Paper 1

Physical Training

Health Fitness Components of Fitness Agility Balance Coordination Power Reaction Time Speed Strength Flexibility
Cardiovascular Endurance Muscular Endurance Quantitative Data Qualitative Data Illinois Agility Test Stork Balance Test
Multi Stage Fitness Test Wall Toss Test Sit and Reach Test Sit Up Bleep Test Vertical Jump Test Ruler Drop Test One Rep Max Test
30m Sprint Test Handgrip Dynamometer Test Principles of Training Specificity Progressive Overload Reversibility Tedium
Types of Training Circuit Continuous Interval Fartlek Static stretching Weight Plyometric High Altitude
Training Thresholds Aerobic Anaerobic Preventing Injury Training Seasons Warming Up Cooling Down

Health and Fitness

HEALTH: A state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity

FITNESS: The ability to meet, or cope with, the d of the environment

Reasons for Fitness Testing

Identifying strengths and /or weaknesses to inform training requirements	Establishing a starting level of fitness and monitoring improvement
Motivation	Providing variety

Fitness Testing

Fitness Testing Limitations

Tests are often **general, not sport specific**. E.g. Sit and Reach Test measures hamstring flexibility but if you're a swimmer, upper body flexibility is also important

Test don't replicate movements used in most sports. E.g. Stork Balance Test involves a pose that doesn't feature in many sports that require good balance

Tests are **conducted in isolation**, with few distractions, and **don't replicate competitive conditions**. External factors may affect your ability to perform at your best in a competition

Many **do not use direct measuring/sub-maximal** testing and are, therefore, inaccurate. E.g. Vertical jump needs maximum force which is difficult to ensure maximum effort at all times

Some tests **need quite high levels of motivation** and results can be unreliable if the person isn't fully committed. E.g. Multi Stage Fitness Test requires you to work until you are exhausted

There is **questionable reliability** because they don't consistently give the same result when they are repeated. E.g. Muscles become fatigued as you complete the One Rep Max test

A fitness test must be carried out using the **correct procedure** to ensure it is valid; to ensure it measures exactly what it sets out to measure

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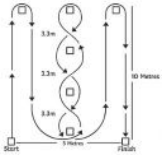
Fitness Testing Continued…

Fitness Tests

Illinois Agility Test

Measures **agility**. Follow the arrows when running around the cones



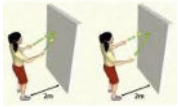
Stork Balance Test

Measures **balance**. Should hold the pose for as long as possible

Multi Stage Fitness Test

Measures **CV endurance**. Reach the cones by the time the bleep sounds

Wall Toss Test



Measures **coordination**. Throw the ball against the wall, alternating hands

Sit and Reach Test

Measures **flexibility**. Keep your legs flat on the floor and stretch forwards gently, with no bounce!

Sit-Up Bleep Test

Measures **muscular endurance**. Only correctly performed sit ups can be counted. Sit up in time with the bleeps

Vertical Jump Test

Measures **power & explosive strength**. Jump as high as you can, measure the distance between your standing and jump reach

Ruler Drop Test

Measures **reaction time**. Catch the ruler as soon as it is dropped.

One Rep Max Test

Measures **maximal strength**. Perform on bench press with a weight that requires your maximum strength

30m Sprint Test

Measures **speed**. Run as as fast as you can between the start and finish line

Handgrip Dynamometer Test

Measures **strength**. Grip as hard as you can on the dynamometer and take the highest reading out of 3 attempts

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Fitness Testing Continued…

Qualitative and Quantitative Data

Qualitative: Data that focuses on understanding things; it involves descriptions about opinions

Quantitative: Data that focuses on measuring things and involves numbers

The Principle of Overload: FITT

The FITT principle is used to increase the amount of work the body does, in order to achieve overload:

FREQUENCY: How often you train
Increasing from 1 to 2 sessions

INTENSITY: How hard you train
Increase the size of weights lifted

TIME: How long you train for
Increase the length of time training

TYPE: The specific method of training
Switching between methods of training

Principles of Training

Specificity

Making training specific to the sport or activity being played or performed, to the movements, muscles and energy systems which are used in that sport or activity

Gymnasts incorporate flexibility training into their training programme

Progressive Overload

Gradually increasing the amount of overload so that fitness gains occur, without the potential for injury. Increasing the stress placed on the body in training. It makes the body work harder than normal so it adapts

Weights can be easily adjusted to increase the intensity of an exercise and enable progressive overload

Reversibility

Fitness levels are lost when you stop exercising. Gains made through training are lost quicker than they are achieved, it can take up to 3 times longer than the break from training to return to the same level of fitness

Sustaining an injury that stops you training is the most common way for reversibility to occur

Tedium

The boredom that can occur from training the same way every time. Variety is needed in a training programme to keep motivation levels high

Doing the same drills at a training session every week can lead to tedium

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All performers need a good level of all ten components of fitness, but different sports require different ones.

Components of Fitness

Agility -  Ability to move and change direction quickly, at speed, while maintaining control Games players to dodge an opponent

Balance -  Ability to keep the body stable by maintaining the centre of mass over the base of support. Two types: static and dynamic Holding balances

Coordination -  Ability to use two or more different parts of the body together, smoothly and efficiently Tennis serve needs hands, feet, head working together

Power -  The product of strength and speed. Power = strength x speed. Referred to as 'explosive strength' or 'anaerobic power' To get enough height in HJ

Reaction Time -  Time taken to initiate a response to a stimulus Reacting to a shot on goal

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/Time Speed to win

Strength -  Ability to overcome resistance. Four types: maximal, static, explosive and dynamic Lifting the heaviest weights in a single contraction

Flexibility -  Range of movement possible at a joint Dancers need high levels of flexibility in order to twist their bodies into positions required in a routine

Cardiovascular Endurance -  Ability of the heart and lungs to supply oxygen to the working muscles. Referred to as 'aerobic power' Working aerobically

Muscular Endurance -  Ability of a muscle or muscle group to undergo repeated contractions, avoiding fatigue. Routines without stopping due to fatigue

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Physical Training

Types of Training

Circuit Training

- Series of exercises, called stations, completed one after the other with a rest in between
- Completion of all the exercise is one circuit

All components of fitness trained

Majority of games players, and is often used by footballers and rugby players

Continuous Training

- Working for a sustained period of time without rest
- Must maintain a steady pace, in the aerobic zone for 20mins

Cardiovascular Endurance

Endurance athletes, including distance cyclists and marathon runners

Interval Training (HIIT)

- Periods of work followed by periods of rest
- HIIT: short periods of intense work in the anaerobic zone and active recovery in the aerobic zone

Cardiovascular Endurance

Long interval HIIT - games players and middle-distance athletes. Short interval HIIT - racket sports players and sprinters

Fartlek Training

- Swedish word for 'speed play'
- Periods of fast work with intermittent periods of slower work
- Over different terrain

Cardiovascular Endurance

Experienced endurance athletes, especially marathon runners

Static Stretching

- Holding a stretch still for up to 30secs
- Muscles contract isometrically because they stay the same length

Flexibility

All sports as a warm up. Gymnastics, dance, ballet and trampolining

Weight Training

- Using weights or resistance to cause muscle adaptations
- 2 different types: free weights and resistance machines

Strength, power, muscular endurance

Sports requiring strength, power and muscular endurance, e.g. rugby, boxing and rock climbing

Plyometric Training

- High-impact exercises that teach the muscles to perform their maximum contractions faster, to be more powerful

Power

Sports requiring power, including sprinting, high jump and javelin

High Altitude Training

- A form of aerobic training
- Carried out at high altitude, anywhere over 2000m above sea level
- To increase red blood cells

Cardiovascular Endurance

Endurance athletes and others who have to work aerobically, such as games players

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Training Thresholds

The upper and lower boundaries of the aerobic training zone and the anaerobic training zone are called training thresholds.

You need to calculate different percentages of your maximum heart rate in order to be able to work in a zone

Aerobic Training Zone:
60-80% of your MHR

Anaerobic Training Zone:
80-90% of your MHR

Your heart must be beating between these values in order to make fitness gains

Warming Up and Cooling Down

Warm Up

4 Stages:
1) Pulse raising
2) Stretching
3) Skills Practice
4) Mental Preparation

Raises body temperature

Increases O2 delivery

Increases range of movement

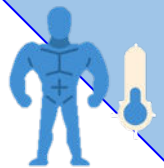
Reduces heart and breathing rate

Cool Down

2 Stages:

1) Pulse lowering

2) Stretching



Removes waste products and helps avoid DOMS

Preventing Injury

- Match type of training and intensity to performer's individual needs
- Don't over train
- Wear appropriate clothing and footwear
- Stretch, but do not overstretch or bounce your stretches
- Use taping and bracing, where appropriate
- Always use the correct technique
- Keep hydrated
- Make time for rest and recovery
- Always warm up and cool down

Training Seasons

Pre-Season:
- General aerobic fitness
- General strength and muscular endurance
- Training CoF that are essential for success in their sport
- Practising the skills and techniques that prepares them for success in the season ahead

Competitive/peak/ Playing Season:
- Concentrate on maintaining fitness levels throughout the season, when they are playing in matches or competing every week
- Must avoid training too much, as this can cause fatigue
- Practise set plays

Post-season/closed season/transition:
- Rest and recuperate; only taking part in light aerobic training to maintain a level of general fitness
- At the end of the closed season, performers should be fully rested and ready for pre-season training