



West Yorkshire
Fire & Rescue Service

PHYSICAL FITNESS GUIDE



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INTRODUCTION

The role of a firefighter can be physically demanding, and consequently firefighters are required to maintain good general levels of physical fitness throughout their careers.

The following information is designed to provide GENERAL GUIDELINES on physical fitness including those applicants intending to undertake the National Firefighter Selection Tests (NFSTs).

It is important to note that good exercise training advice should be highly specific to you as an individual, and will depend upon your general health, age, current fitness level, previous training history, lifestyle and ultimate fitness goals.

Ideally you should seek advice from a qualified fitness professional who will help you design, undertake and evaluate a physical training programme that is specific to your needs.

ARE YOU READY?

You can easily determine your current level of aerobic fitness by performing your best effort 1.5 mile (2413 m) run: you should only be planning to adopt the 12 week training programme recommended here if you can **run 1.5 miles in approximately 12-14 min* or reach levels 5 to 7 on the Multi-Stage Shuttle Run Test**. If you are not within these suggested starting levels, do not be put off. The programme is still applicable to you, it may just take longer than 12 weeks to achieve your final goal and you will need to progress much more gradually. If you are not yet able to achieve these starting aerobic fitness levels, you would be best advised to seek professional guidance on physical training from a qualified fitness instructor, who will be able to assess your specific needs and plan a longer and more detailed training programme for you.

*More muscular individuals (80+ kg) can afford to be at the lower end of this suggested aerobic fitness starting level whilst smaller individuals (50-65 kg) should aim to be at the higher end.

IMPORTANT SAFETY INFORMATION

- If you are in any doubt about your health or physical ability to exercise, you should consult your Doctor before commencing any physical training programme. This is especially important if you are (or think you might be) pregnant, if your health status has recently changed, or have not exercised for the last six-months or have had a recent illness or injury.
- Remember there are no quick ways to develop good general fitness levels. You must progress slowly and gradually by following a structured training programme to reach your goal. It is better to do too little than too much during the early stages of any fitness programme!
- You must wear appropriate clothing during your training. This is especially important with regards to footwear. A good training shoe designed to match your physical characteristics is essential to minimize your chance of injury. A podiatrist will be able to advise you on which type of shoe will meet your training needs.
- Always begin your training sessions with a thorough warm-up and cool-down afterwards.
- The warm-up and cool-down will be discussed in more detail later on.
- Do not train if you are unwell or injured. It is better to rest than train through an illness or injury. Think long term and not just to the next one or two training sessions.

WHAT IS PHYSICAL FITNESS?

Optimum physical fitness for firefighters translates into being able to carry out firefighting activities successfully and without undue fatigue.

The key fitness components for firefighting are:

<p>LONG-TERM AEROBIC ENDURANCE</p> <p>Aerobic Endurance allows you to continue to exercise for prolonged periods of time (> 3 minutes) at low to moderate/high intensity. Typical aerobic activities include hiking, running/jogging, cycling, rowing, swimming or skating.</p>	<p>MUSCULAR STRENGTH</p> <p>Muscular Strength allows you to lift, lower, pull, push and carry heavy objects over very short distances/periods of time (e.g. lifting a 13.5 m ladder back on to an appliance).</p> <p>Best trained using resistance training. It is important to remember that weight training will not necessarily make you look overly muscular.</p> <p>Lifting light weights to start with until you have mastered the correct technique is essential.</p> <p>Seek professional fitness advice on this aspect of training.</p>
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MUSCULAR ENDURANCE

Muscular Endurance is closely linked to both aerobic endurance and muscular strength, but allows you to continue to lift, lower, pull, push and carry heavy objects for more prolonged periods of time (e.g. carrying a light portable pump (~ 33 kg) from an appliance across a field to an external water source).

Muscular endurance is best trained using more moderate resistances over a more prolonged period of activity, such as circuit training using your own body weight as the resistance.

FLEXIBILITY

Flexibility refers to your ability to move your limbs and joints into specific positions at the end of their normal range of movement. Flexibility is important as it will allow your body to work in cramped positions without unduly stressing the muscles, tendons and ligaments (e.g. crawling through small spaces or openings whilst searching the floor space for a casualty in a house fire) and may reduce the risk of injury.

Flexibility is best developed using slow controlled stretching exercises.

HOW TO DEVELOP AND MAINTAIN PHYSICAL FITNESS

Improving physical fitness requires some self-discipline and efficient use of time, as an effective exercise routine needs to be completed on a regular basis (at least 3 days per week). Your training should be gradual and progressive, starting gently and building up the intensity over time. This will produce an improvement in your fitness by placing greater demands on your body.

Any physical training programme has 4 key components that can be manipulated to produce the desired training effect. These are:

- the mode of exercise (the type of exercise) e.g. cycling, running, swimming, etc.,
- the training intensity (how hard you are exercising),
- the training duration (how long you are exercising) and
- the training frequency (how often you are exercising).

By specifically modifying these 4 components of training, you will be able to develop and maintain aerobic endurance, muscular strength, muscular endurance and flexibility.

The mode, frequency and duration of exercise are easy to plan and monitor with a notebook and stopwatch. Setting the correct exercise intensity for muscular strength and endurance training is usually done by counting the number of repetitions that you are able to perform on a particular exercise.

As a good general overall level of fitness is required to undertake firefighter training and good fitness levels cannot be acquired overnight, you should

only undertake this programme if you already have a basic general level of aerobic fitness. The gains in aerobic fitness over a structured 8-12 week training programme are highly individual specific, but typically average about 10-15%. Therefore, you will need to start with a reasonable level of aerobic fitness to meet the required NFST's physical standards with only 8 weeks of training.

GENERAL EXERCISE GUIDANCE

The role of a fire fighter can at times be physically demanding. Therefore the entry selection tests are designed to reflect and assess the physical tasks that firefighters are required to perform. Firefighters are required to be aerobically fit, have good all-round body strength and local muscular endurance. Good exercise training advice is highly specific to the individual. It should be understood, therefore that the advice provided here can only be general; prospective applicants who require further information are advised to seek individual advice, specific to their needs, from a qualified fitness professional.

SAFETY POINTS

If you are in any doubt about your health or physical ability to exercise, you should consult a doctor before commencing any physical training programme. This is especially important if you are (or think you might be) pregnant, if your health status has recently changed, you have not exercised for the last six-months or have had a recent illness or injury. Always warm up before commencing any exercise. Wear the correct clothing and footwear; do not train if you are unwell or injured.

PREPARING FOR EXERCISE (WARM UP)

Performing a warm up prepares the body for the activity about to be undertaken. The length of time needed to warm up correctly depends on many factors; however, you should allow at least 10 minutes for this very important activity. In order to reduce the risk of injury in the warm up period, a number of steps should be followed:

BE SPECIFIC

Make sure your warm up session is geared towards the activity that you intend to perform. Cardiovascular workouts, for example running, you should start with a brisk walk leading into a light jog. For weight training workouts it is important to warm up the joints and muscles that are involved in the resistance exercise

START SLOWLY

At the start of your workout your muscles will be relatively cold. Start exercising slowly and build up the intensity throughout the warm up period. This will increase your muscle temperature steadily and keep the risk from injury to a minimum.

KEEP WARM

If you are exercising in a cold environment, wear additional clothing during the warm up period and try not to stand still for too long.

THE CHESTER TREADMILL TEST (CTT)



WHAT IS THIS TEST FOR?

The CTT is a measure of cardiovascular fitness, completing the 12 minutes shows you have the minimum required VO2 Max to be a firefighter.

HOW CAN I PREPARE FOR THIS TEST?

The CTT involves a lot of incline walking which will test your fitness and can put strain on the calf muscles. Make sure to include incline walking into your training programme to help prepare for the test. Below are 4 examples sessions to help prepare for the CTT. Once you can complete 1 move onto the next to increase the difficulty

LEVEL 1	LEVEL 2
Walk 6.0kph	Walk 6.2kph

Repeat sequence 5 times.	Repeat sequence 5 times.
1 min, Incline 3%	1 min, Incline 4%
1 min incline 6%	1 min incline 8%
1 min incline 9%	1 min incline 12%
1 min incline 0%	1 min incline 0%
LEVEL 3	LEVEL 4
Walk 6.2kph	Walk 6.2kph
Repeat sequence 4 times.	Repeat sequence 3 times.
1 min, Incline 4%	2 min, Incline 5%
1 min incline 8%	2 min incline 10%
1 min incline 12%	2 min incline 15%
1 min incline 15%	2 min incline 0%
1 min incline 0%	

LADDER CARRY TEST



WHAT IS THIS TEST FOR?

This test simulates carrying one half the 13.5m ladder 25m using one hand, swapping and walking 25m with the other hand. This cycle is repeated twice through and you must be able to complete each 25m carry without putting the weight down..

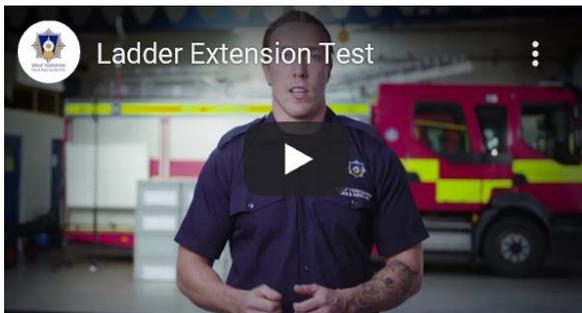
HOW CAN I PREPARE FOR THIS TEST?

This test is demanding on your grip strength so adding exercises into your training programme such as, static holds with dumbbells or kettlebells, farmers walks, shrugs and hanging from a pull up bar will help increase your grip strength.

Here is an example you could add into your training programme

Hold a heavy dumbbell in each hand until it feels very difficult to continue. Put them down and rest for 30 seconds. Continue this process until you have accumulated 2 minutes holding the dumbbells, not including the rest. Once you can hold a weight for 30 seconds on the first set then increase the weight.

LADDER EXTENSION TESTS



WHAT IS THIS TEST FOR?

Completed on an indoor simulator this tests whether someone can extend and lower a 10.5m and 13.5m ladder. One test will involve extending the equivalent weight (28kg) of a 10.5m ladder to its full height; this must be done in 14.5 seconds or less, then lowered under control. The second test involves one single pull of 42kg to simulate extending to lower the 13.5m ladder and lowering under control.

HOW CAN I PREPARE FOR THIS TEST?

Training the muscles in your back and arms will increase the strength required to pass these tests. Exercises such as lat pull downs, seated rows, assisted pull ups or chin ups will all help improve your test performance.

Here is an example you could add into your training programme

2-3 times per week add 4 sets of 6 lat pull downs to your routine, preferably using a rope attachment which are found with most commercial gym cable machines. Lift a weight which you find difficult but achievable 6 times then

rest for 90-120 seconds. That's 1 set so repeat that another 3 times and when you can complete all 4 sets at the same weight increase the weight in your next session. Be sure to complete 2-3 warm up sets at a lower weight before you start

LADDER LIFT TEST



WHAT IS THIS TEST FOR?

The ladder lift test simulates the individual physical demands of underrunning a 13.5m ladder. A total load of ~30 kg, lifted until arms are fully extended overhead is required to successfully complete this test.

HOW CAN I PREPARE FOR THIS TEST?

The main muscle group involved in the ladder lift test are the shoulders. Any movement involving pressing a weight above your head will exercise your shoulders. To increase your strength for this test try adding in 4 sets, 6 repetitions of dumbbell or barbell shoulder presses to your training programme 2-3 times per week. These can be done seated or standing

RURAL SIMULATION TEST (EQUIPMENT CARRY TEST)



WHAT IS THIS TEST FOR?

This is a practical test designed to simulate common rural firefighting tasks. Dressed in full firefighting clothing you will carry multiple items of equipment over a 25m course, there are 22 lengths in total. You will need to complete the test in under 5 minutes and 37 seconds to pass.

HOW CAN I PREPARE FOR THIS TEST?

Multiple muscle groups as well as anaerobic capacity are involved when performing this test. A balanced weights and fitness programme and/or circuit training minimum of 3 times per week will help improve the elements needed to pass this test.

Here is an example workout to add into your training programme

5 sets

Row 200m (a fast pace)

10 walking lunges holding dumbbells

10 burpees

Repeat the 5 sets back to back with as little rest as possible

CASUALTY EVACUATION TEST



WHAT IS THIS TEST FOR?

This tests your ability to rescue a casualty. In full firefighting kit you will drag a 55kg dummy walking backwards whilst guided by the assessor around a 30m (3x10m) course. You must complete this test inside 37.4 seconds to pass

HOW CAN I PREPARE FOR THIS TEST?

A short burst of effort involving the upper body, back and leg muscles. A balanced training programme of weights and fitness 3-4 times per week will aid in preparing for this test.

In preparation for this test try including 4 sets of 10 deadlifts using a barbell or dumbbells 2-3 times per week to build up your leg strength and endurance.

EXAMPLE TRAINING PROGRAMME

SESSION 1	SETS	REPS
Dumbbell deadlift	3	8
Dumbbell shoulder press	3	8
Rope lat pull down	3	8
Single leg crunches	3	15
Optional - Dumbbell hold	Accumulate 2 minutes	

Once you have completed the weights spend 5 minutes warming up on any piece of CV equipment before moving on to one of the aerobic workouts below.

LEVEL 1	LEVEL 2
Walk 6.0kph	Walk 6.2kph
Repeat sequence 5 times.	Repeat sequence 5 times.
1 min, Incline 3%	1 min, Incline 4%
1 min incline 6%	1 min incline 8%

1 min incline 9%	1 min incline 12%
1 min incline 0%	1 min incline 0%
LEVEL 3	LEVEL 4
Walk 6.2kph	Walk 6.2kph
Repeat sequence 4 times.	Repeat sequence 3 times.
1 min, Incline 4%	2 min, Incline 5%
1 min incline 8%	2 min incline 10%
1 min incline 12%	2 min incline 15%
1 min incline 15%	2 min incline 0%
1 min incline 0%	

SESSION 2	SETS	REPS
Dumbbell reverse lunges	3	16
Barbell bench press	3	8
Seated row	3	8
Plank	3	30 seconds
Optional - Dead hang	Accumulate 2 minutes	

Once you have completed the weights spend 5 minutes warming up on any piece of CV equipment before moving on to the aerobic workout.

Choose one of the following:

Rowing machine – Bike – Stepper – Ski erg

Repeat sequence 3-4 times
1 min easy pace
2 min moderate pace
1 min easy pace
2 min faster pace
30 seconds easy pace
30 seconds fast pace