

## Health:

State of complete mental, physical and social wellbeing and not merely the absence of disease or infirmity



## Relationship between health and fitness:

- Ill health can negatively affect fitness as the individual may be too unwell to train.
- Increases in fitness can positively affect health and well-being e.g. you may be less likely to get ill, you may feel better about yourself; **HOWEVER**, an increase in fitness cannot prevent illness.



## Fitness:

Ability to meet the demands of the environment

## Components of Fitness:

- 1) **Cardiovascular endurance:** the ability of the heart and lungs to supply oxygen to the working muscles.
- 2) **Agility:** The ability to move and change direction quickly (at speed) whilst maintaining control.
- 3) **Balance:** maintaining the centre of mass over the base of support.
- 4) **Co-ordination:** the ability to use different (two or more) parts of the body together smoothly and efficiently.
- 5) **Flexibility:** the range of movement possible at a joint.
- 6) **Muscular endurance:** Ability of a muscle or muscle group to undergo repeated contractions avoiding fatigue.
- 7) **Power / Explosive strength:** the product of strength and speed (strength x speed).
- 8) **Reaction Time:** the time taken to initiate a response to a stimulus.
- 9) **Speed:** the maximum rate at which an individual is able to perform a movement or cover a distance in a period of time (speed = distance divided by time)
- 10) **Strength:** the ability to overcome a resistance
  - a) **Maximal** – the largest force possible in a single maximal contraction
  - b) **Dynamic** – repeated contractions
  - c) **Explosive** – (see POWER)
  - d) **Static** – the ability to hold a body part in a static position.

## When asked to explain remember to give specific sporting examples:

- Power is needed in football to kick the ball harder when shooting so it is more difficult for the goalkeeper to save.
- A gymnast uses power gain height when jumping. This will give them more time to complete the move.
- Cardiovascular fitness is important in hockey as each game lasts a long time therefore they need to be able to transport oxygen around the body effectively for the duration of the match. This will help them maintain the quality of performance throughout game.

## Reasons for Fitness Testing:

- To identify strengths and weaknesses, this allows them to work on weaknesses
- To allow you to plan your training
- To show a starting level of fitness
- To monitor improvement
- To monitor the success of a training programme
- To compare against normative data
- To motivate and set goals

## Limitations with Fitness Testing:

- Tests are often not sports specific (give an example)
- They do not replicate the movements in a sport
- They don't replicate the high pressure environment of sporting activities/non competitive
- Some are not reliable
- Some are maximal which means the performer is required to try their best
- Protocols **MUST** be followed or else the tests are invalid

## Components of Fitness and Fitness Testing

### Fitness tests:

- **Agility = Illinois agility run:** Cones arranged in 10m x 5 m rectangle with 4 cones down the middle, performer starts face down, performer runs round the cones as fast as possible, performer is timed, compare results to national averages.
- **Balance = Stork Balance Test:** start balanced on 2 feet, hands placed on hip, one leg lifted so that the toes of the lifted leg touch the inside of the planted leg, timekeeper tells the individual to raise the heel on the planted leg and starts the stopwatch, individual balances for as long as possible, timer stops clock when the individual loses their balance, compare to national averages.
- **Cardiovascular endurance = multi-stage fitness test:** Cones set out 20m apart, test gets progressively harder, individual runs 20m in time with 'bleeps', time between bleeps gets shorter as levels increase, performer runs for as long as possible, score recorded as a level when performer finishes e.g. level 8 bleep 4, compare to national averages.
- **Co-ordination = wall toss test:** tennis ball starts in one hand, stand 2m from wall, on 'GO' the performer works for 30 seconds, performer throws ball against wall and catches it with opposite hand, if ball is dropped the time continues, compare to national averages.
- **Flexibility = sit and reach test:** Remove shoes, sit on floor with feet flat against sit and reach board, performers legs must be straight, performer pushes forward slider as far as possible, score is recorded in centimetres, compare to national averages.
- **Muscular endurance = abdominal curl conditioning test:** Performer lies on mat in a sit-up position, partner holds ankles, performer sits up on bleep and down on bleep (staying in time), the test gets progressively harder as bleeps get faster, score is how many sit ups you did, compare to national averages
- **Power / Explosive strength = vertical jump test:** with flat feet, stand and push the wall ruler with fingertips as high as possible, apply chalk to finger tips, from a standing position jump as high as possible marking the ruler with chalk, record height jumped, compare to national averages.
- **Reaction time = ruler drop test:** Place thumb and index finger together of dominant hand, partner holds metre ruler above, without warning partner drops ruler, individual being tested must catch the ruler, measure in 'cm', compare to national averages
- **Maximal Strength test = one rep max:** lift weight once using the correct technique, if completed attempt a heavier weight until heaviest weight is discovered, take 1 rep max weight and divide it by body weight, compare to national averages.
- **Strength = handgrip dynamometer test:** hold dynamometer in dominate hand, bend elbow at 90 degrees and place against body, squeeze with maximum effort, record best score, compare to national averages.
- **Speed = 30m speed test:** set up two cones 30m apart, use a flying start, individual is timed running as fast as they can for 30m, compare to national averages.