft,
- Fail to maintain control of the container and / or rope line,
- Do not follow instructions provided,
- Receive a second warning.

Will be deemed to have failed this task.

Applicants who:

- Fail to keep their hands and head over the rail whilst hauling,
- Use the rail as an aid to hauling the container,
- Do not utilise the hand over hand method of hauling,
- Rest the container on the rail rather than lifting it over

Will be given a first and final warning and then required to undertake the task again.

Task 3 – Hose hold & drag

Purpose

This task is designed to simulate the critical task of holding a hose line and dragging it from one point to another. This task assesses the applicant's muscular strength and endurance of both the upper and lower body.

Task

The applicant will be required to hold the branch (nozzle) of a 38mm hose whilst flowing water at 800KPa for 1 minute. At the completion of this minute the pressure of the water will be reduced to 600KPa and the applicant whilst still flowing water from the hose will be required to advance (drag) the hose forward a distance of 15m. When the applicant passes the target the pressure of the water will be increased to 800KPa and the applicant will again be required to hold the branch for a further 1 minute.

Whilst holding the hose, the applicant upon direction from the instructor will be required to hit a target with their water stream. When dragging the hose line the applicant is required to move in a forwards direction at all times. Instructors will be on hand to recover the hose should the applicant at any time loose control.

Pass / Fail Criteria

Applicants who:

- Loose control of the hose line at any time,
- Require assistance from an instructor to maintain control of the hose,
- Fail to drag the hose the required 15m,
- Fail to hold the hose for the required 2 x 1min intervals,
- Fail to follow instructions given,
- Slip over whilst dragging the hose line,
- Hold the branch in an unsafe manner,
- Unable to maintain direction of the water flow to hit the required targets,
- Whilst dragging the hose line fail to move in a forward direction,

Will be deemed to have failed this assessment.

Applicants who:

- Interfere with the operation of the branch,

Will be given a first and only warning and then required to undertake the task again.

Task 4 - Victim Rescue

Purpose

This task is designed to simulate the critical task of removing a victim from a dangerous situation. This task will test the applicant's aerobic and anaerobic capacity and both the upper and lower body strength.

Task

The applicant is required to hold a 70Kg dummy under the arms, gripping across the chest and drag it backwards around a course of 60m. The applicant must drag the dummy around 2 markers and return through the starting point whilst maintaining a safe lifting technique. At any time during the victim rescue the applicant is able to place the dummy on the ground in order to readjust their grip.

Pass / Fail Criteria

Applicants who:

- Do not drag the dummy as directed,
- Drag the dummy utilising unsafe lifting techniques,
- Fail to manoeuvre around the markers,
- Fail to drag the dummy the full 60m,
- Fail to follow instructions given,
- Drop the dummy (loose control or grip),
- Receive a second warning,

Will be deemed to have failed this task.

Applicants who:

- Trip and / or fall whilst dragging the dummy,
- Rest on the dummy,

Will be given a first and only warning.

Task 5 – Balance Beam

Purpose

This task is designed to simulate the task of walking along a narrow beam or surface in order to undertake firefighting duties. It tests the applicants balance and coordination whilst the body is under physical duress.

Task

Applicants are required to smartly walk (forwards) along the balance beam to the end without stopping. Once at the end of the beam the applicant is required to turn around whilst still on the beam and return to the starting point. Applicants are to await the all clear from the assessor before stepping off the balance beam.

Pass / Fail Criteria

Applicants who:

- Fail to follow instructions as given,
- Fail to complete the task after 3 attempts,

Will be deemed to have failed this task.

Applicants who:

- Fall off at any point will be required to start over at the beginning,
- Step off prior to the all clear from the assessor,
- Use the supporting structure of the balance beam for assistance,

Will be given a first and only warning and then required to undertake the task again.

Task 6 – Manual Dexterity

Purpose

This task aims to assess the applicant's manual dexterity, aptitude, colour matching and ability to follow simple instructions whilst the body is recovering from strenuous physical activity.

Task

The applicant is required to connect a number of hose couplings to their corresponding coupling on a board. When the couplings are connected together they are to be made hand tight.

A container will be at the base of the coupling board with 11 matching couplings. The applicant is required to select a coupling (in no particular order) and make the connection.

Pass / Fail Criteria

Applicants who:

- Fail to follow instructions given,
- Receive a second warning,
- Can not complete all 11 connections,
- Fail to make the connections finger tight,
- Receive a second warning,

Will be deemed to have failed this task.

Applicants who:

- Drop a coupling,

Will be given a first and only warning and then required to undertake the task again.

Task 7 – Ladder Climb

Purpose

This task is designed to simulate the critical role of climbing a ladder and operating effectively at heights. This task will assess the applicant's aerobic capacity and muscular endurance in addition to testing for acrophobia (a fear of heights).

Task

The applicant will remove their self contained breathing apparatus before attempting this task. The applicant will be fitted with a safety harness and attached to a safety line prior to beginning their climb. The overall time being recorded for the challenge program will stop and not include this change of equipment. Once the applicant is attached to the safety line and ready to commence, the time will restart as soon as contact is made with the ladder.

The applicant will be required to climb to the top of a 14.5m extension ladder in a safe manner before stepping off and onto the roof of a building. Once the applicant has stepped onto the roof they will then climb back onto the ladder and safely climb down to the ground. The time being recorded for the Challenge test will stop when the applicant reaches the ground with both feet.

Pass / Fail Criteria

Applicants who:

- Are not able to climb up and / or down the ladder,
- Require assistance from an instructor at any point,
- Receive a second warning,
- Do not follow instructions as given,
- Fail to complete the whole Challenge test within the time frame permitted,

Will be deemed to have failed this assessment.

Applicants who:

- Fail to climb the ladder using a safe technique,
- Fail to climb onto or off the ladder in a safe manner,

Will be given a first and only warning and then required to undertake the task again.

Candidate Preparation

Physical Fitness Preparation

What is Fire Fighter Fitness

Fire fighting is a physically demanding occupation where periods of intense physical exertion are interspersed with long periods of downtime where the fire fighter is inactive.

Research has identified that fire fighting tasks demand high levels of repetitive pushing and pulling activities and prolonged isometric muscular contractions in challenging work environments including;

- Hot and humid atmospheres
- Dark and confined spaces
- Oxygen deficient atmospheres
- Prolonged periods of physical activity
- Working long hours during the night when your body is telling you to rest

It has been identified that aerobic fitness, flexibility, muscular strength and muscular endurance are important fitness components of a professional fire fighter.

Training Principles for Fire Fighters

The FITT formula: [ACSM 1995]

Frequency- 3 to 4 times per week
Intensity- 60-80% max heart rate HRM= (220 – Age) depending on current fitness levels
Time- 20 – 60 mins
Type- aerobic / cardiovascular training, anaerobic / interval training, resistance training

To maximise training results, a number of principles should be considered.

Specificity:
You should train the muscles and energy systems that are required for the purpose of the activity.

Adaptation:
The body will adjust to any overload as long as it is done in small increments. The amount of progress the body can make depends on adequate rest periods, regular workouts, adequate nutrition and hydration and genetic makeup.

Overload:
Overloading means that a training program causes the body to adapt only when the demands are greater than what the body is accustomed to doing. Overload is generally 70-80% of your maximal effort.

Progression:
Progression is where the body adapts to exercise programs and you must gradually increase the overload to continue to adapt. It is essential that all progressions are gradual and small in nature to prevent overloading or injury.

Over-Training:
The body requires adequate rest to recover before the next training session, therefore you must incorporate rest periods in your weekly training cycle. Adequate nutrition and hydration will also help the body to recuperate before the next training session.

Signs of overtraining are:

- Increased resting heart rate RHR
- Increased injury rate
- Muscle soreness that does not subside after 48 hours
- Insomnia
- Lack of adaptation to exercise
- Loss of strength
- Loss of appetite

Muscle Balance Considerations:
When designing a strength training program, it is important to consider muscle balance by including all major muscles [called compound exercises ie; bench press] and small muscles [called isolated exercises ie; bicep curl]. You should also consider what you do to the front of the body, you should also consider to the back. If you do not incorporate muscle balance in your training program, joints become imbalanced and injuries may occur.

Keep a Training Diary;
A training diary will track your progress. You will be able to make amendments to your program to achieve the principles of progression and overloading.

Guidelines:

- Recognise your individual starting point and set progressive goals
- Training preparation: at least 6-12 weeks
- See your Dr for a medical clearance or fitness assessment if required
- Start off slowly and progress by increasing time, intensity and frequency
- Always wear appropriate footwear and breathable clothing for physical activity
- Ensure to practice the beep test at least once per week and set progressive goals on a weekly basis
- Always perform a warm-up and cool down

Warm Up:
A warm up should begin with a few minutes of a similar type of activity you are about to do at light intensity. For Example: If you are going to perform a running or running interval program, you should warm up with a slow to light jog. The next step is to stretch the major muscles you are going to be using in your training program. It is also essential to stretch before your warm up and throughout your training program, if possible.

- 10-15 minute cardio activity and static stretches. Hold the static stretches for at least 20 sec each. Try and stretch during the cardio component of the warm up.
- A warm up;
    - Elevates body temperature of muscles and connective tissues
    - Increase muscle blood flow
    - Reduces incidence of injury
    - Increase range of motion [ROM]
    - Delayed onset of muscular fatigue
    - Prevention of muscular soreness
    - Improves co-ordination
    - Improves elasticity and contractility of muscles
    - Increases efficiency of the respiratory and cardiovascular systems

Cool Down:
- 10-15 minute cardio activity and static stretches. Hold the static stretches for at least 20 sec each. Stretch at the end of the session.
- A cool down;
    - Decreases body temperature
    - Decreases heart rate
    - Reduces incidence of injury / muscular or joint stiffness

Stretching:
The basic rules for stretching are;
- Stretch slowly and hold the stretch for at least 20 sec
- Do not Bounce unless instructed by a physiologist
- You should not feel pain
- Breathe slowly whilst stretching
- Relax

Heart Rate

- Every time the heart "beats", it pumps a quantity of blood into the blood circulation system.
- The blood is transported by the arteries to the muscles, thereby supplying the muscles with oxygen and the necessary nutrients to operate.
- The pulse can be taken by touching the body in two places - convenient while you are training:
    1. the left or right side of the neck = carotid pulse (from the outside eye angle to the neck, downward pulse)
    2. the inside of the wrist = radial pulse (beneath the thumb)

  NB: use light finger pressure only, (the thumb has its own pulse).
- Check your pulse rate during training - for 15 seconds. Multiply the number by 4 = current pulse rate per minute.

Heart Rate Measurement

A heart rate monitor consisting of a chest or arm band and watch face can be used to measure your heart rate.

Resting Heart Rate :: RHR

To measure your personal resting heart rate you need to:

1. Measure your heart rate for 60 seconds three mornings in a row before you get out of bed.
2. Divide the sum of the three measurements you have written by 3 = your personal resting heart rate.

Maximum Heart Rate :: MHR

220 minus your age = your target maximum heart rate range for training and exercise programs. Do not train to your MHR, instead 80-90% of MHR unless instructed by your exercise physiologist or medical practitioner.

Optimum Training Pulse :: OTP

Fitness Category

1. Beginner, recent starter, unfit * Require medical advice
2. Reasonably fit, exercises regularly
3. Very fit, athlete, professional sports

Karvonen Formula

- RHR + 60% to 70% (MHR - RHR)
- RHR + 70% to 80% (MHR - RHR)
- RHR + 80% to 85% (MHR - RHR)

* Consult your doctor or exercise physiologist before starting any training, exercise or workout program.

Weekly Training Framework

Level	Cardio sessions	Resistance sessions	Duration of Cardio session	Duration of Resistance session	Intensity of session
Beginner	2 - 3	2	5-15mins	30mins	Easy
Intermediate	3 - 4	2 - 3	15-30mins	40-50mins	Moderate
Advanced	5+	3+ Split	30-60mins	60mins	Hard

EXAMPLE

Weekly training regime for an 'intermediate' level person

DAY	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6
MON	Circuit	Circuit	Circuit	Circuit	Circuit	Circuit
TUE	Endurance	Endurance	Endurance	Endurance	Endurance	Endurance
WED	Interval	Interval	Interval	Interval	Interval	Interval
THUR	REST	REST	REST	REST	REST	REST
FRI	Circuit	Circuit	Circuit	Circuit	Circuit	Circuit
SAT	Endurance/BEEP	Endurance/BEEP	Endurance/BEEP	Endurance/BEEP	Endurance/BEEP	Endurance/B
SUN	REST	REST	REST	REST	REST	REST

DAY	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11	WEEK 12
MON	Circuit	Circuit	Circuit	Circuit	Circuit	Circuit
TUE	Endurance	Endurance	Endurance	Endurance	Endurance	Endurance
WED	Interval	Interval	Interval	Interval	Interval	Interval
THUR	REST	REST	REST	REST	REST	REST
FRI	Circuit	Circuit	Circuit	Circuit	Circuit	Circuit
SAT	Endurance/BEEP	Endurance/BEEP	Endurance/BEEP	Endurance/BEEP	Endurance/BEEP	Endurance/B
SUN	REST	REST	REST	REST	REST	REST

Fire Fighter Fitness Components

Aerobic fitness

Definition;

AEROBIC is one of the most important physical fitness factors. It stems from Latin and means:

1. AERO = Air = Oxygen
2. BIC = Bio = Life

Aerobic Exercise and Cardiovascular (Cardio) Exercise is; any physical activity which requires increased oxygen intake and;

- increases cardiac capacity
- strengthens the heart, body and lungs
- uses creatin phosphates, carbohydrates and fat as it's energy source (fuel), depending on intensity.

Aerobic fitness is for long duration fire suppression that is interspersed with intermittent high intensity activities such as carrying equipment, climbing stairs and pulling hoses. These activities require the fire fighter to recover quickly, minimise fatigue, and maintain concentration under physical stress.

Anaerobic Exercise

Definition;

During Anaerobic Exercise (« an » = no, literally: without oxygen):

Anaerobic Exercise is;

- when your body uses creatin phosphates (during the first usually 10 seconds of any type of physical exertion) and carbohydrates only as the energy source, no fat.
- when the activity intensity is high, the heart and cardiovascular system are strengthened and lung capacity / volume is increased.
- Remember that during any physical activity, your body breaks down body cells. These are repaired and replaced during rest and sleep. A good metabolic rate burns calories after exercise.

Fire fighter activities include:

- Hose hold and Drag
- Container Haul
- Victim Rescue
- Carrying victims / debris

Flexibility

A person's flexibility refers to the ability of your joints to move through a full range of motion. Having flexibility in your muscles allows for more movement around the joints and you can achieve this with a basic stretching workout. Stretching after your workout, when your muscles are warm and pliable, is a great way to increase flexibility and keep your body protected from injury. Pilates exercises and core stability exercises also improve full range of motion as well as injury prevention through joint strengthening.

Fire fighter activities include:

- Tunnel crawling
- Climbing upstairs
- Climbing in and out of trucks
- Confined space
- Climbing unstable terrains, hills

Muscular strength and endurance

Muscular endurance is the ability of a muscle or muscle group to do repeated contractions against a less-than-maximum resistance for a given period of time. This is in contrast to muscular strength, which is the greatest amount of force that a muscle or muscle group can exert in a single effort.

Muscular Strength and Muscular Endurance

The difference between muscular endurance and strength are related, muscular endurance requires a certain amount of strength in order to maintain continuous tension or perform repetitive contractions against resistance. Muscular strength is expressed as the maximum amount of force that a muscle can generate in a single contraction, while muscular endurance is a measure of how many times you can move a given weight before fatiguing.

Fire fighting activities include:

- lifting and carrying hoses and rescue equipment
- breathing apparatus
- removing debris
- carrying patients.

Muscular Endurance - Short Term

Fire fighting may consist of bouts of exercise lasting between 30 seconds and 2 minutes, therefore "short-term" muscular endurance training is essential. Muscular endurance training helps fire fighters to cope with fatigue and tolerate high levels of lactic acid. It uses relatively light loads of 40-60% 1RM and they can be lifted for a set period of time or a target number of repetitions. A circuit training set up is suitable for this type of resistance training.

Muscular Endurance - Long Term

"Long term" muscular endurance is suitable for continuous, steady-state events such as long duration fire fighting that last beyond 2 minutes. Light loads are used so that exercises can be sustained for a prolonged period. Rest periods are kept to a minimum and ideally the fire fighter should progress so that the only rest between exercises is the time it takes to move between equipment.

Multi-Stage Shuttle Run

Physiology of the Shuttle Run:

When you run or do any aerobic exercise, you use oxygen to help generate power. Your VO2 max is the maximum ability of your body to take oxygen from the air and pump it via your heart to your muscles. Generally the fitter you are, then the higher your VO2 max is which means you are able to work at higher intensities and workloads for longer periods of time.

Fire fighter VO2 max requirement = level 9.6 which equates to 45.2ml/kg/min.

The Multi Stage Shuttle Run [beep test]:

- Measure out 20m and then mark each end with marker cones.
- Warm up and stretch
- When the disc is started, it will give a brief explanation of the test
- The disc emits a single beep at regular intervals
- You are required to be at the opposite end to the start by the time the first beep sounds
- Continue running at this speed, being at one end or the other each time there is a beep
- After each minute, the time interval between beeps will decrease, so that the running speed will need to increase
- The end of each shuttle is denoted by a single beep, at the end of each level is denoted by a triple beep
- It is important to note that the running speed in level 1 is very slow – you have 9 sec in which to run each 20m shuttle
- You should always place one foot on or over the 20m marked line at the end of each shuttle
- If you arrive at the end of the shuttle before the beep sounds, you should turn around and wait for the beep, then resume running and adjust your speed
- You must run for as long as possible or until you have reached level 9.6
- The observing trainer conducting the test will need to withdraw you when it becomes apparent that you are dropping behind the required pace and are unable to meet the marker on 2 consecutive shuttles
- The observing trainer will make notes of the level and number of shuttles into the level, at which you withdraw

Training Program for the 20m Shuttle Run Test

Interval Training

Duration=15-30min
Interval training consists of repetitions of high intensity work followed by periods of low intensity.
Keep a steady rate of cardio for 8 minutes. Add intensity by including a hill or moving faster for 2 minutes.
Return to a steady lower intensity.

EXAMPLE ONLY

Warm up:	bike	treadmill
7-8 min	level 4	speed 5
2 min	level 6	speed 6.5
6 min	level 4	speed 5.5
2 min	level 8	speed 7
6 min	level 4	speed 5
6 min	cool down	

Week 7-12 increase exercise duration and / or intensity

Endurance Program

EXAMPLE ONLY
20 min- 45 min
Work at a steady rate throughout, maintaining an intensity level of 75%-80% of
HRM [Heart Rate Max]
Bike, treadmill, step ups, swimming, rower, cross trainer, rebounder / boxing combination, brisk walking

Week 7-12 increase exercise duration

Physical Challenge Course

Guidelines:

- Aim for 2 – 3 resistance training sessions per week
- Focus on major muscle group exercises for the entire body and muscle groups that are used in the challenge tasks – legs, back, arms, shoulders, abdominals, lower back, chest
- Aim for 10- 12 exercises, including core stabilisers.
- Start with 2 sets of 12-15 repetitions with light-moderate weight, increase repetitions to 15-18, then 16-20 repetitions. Repeat the process with a heavier weight in week 4 & 10 (ie. progressive overload)
- Minimise rest time and complete circuit training to induce a fatigued state (ie. specific to the challenge)
- Incorporate flexibility exercises - stretching

Training for the Physical Challenge Course

Circuit Program- Muscular strength and Endurance

- 10 min cardio warm-up + stretching

Training program weeks 1-12
EXAMPLE ONLY

	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6
EXERCISE	REPS	REPS	REPS	REPS	REPS	REPS
Fitball squats	12--15	15--18	16--20	12--15	15--18	16--20
Step ups	12--15	15--18	16--20	12--15	15--18	16--20
DB /Bench press	12--15	15--18	16--20	12--15	15--18	16--20
DB /Bench flyes	12--15	15--18	16--20	12--15	15--18	16--20
DB /Seated row	12--15	15--18	16--20	12--15	15--18	16--20
Standing upright rows	12--15	15--18	16--20	12--15	15--18	16--20
Hammer curls	12--15	15--18	16--20	12--15	15--18	16--20
Bench dips	12--15	15--18	16--20	12--15	15--18	16--20
Fitball sit ups	12--15	15--18	16--20	12--15	15--18	16--20
Prone Bracing	25s x 3	35s x 5	50s x 5	60s x 5	60s x 8	90s x 2
Rest between stations	60 sec	60 sec	60 sec	45 sec	45 sec	45 sec
No# of circuits	2	2	2	2	2	2

	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11	WEEK 12
EXERCISE	REPS	REPS	REPS	REPS	REPS	REPS
Fitball squats	12--15	15--18	16--20	12--15	15--18	16--20
Reverse Lunges	12--15	15--18	16--20	12--15	15--18	16--20
Incline Bench press	12--15	15--18	16--20	12--15	15--18	16--20
Fitball push ups	12--15	15--18	16--20	12--15	15--18	16--20
Lat Pulldown	12--15	15--18	16--20	12--15	15--18	16--20
Lateral arm raises	12--15	15--18	16--20	12--15	15--18	16--20
Seated FB Bicep curls	12--15	15--18	16--20	12--15	15--18	16--20
Calf Raises	12--15	15--18	16--20	12--15	15--18	16--20
Bicycle Crunches	12--15	15--18	16--20	12--15	15--18	16--20
Prone Bracing	25s x 3	35s x 5	50s x 5	60s x 5	60s x 8	90s x 2
Rest between stations	45 sec	45 sec	45 sec	30 sec	30 sec	30 sec
No# of circuits	2	2	2	2	2	2

- 10 min cardio cool down + stretching

Core Stabilisation:

Core stability is the ability to maintain a stable base around spinal segments and pelvis during the movement of another body part.

- Core stabilisation helps assist with good posture.
- Core stabilisation helps prevent weak muscles.
- Core stabilisation helps with good posture and control when lifting and bending during fire fighting activity.
- Common Core Stabiliser Exercises: Prone raises, lower leg raises, Alternate arm/leg raises, wall squats.

Flexibility Training:

Static flexibility training is best positioned in a workout session either before or after your warm up and also after your work out session. This type of stretching shoud be focused on ROM – Range of Motion gains, not for improved performance.

Healthy Eating for Performance

Carbohydrate Loading prior to Challenge / Multi Stage Shuttle Run Test

- Your diet needs to consist of low fat, low fibre, moderate protein, high carbohydrate foods.
- Have your last meal 3-4 hours prior to physical activity.
- Incorporate honey, jam, pasta, rice, low fibre cereals, bananas, crumpets, pancakes, bread or toast, porridge, low fat cereal bars etc
- Hydrate prior to physical activity – consume water the day before, include electrolytes

Hydration

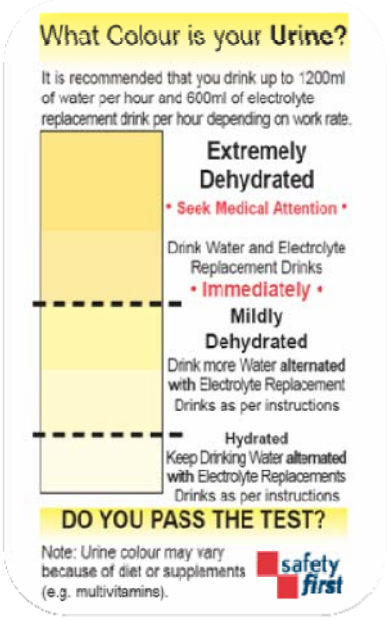
Fire fighters are regularly subject to intense heat and physical exertion, which will produce excessive sweating, not just from fighting fires, but also from other activities. Unlike when training, water intake when working is not easy to maintain and the risk of becoming dehydrated increases.

Dehydration is the loss of fluids and electrolytes [sodium, potassium, calcium, magnesium]. These fluids need to be replaced to keep the body hydrated.

Symptoms of dehydration:

- Urine colour changes [dark and yellow] and has an odour
- Dry mouth
- Low or no urine output
- Sunken eyes
- Lethargic
- Headaches

Prevention:
To avoid becoming dehydrated, drink plenty of water at regular intervals. Aim to replace fluids at the same rate that they are lost, so little and often is ideal. Look at electrolyte replacement drinks before [at least 60 min] and after exercise. A good indication that you are hydrated is the frequency of toilet visits and the colour of your urine. If you are urinating frequently and your urine is clear and odourless then you are sufficiently hydrated.



Why is drinking too much water a problem?
Over drinking [hyponatremia: hypo-denoting a deficiency or abnormally a low level, natremia- pertaining to sodium] it is quite unusual, but can happen. When a person is sweating profusely for extended periods of time, drinking too much water becomes a problem because the body is losing water and sodium in sweat, but only the water is being replaced. This dilutes the electrolyte [sodium] content of the plasma [the liquid part of your blood], and the imbalance, or lack of sodium, can interfere with brain, heart and muscle function.

Recruit firefighter challenge test - Physiology

Tasks	Fitness Component	Muscles Used	Additional Exercises Activities
Tunnel Crawl	Flexibility, aerobic endurance	deltoid [anterior] deltoid [posterior] trapezius latissimus dorsi	bench press, front raises, push ups seated row, db flyes, upright row seated row, db shrugs lat pulldown, bent over rows grass/sand crawling on elbows
Container Haul	Anaerobic, muscular strength & endurance	deltoid [anterior] brachioradialis	bench press, push ups, front raises hammer curls, close grip pulldowns reverse curls, wrist curls, forearm curls Cable roller stress ball hand squeezes "practice with gloves on"
Hose Hold	Anaerobic, muscular strength & endurance	deltiod [anterior] pectoralis quadriceps, gastrocnemius rectus abdominis triceps brachii, biceps brachii	bench press, push ups, front raises db flyes, pec dec, push ups lunges, squats, calf raises sit ups, prone bracing, fb plank db kickbacks, dips, bb curls
Victim Rescue	Aerobic / anaerobic / muscular strength & endurance	quadriceps gastrocnemius rectus abdominis trapezius brachioradialis gluteus maximus	squats, lunges, wide squats calf raises crunches, fb pelvic lifts lat pulldowns, seated row hammer curl, reverse wrist curl leg press, rb kick backs, reverse lunges on step
Balance Beam	Aerobic A build up of lactic acid makes this test harder	rectus abdominis gastrocnemius quadriceps	prone bracing, incline sit ups calf raises squats, lunges
Coupling Board	Dexterity test		hand squeezes practising the test
Ladder Climb	Aerobic & muscular endurance	quadriceps gastrocnemius bicep brachii tricep brachii	squats, lunges, leg press, leg ext calf raises bicep curls, chin up, close grip lat pull down tricep dips