POLICE
SCOTLAND
Keeping people safe

POLICE SCOTLAND
NATIONAL FITNESS STANDARD

GUIDANCE

PURPOSE

Police officers should attain sufficient role specific physical fitness which will enable them to undertake all the rigours and operational demands placed on them as individuals in a safe and effective manner.

It is an essential part of the employer's responsibility to ensure that recruits (and also serving officers) are "fit for duty" i.e. those candidates/recruits possess physical ability to perform the role of an operational police officer. If a candidate is selected who does not possess the core physical competencies and physical motor skills, then that individual is at increased risk of injury during training and, in particular, during the execution of their role as an operational police officer. This has significant Health and Safety implications both for the individual, their colleagues and the communities they serve.

THE STANDARD

A police officer should possess a degree of cardiovascular fitness.

The fitness standard for Scotland must be facilitated on 5 formal occasions.

- Scottish Police College (2 occasions)
- 3 pre-confirmation assessments

Selection

The National fitness standard will form part of the selection process and will be administered on an achieve/fail to achieve basis. No candidate will be offered appointment unless they have achieved the required standard.

Scottish Police College

All new recruits to Police Scotland undertake a 11 week Initial Training Course at the Scottish Police College as part of the Probationer Training Programme. During this course, officers will complete the fitness standard on 2 occasions – week 1 and week 7.

Confirmation

The fitness standard will be conducted on 3 occasions by locally based training staff scheduled at weeks 40, 66 and 92 approximately. If an officer fails to achieve the required standard then they will be afforded 1 further attempt to reach the required fitness standard, with a 6 week development period between each assessment. This may require the officer's probationary period to be extended. If an officer fails to achieve the required standard on 2 consecutive occasions, without reasonable grounds, then they will not have met the physical standards required of a Police Officer and they will be considered for dismissal in terms of Regulation 9 of the Police (Scotland) Regulations 2013.

PROCESS

Cardiovascular Element

All candidates must reach level 5.4 to achieve a pass.

Multi-stage Fitness Test

- The test is maximal – participants should keep going until they can no longer keep up with the beeps.
- The test is progressive – it gets marginally quicker every time the level increases.
- Participants should run from one end of the 15m area to the other in time with the beep. There is no benefit in running ahead of the beeps and indeed participants will be penalised if they do.
- Participants are only required to touch the line at either end with one foot. They are not required to cross the line.
- Participants will be given two warnings prior to being removed from the test. This will happen if they fail to make the line in time with the beeps, on three consecutive occasions.

FITNESS GUIDANCE

Before starting on a programme of physical activity is essential that you:

- Contact your Doctor to ensure that you are of adequate health to proceed with a programme of moderate to vigorous exercise.
- Understand all advice and information supplied to you. If at all unsure about any aspect of the programme you must contact a certified fitness professional.

The assessable element of the fitness assessment is:

> Cardiovascular fitness – the ability of the heart and lungs to provide sufficient oxygen to the working muscles to sustain a rhythmical activity involving large muscle groups (running, cycling, swimming) for an extended period of time (generally >15 minutes)

Other elements of fitness exist, such as flexibility, speed and muscular endurance and all have importance to achieving overall conditioning. The identified assessable area of the fitness assessment has been selected as it displays particular job relevance. Furthermore, from a health perspective, cardiovascular fitness is a key factor in reducing the chances of heart disease, stroke, diabetes, high blood pressure, certain forms of cancer and depression. It is important that to consider yourself fit; you should have reasonable ability in this area.

Cardiovascular training

Enhancing ones cardiovascular fitness will result in improved performance, faster recovery times following exercise, larger heart muscle (which improves cardiac output), decreased blood pressure and resting heart rate, improved body composition and overall greater energy levels.

Any programme must be appropriate to the individual concerned and the programme supplied is designed for those individuals who feel they need training in cardiovascular fitness to bring them up to the standard required or those who have failed to achieve in a recently conducted test. Improving ones fitness should still be a high priority for all those at the recruitment and induction stage, to prepare sufficiently for the Physical Education curriculum administered at the Scottish Police College.

To train effectively for cardiovascular conditioning the F.I.T.T principle should be adhered to:

FREQUENCY:	3-5 times a week (twice may be appropriate to start with)	
INTENSITY: (APMHR)	70%-85% of **age-predicted maximum heart rate**	
TIME:	20-60 minutes	
TYPE:	Running, cycling, swimming, climbing etc	
To find **APMHR**:	Males	220 – (age)
	Females	226 – (age)
E.g. 20 year old male	220 – 20 = 200 beats per minute (BPM)	
Set the intensity range:	70% = 140 BPM	85% = 170 BPM
Training zone or target heart rate range is:	**140 – 170 BPM**	

NB. It should be noted that this formula is only provides an estimate, with an error range of 10-15 beats/min.

How to work out your heart rate during exercise

- Wear a heart rate monitor (retail for between £30 and £200).
- Most cardiovascular machines in gyms have built in heart rate monitors which will give you a reading when held.
- Although not ideal, you can stop your session briefly and take your pulse. At the side of your neck (carotid artery) should be easy to find. Count the beats for 15 seconds and multiply that number by 4. This will give you a reasonably accurate figure for beats per minute.
- If training with other people, you can self-administer a 'talk test'. This involves simply speaking to each other and seeing how easy it is to maintain conversation. If you have to catch breath every 3 or 4 words, you will be in the right sort of training zone. If you can not speak at all, you are probably working too hard and if you can speak with ease, and then you're not working hard enough.

The other key factors in a successful training programme are:

FATIGUE – During a session, you must work hard enough to cause a degree of fatigue. Whereas the 'no pain – no gain' motto is no longer generally accepted in the industry, the exercise must be hard enough to leave you feeling like you have worked hard by the end of it. 'Cruising' through a training programme is unlikely to result in a successful outcome.

RECOVERY – If you train effectively, then you must recognise the body's requirement to recover. Allowing sufficient recovery time following a training session is imperative, as exercising without adequate rest may result in overtraining, which can actually lead to decreases in fitness. The period of recovery will depend upon your current fitness level and the intensity of the session performed. Generally, a recovery time between 24-72 hours should be appropriate, but aim to train every second day as a general rule. If your muscles still hurt following a session (in itself not a bad sign), it is best not to train those areas again until they have had time to recuperate.

PROGRESSION – It should be an obvious aim of any training programme, but many people fail to progress their fitness. To make improvements in fitness you must give the body something more than it has had to do before. This is called **'overload'**. This ensures that during recovery, the body will 'over-compensate' leaving you fitter and able to cope with that training load again. If you repeat the same session (time, intensity, type) on more than 3 occasions, the body will no longer respond and will stop improving.

How to overload:

- Aim to increase an element of your session, such as the frequency, duration or intensity.
- Don't do too much too soon – an overload of 5%-10% each week is safe. This would equate to a weekly increase from 20 minutes to 22

minutes in each cardiovascular session for example, or a weight increase from 20kg to 22.5kg on a resistance exercise.

- Increase only one aspect at a time. For example: aim to run for 8 minutes at 10 minute/mile pace, then every session increase the time by 30 seconds until you reach 12 minutes. Then drop the duration back down to 8 minutes (or more if you think you can cope) but increase your speed to 9:30 minute/mile and build the duration back up again. For resistance training, increase your repetitions initially, then sets (if required) and then the weight.

NB. This is for example only and should not be followed as a training programme.

HOW TO GUARANTEE RESULTS

If you follow the principles of fatigue (through appropriate intensities), sufficient recovery and progression (through overload) then you will create a 'training effect'. It is this training effect which produces a fitter, stronger, more conditioned individual who can endure greater loads and tasks, with quicker recovery times.

SOME IMPORTANT INFORMATION FOR YOUR TRAINING

- Seek advice from a **medical professional**, ensuring that you are in good health and able to participate in regular physical exercise.

- **Footwear** – should provide comfort, cushioning, stability and durability. When running, each foot strike causes impact forces of 2-4 times a person's body weight. Not all training shoes suit an individual due to the natural movement of the foot when walking and running therefore, if you are doubt about the right pair of training shoes for you, consult a podiatrist or visit a specialist running or sports shop, who should be able to advise appropriately.

- **Clothing** – should provide warmth in cold environments and allow you to keep cool in warmer environments. Layered clothing is best in the cold and try to find the right balance – not too much, not too little. When exercising in warmer climates, loose fitting, thin/wicking materials are best.

- **Fluid intake** – During high to moderate intensity exercise, the body can lose 1.5-3.5 litres of fluid every hour, but the digestive system can only absorb approximately 1 litre of fluid per hour. The consequence of this possible constant fluid deficiency requires the exerciser to hydrate before, during and after sessions. Plain, cool water is perhaps the best fluid to take as it enters the tissues fastest but sports drinks may be appropriate for exercise durations of longer than an hour. Over and above normal hydration, you should drink half a litre of water 2 hours prior to exercise, which allows time for the excretion of excess fluid.

During exercise it may be best to drink at intervals between 10-30 minutes (if the session is to last that long of course). After exercise, simply keep drinking if you feel thirsty.

- **Warm-up** – Prior to entering into the main part of your programme, you should perform a short warm-up. This period of low intensity exercise serves to increase blood supply into the muscles, raises your core temperature and prepares you both physiologically and psychologically for the session. It will also, when performed with appropriate dynamic stretching, reduce the chances of sustaining an injury. A warm-up should contain about 5 minutes of low intensity activity such as jogging or any other cardiovascular exercise at a comfortable level. By the end of this 5 minute period you should feel slightly out of breath but not feel over-exerted.

  After this you are ready for the main part of your programme. If you are doing cardiovascular training then start off light again and build up to your prescribed exercise intensity over the next 3-5 minutes. If you are doing resistance training then perform one warm-up set (of 12 repetitions) of each exercise with approximately 50% of your prescribed weight.

- **Cool-down** – On concluding a cardiovascular training session it is important to gradually reduce the heart rate and blood pressure back towards resting levels by remaining active for a subsequent 5-10 minutes. By gradually reducing the intensity of your exercise, down to a walking pace should be adequate. This should then be followed by a few minutes of stretching, concentrating on the working muscle groups from the session. Each stretch should be held for 15-30 seconds.

- **Injuries** – Should you sustain an injury, it is recommended that you be assessed by a **medical professional/physiotherapist prior to continuing with a programme.**

  For the immediate treatment of the injury you may wish to follow the R.I.C.E Procedure;

REST	the injured part
ICE	apply ice/cold compress. Not in direct contact with skin
COMPRESSION	compress the injury
ELEVATION	raise the injured part of the body, if appropriate

CARDIOVASCULAR TRAINING PROGRAMME

The programmes supplied are based upon training over a 6 week period prior to testing. This is considered the shortest timescale to follow programmes of this design. If you have more than 6 weeks of developmental time, you should use this time appropriately. The programmes can be extended to 12 weeks for

example; by simply following the same pattern but repeat each week once, using progression throughout of course.

Exercise Frequency Options

Sunday	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
Two days exercise, five days rest (for those with no exercise experience)						
Rest	**Exercise**	**Rest**	**Rest**	**Exercise**	**Rest**	**Rest**
Three days exercise, four days rest						
Rest	**Exercise**	**Rest**	**Exercise**	**Rest**	**Exercise**	**Rest**
Four days exercise, three days rest						
Exercise	**Rest**	**Exercise**	**Rest**	**Exercise**	**Rest**	**Exercise**

The programme is designed to be followed over a six week period prior to your test date and is aimed at those who would not achieve the required standard without suitable training. This of course, is not to say that those individuals who maintain a reasonable or good standard of fitness have no requirement to train as it is equally important for everyone to perform to their full potential. For those individuals, the specifics of the programme supplied will not be of use but the information pertained in this document will still be valid.

It should be noted that no two people will react the same to one generic programme so advice from Physical Education Instructors should be sought in order to design the best possible training strategy for that individual.

*Please note: exercising on a treadmill alone does not train you for running outdoors. If you do use a treadmill then set a 1% incline on the machine, which will more accurately reflect the demands of outdoor running.

All speeds listed in the programme are suggested paces for your training. You can control whether you run faster or slower than that pace. The rule should always be that your pace should be able to develop as the programme goes on.

GENERIC CARDIOVASCULAR PROGRAMME

Week	Session 1	Session 2	Session 3	Session 4
1	**Treadmill/Outdoor Running** *15-20 minutes* alternate equal periods of running and brisk walking for allotted time. Pace of approx. 10-12 min/mile	As session 1	**If you feel able to do a third session in this week** As session 1	
2	**Treadmill/Outdoor** *15-25 minutes* alternate periods of running with brisk walking. Aim for: 2:1 work to rest ratio. *i.e. 2min work/1min rest* Running pace of approx. 10-12 min/mile	As session 1	**If you feel able to do a third session in this week** As session 1	
3	**Outdoor Run** *8-10 minutes* at 10 min/mile pace *then* *3-5 minutes* walking *then* *6-10 minutes* at 10 min/mile pace	**Treadmill/Outdoor** *12-18 minutes* steady pace throughout 10 min/mile pace	As session 1	
4	**Outdoor Run** *5 minutes* at faster pace than usual *then* *3-4 minutes* light jogging/walking *then* repeat this format **twice** more.	**Outdoor Run** *14-20 minutes* steady pace throughout 10 min/mile pace	**Outdoor Run** 1.5 mile run Performed at maximum exertion Record your time.	*If you feel able to do a fourth session in this week* As session 2

5	**Outdoor Run** Tempo training *3-5* minutes @ top pace you can manage for that time period *then* *30-90* seconds walking *then* repeat this format for another **3** times.	**Outdoor Run** *18-25 minutes* maintain good pace throughout	**Outdoor Run** *2.5-3 miles* at steady pace	**Outdoor Run** <u>As session 1</u>
6	**Outdoor Run** *1.5 mile run* Performed at maximum exertion Record your time.	**Outdoor Run** *3-4 miles* at steady pace	**Outdoor Run** Tempo training <u>As week 5</u>	**Outdoor Run** *25-30 minutes* maintain a good pace throughout

NB. Leave a clear 2 day recovery between your last cardiovascular training session and your assessment day.

NUTRITIONAL ADVICE

Nutrition and exercise are two elements of key importance when training towards a specific goal. Focusing on one at the exclusion of the other will lead to less than optimal results.

A good way to work out your 'estimated' daily calorie requirement is shown in the table 1.

	Male	**Female**
Activity level	**Kcal per kg of body weight per day**	**Kcal per kg of body weight per day**
Light (no regular exercise)	38	35
Moderate (light to moderate intensity exercise 2-4 days a week)	41	37
Heavy (moderate to high intensity training 4-5 days a week)	50	44

Table 1. Adapted from *National Strength and Conditioning Association*

If weight loss is the goal, then simply burn more calories (through activity) in a day than you consume in a day (through diet). A 1-2lb weight loss per week represents a daily calorie deficit of 500-1000 kcal.

Should weight gain be the goal (perhaps an option if you need to improve strength), an additional 350-750 kcal daily would support a weekly weight gain of 1-2 lbs. This would obviously only work in conjunction with a vigorous resistance training programme otherwise the extra calories will be stored as fat.

Another way of judging a daily diet may be to follow the guidance below.

Food Guide Pyramid

1. Bread (wholegrain), cereal, rice and pasta (wholewheat) 6-11 servings
2. Fruit 2-3 servings
3. Vegetables 3-5 servings
4. Milk, yoghurt and cheese 2-3 servings
5. Meat, poultry, fish, pulses, eggs and nuts 2-3 servings
6. Fats, oils and sweets *use sparingly*

What constitutes a serving?

- Bread – one slice
- Cereal – 28 grams
- Pasta/rice – half cup cooked
- Vegetables – half cup
- Fruit – one piece or half cup of tinned fruit
- Milk and yoghurt – one cup
- Cheese – 42-56 grams
- Meat – 56-85 grams
- Egg – one egg
- Nuts – handful of

For more information on nutrition, visit *The Food Standards Agency* website. www.eatwell.gov.uk

NUTRIENTS

There are six nutrients: Carbohydrates, protein, fat, vitamins, minerals and water.

Carbohydrates – are the main source of fuel for energy and are required for the complete metabolism of fatty acids in the body. Therefore, a diet with a lack of carbohydrates will limit the body's ability to perform moderate to hard physical activity. The amount of carbohydrates required is very much dependant upon a person's activity level, the more active a person is – the more fuel required.

A recommended 5 to 6 grams of carbohydrates per kg of body weight is accepted as an adequate intake to support a lifestyle involving moderate intensity exercise.

Sources of carbohydrates: **Breads, grains, pasta, potatoes and rice**.

Protein – is used by the body for building and replacing lean tissue (muscle) and should not merely be considered as a nutrient used by bodybuilders to gain large amounts of muscle mass. If energy stores in the body are severely depleted then protein can be burned for energy.

Protein is an essential nutrient when participating in physical training, particularly resistance (strength) training as the proteins consumed in the diet work to 'repair' the damaged muscles (which is actually an important factor in successful resistance training programmes).

A recommended 1.4 to 1.8 grams of protein per kg of body weight is considered a good range for all those participating in an exercise programme of moderate to high intensity, including strength training. For example a 60kg/9 stone 6lbs person may aim to consume approximately 90 grams of protein per day and a 76kg/12 stone person could aim for approximately 120 grams.

Sources of protein: **meat, fish, poultry, dairy products, eggs, nuts and pulses**.

Dietary Fat – Although excessive consumption of dietary fat should be avoided, a certain amount is essential. Fats supply essential fatty acids which the body cannot naturally produce and provides insulation for vital organs. Most of the fat a person consumes should come from natural sources (unsaturated) as opposed to processed foods (saturated fats).

A recommended 15-20% of daily calories should come from dietary fats. Good sources of dietary fat: **oily fish (mackerel, salmon, trout, fresh tuna), nuts, olive oil** (*Food Standards Agency, UK)*

Vitamins and Minerals - Vitamins help regulate fat, carbohydrate and protein metabolism in the body. They cannot be made by the body and have to be provided through a person's diet. Minerals have many roles in the body's functioning. Apart from the formation of strong bones and teeth, they also help to control the nervous system, fluid balance in tissues and muscular contractions. Minerals are as essential as vitamins and they also, cannot be made in the body. All our bodies' mineral needs have to be supplied from the diet. (*Bupa website)*

A balanced diet will provide all essential vitamins and minerals, with fruit and vegetables being of particularly good value.

Water – Adequate water intake is essential for everyone, particularly those participating in regular exercise. Water is essential to aid digestion, nutrient

absorption and the removal of waste products. It also helps regulate circulation and body temperature.

A daily intake of 1.5-2.5 litres of fluid (consumed evenly throughout the day) is considered adequate for those living a sedentary lifestyle, however not all fluid must be water, but caffeinated drinks and alcohol should not be included in this figure due of their diuretic effect (which can cause dehydration). Obviously, by taking regular exercise the required amount will be greater.

It should be noted that if your body is dehydrated by 2% or more, this will reduce any physical performance by a marked amount.

Following an appropriate training regime and committing oneself to eating a balanced diet, there is no reason why significant improvements would not be made in fitness and body composition.

This section has been formulated through research from the National Strength and Conditioning Association; the Food Standards Agency (UK) website and Bupa (UK) website.