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# Implementation – Job-related fitness test (specialist posts)

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## JRFT guidance – specialist posts

### **POTENTIAL FOR LEGAL CHALLENGE**

This guidance is a revision of guidance produced by the Police Advisory Board of England and Wales after a rigorous assessment and validation process of the job-related fitness tests for specialist police posts. Police forces that implement these standards will be able to cite them as being assessed as reasonable and appropriate under the Equality Act 2010 and the Health and Safety at Work etc. Act 1974. Any derogation from these standards carries a risk of legal challenge from an officer disadvantaged by the implementation of a higher or a lower standard, any additional standards or a different method of assessment than those recommended in this guidance.

## 1. Introduction

In January 2010, the Police Advisory Board of England and Wales (PABEW) agreed national job-related fitness test (JRFT) standards for specialist posts undertaken by police officers. The standards have a physiological link to job-related requirements. Implementing these standards will result in all officers being fitness tested at the selection stage of each specialist post and thereafter on a regular basis.

The information in this document will help police services ensure that the JRFT standards comply with the Health and Safety at Work etc. Act 1974 and the Police (Health and Safety) Act 1997. This document complies with the Health and Safety Executive guidance on effectively managing health and safety in the workplace – HSG65.

Important considerations relating to diversity, equality and the legal justification for the test are outlined in the JRFT implementation guidance [LINK]. This document also includes useful information relating to supporting structures, risk assessments for the test and health declarations.

## 2. JRFT standards

The recommended specialist post JRFT endurance standards are outlined below.

| <b>Specialist post</b> | <b>Recommended standard<br/>(level : shuttle)</b> |
|------------------------|---|
| Marine police unit     | 5 : 4   |
| CBRN                   | 5 : 4   |
| Method of entry        | 5 : 4   |
| Dog handler            | 5 : 7   |
| Mounted branch         | 5 : 7   |
| Police cyclist         | 5 : 8   |
| Police support unit    | 6 : 3   |

| Specialist post                    | Recommended standard<br>(level : shuttle) |
|------------------------------------|---|
| Air support                        | 6 : 4                                     |
| Police divers                      | 6 : 8                                     |
| Marine police<br>(tactical skills) | 7 : 2                                     |
| Authorised firearms officer        | 7 : 6                                     |
| ARV                                | 9:4                                       |
| DIAFO                              | 10:5                                      |

### 3. Alternative tests for specialist posts

On 2 November 2016, the College of Policing Professional Committee endorsed the Chester Treadmill Police Walk Test (CTPWT) and the Chester Treadmill Police Run Test (CTPRT) as validated alternatives to the 15-metre multi-stage fitness test.

### 4. The Chester Treadmill Police Walk Test

The **CTPWT** is a performance test specifically developed for the police service of England and Wales as an alternative fitness test to the 15-metre shuttle run. It is used to determine whether an officer is able to achieve the minimum recommended aerobic fitness standard for PST and specialist posts, excluding ARV and DIAFO (College of Policing 2014). After a suitable warm up, the subject is required to walk at a brisk pace (**6.0km/hr**) on the treadmill. Every two minutes, the gradient is raised by three per cent.

**CTPWT target times for specialist posts, estimated aerobic capacity and recommended shuttle run level**

| <b>Specialist post</b>          | <b>CTPWT target time (min:sec)</b> | <b>Estimated aerobic capacity* (mlsO<sub>2</sub>/kg/min)</b> | <b>Recommended standard (level : shuttle)</b> |
|---------------------------------|------------------------------------|--|---|
| Marine police unit              | 10:00                              | 35   | 5 : 4   |
| CBRN                            | 10:00                              | 35   | 5 : 4   |
| Method of entry                 | 10:00                              | 35   | 5 : 4   |
| Dog handler                     | 10:20                              | 36   | 5 : 7   |
| Mounted branch                  | 10:20                              | 36   | 5 : 7   |
| Police cyclist                  | 10:20                              | 36   | 5 : 8   |
| Police support unit             | 10:40                              | 37   | 6 : 3   |
| Air support                     | 10:40                              | 37   | 6 : 4   |
| Police divers                   | 11:20                              | 39   | 6 : 8   |
| Marine police (tactical skills) | 11:40                              | 40   | 7 : 2   |
| Authorised firearms officer     | 12:00                              | 41   | 7 : 6   |

\* Aerobic capacity must be at least this value in order to attain the CTWTP target time and/or 15-metre shuttle run level.

**WARNING – HEALTH & SAFETY: All officers undertaking the tests should not run beyond the endurance pass standards outlined.**

## 5. The Chester Treadmill Police Run Test

The **CTPRT** is a performance test specifically developed for the police service of England and Wales as an alternative test to the 15-metre shuttle run. It is used to determine whether an officer is able to achieve the minimum recommended aerobic fitness standards of **46mlsO<sub>2</sub>/kg/min** (ARV) or **51mlsO<sub>2</sub>/kg/min** (DIAFO) (College of Policing 2014). After a suitable warm up, the officer is required to run at a brisk pace (**10.4km/hr**) on the treadmill. Every two minutes, the gradient is raised by a designated amount. On satisfactory completion of **8 minutes**, the officer will have achieved the minimum recommended fitness standard for ARV. DIAFO are required to complete the full **10-minute** test.

### CTPRT target times for specialist posts, estimated aerobic capacity and recommended shuttle run level

| Specialist post | CTPRT target time (min:sec) | Estimated aerobic capacity* (mlsO <sub>2</sub> /kg/min) | Recommended standard (level : shuttle) |
|-----------------|-----------------------------|---|--|
| ARV             | 8:00                        | 46  | 9:4                                    |
| DIAFO           | 10:00                       | 51  | 10:5                                   |

\* Aerobic capacity must be at least this value in order to attain the CTPRT target time and/or 15-metre shuttle run level

The research study concluded that:

- the CTPRT has been shown to be a valid and highly reliable test for ensuring the ARV officer or DIAFO has achieved the minimum aerobic capacity standard required for operational duties as detailed by Brewer (2010)
- the CTPWT has been shown to be a valid and highly reliable test for ensuring the police officer has achieved the minimum aerobic capacity standard required for operational duties as detailed by Brewer (2010).

### **Equipment required for testing**

In order for forces to implement the above tests, they will be required to procure a high-quality motorised and calibrated treadmill capable of operating accurately at 10.4km/hr and at inclines up to a maximum gradient of 15 per cent and a rating of perceived exertion (RPE) chart (Borg 1982). Both are readily available to all forces.

### **Pre-test health screening**

It is imperative that there are **no medical contraindications** to the subject undertaking the CTPWT.

Most individuals don't require a medical check-up before taking this test or starting regular, moderate exercise. If there are any doubts about the individual's suitability to partake in moderately vigorous physical activity, however, then please advise them to consult a doctor – and do not conduct the treadmill test.

### **Pre-test conditions**

- The subject should not have eaten, smoked, exercised or drunk tea or coffee for at least two hours before the test.
- The subject should not be recovering from illness or have a cold, or be taking beta blocker drugs which will depress heart rate scores.
- The subject should be wearing comfortable clothing suitable for running.
- The room should be quiet, well-ventilated and between 18-20 degrees Celsius.
- The subject should not have undertaken any heavy physical exercise for at least 24 hours before the test.
- An appropriate risk assessment has been completed and approved.



## 6. Administering the Chester Treadmill Police Walk Test

**The test administrator should be well-trained, knowledgeable and experienced in conducting the test. They should be totally familiar with operating the treadmill and in explaining to a subject the use of the RPE chart. If at any time during the test, the subject shows signs of over-tiredness, discomfort or dizziness and/or reports an RPE of 18+, then the test should be stopped and the subject allowed to recover and cool down.**

Ensure that:

- there are no medical contraindications to performing the CTPWT
- the test environment is suitable
- the treadmill has been carefully calibrated and you (the tester) are a skilled operator
- the RPE chart is clearly visible for the subject
- the subject is appropriately dressed, wearing suitable footwear and is fully able to walk confidently on the treadmill at a brisk pace with increasing gradients
- the subject has a suitable warm up with mobility, stretching and limbering floor exercises of low to moderate intensity.

Inform the subject what they will be required to do, explaining the importance of good treadmill walking technique.

Following a suitable warm up, ask the subject to stand on the treadmill. Attach safety cord as appropriate.

Start the treadmill and slowly increase the speed to a comfortable walking pace (around 4-5km/hr) at 0 per cent gradient for a 2-minute familiarisation. This also acts as a further cardiovascular warm-up period. Increase the speed to **6.0km/hr** and **start the test**.

**Level 1:** 0-2 minutes at 0 per cent gradient. At the end of the level, check RPE is less than 18 and, if so, continue to level 2, increasing the gradient to 3 per cent.

**Level 2:** 2-4 minutes at 3 per cent gradient. At the end of the level, check RPE is less than 18 and, if so, continue to level 3, increasing the gradient to 6 per cent.

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**Level 3:** 4-6 minutes at 6 per cent gradient. At the end of the level, check RPE is less than 18 and shows no signs of distress or discomfort. If so, continue to level 4, increasing the gradient to 9 per cent.

**Level 4:** 6-8 minutes at 9 per cent gradient. At the end of the level, check RPE is less than 18 and subject shows no signs of distress or discomfort. If so, continue to level 5, increasing the gradient to 12 per cent.

**Level 5:** 8-10 minutes at 12 per cent gradient. On successful completion of level 5 (10 minutes), the subject will have reached an aerobic fitness standard of 35mlsO<sub>2</sub>/kg/min. At the end of the level, check RPE is less than 18 and subject shows no signs of distress. If so, continue to level 6, increasing the gradient to 15 per cent.

**Level 6:** 10-12 minutes at 15 per cent gradient. For those in specialist posts required to pass at a higher level of fitness, the test may be continued for up to a further 2 minutes.

**Cool down:** At the end of the test, lower the gradient to 0 per cent, reduce the treadmill speed to a gentle stroll (around 4-5km/hr) and ask the subject to continue walking until they feel recovered and can hold a conversation comfortably – normally around 4-5 minutes. Also, ensure that the subject further cools down with some gentle limbering and stretching floor exercises.

## 7. Chester Treadmill Police Run Test

### Description

The CTPRT (Sykes 2015) is a modification of the original Chester Treadmill Test (Sykes 2007), which was designed for use by the UK fire service as an alternative to the 20-metre shuttle run and Chester Step Test.

The CTPRT is a performance test specifically developed for the police service of England and Wales as an alternative test to the 15-metre shuttle run to determine whether an officer is able to achieve the minimum recommended aerobic fitness standards of **46mlsO<sub>2</sub>/kg/min** (ARV) or **51mlsO<sub>2</sub>/kg/min** (DIAFO) (College of Policing 2014). After a suitable warm up, the officer is required to run at a brisk pace (**10.4km/hr**) on the treadmill. Every two minutes, the gradient is raised by a designated amount (see table 1). On satisfactory completion of **eight minutes**, the officer will have achieved the minimum recommended fitness standard for ARV. DIAFO are required to complete the full **10-minute** test.

## Equipment

- High-quality motorised and calibrated treadmill, capable of operating accurately at **10.4km/hr** and at inclines up to a maximum gradient of **15 per cent**.
- An RPE chart (Borg 1982) (figure 1).

### Pre-test health screening

It is imperative that there are **no medical contraindications** to the subject undertaking the CTPRT. Most individuals don't require a medical check-up before taking this test or starting regular, moderate exercise. If there are any doubts about the individual's suitability to partake in moderately vigorous physical activity, however, then please advise them to consult a doctor – and do not conduct the treadmill test.

### Warning

There is always the slight risk that taking any form of exercise may reveal a health defect or weakness that may lead to injury, illness or even fatality. If you have any doubts at all about the subject's ability to safely undertake the CTPRT or to participate in a programme of regular exercise, then do not conduct the test and refer them to the occupational health department or their GP for appropriate advice.

For further information on pre-participation health screening, see the American College of Sports Medicine (ACSM 2013).

### Pre-test conditions

- The subject should not have eaten, smoked, exercised or drunk tea or coffee for at least two hours before the test.
- The subject should not be recovering from illness or have a cold, or be taking beta blocker drugs which will depress heart rate scores.
- The subject should be wearing loose-fitting, comfortable clothing.
- The room should be quiet, well-ventilated and between 18-20 degrees Celsius.
- The subject should not have undertaken any heavy physical exercise for at least 24 hours before the test.
- An appropriate risk assessment has been completed and approved.

## 8. Administering the Chester Treadmill Police Run Test

**The test administrator should be well-trained, knowledgeable and experienced in conducting the test. They should be totally familiar with operating the treadmill and in explaining to a subject the use of the RPE chart. If at any time during the test, the subject shows signs of over-tiredness, discomfort or dizziness and/or reports an RPE of 18+, then the test should be stopped and the subject allowed to recover and cool down.**

1. Ensure that:
  - there are no medical contraindications to performing the CTPRT
  - the test environment is suitable
  - the treadmill has been carefully calibrated and you (the tester) are a skilled operator
  - the RPE chart is clearly visible for the subject
  - the subject is appropriately dressed, wearing suitable footwear and is fully able to run confidently on the treadmill at a brisk pace with increasing gradients
  - the subject has a suitable warm up with mobility, stretching and limbering floor exercises of low to moderate intensity.
2. Inform the subject what they will be required to do, explaining the importance of good treadmill running technique.
3. Following a suitable warm up, ask the subject to stand on the treadmill. Attach safety cord as appropriate.
4. Start the treadmill and slowly increase the speed to a slow jog of 8km/hr at 0 per cent gradient for one minute, then to 9km/hr for a further minute, giving a 2-minute treadmill familiarisation which also acts as a further cardiovascular warm-up period.
5. **Start the test**, gradually increasing the speed over 30 seconds to **10.4km/hr**.
6. **Level 1:** 0-2 minutes at 0 per cent gradient. At the end of the level, check RPE is less than 18 and, if so, continue to level 2, increasing the gradient to 2 per cent.
7. **Level 2:** 2-4 minutes at 2 per cent gradient. At the end of the level, check RPE is less than 18 and, if so, continue to level 3, increasing the gradient to 4 per cent.
8. **Level 3:** 4-6 minutes at 4 per cent gradient. At the end of the level, check RPE is less than 18 and, if so, continue to level 4, increasing the gradient to 5 per cent.

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9. **Level 4:** 6-8 minutes at 5 per cent gradient. On successful completion of level 4, the subject will have reached the minimum aerobic fitness standard for **ARV (46mlsO<sub>2</sub>/kg/min)**. At the end of the level, check RPE is less than 18 and subject shows no signs of discomfort or distress. If so, continue to level 5, increasing the gradient to 8 per cent.
10. **Level 5:** 8-10 minutes at 8 per cent gradient. On successful completion of level 5, the subject will have reached the minimum aerobic fitness standard for **DIAFO (51mlsO<sub>2</sub>/kg/min)**.
11. **Cool down:** At the end of the test, lower the gradient to 0 per cent, reduce the treadmill speed to a gentle stroll (around 4-5km/hr) and ask the subject to continue walking until they feel recovered and can hold a conversation comfortably – normally around 4-5 minutes. Also, ensure that the subject further cools down with some gentle limbering and stretching floor exercises.

### CTPRT target times for ARV and DIAFO

| Specialist posts | CTPRT recommended target times (min:sec) | Estimated aerobic capacity (mlsO <sub>2</sub> /kg/min) |
|------------------|--|--|
| ARV              | 8:00                                     | 46   |
| DIAFO            | 10:00                                    | 51   |

**ARV:** Successful completion of the 8-minute test indicates that aerobic capacity must be at least 46mlsO<sub>2</sub>/kg/min.

**DIAFO:** Successful completion of the 10-minute test indicates that aerobic capacity must be at least 51mlsO<sub>2</sub>/kg/min.

As with the 15-metre shuttle run, the CTPRT could be a near-maximal (or even maximal) test for some individuals and the tester should take care to ensure that, if the subject is unable to keep up with the work-rate and becomes overly distressed, the test should be stopped and the subject allowed to cool down.

**Technical note:** The test has been designed specifically to identify officers capable of achieving the minimum aerobic fitness standard of 46 (ARV) and 51mlsO<sub>2</sub>/kg/min (DIAFO),

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as required by the police service of England and Wales. This is not a test to determine a subject's actual aerobic capacity (VO2Max). It merely indicates that the value is equal to that required for related operational activities.

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Should an actual assessment of aerobic capacity and fitness level also be required, this may be estimated from the heart rate responses during the test using the bespoke CTPRT aerobic fitness calculator software package ([www.cartwrightfitness.co.uk](http://www.cartwrightfitness.co.uk)).

### Summary of CTPRT treadmill protocol and oxygen cost at each level

| Level | Time (mins) | Treadmill gradient | O <sub>2</sub> cost (mlsO <sub>2</sub> /kg/min) |
|-------|-------------|--------------------|---|
| 1     | 0-2         | 0%                 | 38  |
| 2     | 2-4         | 2%                 | 41  |
| 3     | 4-6         | 4%                 | 44  |
| 4     | 6-8         | 5%                 | 46  |
| 5     | 8-10        | 8%                 | 51  |

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**CTPRT/shuttle run comparisons:** See table 3 for ARV and DIAFO CTPRT target times and equivalent 15-metre shuttle run levels.

**CTPRT target times for specialist posts, estimated aerobic capacity and recommended shuttle run level**

| <b>Specialist post</b> | <b>CTPRT target time (min:sec)</b> | <b>Estimated aerobic capacity* (mlsO<sub>2</sub>/kg/min)</b> | <b>Recommended standard (level : shuttle)</b> |
|------------------------|------------------------------------|--|---|
| ARV                    | 8:00                               | 46   | 9:4   |
| DIAFO                  | 10:00                              | 51   | 10:5  |

\* Aerobic capacity must be at least this value in order to attain the CTPRT target time and/or 15-metre shuttle run level.

## 9. Rating of perceived exertion chart (Borg 1982)

|           |                           |
|-----------|---------------------------|
| <b>6</b>  | <b>NO EXERTION AT ALL</b> |
| <b>7</b>  | <b>EXTREMELY LIGHT</b>    |
| <b>8</b>  |                           |
| <b>9</b>  | <b>VERY LIGHT</b>         |
| <b>10</b> |                           |
| <b>11</b> | <b>LIGHT</b>              |
| <b>12</b> |                           |
| <b>13</b> | <b>SOMEWHAT HARD</b>      |
| <b>14</b> |                           |
| <b>15</b> | <b>HARD (HEAVY)</b>       |
| <b>16</b> |                           |
| <b>17</b> | <b>VERY HARD</b>          |
| <b>18</b> |                           |
| <b>19</b> | <b>EXTREMELY HARD</b>     |
| <b>20</b> | <b>MAXIMAL EXERTION</b>   |