



The PE Classroom

Physical Training

Part 1

Edexcel GCSE PE

Principles of Training

The **FITT** Principle makes sure **Progressive Overload** occurs

- Frequency** → How often training is
- Intensity** → How 'hard' training is
- Time** → How long training is
- Type** → Type of training used

Progressive Overload - gradually increasing training load to safely make steady improvements

Specificity - training matches requirements of an activity

Rest & Recovery - ensures the body repairs and recuperates

Principles of Training:

1. Individual Needs
2. Specificity
3. Progressive Overload
4. FITT Principle
5. Rest and Recovery
6. Overtraining
7. Reversibility
8. Training Thresholds

Planning a Personal Exercise Programme (PEP)

- Targeted Component of Fitness
- Current Fitness Level
- Area of sport targeted
- Facilities and equipment



Overtraining - Training beyond your ability to recover can cause illness and drops in fitness

Reversibility - fitness is gradually lost when one stops training:

Injury Demotivation
Illness Off-season Fatigue

Training Thresholds

- Aerobic Training Threshold → 60-80% of Max HR
- Anaerobic Training Threshold → 80-90% of Max HR

Maximum Heart Rate = 220 - Age

Muscular Endurance
• Below 70% of 1RM
• 3 sets of 12-15

Strength/ Power
• Above 70% of 1RM
• 3 sets of 4-8 reps

Long Term Effects of Exercise

Cardiovascular System



Musculo-skeletal System

- ↑ bone density
- ↑ strength of tendons & ligaments
- ↑ Muscle hypertrophy

Respiratory System

- ↑ lung capacity/volume
- ↑ strength of intercostal muscles
- ↑ vital capacity
- ↑ strength of diaphragm
- ↑ number of alveoli



Components of Fitness & Fitness Tests



Training Methods



Fitness Classes

1. Yoga
2. Pilates
3. Spin
4. Aerobics
5. Body Pump



REMEMBER

- Training Purpose?
- Training Thresholds?
- Rest & Recovery?
- Training Targets?
- Training Zones?

The PE Classroom



Components of Fitness

- Health** – A state of complete emotional, physical and social well-being and not merely the absence of disease and infirmity.
- Exercise** – Physical activity that maintains or improves health and fitness.
- Fitness** – The ability to meet the demands of the environment.
- Performance** – How well a task is completed.
- Cardiovascular Fitness** – The ability to exercise the whole body for long periods of time.
- Muscular Strength** – Your ability to exert force against a resistance.
- Muscular Endurance** – Your ability to use voluntary muscles repeatedly without getting tired.
- Flexibility** – The range of motion of your joints or the ability of your joints to move freely.
- Body Composition** – The percentage of body weight that is muscle, fat or bone.
- Agility** – The ability to control the movement of the whole body and change position quickly.
- Balance** – Being able to keep the body stable, while at rest or in motion.
- Co-ordination** – The ability to use two or more body parts together.
- Power** – The ability to undertake strength performances quickly (strength x speed).
- Reaction Time** – The time between the presentation of a stimulus and the onset of movement.
- Speed** – The rate at which an individual can perform a movement or cover a distance.



Optimise Training & Prevent Injury



- PAR-Q (Physical Activity Readiness Questionnaire)** – A questionnaire that can be used by anyone who is planning to start an exercise routine.
- RICE** – Used to treat minor injuries. Rest, Ice, Compression, Elevation.
- Warm-up** – a period or act of preparation for a match, performance, or exercise session, involving gentle exercise or practice.
- Cool-Down** – to continue to exercise gently to prevent injury after you have done more difficult exercises.
- Fracture** – A crack or break to a bone.
- Dislocation** – Injury or disability caused when the normal position of a joint is disturbed.
- Sprain** – Ligament damage.
- Strain** – Muscle pull or tear.



Performance Enhancing Drugs



- Anabolic Steroids** – Mimic the male sex hormone testosterone and promote muscle and bone growth.
- Beta Blockers** – Used to control the heart rate and have a calming and relaxing effect.
- Diuretics** – Elevate the rate of urine production.
- Narcotic Analgesics** – A Painkilling, or pain relieving drug.
- Peptide Hormones** – Adding hormones into the blood stream e.g. EPO.
- Growth Hormones** – Adding hormones into the blood stream in order to improve muscle growth.
- Stimulants** – Have an effect on the central nervous system, therefore increasing alertness.
- Blood Doping** – Artificially increasing the number of red blood cells in the blood stream.



Key Terms - Physical Training

Principles of Training



- Individual Needs** – The needs of an individual could alter due to their fitness level, weight, gender or previous injuries.
- Specificity** – The particular requirements of an activity.
- Progressive Overload** – Gradually increasing the amount of overload to improve fitness but without injury.
- FITT Principle** – Training principle linked to progressive overload, based on frequency, intensity, time and type.
- Overtraining** – Training beyond your body's ability to recover.
- Reversibility** – Gradually losing fitness instead of progressing.
- Target Zone** – The range within which an individual needs to work.
- Training Threshold** – A safe and effective level to train at.
- Karvonen Formula** – A test to find out an individual's optimum heart rate.
- Resting Heart Rate** – The amount of times your heart beats per minute at rest (normal RHR is 60-100 BPM).
- Maximum Heart Rate** – Your highest possible heart rate. $220 - \text{Age}$.



Training Methods

- Continuous Training** – Steady training with no rest periods.
- Interval Training** – High intensity periods of activity followed by defined periods of rest.
- Fartlek Training** – Training where the speed and terrain are constantly changing.
- Circuit Training** – Involves a number of exercises arranged within 'stations'.
- Weight/Resistance Training** – Uses progressive resistance to build on muscle strength or muscle endurance.
- Plyometrics** – Exercises where muscles use maximum force in short intervals of time.
- Aerobics** – Mainly aerobic exercise to music, covering a variety of exercises.
- Body Pump** – Exercise to music normally using low weights with many repetitions and a variety of exercises, such as lunges and squats.
- Pilates** – A series of core stability exercises focussing on the quality of the exercise.
- Yoga** – Ancient form of exercise that focuses on posture, poses and breathing.
- Spinning** – Aerobic and anaerobic cycling on a stationary bike to music.



Evaluate - this is when you are required to provide a reasoned argument. Much like 'discuss' you are expected to give both points of view, consider 'strengths v weaknesses' or 'advantages v disadvantages'. However you must then provide a conclusion in which you make a decision on the most appropriate option and justify your choice.