

# Unit 2: Fitness in Sport: Components of Fitness

## Cardiovascular Endurance:

**Ability to maintain activity over a sustained period of time (without tiring)**

**Test:** Multi stage fitness test/cooper 12 minute run.

**Examples:** Cardiovascular endurance is particularly important in distance running, triathlon, playing a whole football or netball match without tiring.

## Muscular Endurance:

**Ability of a muscle or group of muscles to sustain exercise over a period of time**

**Test:** 1 minute sit up/press up test

**Examples:** A rower repeatedly pulling their oar against the water to propel the boat towards the line; a cyclist's leg muscles turning the pedals; in the gym, completing 40 sit-ups.

## Speed:

**The ability to move all or part of the body as quickly as possible.**

**Test:** 30m/50/ sprint

**Examples:** Speed is important in sprinting, speed skating, sprint cycling and sports such as tennis when a player has to move forward quickly from the baseline to reach a drop shot close to the net.

## Strength:

**Maximum force exerted by a muscle or group in a single contraction**

**Test:** 1 rep max/hand grip test

**Examples:** A weightlifter performing a clean and jerk; putting the shot; a boxer punching a right hook; a rugby player in a scrum, pushing against the opposition pack.

## Power:

**Ability to apply both strength and speed in one action**

**Test:** Vertical Jump

**Examples:** Breaking through a tackle in rugby; jumping for a ball in basketball.

## Flexibility:

**The range of movement (ROM) at a joint. It is the ability to move the joints through their full range of movement.**

**Test:** Sit and Reach/hyperextension test

**Examples:** Flexibility is important in sports such as dance and gymnastics as it allows participants to perform complex moves efficiently and improves the aesthetic quality of the performance. Good flexibility also helps to prevent injury.

## Agility

*The ability to change direction or position of the body at speed*

**Test:** Illinois Agility Test

**Examples:** Most sports, except static ones, require agility. Rugby players need agility to side-step when they are running with the ball; netballers need agility to dodge into space for a pass or stick with the player they are marking.

## Co-ordination:

*The ability to use two or more parts of the body together, efficiently and accurately.*

**Test:** Alternate hand throw

**Examples:** Hand-eye coordination is important in sports that require precision. E.g. being able to hit a ball in tennis. Limb coordination allows you to be able to walk, run, dance, kick and swim.

## Body Composition:

*refers primarily to the distribution of muscle and fat in the body.*

**Test:** Skin Fold Callipers

### **Key Fact:**

Male average body fat 13-16%  
Obese over 25%

Female average body fat 20-24%  
Obese over 35%

## Validity and Reliability of Testing

### **Validity:**

Validity is whether the tests actually measure what they set out to. It is quite possible that a test can be very reliable but not valid.

### **Reliability:**

The conditions for the test must always be the same so that it is likely the same results will be produced.

## Reaction Time:

*is the time taken to move in response to a stimulus.*

**Test:** Ruler Drop Test

**Examples:** In lots of sports, you need to have fast reactions. The stimulus that you respond to could be, e.g. a starter gun, a pass in football, or a serve in tennis.

## Balance:

*Ability to maintain stability and an awareness of body position*

**Test:** Stork Stand Test

**Examples:** Any sport that involves changing direction quickly, like football or basketball, required good balance. Also, gymnastics.

## Why fitness testing is important and the role it plays in the improvement of performance?

The reasons for testing include:

- Important information for the coach
- Team selection
- Strengths and weaknesses
- Goal setting/target setting
- Baseline
- Comparison against normative data