# Unit R042 – Applying principles of training

## Fitness testing and training programmes

## *Instructions and answers for teachers*

***These instructions should accompany the OCR resource 'Fitness testing and training programmes' activity*** *which supports OCR Cambridge Nationals in Sport Science.*


Sport Science Level 1/2
Lesson Element

Unit R042 – Applying principles of training

Fitness testing and training programmes

These tasks will give you the opportunity to explore the different methods of fitness testing in both theoretical and practical settings, looking objectively at the validity and reliability of a range of fitness tests. You will also think about the information you will need in order to plan an effective fitness training programme before setting goals which are SMART.

Task 1 – Fitness testing

Having taken part in a range of different fitness tests in a practical setting, now complete the table below.

| Fitness component | Test | Description of test | Diagram (if needed) |
|---|---|---|---|
| Agility | | | |
| Balance | | | |
| Flexibility | | | |
| Power | | | |

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**The Activity:**

This resource comprises of 5 tasks.

These tasks will give learners the opportunity to explore the different methods of fitness testing in both theoretical and practical settings, looking objectively at the validity and reliability of a range of fitness tests. Learners will also think about the information they will need in order to plan an effective fitness training programme before setting goals which are SMART.


*This activity offers an opportunity for English skills development.*

**Associated materials:**

'Fitness testing and training programmes' Lesson Element learner activity sheet.

**Suggested timings:**

**Task 1:** 1 hour **Task 2:** 30 minutes **Task 3:** 30 minutes

**Task 4:** 45 minutes **Task 5**: 45 minutes

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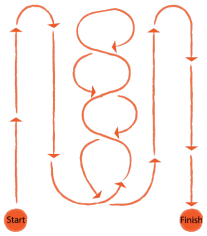
## Task 1 – Fitness testing

Having taken part in a range of different fitness tests in a practical setting, learners can complete the table below.

| Fitness component | Test | Description of test | Diagram (if needed) |
|---|---|---|---|
| Agility | Agility run test | The participant starts lying face down on the floor at the start cone. On 'go' get up and run the course as fast as possible. Time stops when participant passes the 'finish' mark. |   |
| Balance | Standing stork test | Participant stands on right leg, left leg bent with sole of left foot against right knee. Stand on tiptoe and hold for as long as possible. The repeat on other leg. Add both times together for total. | |
| Flexibility | Sit and reach | Tape a ruler onto the side of a bench or box so that it sticks over by 15cm. Participant sits on floor with feet flat against box or bench. Keeping knees straight, bend forwards and stretch hands as far along rules as possible. Record measurement. Do 3 times and take an average. | |
| Power | Standing long jump | From standing still, participant jumps with both feet together as far forward as possible. Repeat 3 times and take longest measurement. | |
| Speed* | 30 meter sprint | Mark area 60m long, put cones halfway across the area at the 30m mark. On 'go' the participant sprints from one end, start stopwatch when they pass the 30m mark and stop when they cross finish line. | |

| Fitness component | Test | Description of test | Diagram (if needed) |
|---|---|---|---|
| Body composition* | Skinfold test | Using skinfold callipers, take measurements at triceps, subscapular, biceps and suprailiac. Take measurements 3 times and find average. | |
| Cardiovascular endurance | Multi-stage fitness test | Mark out a 20m area with cones at either end. Follow the instructions on the Multi-stage fitness test CD. Record the level reached. | |
| Muscular endurance | Sit ups test | Assume basic sit up position with a partner holding feet. See how many sit ups you can do in 30 seconds. | |
| Strength | Grip strength test | Squeeze the hand grip dynamometer as hard as possible. Repeat 3 times and take the highest reading. | |
| Reaction time* | Ruler drop | A partner holds a 30cm ruler at the 30cm end. The participant has their thumb and forefinger covering – but not touching – the zero. Without warning the partner drops the ruler and the participant must catch it between thumb and forefinger as quickly as possible. The number that the ruler is caught at is recorded. Repeat 3 times and take the shortest reading. | |

*Some of the Fitness components listed in table above, go beyond the requirements of the Specification for Cambridge Nationals in Sport Science, however we feel it is a valuable addition to this Lesson Element.

## Task 2 – Validity and reliability

It is important that learners are aware of any potential issues regarding the validity and reliability of fitness tests so that inaccuracies can be mitigated.

In the table below learners can suggest ways in which the validity and/or reliability might be compromised and steps that can be taken to ensure that all tests are as valid and reliable as possible.
Sport or activity:

| Potential ways in which the validity and/or reliability of the test may be compromised | Steps that can be taken to ensure tests are as valid and reliable as possible |
|---|---|
| Temperature and humidity.<br>The amount of sleep the participant had prior to testing.<br>The participant's state of mind.<br>Medication the participant may be taking.<br>The time of day.<br>The time since the participant last ate.<br>The test environment.<br>The participant's prior test knowledge or experience.<br>How much effort the participant puts in.<br>Accuracy of the measurements.<br>The personality and skill of the tester.<br>The participant's clothing and shoes. | Use competent and well trained testers.<br>Equipment should be standardised and calibrated regularly.<br>Each test should measure only one factor.<br>Care should be taken to make sure the participant understands exactly what is required of them.<br>The test procedure should be standardised in terms of administration, organisation and environmental conditions.<br>The test should be designed so that it can easily be repeated by another trained tester.<br>The test should be fully documented so that it can be administered in exactly the same way the next time it is conducted. |

## Task 3 – Maximal and sub-maximal

Fitness tests can be described as 'maximal' and 'sub-maximal'. Learners can record below what these terms mean, the pros and cons of each type of test and can give examples of both types of test.

Fitness tests which can be described as 'maximal;' are tests that:

| |
|---|
| require 'all out' effort from the participant |

Maximal fitness tests include:

| |
|---|
| Multi-stage fitness test and Cooper 12 minute run |

There are pros and cons of maximal fitness tests, these include**:**

| | |
|---|---|
| Pros – | provides an accurate reflection of participant's peak fitness levels (peak heart rate, VO2 max etc.) |
| Cons – | takes longer and is uncomfortable/not pleasant for participants |

Fitness tests which can be described as 'sub-maximal' are tests that:

| |
|---|
| do not require 'all out' effort from the participant |

Sub-maximal fitness tests include:

| |
|---|
| Harvard step test |

There are pros and cons of sub-maximal fitness tests, these include:

| | |
|---|---|
| Pros – | takes less time and is more pleasant for participants |
| Cons – | Do not provide an accurate reflection of the participants' true fitness levels and can be less valid/reliable |

## Task 4 – Fitness programme questionnaire

Before planning a fitness training programme for a participant, learners will need to consider a range of different information.

Learners can list below the questions they will need to ask (and get answers for) and the reasons they need to know this piece of information before they plan a fitness training session.

| Question/information to find out | Why this information is important |
|---|---|
| What are your goals/aims? | This impacts the contents and focus of the activities in the programme. |
| Do you have any medical concerns/issues that might impact your ability to exercise? | Does a doctor's advice need to be sought? Certain exercises might need to be avoided. |
| What type of sport/physical activities do you enjoy doing? | Adherence will be increased if the participant is enjoying the sessions. |
| What type of sport/physical activities do you not enjoy doing? | Adherence will decrease if the participant is not enjoying the sessions. |
| What time can you commit to the fitness programme? (how often/for how long etc.) | Need to know how often and for how long in order to plan the programme. |
| Need to carry out baseline fitness tests relevant to aims and focus of programme | In order to see if any progress has been made during/after the programme. |
| | |

## Task 5 – Setting SMART goals

Learners can now set goals and objectives for their fitness training programme. It can be useful to think of them in terms of the mnemonic SMART.

Goals and objectives should be:

**Specific** – state exactly what is hoped to be achieved.

**Measurable** – able to track progress and measure results.

**Agreed** – all parties should agree on what is to be achieved.

**Realistic** – should be challenging but achievable.

**Time bound** – there must be a deadline to work towards.

In the table below learners can record the SMART goals for their fitness training programme.

| | |
|---|---|
| **Specific** | |
| **Measurable** | |
| **Agreed** | |
| **Realistic** | |
| **Time bound** | |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