GCSE PE

CORE KNOWLEDGE QUIZ BOOKLET 2019-20

ANSWERS

Exam Topic 1 – Fitness and Body Systems

1hr 45mins 90 Marks

Wednesday 13th May 2020 – PM

Sections to revise:

Functions of the musculo-skeletal system
Location of 20 bones
Classification of bones
Classification of joints
Range of movements at joints
Role of ligaments, tendons & cartilage at joints
Classification of muscles
Location of 12 muscles
Movements produced at each muscle
Antagonistic pairs
Muscle fibre types
Short term effect of exercise on the musculo-skeletal system
Long term effect of exercise on the musculo-skeletal system
How the musculo-skeletal system allows participation in sport

Functions of the cardiovascular system
Labelling of the heart
Blood flow
Structure of arteries, veins and capillaries
Vascular shunting, vasoconstriction & vasodilation
Components of blood and function of each
Composition of air
Labelling of the respiratory system
Gases exchange
Aerobic and anaerobic exercise
Short term effect of exercise on the cardio-respiratory system
Long term effect of exercise on the cardio-respiratory system
How the cardio-respiratory system allows participation in sport

Lever systems
Mechanical advantage & disadvantage
Planes of movement

Components of fitness
Fitness testing
Principles of training
Methods of training
Warm-Up & cool-Down
PAR-Q

Injury Prevention
Sporting injuries & treatment

Drugs

Definitions

Musculo-Skeletal System

Skeletal System

What are the 5 functions of the skeletal system?

Protection of vital organs
Muscle Attachment
Joints for Movement
Storing Calcium & Phosphorus – Minerals vital for developing and maintaining the strong and healthy bones needed for exercise. Phosphorus also helps to reduce muscle pain after a hard work-out.
Red & White Blood Cell Production – (produced in bone marrow) RBC carry oxygen, WBC – fight infection

*TIP: **J**UST **P**UT **M**AIN **S**KELETAL **P**EOPLE*

Can you point to the 20 bones in your body you need to know for your exam?

TIPS:
Humerous is attached to funny bone,
*Tibia is on-**T**op of fibula,*
*Ulna is **U**nderneath radius*
*Carpals– **C**uffs*
*Tarsals – **T**oes*

What are the 4 classification of bones? Function of each classification?

Long – Main movements of the body e.g. humerous, femur, tibia etc.
Short – Weight bearing and used for fine delicate movements e.g. carpels and tarsals
Irregular – Protection and muscle attachment e.g. vertebrae and patella
Flat – Protection and muscle attachment e.g. cranium, ribs, pelvis

What classification does each bone belong too?

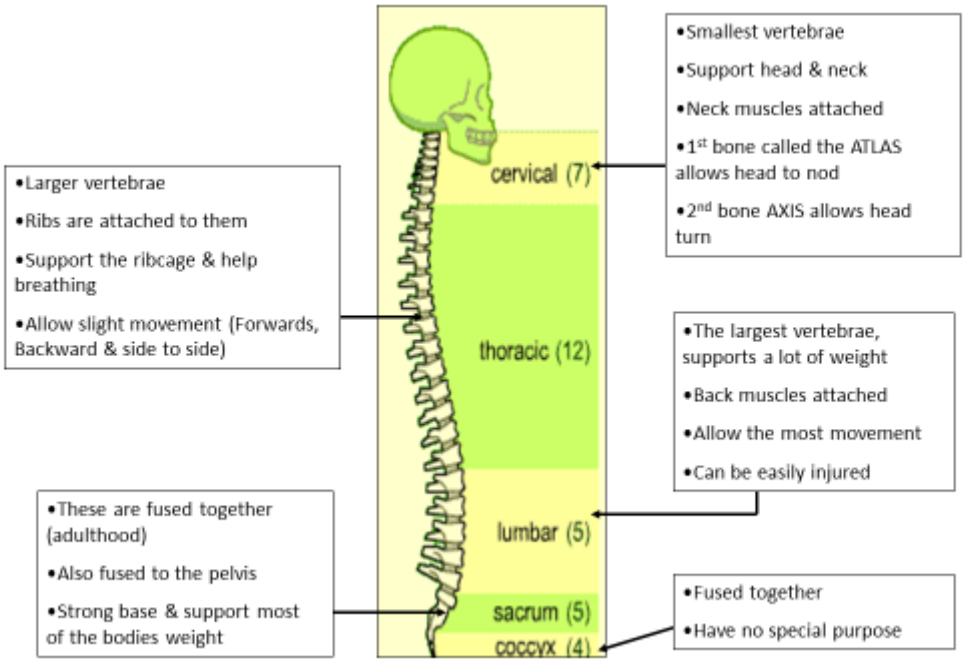
Bone	Bone Type
Cranium	Flat
Clavicle	Flat
Scapula	Flat
Sternum	Flat
Pelvis	Flat
Ribs	Flat
Femur	Long
Phalanges	Long
Metatarsals	Long
Metacarpals	Long
Fibula	Long
Tibia	Long
Ulna	Long
Radius	Long
Humerous	Long
Tarsals	Short
Carpals	Short
Vertabrae Column	Irregular
Patella	Irregular

What are the regions of the vertebrae column and how many bones are in each?

Cervical, Thoracic, Lumber, Sacral, Coccyx
7 12 5 5 4

TIP: **C**ome **T**o **L**ondon **S**ee **C**helsea or **C**ute **T**eddies **L**ove **S**ome **C**uddles

What are the functions of each region of the vertebrae column?



What does the vertebrae column protect?

Spinal cord – central nervous system

What is a joint?

A joint is where 2 or more bones meet

What is the role of the 3 connective tissues at a joint?

Tendons – muscle to bone
Ligament – bone to bone
Cartilage – end of bones to prevent arthritis and lubricate the joint

Can you give examples of the 4 types of synovial joints?

Ball & Socket – Hip & Shoulder
Hinge – Knee & Elbow
Pivot – Neck (atlas and axis)
Condyloid – Wrist

Can you name the 8 range of movements possible at synovial joints and give a sporting example?

Flexion (Forwards) – *"A bending movement that decreases the angle between body parts*"
Extension (Backwards) - *"A straightening movement that increases the angle between body parts"*
Abduction (Away) - "A movement that pulls away from the midline of the body"
Adduction (Add) - *"A movement that pulls towards the midline of the body"*
Circumduction (Circle) - "Moving in a circular or conical shape*"*
Rotation (Twist) - "Movement around a single axis or pivot point*"*
Dorsi-Flexion - "Planting or flexing the toes up, closer to the shin*"*
Plantar-Flexion - "Extending or pointing the toes down, away from the shin*"*

Which movement is possible at each synovial joint?

Ball & Socket – all but dorsi-flexion & plantar flexion
Hinge – flexion and extension
Pivot – rotation
Condyloid – all but rotation, plantar-flexion & dorsi-flexion

Musculo-Skeletal System

Muscular System

What are the 3 types of muscle?

Cardiac (heart), Involuntary (intercostal, diaphragm), Voluntary (quadriceps, hamstring, biceps)

What are the 3 functions of the voluntary muscular system?

Movement and flexibility
Posture
Define body shape

Can you point to the 12 voluntary muscles in your body you need to know for your exam?

Deltoid
Pectoralis major
Latissimus Dorsi
External Obliques
Biceps
Triceps
Gastrocnemius
Tibialis Anterior
Gluteal
Hip Flexors
Quadriceps
Hamstrings

Can you describe the movement produced by each muscle?

Deltoid – all movements at the shoulder
Pectorialis major – Adduction of the arm at the shoulder
Latissimus Dorsi – Adduction and extension of the arm at the shoulder
External Obliques – Pull chest downwards, Flex and rotate the spinal column
Biceps – Flexion of the arm at elbow
Triceps – Extension of the arm at the elbow
Gastrocnemius – Planting the toes into the ground (plantar-flexion)
Tibialis Anterior – Pulling toes up towards shin (dorsi-flexion)
Gluteal – Adduct and extend the leg at the hip
Hip Flexors - Flexion of the leg at the hip
Quadriceps – Extension of the leg at the knee External Obliques – Flexion of the truck,
Hamstrings – Flexion of the leg at the knee

Can you name 4 antagonistic pairs and explain how they work together?

Bicep & Tricep
Quadricep & Hamstring
Gastrocnemius & Tibialis Anterior
Gluteal & Hip Flexors

The contracting muscle is called the agonist or prime mover
The relaxed muscle is called the antagonist

What are the 3 muscle fibres types and give an example of which sports they would suit?

Type 1 – long distance running (5,000m)
Type 11a – middle distance runner (800m)
Type 11x – 100m sprinters

Can you name 1 negative and 1 positive for the 3 different muscle fibre types?

Type 1:
Positives: High fatigue resistance - high myoglobin & mitochondria content
Negatives: Low speed & force of contraction

Type 11a:
Positives: High speed & force of contraction, strength & speed endurance
Negatives: Not as fatigue resistant as type I & not as powerful as Type IIx

Type 11x:
Positives: Very high speed of force & contraction
Negatives: Very low fatigue resistance - high myoglobin & mitochondria content

Can you name the 3 short term effects of exercise on muscles?

Muscle fatigue
Cramp
Lactate accumulation – leading to Delayed Onset of Muscular Soreness (DOMS)

Can you name the 3 long terms effects of exercise on the musculo-skeletal system?

Increased bone density – prevents osteoporosis (if weight wearing exercise)
Increased strength of ligaments and tendons
Muscular Hypertrophy – leading to increased muscular strength, muscular endurance and power

What is also required for these long term effects of exercise to occur?

Rest & Recovery

What is weight bearing exercise?

Any movement where you are moving your own body weight e.g. running, jumping, press-ups, chin-ups

Why is diet so important to the skeletal system?

Calcium – increase in bone density preventing osteoporosis
Vitamin D – helps absorb calcium
Smoking and drinking too much has a toxic effects on bones

What are Myofibrils?

Strands that grab onto one another to pull & make muscle contracts

What are Myoglobin?

Helps deliver O2 to muscle cells

What are Mitochondria?

Structures in muscle cells where respiration happens

Cardio-Respiratory System

Cardiovascular System

What is the cardio-respiratory system?

The interaction of the heart and lungs to supply oxygen to the muscles and organs.

What is the cardiovascular system made up of?

Heart, blood and blood vessels

What are the functions of the cardiovascular system?

Transportation - of oxygen, carbon dioxide and nutrients (glucose)

Clotting – Platelets form clots, which seal open wounds. Guarding the body against infection and excessive bleeding.

Regulation of body temperature – Vasodilation increases blood flow towards the skin to be cooled. Body temperature needs to stay around 37C. (hypothermia and heat exhaustion)

What is blood pressure?

The pressure of the blood against the walls of the blood vessels, especially the arteries.

Can you explain the difference between Systolic and Diastolic pressure? (DR SC)

Systole: The phase of the heartbeat when the muscle contracts and pumps blood chambers into the arteries.

Diastolic: The phase of the heartbeat when the heart muscle relaxes and lets the chambers fill with blood.

What are the four valves in the heart? (Tri before you Bi)

Tricuspid, Bicuspid, Aortic and Pulmonary

Which two are also known as the semi-lunar valves?

Aortic and Pulmonary

Which is the differences between the inferior and superior vena cava?

Inferior returns de-oxygenated blood to the heart from below the heart.
Superior returns de-oxygenated blood to the heart from above the heart.

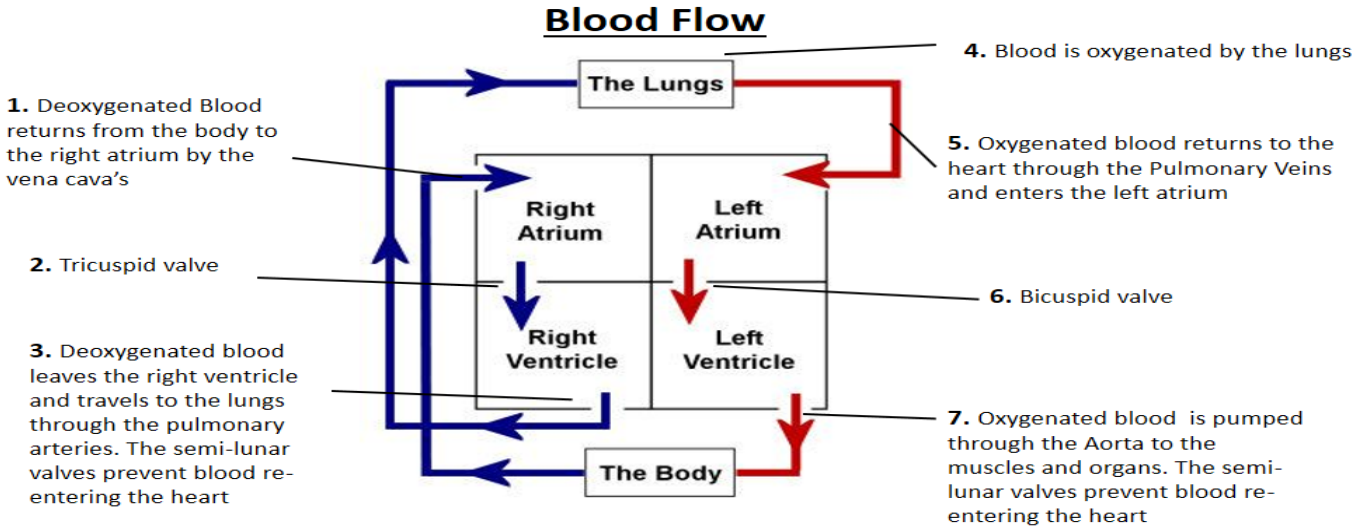
What is the name of the blood vessel that supplies the body with oxygen?

Aorta

What are the differences between veins, arteries and capillaries?

Arteries	Carries Oxygenated blood Away from the heart, except the pulmonary Under high pressure Thick muscular walls and small lumens Blood is pushed along = makes them pulse Vasodilation and vasoconstriction occurs during exercise
Veins	Carries deoxygenated blood towards the heart, except the pulmonary Under low pressure and blood travels slowly Therefore has valves to prevent back flow Have thinner walls and larger lumens than arteries
Capillaries	Walls are one cell thick Very narrow so blood cells have to slow down. Wraps around muscles and organs so Gaseous exchange takes place. Carry both oxygenated and deoxygenated blood

Can you discuss the flow of blood starting at the vena cava?



Can you explain blood shunting during exercise?

Vascular Shunting = Increasing blood flow to active areas during exercise by diverting blood away from inactive areas. This is achieved by vasodilation (blood vessel widens) and vasoconstriction (blood vessel narrows.

What are the 4 components of blood? Function of each component?

Red blood cell	Transports oxygen by binding to haemoglobin. Very important for aerobic sports e.g. marathon runners.
White blood cell	Immune system, fighting disease and infection. (destroying pathogens with antibodies) Keeps athletes healthy so they can train and compete.
Platelets	Formed in bone marrow. Clot and scab around open wound and prevents infection and blood loss. Very important for contact sports e.g. rugby
Plasma	Fluid that allows blood to flow. Made of 90% water

What are the 5 short term effects of exercise on the cardiovascular system?

Increased heart rate
Increased stroke volume
Increased cardiac output
Increased redistribution of blood flow
Increased blood pressure

What are the 10 long term effects of exercise on the cardiovascular system?

C	C	C
Increased **Cappilirisation**	**Cardiac Hypertrophy**	Decrease in **Coronary Heart Disease (CHD)**
Increased Gaseous Exchange	Increased Resting Stroke Volume	Healthier Veins and Arteries
	Increased Cardiac Output	Drop in Resting Blood Pressure
	Decreased Resting Heart Rate	
	Faster Recovery Time	

Can you explain some effects lifestyle can have on the cardiovascular system?

Think about: Rest, high cholesterol, recreational drugs, sedentary lifestyle and stress. (Refer to benefits and lifestyle section of booklet)

Define cardiac output?

The amount of blood pumped by the heart in one minute

What is the cardiac equation?

Heart rate x stroke volume = cardiac output

Define heart rate?

The number of times the heart beats per minute

Define stroke volume?

The amount of blood pumped by the heart during each beat

Cardio-Respiratory System

Respiratory System

What are the main functions of the respiratory system?

Brings oxygen into the body to help produce energy aerobically.
Expels carbon dioxide, a waste product that is created in the muscles when exercising.

What is tidal volume?

The amount of air inspired and expired with each normal breath at rest or during exercise.

What is 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.

What is lung volume?

The capacity of the lungs. (How much air they can hold)

What are Alveoli and what do they do?

The Alveoli are found at the end of the bronchioles. They are surrounded by capillaries. Oxygen is transferred into the blood through the semi permeable walls of the capillaries. Once oxygen is in the blood it can get to the muscles that need it. Carbon dioxide and other waste products are also able to removed in this way. This is called 'Gaseous exchange'. This process is improved by regular exercise and damaged by nicotine and cigarettes.

What is the difference between aerobic and anaerobic respiration?

Aerobic energy production takes place in the presence of oxygen
Anaerobic energy production takes place without the presence of oxygen

What are the energy equations?

Aerobic: Glucose + O_2 = Energy + CO_2 + Water
Anaerobic: Carbohydrate ➔ Glucose = Energy + Lactic Acid

What is Lactic acid?

A by-product of anaerobic energy production. When lactic acid (poison) builds up muscles become fatigued and cannot function properly.

What is Oxygen debt?

The amount of oxygen needed at the end of a physical activity to break down lactic acid into water and carbon dioxide.

What are the 5 short term effects of exercise on the respiratory system?

Increased depth of breathing
Increased rate of breathing
Increased gaseous exchange
Increased tidal volume
Oxygen Debt (depending on the intensity of the activity)

What are the 6 long term effects of exercise on the respiratory system?

Increased intercostal strength
Increased diaphragm strength
Increased lung capacity
Increased vital capacity
Increased number of alveoli
Increased V02 Max

What is VO2 max?

The volume of oxygen an athlete can consume while exercising at maximum capacity.

What is diffusion?

Molecules move from an area of high concentration to an area of low concentration to reach a balance

What is the composition of air we inhale and exhale?

Gas	Amount in inhaled air	Amount in exhaled air
Oxygen	21%	16%
Carbon dioxide	0.04%	4%
Nitrogen	78%	78%
Other gases	0.96%	2%

What are the effects of aerobic training?

Hypertrophy of slow twitch muscle fibres
Increased myoglobin content - improves 02 supply to muscles
Increased size & strength of mitochondria – produces more energy anaerobically

What are the effects of anaerobic training?

Hypertrophy of fast twitch muscle fibres
Increased strength & power
Increased tolerance to lactic acid

Mechanics of breathing – What happens to allow us to inhale?

Diaphragm & intercostal muscles contract; increase in thoracic cavity volume; decrease In thoracic cavity pressure; air forced into lungs

Mechanics of breathing – What happens to allow us to exhale?

Diaphragm & external intercostal muscles relax; decrease in thoracic cavity volume; increase in thoracic cavity pressure; air forced out of lungs

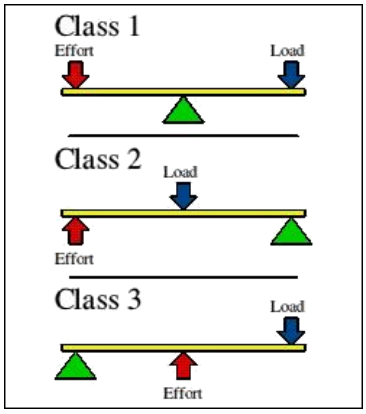
Movement Analysis

Lever Systems

What are the 3 types/classes of levers in the body and give an example of each?

1. 1st class lever e.g. nodding the head (header in football)
2. 2nd class lever e.g. going up onto your toes (calf raise, long jump take-off)
3. 3rd class lever e.g. Bicep curl (running action, when the knee extends)

Can you draw the three different types/classes of lever?



Which levers have a mechanical advantage/disadvantage?

Class of Lever	Example	Sporting Example	Mechanical Advantage or Disadvantage?
1st Class	Seesaw	Heading in football	Can be either
2nd Class	Wheelbarrow	Long jump take off	Mechanical advantage
3rd Class	Shovel	Bicep curl	Mechanical disadvantage

Describe a mechanical advantage?

Levers that are used to make a small amount of force into a bigger amount of force.
A mechanical advantage is when a lever allows you to move a large load with a smaller effort.

Describe a mechanical disadvantage?

Where the resistance arm is always greater than the effort arm.
The longer the resistance arm of the lever, the greater the speed at the end of it. Take a large amount of muscular effort.

Planes and Axes of Movement

Can you name the 3 planes of movement in the body?

Transverse
Sagittal
Frontal

Can you name the 3 axes in the body?

Sagittal
Frontal
Vertical

Which is the correct description of the sagittal plane?

A. divides the body from left to right
B. divides the body from top to bottom
C. divides the body from inside to out
D. divides the body from back to front.

Which is the correct description of the frontal plane?

A. divides the body from left to right
B. divides the body from top to bottom
C. divides the body from inside to out
D. divides the body from back to front.

Which is the correct description of the transverse plane?

A. divides the body from left to right
B. divides the body from top to bottom
C. divides the body from inside to out
D. divides the body from back to front.

Can you describe a movement in the 3 planes and axis?

Sagittal plane around the frontal axis: Somersault
Frontal plane around the sagittal axis: Cartwheel
Transverse plane around the vertical axis: Full twist on trampoline

Movement in the sagittal plane occurs around which axis?

Frontal

Movement in the frontal plane occurs around which axis?

Sagittal

Movement in the transverse plane occurs around which axis?

Vertical

Fitness Training

What is the definition of Fitness?

The ability to meet the demands of the environment.

What is the definition of Health?

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

What is the definition of Exercise?

A form of physical activity done to maintain or improve health and / or physical fitness.

What is the definition of performance?

How well a task is completed

What does HRE stand for?

Health related exercise

Can you list the 5 components of HRE and give a full definition for each?

Muscular Strength: The amount of force a muscle can exert against a resistance.
Muscular Endurance: The ability to use the voluntary muscles many times without getting tired.
Cardiovascular Fitness: The ability to exercise the entire body for long periods of time. (without fatigue)
Flexibility: The range of movement possible at a joint.
Body Composition: The percentage of body weight that is fat, muscle and bone.

TIP: Muscular Muscles Can Feel Big

What does SRF stand for?

Skill related fitness

Can you list the 6 components of SRF and give a full definition of each?

Agility: The ability to control the movement of your whole body and change position quickly
Balance: The ability to keep the body stable, while at rest or in motion
Coordination: The ability to use two or more body parts together
Power: The ability to undertake strength performances quickly. Power = 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 to cover a distance

TIP: ABCPRS

Can you chose a sport & list the 3 most important components of HRE & SRF for it, and explain why?

Most sports will need all the elements in some way; they just need to be justified.

Think of the areas of HRE and SRF. Can you think of a fitness test you could use for each of these areas and explain it?

Cooper 12 minute – Cardiovascular Fitness
Hand grip strength test - Muscular Strength
Sit and reach test – Flexibility
Harvard step test - Cardiovascular Fitness
Illinois agility run - Agility
Vertical jump – Power
30 metre sprint – Speed
1 minute press-up/sit-up – Muscular Endurance

What is a test protocol?

The instructions for the test so the results are valid.

What is the difference between quantitative and qualitative data?

Quantitative = analysis through numbers e.g. keep track of data
Qualitative = analysis through description e.g. explain difference seen

What are the principles of training? Can you give a definition and example of each?

F.I.T,T: Frequency, Intensity, Time, Type
Individual needs / differences: Matching the training to the requirements of an individual
Reversibility: Gradually losing fitness instead of progressing or remaining at the current level
Specificity: Matching training to the requirements of an activity
Thresholds of Training: Monitoring heart rate to ensure you are working in the correct area of the training zone
Overtraining: Training beyond your ability to recover
Progressive overload: Gradually increasing the amount of overload to improve fitness but without injury

TIP: FIRST-OP

What does FITT stand for?

Frequency, Intensity, Time, Type

Can you explain each element of FITT?

Frequency – How often
Intensity – How hard
Time – How long
Type – What kind of activity / exercise

Why would you use the FITT principle? (linked to progressive overload)

Used to gradually increase the amount of work the body does, in order to achieve overload without injury

Why is rest & recovery important?

To allow time for adaptations to the body to occur

List the 6 methods of training?

Interval Training –High intensity exercise followed by rest or active rest
Fartlek Training - Periods of work and periods of rest of light work like interval training. The difference is this is completed over different intensity and terrains (e.g. hills)
Continuous Training – Exercising for extended periods of time without rest (least 15 minutes)
Circuit Training - Involves a number of exercises called stations, arranged to avoid injury
Plyometric Training: High impact exercises that teach muscle to perform their maximum contractions faster e.g. box jumps squats etc.
Weight Training – Uses progressive resistance either in terms of the weight itself or number of repetitions to increase muscular strength or endurance.

TIP: **I**ntense **F**arting **C**an **C**ause **P**ainful **W**ind

Can you give at least 2 advantages of each method of training?

Interval Training:
You burn about twice as many calories than continuous training.
Greater ability to cope with the production of lactic acid.
Increasing your ability to work aerobically for longer

Fartlek Training:
Less boring than continues and interval
Develop pace setting skills
Intensity and length modified by needs of performer
Can be done over different terrains.

Continuous Training:
Doesn't require expensive equipment
Mimics long distance events.
A wide range of activities. E.G (Run/Cycle/Swim)

Circuit Training:
Creative and fun
Match exercises to specific training needs.
Large groups can train at the same time.
Doesn't require a lot of equipment or space.
Different fitness levels can train together.

Plyometric Training:
Little or no equipment.
Short, high intensity.
Simulates movements in your sport.

Weight Training:
Can be tailored to individual needs and abilities.
Can be altered to prevent boredom.
Can strengthen the whole body or specific muscles.
Easily monitored.

Can you give at least 2 disadvantages of each method of training?

Interval Training:
Longer rest/recovery time between sessions due to high intensity. (48 hours)
High intensity, harder to motivate yourself.

Fartlek Training:
Self-disciplined to change pace
Weather dependent.

Continuous Training:
Can get boring
Doesn't improve anaerobic fitness

Circuit Training:
It can take a while to set up.
Techniques can be affected by fatigue. Therefore injury can occur.

Plyometric Training:
3 days rest between each session.
Must have good levels of strength and muscular endurance.
Can cause stress on joints and muscle soreness.

Weight Training:
Can be expensive to join a gym/buy equipment.
Incorrect technique can cause injury.
You need a spotter when lifting heavy free weights.

Can you name and explain the 5 different exercise classes?

Body Pump – Weight based with barbells, develops muscular endurance and strength.
Aerobics – Develops cardiovascular fitness to music.
Pilates – Develops strength, flexibility and balance through mat exercises using resistance.
Yoga - A series of postures, developing strength, balance and flexibility through using a mat and breathing control aiding relaxation.
Spinning – High intensity work out on stationary bikes developing muscular and cardiovascular endurance.

What are the advantages & disadvantages of fitness classes?

Advantages:

- Lots of variety, reducing boredom.
- Motivation to work harder.
- Meet new people.
- Way to increase knowledge.

Disadvantages:

- Can be expensive
- Not tailored to individual needs.
- In large classes instructor may not be able to correct technique.

Why would you use different methods to train?

To create a varied and enjoyable programme and also to allow focus on specific muscle groups.
Different methods offer different advantages. Multi-discipline events e.g. decathlon

Think of the methods you use most regularly within your own sport, justify why you use them?

Think of a number of different sports and justify your answers.

What 4 are the 4 stages of designing an effective exercise programme?

Aim, design, monitor, evaluate

What does PAR-Q stand for and why is it used?

Physical Activity Readiness Questionnaire – to assess suitability to start to exercise safely & at what intensity

What does SMART mean?

Specific, Measurable, Achievable, Realistic, Time-bound

Can you describe each area of SMART?

Specific: Your goal must be clear
Measurable: You must have a way of knowing if you have achieved your goals (need data).
Achievable: The goal should be within physical reach of performer. They should be challenging but attainable.
Realistic: It should be possible for the performer to actually hit the goals set with resources available.
Time bound: Goals should have time limits so that a performer can assess whether or not they have hot their goal at a given point or not.

List 4 reasons why we set SMART targets?

Helping you to focus on what is important
Increasing your motivation to make progress
Helping you develop new strategies to meet that goal
Enabling you to monitor how well you are doing

Give an example of a SMART target?

100m sprinter: Take 0.2 seconds off PB by the last race of the season
Striker in football: Score 12 goals this season compared to 9 last season
Rugby goal kicker: To improve my season's kicking percentage by 5% compared to last season

What are the three stages of an exercise session?

Warm-Up, Main Activity, Cool-down

3 stages of a warm-up?

Cardiovascular Phase – Stretches & Joint Mobilisation – Skills/Physiological Phase

3 stages of a cool-down?

Cardiovascular Phase – Stretches– Relaxation Phase

List the 5 reasons we warm-up?

1. Increases the temperature of muscles, tendons and ligaments – reduces chance of injury
2. Increases heart rate and body temperature safely - reduces chance of injury
3. Increase flexibility – aids performance
4. Psychologically prepares you for exercise – aids performance
5. Increases oxygen delivery to working muscles – aids performance

List the 6 reasons we cool-down?

1. Gradually returns body temperature, breathing and heart rate to their resting rate
2. Psychologically unwind
3. Removal of lactic acid –preventing DOMS
4. Removal of carbon dioxide and waste products
5. Avoids blood pooling in lower limbs whilst leads to dizziness
6. Improves flexibility

Can you explain Aerobic and Anaerobic fitness?

Aerobic Fitness – 'With Oxygen'.
If exercise is not too fast and is steady, the heart can supply all the oxygen the muscles need.

Anaerobic Fitness – 'Without Oxygen'.
If exercise is done in short, fast bursts, the heart cannot supply blood & 02 to muscles as fast as cells use them. Exercising is this way will lead to an oxygen debt

How do you work out your training zones (Korvonen formula)?

MHR = 220-Age
60-80% = aerobic zone
80-90% = anaerobic zone

Can you explain the following?

Heart rate: The number of times the heart beats each minute

Resting Heart rate: The number of times the heart beats each minute when the body is completely at rest

Working Heart rate: The number of times the heart beats each minute during or immediately after exercise

Maximum Heart rate (MHR): Can be calculated by subtracting the persons age from 220

Recovery Rate: The measure of how long it takes for a person's heart rate to return to its resting level after a training session.

Injury Prevention & Treatment

Name and explain the 6 steps for preventing injury in sport.

People **P**lease **P**repare **W**hen **C**ontinuously **R**unning

PAR-Q: Self screening tool that can be used by anyone who is planning to start an exercise or training programme – safety and intensity

Protective clothing & equipment: Protective clothing and equipment must be worn and may be part of the rules of the sport. This is for the safety of the player and their opponents. E.g. shin pads absorb shock of impact

Principles of Training: **Overtraining** can lead to overuse injuries e.g. repetitive strain injury. Ensure an **increase** in training is **gradual**. Training should meet the **individual's needs** and be **specific** to their sport. Training should be at the appropriate intensity taking into consideration **thresholds** of training

Warm-up: to increase the elasticity of the muscles and reduce the risk of injury.

Checking Equipment and facilities: check that the equipment and facilities being used are safe and clear of anything which could be harmful. E.g. check the padding around the rugby posts which are in place to soften the impact in the event of a collision.

Rules: All games and sports have rules so that there can be fair competition. Rules help to ensure safety & help games flow. Balanced competition to ensure safety & fairness e.g. age categories, weight categories etc

What are the 5 types of hard tissue injuries which can occur during sport and their symptoms?

Concussion is caused by a blow to the head. Symptoms include headaches, weakness, loss of co-ordination, confusion and slurred speech.

Fracture is a broken or cracked bone. Symptoms include pain at the site of the injury, inability to move the limb, swelling and bruising. (Open, Closed, Simple, Greenstick)

Dislocation is when a bone at a joint is forced out of its normal position. Symptoms include deformity, pain at the site of the injury and swelling.

Sprain is a damaged Ligament: Symptoms include swelling, bruising and pain.

Torn Cartilage is usually caused by wear and tear. Symptoms include pain, swelling, stiffness and a decrease in range of movement at the joint.

Name the three soft tissue injuries which can occur in sport.

Strain is a twist, pull or tear of muscle or tendon.

Tennis Elbow is caused by stretching or tearing muscles or tendons. It is an overuse injury, which causes pain on the inside of the elbow.

Golfer's Elbow is caused by stretching or tearing muscles or tendons. It is an overuse injury, which causes pain on the outside of the elbow.

Abrasions or Grazes can be caused by friction of the skin against a rough surface. The injury should be kept clean with a sterile wipe.

What is the correct treatment for soft tissue injuries?

Rest – Stop playing or training
Ice – use an ice pack and apply pressure the injury with the ice pack to reduce swelling.
Compression – use pressure to hold the ice pack on the injury.
Elevation – raise the injury, if possible above the heart to minimise swelling.

Drugs (Beat Drugs And Say No People)

Can you name the 6 Performance Enhancing Drugs & explain the effects of each?

Beta Blockers - Drugs that are used to control the heart rate and have a calming and relaxing effect
- Reduction in heart rate
- Calming effect
- Reduce anxiety

Diuretics - Drugs that elevate the rate of urine production
- Weight Loss
- Masking Agents

Anabolic Steroids - Mimic the male sex hormone testosterone promotes bone & muscle growth
- Increase muscle mass
- Develop bone growth
- Increase in strength
- Allow the athlete to train harder for longer

Stimulants - Effect the central nervous system, increased mental and/or physical alertness
- Increase alertness (performer is quicker to respond)
- Increases heart rate (therefore more O2 delivery)
- Increases aggression and competitiveness
- Reduces tiredness

Narcotics Analgesics –
Narcotics: Drugs that affect mood or behavior, including drowsiness and relieving pain.
Analgesics: A painkilling or pain relieving drug.
- They increase the performer's pain threshold.
- They give a sense of euphoria.
- They give a sense of being invincible
- They mask injury pain so the performer can continue to compete

Peptide Hormones - Peptide hormones are found naturally in the human body.
- EPO increases red blood cell production and therefore increases O2 delivery to working muscles
- Growth Hormones increases muscle mass and therefore strength

What is a Masking Agent?

Masking agents have the potential to impair or conceal the banned substance in the urine – Diuretics

What is Blood Doping (illegal)?

This is the practice of ejecting and injecting blood to boost the number of red blood cells (RBCs) in the bloodstream in order to enhance athletic performance. This is because they carry oxygen from the lungs to the muscles, more RBCs in the blood can improve an athlete's aerobic capacity (VO_2 max) and endurance.

Why do some athletics do training at high altitude (legal)?

People who are born or train at high altitude have a higher cell count because there is less oxygen. Their blood needs to be super-efficient at absorbing oxygen so more red blood cells are produced.

Why do people risk it all by taking drugs? (3 pressures)

Peer Pressure
Coach Pressure
Pressure to Win

What are the consequences of being found guilty of using a performance enhancing drug?

Bans, Fines, Prison Ruin your reputation, Lose sponsorship deals, Give the sport a bad name, Mistrust of results within the sport

Exam Topic 2 – Health and Performance

1hr 15mins 70 Marks

Friday 15th May 2020 – PM

Sections to revise:

How participation in sport can promote physical, social and emotional health
Impact of fitness on well-being
Lifestyle choices – positive and negative effects
Effects of a sedentary lifestyle

7 Categories of a balanced diet
Macro and micro nutrients
Optimum weight
Energy balance
Hydration

Classification of skill
Types of guidance
Types of feedback
Mental preparation for performance

Engagement and participation rates

Commercialisation of sport

Sporting behaviour and sporting deviance

DIET

Can you list the 7 parts of a balanced diet?

Fats, Minerals, Carbohydrates, Protein, Fibre, Vitamins, Water

Tip: **F**at **M**en **C**an't **P**lay **F**ootball **V**ery **W**ell

What is the primary function of each category of food?

Fats – 2nd source of energy but should be eaten in moderation due to potential weight gain, Bulking
Minerals & Vitamins – Health, growth and repair:
Vitamin C – Fight colds
Vitamin D – Absorbs Calcium to prevent brittle bones (osteoporosis)
Calcium – Prevent Osteoporosis
Iron – Prevent Anaemia
Carbohydrates – 1st source of energy
Protein – Muscle growth (hypertrophy) & repair, 3rd energy source
Fibre – Aid digestion, bulking agent, reduces cholesterol
Water – Prevents dehydration

Which are macro and micro-nutrients?

Macro provide energy **-** Carbohydrates, fat, protein – needed in large amounts
Micro are essential for a healthy body – Vitamins & minerals – needed in small amounts

What do we mean by a 'balanced diet'?

Eating different 'categories' of food in correct quantities & combinations

What are the two types of carbohydrate and what do they do?

Simple (sugars) – fast release energy
Complex (starches) – slow release energy

What are the two types of fat and what foods are included in each?

Saturated – animal fats (solid at room temperature so can lead to coronary heart disease)
Unsaturated – nuts, lentils & pulses

Can you name at least 3 reasons why it's important to stay hydrated?

Prevents dehydration
Regulates body temperature
Help transport nutrients & waste products
Aids mental concentration
Helps tissues, cells & organs to function properly
Keeps joints lubricated

When are the 3 times we should hydrate when exercising?

Before (500ml 4 hours & 250ml 15 mins before)
During (regular water breaks)
After hydrate as soon as possible

2.5 litres for men and 2 litres for women daily intake

What are the 4 ways we can change our diet to improve sports performance?

1) Carbo-Loading
2) High Protein Diet
3) Isotonic Energy Drinks/Hydration
4) Vascular Shunting

What is carbo-loading and why is it important?

Strategy used by endurance athletes 1 to 4 day before an event to increase the stores of glycogen in their muscles and liver to produce energy for performance

Step 1) Reduce amount of exercise
Step 2) Reduce the fibre intake
Step 3) Eat high carbohydrate diet to increased glycogen stores in muscles & liver

Therefore will be able to maintain optimum performance for longer due to increased energy production

What is Optimum weight and what factors can affect it?

The most favourable weight to produce their best performance in their sport
Height, Muscle Girth, Gender, Bone Structure (Height Makes Giants Big)

Can you describe the energy balance and explain how we lose, maintain and gain weight

Lose – Burn off more calories through exercise than you take in through diet
Maintain– Calories burnt through exercise same as amount taken in through diet
Gain – Burn off less calories through exercise than you take in through diet

Can you define Obese?

Weighing significantly more than the ideal weight for your height and having an excess amount of body fat

Can you define Overfat?

Having too much body composition as fat

Can you define Overweight?

Having more weight than is considered healthy by medical professionals

Can you explain how you can be overweight but healthy?

Muscle weighs more than fat so people who are muscular maybe considered overweight e.g. Anthony Joshua

What is Body mass index (BMI)?

A measure of body fat based on your weight in relation to your height

What is Metabolic Rate?

Amount of energy per unit time that a person needs to keep the body functioning at rest

What is vascular shunting?

Redistribution of blood when exercise begins

Benefits of Participation

Can you list as many effects of exercise on health as you can?

Can you divide those reasons into physical, emotional and social? How are these benefits achieved?

PHYSICAL BENEFITS

Benefit of Exercise on Physical Health	How is it Achieved
Improvement in all areas of HRE	Regular training
Increased Bone Density – preventing Osteoporosis	Weight Bearing Exercise (Walking/Running)
Reduced chance of Obesity/Maintain Optimum Weight	Burning excess calories through exercise
Reduced chance of Coronary Heart Disease	Reducing Cholesterol & Blood Pressure
Reduced chance of Strokes	Reducing Cholesterol & Blood Pressure

EMOTIONAL BENEFITS

Benefit of Exercise on Emotional Health	How is it Achieved
Increased Self-Esteem & Confidence	- Overcoming an emotional/physical challenge - Feel part of something as team member - Performing better by practising more - Think you look good by losing weight if overweight
Aesthetic Appreciation -See beauty in performance	- Watching skilful performance
Relieve Stress & Stress/Mental Illness	- Taking mind off problems - Having fun - Serotonin (Feel good Hormone)
Competition	- Feeling good if winning/meeting a challenge
Reduce Boredom	- Having something to do

SOCIAL BENEFITS

Benefit of Exercise on Social Health	How is it Achieved
Developing Friendships & Social Mixing	Meet new people & meet old friends By Joining a team or club
Improved Co-operation	Work as a team towards a common purpose Ability to interact with others Adapt to social situations
Increased social activities and therefore will not engage in antisocial behaviour)	Activities to occupy your time

Negative effects of overtraining on your physical health?

Overexertion (leading to heart attacks & strokes) & overuse injuries

Negative effects of overtraining on your emotional health?

Addictive. Injury & Inactivity leading to depression. Competition pressure

Negative effects of overtraining on your social health?

Long training hours means a lack of social time

Define well-being?

The state of being comfortable, healthy or happy

What is Aesthetic Appreciation?

To be able to see the beauty in a performance

Lifestyles Choices

Describe what is meant by lifestyle choices?

The choices we make about how we live and behave that impact our health

What are the 5 lifestyle choices that affect our health?

Diet
Work/Rest/Sleep Balance
Exercise
Alcohol
Smoking

How can the choices we make about diet, exercising and work/rest/sleep balance affect our health?

5 Lifestyle Choices	
1. Diet	• Calorie Intake: 2500 calories for men and 2000 calories for women (Anorexia and Obesity) • Diseases caused by lack of nutrients: **Rickets** (lack of Vitamin D or calcium) can result in weak bones, **Scurvy** (due to lack of Vitamin C), which can result in tiredness, **Osteoporosis** (lack of calcium), which can lead to weak bones.
2. Activity Levels	• 5-18 year olds should do 1 hour of exercise every day • Reduced chance of Coronary Heart Disease & Osteoporosis
3. Work/Rest/Sleep Balance	• Lack of correct balance can lead to tiredness, lack of concentration and irritability
4. Alcohol	• Health: Heart failure, increased blood pressure, increased wright, liver disease/cancer • Performance: Slower reaction time, decreased mobility due to excess weight, decreased co-ordination & concentration
5. Smoking	• Health: Strokes, bronchitis, heart disease/angina, blood clots, emphysema, lung cancer • Performance: Breathlessness, reduces oxygen-carrying capacity

What affects can excess alcohol have on your health?

Liver disease/cancer
Heart failure
Increased blood pressure
Increased weight

What affects can excess alcohol have on sports performance?

Sedative (Calming) which is banned in sports
Decreases mobility
Diuretic leading to dehydration

What affects can smoking have on your health?

Increased blood pressure & heart rate
Heart disease, coronary heart disease & strokes
Bronchitis
Emphysema
Lung cancer
Blood Clots

What affects can smoking have on sports performance?

Factors Affecting Participation & Sedentary Lifestyle

What are 6 factors which affect participation? (SAGED)

Socio-Economic, Age Gender, Ethnicity, Disability

What are the 8 barriers to participation? Explain the link between the factors and barriers?

Access, Time, Nature of Activity, Stereotyping, Cultural Influences, Cost, Images, Availability

Can you link the barriers to the target groups?

Target Group	Barrier
Socio-Economic	Access – upper class sports, private member clubs Cost – equipment, membership, match fees, travel costs Availability – lack of faculties in deprived areas
Age	Access – travel, awareness of opportunities Image – e.g. fashionable Golf and Tiger Woods Time – school/working hours/retired Nature of Activity – health with high adrenaline and contact sports Cost – wage/retired Stereotyping – poor self image, lack confidence, publics opinion
Gender	Stereotyping & Nature of Activity – some sports see as masculine (boxing), media coverage Cost – Pay gap Image – self and publics opinion – this girls can campaign Availability – women's clubs Time – family commitments
Ethnicity	Stereotyping – ethnic football managers, lack of role models Cultural – national sports
Disability	Access e.g. ramps, hoists, stereotyping, nature of activity and availability - adapted sessions

What is a sedentary lifestyle?

A lifestyle with little, irregular or no physical activity

List the 7 long term health problems linked to a sedentary lifestyle?

1) Heart Disease
2) Diabetes Type 1 & 2
3) Osteoporosis
4) Loss of Muscle Tone & Posture Weight Gain – Obesity
5) Negative Impact on Components of Fitness
6) Depression
7) Weight Gain – Obesity

What is diabetes?

A condition where the amount of glucose in your blood is too high because your body can't regulate the levels in the blood correctly

Type 1 Diabetes: The Pancreas doesn't produce any insulin
Type 2 Diabetes: The body doesn't produce enough insulin to function properly or your body doesn't react correctly to the insulin produced.

Being overweight or obese is one of the causes of type 2 diabetes. A sedentary lifestyle is linked to a 91% increased risk of type 2 diabetes

What is Coronary Heart Disease?

Narrowing of the arteries

How can exercise reduce chances of coronary heart disease?

Exercise helps to remove fatty deposits which build up in the walls of the coronary arteries, narrowing the blood vessels which take blood back to the heart, therefore restricting blood flow to the heart. Exercise also prevents build-up of more fatty acids

Why is high blood pressure dangerous?

If your blood pressure is often too high this puts extra strain on your heart and blood vessels. Eventually high blood pressure can lead to a heart attack or a stroke. Exercise can help to lower blood pressure

What is depression?

A persistent feeling of sadness and loss of interest in life

What is osteoporosis?

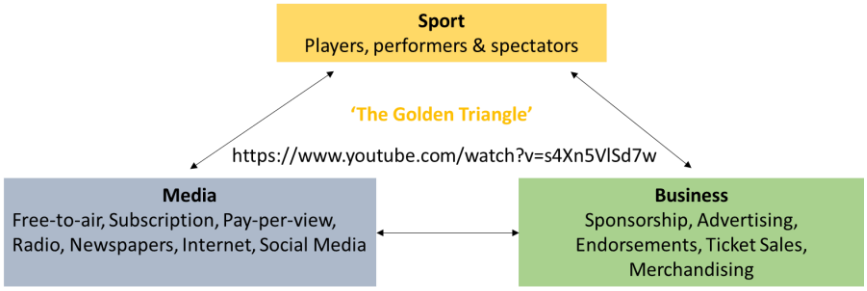
Bones become weak and brittle and more likely to break

Commercialisation

What is commercialisation?

Making something available on the market; using something to make a profit

What 3 things make up the golden triangle of sports commercialisation?



The benefits each gives the other is essential to maximises opportunity & profit

Can you name 2 advantage and 2 disadvantages of commercialisation on sport?

Advantages: More media increases grassroots participation and money from businesses. More money available for teams, equipment, facilities, coaches and players, Prize funds and awards bigger, More money spend on technological development that can help performance, More competitions and events, More role models and ambassadors
Disadvantages: Rules and fixtures changed to meet requirements of sponsors and media, Over-exposure, Minority sports get less coverage, Controversies become sensationalised giving sport bad reputation, Sports incredibly dependent on money from media & sponsors, Sponsors may promote and sell products or services that promote poor lifestyle choices, breaks in play for advertisements

Can you name 2 advantage and 2 disadvantages of commercialisation on players

Advantages: Players paid high wages, Media turn players into role models and paid to endorse products, More money to pay for technological advanced equipment & facilities, More money to pay for better coaching, More competition raises standard & national teams profile, More money for players at grassroots to train full time and progress to elite
Disadvantages: Media coverage pressure to perform & win at all costs, Media spotlight highlights mistakes, Sponsors may dictate a players behaviour disrupting training, Intense scrutiny of private lives, More competition can led to overuse injuries, Too may competitions can reduce the standard, Women paid less than men due to media and sponsors focus, Achievements of one or two can be emphasised at the expense of the team, Change of timings may be less favourable, Negative reporting can lose sponsorship

Can you name 2 advantage and 2 disadvantages of commercialisation on spectators

Advantages: Events are scheduled so easily watch them on TV or online, Commentary educates the viewer, More live coverage of top events, highlight, documentaries & coaching tips engages and educates, Media provide information on fixtures, tables, rankings, Money spent on technology to improve viewing with replays and close-ups, Media coverage of role models outside of sport connects fans to players, Able to buy same clothes & equipment as role models
Disadvantages: More people stay at home to watch, Most sport subscription or pay-to-view so expensive to watch, Tickets and merchandise expensive, More popular sport become more difficult to get a ticket due to hospitality reasons, Scheduling for home-viewing make it more difficult to watch live, Minority sports not shown

Can you name 2 advantage and 2 disadvantages of commercialisation on sponsors?

Advantages: Sponsors name is linked to a positive, healthy and successful activity and advertised to a wide audience, increasing profits for the brand, relatively cheap
Disadvantages: If a sponsor links their name to a team or player that is hit by scandal or poor performances it can have a damaging effect on its reputation and profits, some sports may not get high number of viewers & therefore exposure

Sporting Behaviour

What is Deviance?

Behaviour that falls outside the norms of what is thought to be acceptable; goes against the moral or laws of the sport

What is Negative Deviance? Example?

Deviance that has a detrimental effect. Intention to cause harm or break the rules

Cheating, performance enhancing drugs, violence, match fixing, racism, sexism

What are the consequences of negative deviance?

Bookings, sin-bins, bans, fines, prison, damage reputation, loss of sponsorship

What is being done to prevent negative deviance?

Random drug tests, fair play awards, respect campaigns, anti-racism and sexism campaigns, video (VAR)

What is the current trend for negative deviance in sport?

More tempting to try due to financial rewards but less likely to get away with it due to drug tests and video

What is Gamesmanship (Positive Deviance)? Example?

Bending the rules/laws of a sport without actually breaking them. Deviance where there is no intention to cause harm or break the rules

Time wasting, sledging in cricket, entering a weaker team if following match is more important

What is Sportsmanship? Example?

Qualities of fairness, following the rules, being gracious in defeat or victory

Showing respect to officials and opponents. Shaking hands, being honest if a rule is broken

What does sportsmanship create?

Good role models
Positive image of the sport
Satisfaction/pride – you know you won honestly

Classification of Skill

What are the 3 different skill continuums?

1. Open and Closed Skills
2. Simple (basic) and Complex Skills
3. Low Organisation and High Organisation Skills

Define the term 'Basic Skill? E.g.

A simple skill requiring little concentration to execute
Running, cycling, swimming, chest pass

Define the term 'Complex Skill'? E.g.

Skills that are difficult, require a lot of information to be processed and require a lot of decision making, concentration/attention.
Summersault, smash in tennis, dribbling past defender in basketball

Define the term 'Open Skill'? E.g.

A skill performed in an unpredictable environment, where the performer must react to and adjust to the changing nature of the situation
Rugby tackle, pass in football

Define the term 'Closed Skill'? E.g.

A skill performed in a predicated environment
Athletics throw, darts throw

Can you define the term 'Low Organisation Skill'? E.g.

A basic skill that can be broken down easily into different phases so each part can be practised separately
Tennis serve, front crawl

Can you define the term 'High Organisation Skill'? E.g.

A skill that cannot be broken down easily and practised separately because the phases of the skill are closely linked
Golf swing, summersault

Types of Practice

Can you name the 4 different types of practice?

1. Massed practice
2. Distributed practice
3. Fixed practice
4. Variable practice

Can you define the term '<u>massed practice</u>'? (Without rest)

Practice that occurs without breaks between trials (practice attempts)

What are the advantages of massed practise?

This practice structure allows experienced and motivated performers to increase consistency and potentially get used to performing it when they are tired.

It is usually used to practice low organisation, closed, basic and non-dangerous skills

What are the disadvantages of massed practise?

Can be boring/tedious
It can be tiring, leading to errors and potential accidents

Can you define the term '<u>distributed Practice</u>'? (Time for feedback)

Intervals between skill practice in a training session for rest or mental rehearsal.

What are the advantages of distributed practise?

Most effective practice structure for learning a new skill, because it allows time for feedback on performance. It also helps less motivated performers because there is time for rest and recovery.

It is most suited to complex skills, high organisation, open and dangerous skills which require a lot of concentration.

What are the disadvantages of distributed practise?

The performer may not gain the skill in the time allowed, therefore taking longer to learn the skill

Can you define the term '<u>Fixed Practice</u>'? (Repeated)

Repeatedly practising a whole skill within a training session.

What are the advantages of fixed practise?

Good for novices
Good for improving consistency

Closed skills are normally practised in this way

What are the disadvantages of fixed practise?

Can become boring or tedious
Performers can lose interest and the skill practice can suffer

Can you define the term '<u>variable Practice</u>'? (Apply)

A training session that includes frequent changes of task so the skill can be repeated in different situations.

What are the advantages of variable practise?

Performers need to be adaptable and variable practice helps them to develop perform in a game

This type of practice is vital for open skills and mimics game play

What are the disadvantages of variable practise?

If a novice moves on too quickly to variable practice their skill level can be affected

What is each different practise most useful for?

Type of Practice	Description	Advantages	Disadvantages	Practice is most useful for:
Fixed	Repeatedly practising a whole skill within a training session. E.g. A golfer uses fixed practice so their golf swing becomes well learned.	Good for novices Good for improving consistency	Can become boring or tedious Performers can loose interest and the skill practice can suffer	Closed skills
Variable	A training session that includes frequent changes of task so that the skill can be repeated in different situations. E.g. Skills that are influenced by opposition (bringing in a defender)	Mimics game play	If a novice moves on too quickly to variable practice their skill level can be affected	Open skills
Massed	A training sessions where there are little or no breaks. The same skill or part of a skill is repeated over and over again. E.g. A squash player continuously hitting forehand drives until they master the skill.	The correct movement pattern is grooved (getting to feel for the skill) so it is repeated next time	This type of practice can be boring It can also be tiring, leading to errors and potentially accidents	Simple, Low Organisation and Closed skills
Distributed	When there are breaks in the session providing time for feedback and rest. E.g. 5 attempts at kicking a rugby ball at the posts, then rest receive feedback from coach while another player has their turn.	The performer doesn't get too tired It prevents boredom/keeps motivation high	The performer may not gain the skill in the time allowed, therefore taking longer to learn the skill	Complex, High Organisation and Open skills

Types of Guidance

Can you name the 4 types of guidance?

1. Visual guidance
2. Verbal guidance
3. Manual guidance
4. Mechanical guidance

Can you define the term 'Manual Guidance'?

Manual guidance involves a coach physically moving a performer into the correct position or supporting them as they perform a skill

Can you define the term 'Mechanical Guidance'?

Mechanical guidance takes place when equipment is used to assist in the coaching process.
e.g. floats in swimming, harness for summersaulting on the trampoline

Can you list 3 types of visual feedback a coach may use?

A video of the performer
Pictures (photos or sketches)
A good quality demonstration

Name 2 advantages and disadvantages of visual feedback?

+ Useful for all levels of performer
+ Especially good for beginners/young performers
+ Vision is most people's dominant sense
+ Performers can copy what they have seen

- The demonstration must be of good quality
- Some skills may be too complex to demonstrate
- Not effective if performers are not paying attention

Name 2 advantages and disadvantages of verbal feedback?

+ Especially useful for high level performers – can include high level of detail
+ Useful for sharing basic information
+ Good way of highlighting key teaching points

- Can be boring/tedious
- Can result in 'information overload'
- Complex things can be difficult to explain

Name 2 advantages and disadvantages of manual feedback?

+ Good for complete beginners
+ Allows some development of correct feel

- A movement can feel different when someone else is moving your body for you
- Performer may not think that they're actually performing it themselves

Name 2 advantages and disadvantages of mechanical feedback?

+ Good for potentially dangerous skills
+ Can allow performer to gain a feel for a movement without fear
+ Good for building confidence

- Performer can come to rely on the aid
- *Equipment may be expensive*

Is verbal feedback more suitable for novice or experienced performers and why?

More suitable for experienced performers because they already know what the skill should look like and can make sense of the information.

Can you state the type of guidance being used if a coach uses a tumbling belt to help a performer learn to somersault in Trampolining?

Mechanical guidance

Types of Feedback

Can you list the 4 types of feedback?

1. Intrinsic feedback
2. Extrinsic feedback
3. Concurrent feedback
4. Terminal feedback

Can you describe the term 'Intrinsic Feedback'?

Feedback which comes from the performers themselves. It relates to how a movement feels, which is known as kinaesthetic feel.

Would a novice use intrinsic feedback? Justify your answer

Novice performers will not be able to rely on this feedback because they will not have a developed knowledge and understanding of how skills should feel.

Would an experienced performer use intrinsic feedback? Justify your answer

They have developed knowledge and understanding of kinaesthetic feel and will know if a movement is correct or incorrect. They will be much more capable of self-assessing & self-correcting because of their extra experience.

Can you describe the term 'Extrinsic Feedback'?

Feedback from outside the performer, e.g. feedback from a coach telling you what you did right or wrong.

Would a novice use extrinsic feedback?

Less-experienced performers need this kind of feedback to let them know how they have done and motivate and encourage them to keep trying.

Would an experienced performer use extrinsic feedback?

More-experienced performers are likely to use extrinsic feedback to gain a full picture of how they did before deciding on what needs to be improved**.**

Can you describe the term 'Concurrent Feedback'?

Concurrent feedback takes place during the performance and can be intrinsic or extrinsic.

Can you describe the term 'Terminal Feedback'?

Feedback which is given after the performance - always extrinsic

Mental Rehearsal

Name 2 ways we can mentally prepare for sports performance

1. Physiological warm-up
2. Mental rehearsal

Can you define the term 'Mental Rehearsal'?

A technique used by sports performers. It involves mentally practising a skill or movement, before physically doing it.

Which one of the following is a correct statement about mental rehearsal?

A. it allows you to physically prepare for your activity
B. it's a good substitute for physical practice
C. it allows you the performer to think about completing the action correctly
D. It should only be completed by those who are injured

List 4 benefits of mental rehearsal?

1. Be used to develop an existing skill
2. Help to focus the mind on the task
3. Reduce anxiety (due to focus)
4. Build confidence (due to mentally seeing successful performances)

Give an example of an athlete using mental rehearsal?

A sprinter at the start of the 100m, preparing and getting into their starting blocks and looking up at the track
A high jumper or pole vaulter practising their first step, then visualising their run up and jump, clearing the bar
A discus thrower before their throw, seeing the discus flying through the air and landing for their best performance

Glossary of Terms

Aerobic work
Working at a moderate intensity so that the body has time to utilise oxygen for energy production allowing the body to work for a continuous period, e.g. long-distance events, for the duration of a match

Anaerobic work
Working at a high intensity without oxygen for energy production, therefore limited energy so work period will be short, e.g. sprinting up the wing in a football match

Antagonistic muscle pairs
Pairs of muscles that work together to bring about movement. As one muscle contracts (agonist) the other relaxes (antagonist). For example, the biceps and triceps. The triceps relax to allow the biceps to contract to flex the arm at the elbow. Roles are reversed to extend the arm at the elbow

Axis
A line around which the body/body part can turn

Basic skill
A simple skill requiring little concentration to execute

Closed skill
A skill performed in a predictable environment, e.g. a player taking a penalty

Complex skill
A skill requiring a lot of attention/concentration

Deviance
Behaviour that goes against the moral values or laws of the sport

Distributed practice
Intervals between skill practice in a training session for rest or mental rehearsal

Exercise
A form of physical activity done to maintain or improve health and/or fitness; it is not competitive sport

Energy balance
This is the basis of weight control. For body weight to remain constant energy input (via food) must equal energy expenditure

Feedback
Information received during or after a performance about the performance

Fitness
The ability to meet the demands of the environment

Fixed practice
Repeatedly practising a whole skill within a training session

Frontal axis
Imaginary line passing horizontally through the body from left to right, allows flexion and extension

Frontal plane
Imaginary line dividing the body vertically from front to back. Movement occurs in the frontal plane about the sagittal axis, e.g. when performing a star jump

Gamesmanship
Bending the rules/laws of a sport without actually breaking them

Guidance
Information to aid the learning of a skill. This information can be given visually, e.g. through demonstrations; verbally, e.g. by the coach explaining how to perform the technique; manually, e.g. by physically moving a performer into the correct position; and mechanically, e.g. using a harness in trampolining

Health
A state of complete emotional, physical and social well-being, and not merely the absence of disease and infirmity

High organisation skill
A skill that cannot be broken down easily and practised separately because the phases of the skill are closely linked, e.g. cartwheel, golf swing

Hydration
Being hydrated means the body has the correct amount of water in cells, tissues and organs to function correctly. The average recommended daily intake is 2.5 litres of water for men and 2 litres for women

Lactic acid
A by-product of energy production. Formed when the body is exercising anaerobically at high intensity

Lactate accumulation
When lactate levels in the blood/muscle rise due to increased work intensity, e.g. moving from aerobic to anaerobic exercise

Lifestyle choice
The choices we make about how we live and behave that impact on our health

Low organisation skill
A basic skill that can be broken down easily into different phases so each part can be practised separately, e.g. tennis serve, front crawl swimming stroke

Macronutrient
A type of food required in relatively large amounts in the diet, e.g. carbohydrates and fats

Massed practice
Practice that occurs without rest between trials
Micronutrient
A type of food required in relatively small quantities in the diet, vitamins and minerals

Mechanical advantage
2nd class levers allow a large load to be moved with a relatively small amount of muscular effort

Mechanical disadvantage
3rd class levers cannot lift as heavy loads, with the same amount of effort, as 2nd class levers due to the position of the effort and load from the fulcrum

Muscle fibre types
Muscle fibres make up the skeletal muscle. The different fibre types are type I, type IIa and type IIx

Open skill
Skills performed in an unpredictable environment where the performer has to react and adjust due to the changing nature of the situation, for example a player trying to pass the ball to a team mate who is trying to get free from the opposition

Optimum weight
Refers to the weight someone should be, on average, based on their sex, height, bone structure, and muscle girth

Sagittal axis
Imaginary line passing horizontally through the body from front to back, allows abduction and adduction

Sagittal plane
Imaginary line dividing the body vertically into left and right sides

Sedentary lifestyle
Where there is little, irregular or no physical activity

Sportsmanship
Qualities of fairness, following the rules, being gracious in defeat or victory

Transverse plane
Imaginary line dividing the body horizontally from front to back

Type I
Also known as slow twitch muscle fibres, they are suited to low intensity aerobic work, for example marathon running, as they can be used for a long period of time without fatiguing

Type IIa
These are fast twitch muscle fibres, they are used in anaerobic work, but can be improved through endurance training to increase their resistance to fatigue

Type IIx
These are fast twitch muscle fibres that are used in anaerobic work and can generate much greater force than the other fibre types but fatigue quickly. They would be beneficial to 100 m sprinters

Variable practice
A training session that includes frequent changes of task so that the skill can be repeated in different situations

Vascular shunting
Process that increases blood flow to active areas during exercise by diverting blood away from inactive areas. This is achieved by vasoconstriction and vasodilation

Vasoconstriction
Narrowing of the internal diameter (lumen) of the blood vessel to decrease blood flow

Vasodilation
Widening of the internal diameter (lumen) of the blood vessel to allow increased blood flow

Vertical Axis
Imaginary line passing vertically through the body, allows rotation of

AHS Acronyms

Skill Related Fitness Components – ABC PRS
Agility, Balance, Coordination, Power, Reaction Time, Speed

Health Related Fitness Components - Muscular Muscles Can Feel Big
Muscular Endurance, Muscular Strength, Cardiovascular Fitness, Flexibility, Body Composition

Principles of Training – FIRST-OP
FITT (frequency, intensity, time, type), Individual Needs, Reversibility, Specificity, Thresholds of Training, Overtraining, Progressive Overload

Methods of Training – Intense Farting Can Cause Painful Wind
Interval, Fartlek, Continuous, Circuit, Plyometrics, Weight

Preventing Injury – People Please Prepare When Continuously Running
Protective Clothing & Equipment, Principles of Training, PAR-Q, Warm-Up, Checking Facilities & Equipment, Rules (including balanced competition)

Goal Setting – SMART Targets
Specific, Measurable, Achievable, Realistic, Time Bound

Categories of a Balanced Diet - Fat Men Can't Play Football Very Well
Fats, Minerals, Carbohydrates, Protein, Fibre, Vitamins, Water

Factors Affecting Optimum Weight – Height Makes Giants Big
Height, Muscle Girth, Gender, Bone Structure

Performance Enhancing Drugs – Beat Drugs And Say No People
Beta Blockers, Diuretics, Anabolic Steroids, Simulants, Narcotics Analgesics, Peptide Hormones

Command Words

Access	Gathering opinions to make a judgement
Analyse	Break something down and examine
Classify	Grouping based on characteristics
Define	Definition of word/term
Describe	Detailed description
Discuss	Advantages & disadvantages
Examine	Justified answer based on analysis
Explain	Justified answer with linked reasoning
Evaluate	Supported judgement in relation to question context e.g. sport or sports performer in question
Justify	Give reasons for your answers
Predict	Predict what is likely to happen in the future
Relative	Judgement based on order of importance
State	Recall facts