TRAINING GUIDE

PHYSICAL APTITUDE TEST (PAT)

The occupation of firefighting is well recognised for its physically demanding nature and for this reason it is important that applicants possess high levels of cardiovascular and musculoskeletal fitness. To support applicants with their physical preparation and to assist with maximising performance during the PAT phases, the following cardiovascular and resistance exercise suggestions have been provided

Prior to undertaking any physical training program, it is recommended that you take the Physical Activity Readiness Question (PAR-Q) available within this document. It is important you address any areas of concern with your health professional. It is advised that you seek professional help from a strength and conditioning coach or personal trainer when commencing any new physical training program.

* Please note the ability to complete the program provided does not guarantee success in the PAT.

GOVERNMENT OF WESTERN AUSTRALIA

DFES
Department of Fire & Emergency Services

CARDIOVASCULAR (CARDIO) EXERCISE PREPARATION

You should aim to be performing cardiovascular (aerobic) exercise most days of the week where possible. Commence at an intensity which is comfortable for you to sustain for at least 10 minutes and progress towards longer duration efforts (i.e. 30 minutes).

Your Heart Rate (HR) response can be useful indicator of exercise intensity so monitor wherever possible. As a general starting point, you should be making sure to elicit a HR response of at least 60-80% of your HR Max (formula = 220 – age). For instance, if you're 26 years old, your HR Max is 196 beats per minute and recommended exercise intensity is therefore within the range 116 – 155 beats per minute.

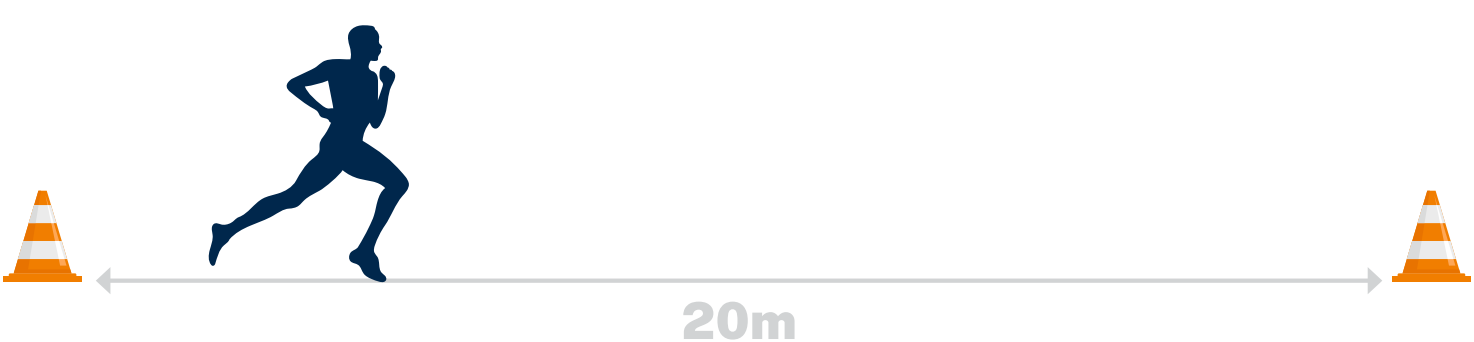
Another way to quickly determine your exercise intensity is the talk test, if you're performing light to moderate intensity exercise you will be able to talk but not sing. If you're performing high intensity exercise you will not be able to say more than a couple of words without stopping to take a breath.

20 METRE SHUTTLE RUN (BEEP TEST)

There's nothing like practising the real thing. Download the shuttle run and give it a go. For an additional challenge try setting up the course on a grass surface (oval – make certain the surface is flat without potholes) as this will be significantly more difficult than performing the test on a flat, non-slip surface like a netball or basketball court.

Don't rely on the test as a training mechanism because it begins at too lower intensity for training benefits but it's the best way to find out where your current performance level is at.

It is important to note that you will need to incorporate some shuttles or change of direction exercises into your program. The change of direction component of the Beep Test will be a significant metabolic cost to your body and could dictate your performance so its highly recommended you include some element into your program.



STEADY STATE CARDIO

To build a strong foundation for improving your cardiovascular fitness (aerobic capacity), low to moderate intensity continuous jogging is highly recommended. A quick way to determine you are working in the correct zone (Zone 2) for this training is by nose breathing or by being able to maintain a conversation. You could also introduce other modes of cardiovascular exercise including loaded hikes, cycling, rowing and swimming however your focus should remain on jogging.

FARTLEK

Fartlek (Swedish for speed play) is literally, playing around with speeds – essentially, it's a form of unstructured speedwork. It involves a continuous run in which periods of faster running are mixed with periods of easy-or moderate-paced running (not complete rest, as with interval training).

To commence fartlek training you will need to identify somewhere suitable for long distance running such as a park, track, or long path/road. As an example, start with a 10-15-minute run and look for a landmark or something obvious that catches your eye, increase your pace for 30-60 seconds until you reach that landmark and then revert to your slower pace until your recover or identify a new landmark.

INTERVAL TRAINING

This type of training involves small bouts of higher intensity exercise which will significantly elevate your heart rate response. Each high intensity effort is accompanied by a short recovery period before increasing your exercise intensity again. The aim is to maintain the intensity of the high intensity efforts throughout the workout by providing your body enough recovery time.

Interval training will assist the body to adapt to exercise and activity of increasing intensity and workloads, therefore assisting tolerance and conditioning for the later levels of the 20 Metre Shuttle Run. Interval training can also be included as part of your training programs utilising other modes of cardiovascular exercise. Start with a 1:1 (60 seconds of work with 60 seconds of rest) or less work to rest ratio and progress towards more work and less rest i.e., 2:1 (60 seconds of work and 30 seconds of rest).

METABOLIC CONDITIONING EXERCISE PREPARATION

Metabolic conditioning is an alternative training mode for developing cardiovascular fitness. Exercises are performed consecutively without rest for a specific time or repetition.

When participating in these programs, participants should consider (where appropriate) exposing themselves to increased heat and metabolic costs through wearing heavy clothing (i.e., Tracksuit and/or jackets, beanie, gloves) or weighted backpacks/ vests (20kg). If you are wearing external loads (vest) take this into account when choosing resistance. It is advised that you DO NOT run while wearing these added items as this will expose you to greater injury risk.

BODY WEIGHT CIRCUIT
Sets: 2 – 4
Reps: 15 reps or 30 sec of each exercise
Rest between sets or after finishing all exercises: 90sec – 2 mins
Exercises: Push up/ Crawls/ Lunges/ Mountain Climbers/ Squats/ Jumping Jacks

BARBELL CIRCUIT
Sets: 2 – 4
Reps: 15 reps or 30 sec of each exercise
Rest between sets or after finishing all exercises: 90sec – 2 mins
Exercises: Squat/ Reverse Lunge/ Bent Over Row/ Military Press/ Romanian Deadlift/ Suitcase Carry

DUMBBELL CIRCUIT
Sets: 2 – 4
Reps: 15 reps or 30 sec of each exercise
Rest between sets or after finishing all exercises: 90sec – 2 mins
Exercises: Front Rack Squat/ Dumbbell Overhead Carry/ Reverse Lunge/ Bent Over Alternating Row/ Single Arm Shoulder Press/ Farmers Carry

COMBO CIRCUIT
Sets: 2 – 4
Reps: 15 reps or 30 sec of each exercise
Rest between sets or after finishing all exercises: 90sec – 2 mins
Exercises: Dumbbell Squat into Push Press/ Spiderman Crawl/ Walking Lunges/ Turkish Get Up/ Renegade Row/ Farmers Carry

RESISTANCE EXERCISE PREPARATION

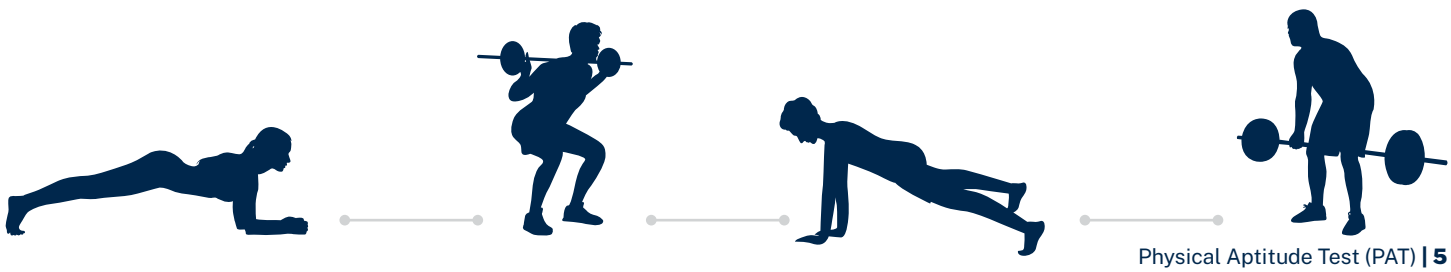
Resistance training should accompany regular cardiovascular exercise on a weekly basis. Aim to add 2-3 dedicated resistance training sessions into your weekly workouts where possible to assist to further improve your cardiovascular function whilst improving the strength, power and function of your musculoskeletal system.

The below exercises are important movement patterns that you should be comfortable and familiar performing under load or with resistance specific to your current abilities (start with less and progress to more).

LOWER EXTREMITIES:
1) Squats
2) Deadlift/Lunge

UPPER EXTREMITIES:
1) Pushing Horizontally
   (push ups and chest press)
2) Pushing Vertically
   (overhead press)
3) Pulling Horizontally
   (bent over/seated row)
4) Pulling Vertically
   (chin up/ lat pulldown)

TRUNK:
1) Planks (prone and side)
2) Rotation
   (seated, kneeling and standing)
3) Supine (lying and bridging)



The strength training program provided below consists of a 13-week program broken into 4 blocks. Each block is specifically designed to manipulate the required sets and repetitions (reps) to maximise your physical performance in the lead up to the PAT.

Sets, Reps and Load Selection: Each block involves determining your loads for the block. Pick a weight you think you can achieve for the prescribed reps (see table). Do as many reps as you can with this weight (ensuring correct technique is maintained). If the reps achieved is 2 or more than the recommended, choose a heavier load.

Each week, look to increase lower body exercise loads by 2.5-5kg and upper body exercise loads by 1.25kg-2.5kg (at least for 1 set in the session and only if correct technique can be maintained). Ensure correct technique can still be maintained with the increased loads.

NOTE: A handy trick is to log your loads each session, so you ensure you keep moving forward.

	Block 1				Block 2				Block 3			Block 4	
WEEK	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
SETS	2	2	3	3	3	3	4	4	5	5	5	2	2
REPS	6	8	10	12	8	8	6	6	5	5	3	3	2
REST	60 seconds				90 seconds				2 minutes			3 minutes	

SUPERSETS A superset is a strategy whereby you move from one exercise to the next without taking a break. Once you have completed both exercises you have completed the set. Within this program it is represented by A and B (as shown below). The purpose for a superset is to make the training experience more time efficient. In the program below you would complete the Goblet Squat to Bench (A) and then move straight on to Hip Thrust (B). Complete the allocated rest period and then complete

INCREMENTAL STRENGTH TRAINING

		BLOCK 1 (Week 1-4)	BLOCK 2 (Week 5-8)	BLOCK 3 (Week 9-11)	BLOCK 4 (Week 12-13)
LOWER EXTREMITIES	**SQUAT**	A) Goblet squat to bench B) Hip thrust	A) Goblet squat to bench B) Romanian deadlift single leg	A) 2 arm kettlebell front squat to box B) Romanian deadlift	A) 2 arm kettlebell front squat to box B) Romanian deadlift
	DEADLIFT/ LUNGE	A) Lunge hold B) Bridge (20 seconds)	A) Lateral lunge B) Lateral bridge	A) Reverse lunge B) Low to high chop	A) Bulgarian split squat B) Vertical stability lift
UPPER EXTREMITIES	**PUSHING**	A) Kneeling single arm dumbbell shoulder press B) Incline push ups (without loads)	A) Kneeling alternating arm dumbbell shoulder press (hold at top position) B) Push ups	A) Standing single arm dumbbell shoulder press B) Single arm dumbbell chest press	A) Standing alternating arm dumbbell shoulder press (hold at top position) B) Single arm dumbbell press pause
	PULLING	A) Seated single arm pull down B) Inverted row (knees bent)	A) Half kneeling alternating cable pull down B) Inverted Row	A) Seated single arm pulldown B) Single arm dumbbell bent over row	A) Seated single arm pulldown B) Single arm dumbbell bent over row

Note: It is imperative that correct technique is mastered with an exercise prior to adding load. If you are not proficient at a given exercise, continue with this exercise for the next block and adjust the sets, reps and rest period to match that block. Since these sessions are strength-focused, you should do the prescribed number of sets for one exercise category before moving on to the next.

EXAMPLE OF TRAINING PROGRAM BLOCK

WEEK	MON	TUE	WED	THUR	FRI	SAT	SUN
1	Fartlek (20sec Jog, 20sec Stride, 20sec Walk) 8mins x 2	Strength Block 1	Rest	15 - 30 mins zone 2 cardio	Strength Block 1	Metabolic Circuit	Rest
2	Fartlek (20sec Jog, 20sec Stride, 20sec Walk) 8mins x 3	Strength Block 1	Rest	20 - 40 mins zone 2 cardio	Strength Block 1	Metabolic Circuit	Rest
3	Fartlek (20sec Jog, 20sec Stride, 20sec Walk) 8mins x 4	Strength Block 1	Rest	30 - 45mins zone 2 cardio	Strength Block 1	Metabolic Circuit	Rest
4	Fartlek (20sec Jog, 20sec Stride, 20sec Walk) 8mins x 5	Strength Block 1	Rest	45 - 1 hr zone 2 cardio	Strength Block 1	Metabolic Circuit	Rest
5	10 x 20m Shuttles in 1 min 20sec with 2 min rest. X 8	Strength Block 2	Rest	8 mins jog 4 mins walk x 3	Strength Block 2	Metabolic Circuit	Rest
6	10 x 20m Shuttles in 1 min 12 sec with 2 min rest. X 8	Strength Block 2	Rest	8 mins jog 4 mins walk x 4	Strength Block 2	Metabolic Circuit	Rest
7	10 x 20m Shuttles in 1 min 5 sec with 2 min rest. X 8	Strength Block 2	Rest	8 mins jog 3 mins walk x 3	Strength Block 2	Metabolic Circuit	Rest
8	10 x 20m Shuttles in 1 min with 2 min rest. X 8	Strength Block 2	Rest	8 mins jog 2 mins walk x 3	Strength Block 2	Metabolic Circuit	Rest
9	Intervals 1 min on 1 min off x 8	Strength Block 3	Rest	Beep Test + 8 mins jog 2 mins walk x 3	Strength Block 3	Metabolic Circuit	Rest
10	Intervals 1 min on 1 min off x 9	Strength Block 3	Rest	Beep Test + 8 mins jog 2 mins walk x 2	Strength Block 3	Metabolic Circuit	Rest
11	Intervals 1 min on 1 min off x 10	Strength Block 3	Rest	Beep Test + 8 mins jog 2 mins walk	Strength Block 3	Metabolic Circuit	Rest
12	Fartlek (20sec Jog, 20sec Stride, 20sec Walk) 2 x 10mins	Strength Block 4	Rest	Beep Test	Rest	Metabolic Circuit	Rest
13	Fartlek (20sec Jog, 20sec Stride, 20sec Walk) 2 x 10mins	Strength Block 4	Rest	Beep Test	Rest	Metabolic Circuit	Rest

ADDITION PREPARATORY INFORMATION

It is always important to warm up and cool down pre and post exercise. This will assist to increase performance throughout your workout, lower your risk of injury and improve your post exercise recovery. Appropriate nutrition and hydration strategies will also greatly assist with the above.

Remember, all dedicated exercise programs require time for the body and its system to adapt. Make sure to provide yourself enough time in preparation for the PAT so that you can maximise the benefits of your targeted exercise program. It is recommended that a minimum of 12 weeks training (longer where possible) is allowed to ensure enough full adaptation to the training program and maximal benefits are achieved (your training will need to be performed frequently and consistently throughout this time).

If you aren't sure where to commence with your exercise preparations, please visit the 'Exercise & Sports Science Australia - ESSA' website and download the 'Adult Pre-Exercise Screening (APSS)' tool. The APSS has been designed to assist those becoming more active or increasing exercise intensity, to do so safely and under appropriate medical guidance (Pre-Exercise Screening Systems (essa.org.au).

ADULT PRE-EXERCISE SCREENING SYSTEM (APSS)

This screening tool is part of the Adult Pre-Exercise Screening System (APSS) that also includes guidelines (see User Guide) on how to use the information collected and to address the aims of each stage. No warranty of safety should result from its use. The screening system in no way guarantees against injury or death. No responsibility or liability whatsoever can be accepted by Exercise & Sport Science Australia, Fitness Australia, Sports Medicine Australia or Exercise is Medicine for any loss, damage, or injury that may arise from any person acting on any statement or information contained in this system.

Full Name: _____

Date of Birth: _____ Male: ☐ Female: ☐ Other: ☐

STAGE 1 (COMPULSORY)

AIM: To identify individuals with known disease, and/or signs or symptoms of disease, who may be at a higher risk of an adverse event due to exercise. An adverse event refers to an unexpected event that occurs as a consequence of an exercise session, resulting in ill health, physical harm or death to an individual.

This stage may be self-administered and self-evaluated by the client. Please complete the questions below and refer to the figures on page 2. Should you have any questions about the screening form please contact your exercise professional for clarification.

Please tick your response	YES	NO
1. Has your medical practitioner ever told you that you have a heart condition or have you ever suffered a stroke?	☐	☐
2. Do you ever experience unexplained pains or discomfort in your chest at rest or during physical activity/exercise?	☐	☐
3. Do you ever feel faint, dizzy or lose balance during physical activity/exercise?	☐	☐
4. Have you had an asthma attack requiring immediate medical attention at any time over the last 12 months?	☐	☐
5. If you have diabetes (type 1 or 2) have you had trouble controlling your blood sugar (glucose) in the last 3 months?	☐	☐
6. Do you have any other conditions that may require special consideration for you to exercise?	☐	☐

IF YOU ANSWERED 'YES' to any of the 6 questions, please seek guidance from an appropriate allied health professional or medical practitioner prior to undertaking exercise.

IF YOU ANSWERED 'NO' to all of the 6 questions, please proceed to question 7 and calculate your typical weighted physical activity/exercise per week.

7. Describe your current physical activity/exercise levels in a typical week by stating the frequency and duration at the different intensities.
For intensity guidelines consult figure 2.

Intensity	Light	Moderate	Vigorous/High
Frequency (number of sessions per week)	_____	_____	_____
Duration (total minutes per week)	_____	_____	_____

Weighted physical activity/exercise per week

Total minutes = (minutes of light + moderate) + (2 x minutes of vigorous/high)

TOTAL = _____ **minutes per week**

- If your total is less than 150 minutes per week then light to moderate intensity exercise is recommended. Increase your volume and intensity slowly.
- If your total is more than or equal to 150 minutes per week then continue with your current physical activity/exercise intensity levels.
- It is advised that you discuss any progression (volume, intensity, duration, modality) with an exercise professional to optimise your results.

I believe that to the best of my knowledge, all of the information I have supplied within this screening tool is correct.

Client signature: _____ Date: _____

WORKOUT PLANNER

EXERCISE RIGHT at home

PHYSICAL ACTIVITY GUIDELINES

Australian adults should aim to do 2 ½ to 5 hours of moderate intensity physical activity or 1 ¼ to 2 ½ hours of vigorous intensity physical activity (or a mix of both) each week. You should also aim to do muscle strengthening exercises at least twice.

WEEK STARTING _____

WEEKLY GOALS _____

MONDAY	TUESDAY	WEDNESDAY

THURSDAY	FRIDAY	SATURDAY

SUNDAY