Lakelands Academy
Physical Education Department

Knowledge Organiser BTEC PE - Component 3 LAB

Investigate fitness testing to determine fitness levels

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Physical Education Department

Reasons for Fitness Testing

1. **Gives baseline data:** If an athlete completes a test at the beginning and then at the end of their training programme, they can monitor their performance and see if they are improving.
2. **Design training programmes:** Athletes and coaches can use the results of fitness test and plan training programmes specifically to improve their weaknesses.
3. **Determine if training programmes are working:** Tests can be used as a mid-point in training programmes.
4. **Results can give a performer something to aim for:** They can provide goal setting aims and give them motivation to improve.

Pre-Test Procedures

1. **Calibration of equipment:** Equipment should be checked for wear and tear and damage, measuring must be completed with a tape measure and secured do the distance doesn't change throughout the test.
2. **Complete informed consent:** Informed consent is completed by the participant and allows them to understand what and how they will be tested and know they can remove themselves from the test at any time.
3. **Complete physical activity readiness questionnaire (par-q):** This is completed to ensure the participant is fit and healthy to take part in the test.
4. **Participant pre fitness test check e.g. Prior exercise participation:** This includes checking jewellery, clothing, trainers and completing a warm up.

Validity of Results

1. Validity refers to whether a test measures what it aims to measure. If we are aiming to test flexibility however when we are performing the sit and reach and bending our legs the test becomes invalid.
2. Often in our tests to ensure it is valid we perform the test three times to see if we are getting similar results each time.
3. For example the standing long jump can be completed three times and the highest score taken. However this cannot happen with the copper run due to the length of the test and the impact it will have on the reliability of the test as the participant will be tired during the second and third time.

Reliability of Test

Factors affecting reliability:

1. **Calibration of equipment:** For example if person administering the test has not measured out the 400m Cooper run correctly, when the athlete use the nominal data their scores will be incorrect.
2. **Motivation of the participant:** If the participant is unwell or isn't trying their best they will not receive accurate results.
3. **Conditions of the testing environment (inside versus outside conditions)** If the ground is wet when testing agility it will be have for the participant to change direction without falling over.
4. **Experience of the person administering the test – compliance with standardised test procedure.** If the administrator doesn't start or stop the stopwatch at the correct time the results will be incorrect.

Practicality

1. **Cost:** Specialist equipment and facility hire can be expensive to carry out the tests.
2. **Time taken to perform the test:** Tests like the cooper run and multi stage fitness test can take a long time to perform.
3. **Time taken to set up the test:** Measuring for test such as the Cooper run, Sprint test and Illinois test can be difficult and time consuming.
4. **Time taken to analyse data:** Collecting and analysing large cohorts of data can be very time consuming and if you are conducting more than one type of test.
5. **Number of participants:** Some tests require specific equipment and if you have 30 participants to complete the test however on one piece of equipment this is not practical.

Interpretation of Fitness Test Results

In your exam you will need the following skills

1. **To be able to compare results to normative published data:** normative data is results taken from people of similar ages and finding out what the average norm is for that age and sex.

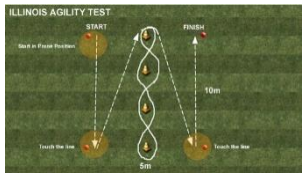
For Example normative data for the cooper run, female and a range of ages. Not all tests have normative data is they aren't common/ popular tests.

Age	Excellent	Above Average	Average	Below Average	Poor
13-14	>2000m	1900-2000m	1600-1899m	1500-1599m	<1500m
15-16	>2100m	2000-2100m	1700-1999m	1600-1699m	<1600m
17-20	>2300m	2100-2300m	1800-2099m	1700-1799m	<1700m
20-29	>2700m	2200-2700m	1800-2199m	1500-1799m	<1500m
30-39	>2500m	2000-2500m	1700-1999m	1400-1699m	<1400m
40-49	>2300m	1900-2300m	1500-1899m	1200-1499m	<1200m
>50	>2200m	1700-2200m	1400-1699m	1100-1399m	<1100m

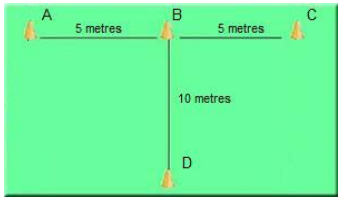
2. **Analyse and evaluate test results**: Understanding where an athlete's success and weaknesses are based on the results of their tests.
3. **Make recommendations for improvements to fitness performer based on test results**: This could be a specific type of training which is linked to the component of fitness they are weak in.

Fitness test methods for components of **skill-related fitness**

Agility



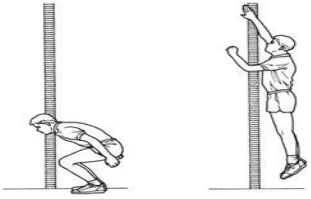
Illinois agility run test



T Test

The Illinois and T test are used to examine the participant's ability to **change direction** at **speed** and remain in an **upright position**.

Power

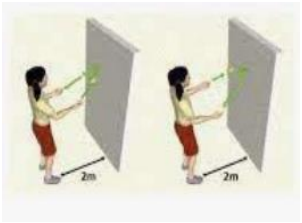


Vertical Jump Test

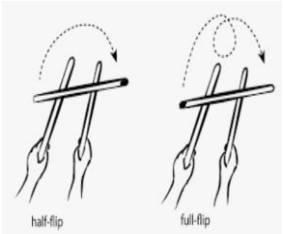
Standing Long/Broad Jump

Vertical and Broad jump tests are used to examine the **explosive movements** of the legs and arms by measuring the height achieved by these explosive movements.

Coordination



Alternate-Hand Wall-Toss test

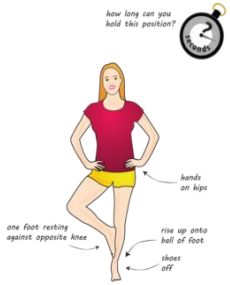


Stick Flip Coordination Test

These tests are used to examine the participant's ability to **move two or more body parts** at the **same time smoothly** and **efficiently**, to allow effective application of technique, such as catching the ball or stick.

Balance

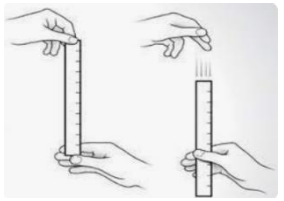
Y Balance Test



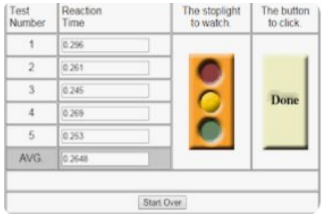
Stork Stand Test

These tests are used to examine the participant's ability to maintain **centre of mass over a base of support,** useful to maintain positions in performance sports **(static balance)** or when on the move in any other sporting situation **(dynamic balance).**

Reaction Time



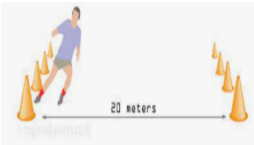
Ruler Drop Test



Online Reaction Time Test

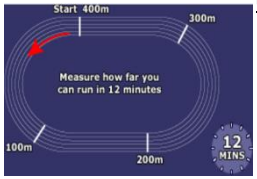
These test are used to examine how the **quickly** the athlete can **respond** to a **stimulus.** In one test the ruler is the stimulus and the quick the athlete catches the ruler the better. The stimulus in the other test are the lights and the computer examines the speed in which the athlete presses the button.

Aerobic Endurance



The Multi Stage Fitness Test (Bleep Test)

The 12 Minute Cooper Run



Harvard Step Test

The Yo-Yo Test

These tests are using to examine the ability of the cardiovascular system to **provide** the **working muscles** with **nutrients and oxygen** over a **long period of time.**

Fitness test methods for components of **physical fitness.**

Muscular Endurance

1 Minute Press Up

1 Minute Sit Up

Plank Test

Each test examines how many times the different **muscle** groups can **contract** in a length of **time.**

Muscular Strength

Grip Dynamometer

1 Max Rep

This tests are done to examine the **amount of force** that can be applied against a **resistance.** For example, the dynamometer tests the strength of the bicep. The 1 Max rep tests the maximum weight lifted in one repetition.

Flexibility

Calf Muscle Flexibility Test

Sit and Reach Test

Shoulder Flexibility Test

Each of these tests are used to examine the **range of movement** at a **joint**, Shoulder, Hip and Ankle Joint.

There is a range of tests as different sports require flexibility in different joints in the body.

Body Composition

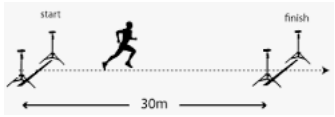
Waist to Hip Ratio

Body Mass Index (BMI)

These tests are used to examine the **ratio** (percentage) of **fat mass** compared to **fat free mass** (bone, muscle and organs) in the body. Different sports required different body composition for success.

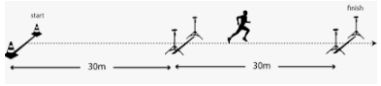
Bioelectrical Impedance Analysis (BIA)

Speed



30m Flying Sprint

30m Sprint



Two tests which both examine **distance divided** by **time** to reduce time taken to move the body or body part. In this case the **fast movements** of the **arms** and the **legs**.

The **30m sprint** is from a standing start.

The **fly sprint** test the athlete at full speed