



### 1.1.1 Healthy Active Lifestyle

Healthy Active Lifestyle: 'a lifestyle that contributes to physical, mental, social wellbeing and includes regular exercise and physical activity'

In order to be healthy your lifestyle needs to combine these three factors:

Physical - increase fitness

Mental- relieve stress

Social-make friends



### 1.1.1 Benefits of taking part in physical activity

S-Self esteem

M-Mental challenge

E-Enjoyment

R-Relieve stress

F-Fitness

I-Improve health

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### 1.1.1 Reasons for taking part in physical activity

Reasons = PACCS

Physical Challenge- set a goal to achieve

Aesthetic Appreciation - recognition of beauty

Competition - motivates

Cooperation - work as a team

Social mixing - improve communication skills

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### 1.1.2 Influences on taking part

Cultural - age, race, disability, gender

Health and wellbeing - illness and health problems

Image - fashion, media coverage,

People - family, peers, role models

Socio-economic - cost, status

Resources- availability, location, access, time

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### 1.1.2 Opportunities for getting involved in sport

Government Initiatives - 2 hours of PE a week

PESSCL - to increase opportunities for 5-16yrs

Sport England - stay, start, and succeed

Youth Sport Trust - top link /top programmes

Sainsbury Active Kids programme -vouchers



### 1.1.2 Sports Participation Pyramid



### 1.1.3 Health, Exercise, Fitness and Performance

**Fitness** - ability to meet the demands of the environment

**Health** - a state of complete mental, physical, social wellbeing and not merely the absence of disease and infirmity.

**Exercise** - a form of physical activity which maintains or improves health and/or physical fitness

**Performance** - How well a task is completed



### 1.1.3 The six components of skill-related fitness

**Coordination** - the ability to use two or more body parts together

**Reaction Time** - time between the stimulus and the movement

**Agility** - the ability to change direction quickly

**Balance** - the ability to retain the centre of mass of the body

**Speed** -to cover a distance in a period of time

**Power** - Strength x Speed

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### 1.1.3 The five components of health related fitness

**Body Composition** - the % of body weight that is fat, muscle and bone

**Muscular Endurance**- the ability to use voluntary muscles many times without tiring

**Muscular Strength**- the amount of force a muscle can exert against a resistance

**Flexibility**- the range of movement around a joint

**Cardiovascular Endurance** - the ability to exercise the entire body for long periods of time

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### 1.1.4 The principles of Training

**Individual Needs** - matching training to the requirements of an individual

**Specificity** - matching training to the requirements of an activity

**Progressive overload**-gradually increasing the amount of overload so as to gain fitness (through FITT principles)

**Rest and Recovery- REST**- the period of time allocated to recovery.

**RECOVERY** - the time required to repair damage to the body caused by training competition

**Reversibility** - fitness is reduced due to injury, lack of training, out of season

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### 1.1.4 Goal Setting



**Specific**-knowing what the goal is

**Measurable** - it's easy to know when a goal has been achieved

**Achievable**- can have a degree of success

**Realistic**- can the goal be carried out effectively

**Time Bound**- how long to achieve goal

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### 1.1.4 FITT Principles



To **progressively Overload** you must Increase

**Frequency** - how often you train.

**Intensity** - how hard you train.

**Time**- how long each training session lasts.

**Type**- Method of training chosen to achieve your goal

(Circuit, Continuous, Interval, Weight, Cross, Fartlek)

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### 1.1.4 The Exercise Session



**Warm up** - pulse raising, stretching, skill

**Main Activity** - skill, drills, game

**Cool-Down** - jogging, stretching

**Aerobic**- With Oxygen, Marathon runner

**Anaerobic** - Without oxygen, Sprinter - lactic acid is a bi-product

### 1.1.4 Analysing Training Sessions



**Heart Rate** - the number of times the heart beats per minute

**Resting Heart Rate** - how many times the heart beats at rest.

**Working Heart Rate** - measurement of heart rate during or immediately after exercise

**Maximum Heart Rate** - 220-Age

**Target Heart Rate or target Zone**- 60-80% of MHR

**Recovery Rate**- how long it takes for a person's heart rate to return to resting level.



### 1.1.4 Methods of training

**Interval** - Alternating periods of high intensity work, with rest. (SPEED)

**Continuous** - Working for a sustained time (15-20 mins) without resting. (CVE)

**Fartlek** - Varying the speed and terrain during your training. You may run, walk, cycle or even ski. (CVE, ME, SPEED, AGILITY)

**Circuit**- Involves exercising over a series of stations for equal amounts of time or repetitions. (CVE, ME, MS, POWER)

**Weight** - Muscular strength (high weight, low rep)  
Muscular endurance (low weight, high reps)  
Power = strength x speed

**Cross** - Using a variety of training methods in one session.



### 1.1.4 Assessing your fitness levels

**PAR-Q** Physical Activity Readiness Questionnaire

**Health Related Fitness Tests:** Cooper 12 minute Run, Hand Grip Strength, Sit and Reach, Harvard Step Test, Bleep test

**Skill Related Fitness Tests:** Illinois Agility Test, Standing Stork Test, Sergeant Jump Test, Standing Broad Jump, Ruler Drop Test, 30 Metre Sprint, Three Ball Juggle



### 1.1.5 Links between Diet, Rest, Work and Exercise

DIET - wrong diet can lead to health problems. Diet needs to allow for energy for exercise.

REST - needs to be set aside from work to allow recovery and make you less prone to illness



### 1.1.5 DIET

**MACRO NUTRIENTS**

Carbohydrates - energy

Fats - second energy store

Protein - growth and repair

**MICRO NUTRIENTS**

Vitamins - D

Minerals - Iron and Calcium

**OTHER**

Fibre and Water



### 1.1.5 Dietary intake and performance

Carbo-loading - mainly for endurance athletes.

How does it change: Before During After ??

**BLOOD SHUNTING** - redistribution of blood during exercise to the muscles.

Leave 2-3 hrs after a meal before exercise.



### 1.2.1 Different Body Types

**Somatotypes:**

(BIG End) Endomorph -fatness- sumo wrestler

Ectomorph - thinness - long distance runner

Mesomorph - Muscularity - 100m sprint

**OPTIMUM WEIGHT** - most favourable

Factors which affect optimum weight are: Height, Gender, Bone Structure and Muscle Girth



### 1.2.1 Weight Related Conditions

**Anorexic**- loss of appetite



**Obese** - people who are very over fat



**Over fat**- having body fat in excess of normal



**Overweight**- having weight in excess of normal



**Underweight** - weighing less than is normal, healthy or injured



### 1.2.1 Performance Enhancing Drugs

Beta Blockers-controls heart rate / calming effect - Archery

Anabolic Steroids-increase muscle growth / train harder - Sprinter

Diuretics-loss of weight-Jockey-dehydration

Stimulants-increase alertness- Start of a race

Narcotic analgesics-painkiller- Can make injury worse

**Peptide Hormones**-increase red blood cells-long distance athletes includes EPO

**BAND SP**



### 1.2.1 Risk Assessment

Warming Up

Check equipment and facilities

Protective equipment and clothing

Adherence to rules

Footwear

**Balanced Competition** - to make competition safe and fair by age, gender, weight, handicap, grading/skill level.



### 1.2.1 Recreational Drugs

**Smoking effects:**

Increase risk of coronary heart disease / Increased chance of lung cancer

Increased chance of asthma / negative effect on aerobic fitness / raises blood pressure

**Alcohol effects:**

Slows down reactions

Raises blood pressure

Long term liver damage



### 1.2.2 Cardiovascular System

#### Long term effects of exercise:

- Lower resting heart rate
- Increased cardiac output
- Increased stroke volume
- Faster recovery
- Increased size heart
- Lower blood pressure



### 1.2.2 Cardiovascular System

#### Immediate effects of exercise:

- Increased heart rate
- Increased Blood Pressure
- Increase systolic blood pressure



### 1.2.2 Cardiovascular System



**Cardiac Output**-the amount of blood ejected from the heart in one minute

$$\text{Stroke Volume} \times \text{Heart Rate} = \text{Cardiac Output}$$

**Stroke Volume**-the volume of blood pumped out of the heart by each ventricle in one contraction.

**Heart Rate** - the amount of times the heart beats in one minute

**Blood Pressure**- the force exerted by circulating blood on walls of the blood vessels. (systolic and diastolic)



### 1.2.2 Cardiovascular System

**REST**- the period of time allocated to recovery

- allows heart to grow in size and thickness
- capillaries increase

**EXAMPLE**- two days training followed by a days' rest



### 1.2.2 Cardiovascular System

#### Diet

Fat and cholesterol deposit's on the inside the walls of arteries. People who suffer from this are:

- short of breath
- suffer from chest pains (angina)
- Increased blood pressure due to narrowing of arteries



### 1.2.2 Cardiovascular System

#### Diet

**HDL (good cholesterol)**-high density lipoprotein (contains more protein than fat)

**LDL (bad cholesterol)** -Contains mainly fat



### 1.2.2 Cardiovascular System

#### Recreational Drugs

**Smoking:** Lowers HDL, Increase chances of blood clot resulting in heart attack or stroke, increase blood pressure

**Alcohol:** in moderation, is thought to increase HDL and therefore lowers blood pressure.



### 1.2.3 Respiratory System

#### Immediate effects of exercise:

- Increased breathing rate
- Increased depth of breathing

**Oxygen debt**- The amount of extra O<sub>2</sub> consumed during recovery after strenuous exercise, compared to the amount consumed at rest.



### 1.2.3 Respiratory System

#### Long term effects of exercise:

Increased lung capacity

Increased Vital capacity- the greatest amount of air that can be made to pass into and out of the lungs by the most forceful inspiration and expiration

Increased number of alveoli

Lungs become more efficient at delivering O<sub>2</sub> and removing CO<sub>2</sub>.



### 1.2.3 Respiratory System

#### Effects of Smoking on the alveoli:

They become less stretchy and efficient, and then it becomes difficult to get oxygen in and carbon dioxide out.

Smoking increases chances of lung cancer.



### 1.2.4 Muscular System

#### Immediate effects of exercise:

Increased fuel/energy demands - as exercise increases the body demands more O<sub>2</sub> and glycogen.

Lactic Acid- begins to build up.

Isometric - Muscle contraction which results in increased tension but the length does not alter.

Isotonic (bubbles in tonic which move!) - Muscle contraction that results in limb movement



### 1.2.4 Muscular System

#### Long term effects of exercise:

Increased muscle size - Hypertrophy

Increased Muscular Strength

Increased Muscular Endurance

Increased power



### 1.2.4 Muscular System

#### Potential Injuries

Muscle Strain / pulls

Muscle Atrophy (smaller)

Treatment: RICE

Rest, Ice, Compression, Elevation



### 1.2.4 Muscular System

**REST:** allows the muscles to repair after the damage caused by exercise.

**DIET:** For muscles to recover they need protein to repair and rebuild. After exercise they require carbohydrates to build up the energy stores again.

**DRUGS:** use of steroids to aid muscle building, recovery and to train harder and for longer.



### 1.2.4 Muscular System

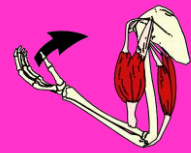
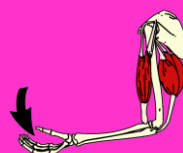
Deltoid  
Trapezius  
Latissimus Dorsi  
Pectorals  
Biceps  
Triceps  
Abdominals  
Quadriceps  
Hamstrings  
Gluteals  
Gastrocnemius



### 1.2.4 Muscular System

#### Agonist and Antagonist Pairs

Muscle work in pairs. As one muscle contracts (agonist) the other relaxes (antagonist) e.g. triceps/biceps





### 1.2.5 Skeletal System

Long term effects of exercise:

- Increased bone density
- Increased strength of ligaments and tendons

Ligaments = bone to bone

Tendons = muscle to bone



### 1.2.5 Skeletal System

Functions of skeletal:

**Movement** - the bones, joints and muscles work together to move

**Support** - vertebrae supports the head

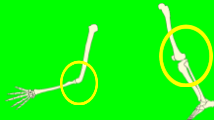
**Protection** - cranium protects the brain



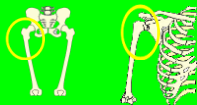
### 1.2.5 Skeletal System

Ranges of movement:

**Hinge joint** at elbow and knee: flexion, extension



**Ball and Socket joint** at the shoulder: flexion, extension, rotation, abduction, adduction



### 1.2.5 Skeletal System

**Importance of weight-bearing exercise**

Exercises such as walking, running, tennis and aerobics can prevent osteoporosis

**Diet**

Calcium and vitamin D strengthens bones.



### 1.2.5 Skeletal System

**Injuries:**

Fractures: compound, greenstick, simple, stress

Joint injuries: tennis elbow, golfer's elbow, dislocation, sprain, torn cartilage

Treatment: **RICE** : rest, ice, compression, elevation

### 1.2.5 Skeletal System

**Movements at a joint:**

**Flexion, Extension, Adduction, Abduction, Rotation**

