



GCSE PE

**CORE KNOWLEDGE
QUIZ BOOKLET
2018-19**

ANSWERS

Exam Topic 1 – Fitness and Body Systems

1hr 45mins 90 Marks

Wednesday 15th May 2019 – AM

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: JUST PUT MAIN SKELETAL PEOPLE

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-Top of fibula,

*Ulna is **U**nderneath radius*

*Carpals– **C**uffs*

*Tarsals – **T**oes*

What are the 4 classification of bones?

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 e.g. cranium, ribs, pelvis

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

Cervical, Thoracic, Lumbar, 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 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) – Closing or making the angle at a joint smaller

Extension (Backwards) - Increasing the angle between the bones at a joint

Abduction (Away) - A movement taking part of the body away from the centre line

Adduction (Add) - A movement bringing part of the body towards the centre

Circumduction (Circle) - Moving in a circular shape

Rotation (Twist) - Movement around a single axis or pivot point

Dorsi-Flexion - Extending or pointing the toes down, away from shin

Plantar-Flexion - Planting or flexing the toes up, closer to 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

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
Tibialis Anterior – Pulling toes up towards shin
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 trunk,
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
Type 11a – middle distance runner
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 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

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 bearing exercise)

Increased strength of ligaments and tendons

Muscular Hypertrophy – leading to increased muscular strength, muscular endurance and power

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

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.

What is blood pressure?

The force exerted by circulating blood on the walls of the blood vessels.

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

Systolic blood pressure is the maximum blood pressure in the arteries when the heart contracts and pushes blood out through the aorta into the body.

Diastolic blood pressure is the pressure of the blood during the relaxation phase between heartbeats (when the heart is at rest).

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

Tricuspid, Bicuspid, Aortic and Pulmonary

Which two are 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.

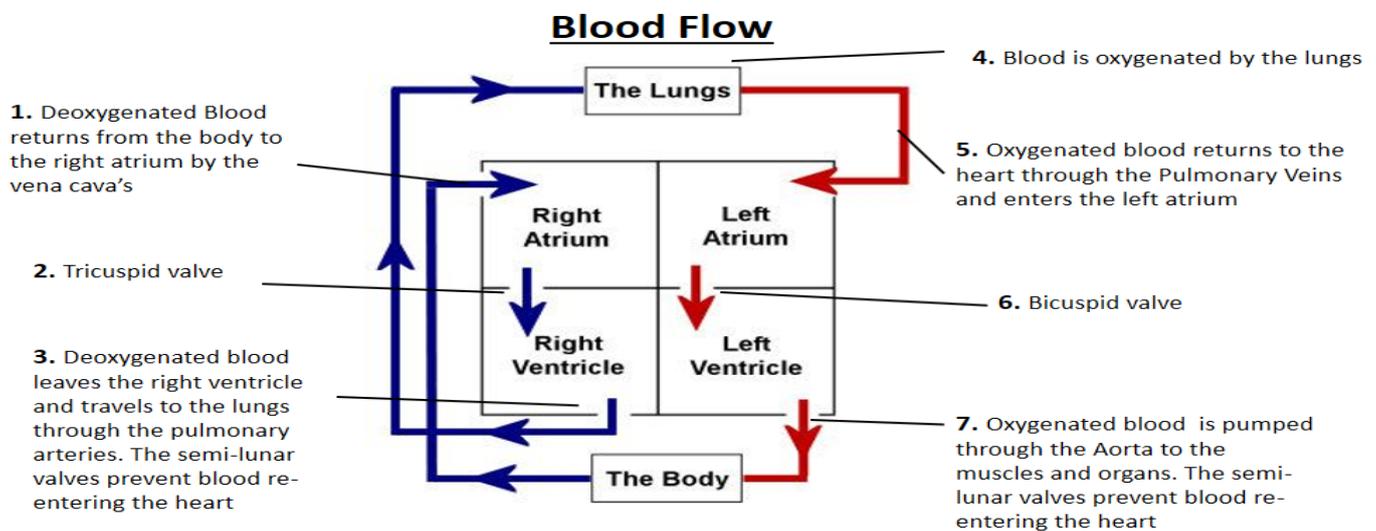
What is the name of the blood vessel that supplies the body with oxygen?

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 four components of blood?

| | |
|------------------|--|
| 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 4 short term effects of exercise on the cardiovascular system?

- Increased heart rate
- Increased stroke volume
- Increased cardiac output
- Increase redistribution of blood flow

What are the 9 long term effects of exercise on the cardiovascular system?

Cardiac Hypertrophy –
Increased Size & Strength of
Heart

Lower risk of Coronary Heart
Disease (CHD)

Faster Recovery Rate

Increased Cappelirisation

Decreasing Resting Heart Rate



Drop in Resting Blood Pressure

Increased Maximum
Cardiac Output

Increased Resting Stroke Volume

Increased Number of Red Blood Cells

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

Think about: Rest, high cholesterol, recreational drugs, sedentary lifestyle and stress.

What is 'Cardiac output'?

The amount of blood ejected from the heart in one minute.

What is 'stroke volume'?

The volume of blood pumped out of the heart by each ventricle during one contraction.

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 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 be 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: Glycogen + O₂ = Energy = CO₂ + Water
Anaerobic: Glucose = Energy = Lactic Acid

What is Lactic acid?

A by-product of anaerobic energy production. When lactic acid 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 short term effects of exercise on the respiratory system?

- 1) Tidal Volume – The amount of air inhaled or exhaled per breath (ml)
- 2) Frequency – The number of breaths taken per minute
- 3) Minute Ventilation – $TV + F = MV$ (Respiratory Equation)
The maximum amount of air inhaled or exhaled per minute (ml)
- 4) Vital Capacity – Maximum amount of air exhaled following a maximum inhalation
- 5) Oxygen debt

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

Hypertrophy of respiratory system muscles
Increased lung capacity & vital capacity
Increased number of alveoli
Increased $\dot{V}O_2$ Max

What is $\dot{V}O_2$ 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

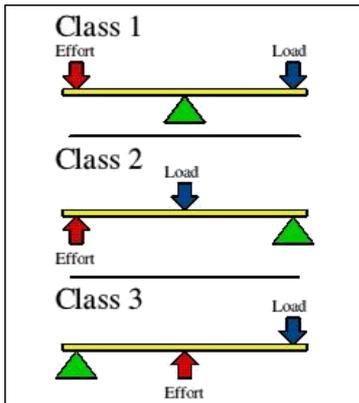
Movement Analysis

Lever Systems

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

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

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



Can you state the mechanical advantage provided by a 2nd class lever?

They make it easier to move a heavy load.

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.

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

Sagittal plane and frontal axis: Somersault
Frontal plane and sagittal axis: Cartwheel
Transverse plane and vertical axis: Full twist

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.

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. $Power = Strength \times Speed$

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 run – 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 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?

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 increase the amount of work the body does, in order to achieve overload.

List the 6 methods of training studied?

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: Intense Farting Can Cause Painful Wind

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 continuous 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 name and explain the 5 different exercise classes?

Body Pump – Weight based group exercise (strength)
Aerobics – Rhythmic dance set to music (core and posture)
Pilates – A series of posture/stretching (strength and flexibility)
Yoga - A series of posture/stretching (strength, flexibility and breathing control including aspect of meditation)
Spinning – High intensity work out on stationary bikes (Cardiovascular fitness)

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.

Think of the methods you use most regularly within your own sport, can you 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

Why do you set SMART goals in your training?

So that you can plan and monitor your training and progress. Those that set goals that they can then achieve are more likely to continue with fitness programmes than those that do not.

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.

Achievable: The goal should be within reach of the performer. They should be challenging but attainable.

Realistic: It should be possible for the performer to actually hit the goals set with hard work and determination

Time bound: Goals should have time limits so that a performer can assess whether or not they have hit their goal at a given point or not,

Why do we set SMART targets?

The intention is to make them easier to achieve.

What are the three areas of an exercise session?

Warm-Up, Main Activity, Cool-down

Why do we warm-up?

Increases temperature of muscles, tendons and ligaments

Increases heart rate and body temperature safely

Increases flexibility

Mentally prepares you for exercise

Increases oxygen delivery to the working muscles

Why do we cool-down?

Aid removal of lactic acid, CO₂ & waste products

Prevents blood pooling

Gradually brings heart rate, breathing rates & body temperature down to resting rates

Improves flexibility

Mentally unwind

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 & O₂ to muscles as fast as cells use them. Exercising in this way will lead to an oxygen debt

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

Target Heart rate / Target Zone: Can be found by taking 60% of the maximum heart rate as the lower threshold and 80% as the upper threshold. This means that the person will be working at a worthwhile level of training and getting fitter with reduced chance of injury

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 rules for preventing injury in sport.

People Please Prepare When Continuously Running

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.

Principles of Training: A training programme should be designed based around the principles of training to avoid overuse injuries (golfer's or tennis elbow). It must meet your individual needs and be specific to your sport and your goals. etc

Warm-up: Warming the muscles gradually helps to prevent injury and makes your workouts more effective.

Checking Equipment and facilities: Always check equipment before use to make sure it is in good condition.

Always check facilities before use to make sure there are no hazards, such as broken glass on a playing field.

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

What are the types of 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.

A Fracture is a broken or cracked bone. Symptoms include pain at the site of the injury, inability to move the limb, swelling and bruising.

A 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.

A 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.

A 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

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

Anabolic Steroids - Mimic the male sex hormone testosterone promotes bone & muscle growth

- Increases muscle mass
- Develops bone growth
- Increases aggression
- Produces quick results

Beta Blockers - Drugs that are used to control the heart rate & have a calming and relaxing effect

- Lower heart rate & blood pressure
- Stress levels and anxiety are reduced

Diuretics - Drugs that elevate the rate of urine production

- Weight Loss
- Masking Agents

Narcotics Analgesics - Drugs that can be used to reduce pain

- Pain Relief (depresses central nervous system) BUT increases the likelihood of injury

Stimulants - Effect the central nervous system, increased mental and/or physical alertness

- Stimulates nervous system: increases alertness & overcomes tiredness
- Offsets the effects of DOMS

Peptide Hormones - Drugs that cause other hormones to be produced

- HGH - Increase muscle growth
- EPO- Increase the number of red blood cells (O₂ and lactic acid)

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?

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 (VO₂ max) and endurance.

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

- Peer Pressure
 - Coach Pressure
 - Pressure to Win
-

Exam Topic 2 – Health and Performance

1hr 15mins 70 Marks

Friday 17th May 2019 – PM

Sections to revise:

How participation in sport can promote physical, social and emotional health
Impact of fitness on well-being
Lifestyle choices – positives and negatives 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: **Fat Men Can't Play Football Very Well**

What is the primary function of each category of food?

Fats – 2nd source of energy, bulking

Minerals & Vitamins – Health, growth and repair

Carbohydrates – 1st source of energy

Protein – Muscle growth & repair, 3rd energy source

Fibre – Aid digestion, bulking agent, reduces cholesterol

Water – hydration

Which are macro and micro-nutrients?

Macro provide energy - Carbohydrates, fat, protein

Micro are essential for a healthy body – Vitamins & minerals

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 the 4 deficiency diseases caused by a lack of vitamins or minerals?

Scurvy – Vitamin C

Ricketts – Vitamins D

Osteoporosis – Calcium

Anaemia – Iron

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

Prevents DEHYDRATION

Holds oxygen and main component of many cells

Transports nutrients, hormones & electrolytes around the body

Helps remove waste products through sweating

Regulates body temperature through sweating

Keeps joints lubricated

Aids mental concentration

Severe dehydration can lead to serious health problems (headaches, bladder, kidney, bowel)

When are the 3 times we should hydrate when exercising?

2 hours before performance

Just before event

Whenever possible during performance

What is carbo-loading and why is it important?

Strategy used by endurance athletes 3 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 loss, maintain and gain weight

Loss – 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 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?

Physical Health

Improvement in all areas of HRE - How?

Cardiovascular Fitness:

- Reduce Blood Pressure
- Reduce risk of CHD & Strokes

Muscular Strength & Endurance:

- Increase muscle mass
- Prevent Osteoporosis - Fractures

Increase Life Expectancy & Withstand & Recover from Illness:

- Cold & Flu
- Heart attack
- Stroke
- Type 2 Diabetes
- Some Cancers

Emotional Health

Feel-Good Factor – Serotonin

Relieve Stress & Tension - Endorphins

Increase Self-Esteem & Confidence

Enjoyment

Emotional/Psychological Challenge

Aesthetic Appreciation

Will have more energy if you exercise meaning you can cope with the physical demands of life

Exercising stimulates growth of new brain cells reduced age-related diseases - dementia

Social Health

Ability to interact with others, adapt to social situations and form relationships:

- Co-operation
- Social Mixing
- Developing Friendships
- Gaining a good attitude to competing

What is Aesthetic Appreciation?

To be able to see the beauty in a performance.

How can you increase your self-esteem through sport?

Feel part of something by becoming involved in a team

Performing better by practising more

Think you look better due to exercise through weight loss if overweight

What are the impact of fitness on well-being?

| Positive Effects | Negative Effects |
|---|---|
| CRS- Helps you cope with the physical demands of life | Risk of sports related injury – led to psychological issues |
| Improves longevity: "How long a person lives" | Competition pressure can led to psychological issues |
| Lowers risk of psychological illness | Early specialism in 1 sport can reduce other opportunities |
| Reduces risk of type 2 diabetes | Can lead to obsessive interest in body shape |
| Makes you less likely to use drugs or smoke | Exercise can be addictive – can lead to overtraining |
| Recover from exercise, injury & illness quicker | Overtraining can damage joints & cause overuse injuries |
| Lower resting heart rate and blood pressure | Overtraining can led to atrophy |
| Feel happier and more confident | |
| Increases bone density | |
| Improves body composition & maintain optimum weight | |

Lifestyles Choices

What are 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 do these choices affect our health?

| Healthy Diet | Unhealthy Diet |
|---|--|
| Boosts energy levels – enjoy life | Affect concentration and feel lethargic |
| Essential nutrients for healthy immune system | Deficiencies leading to health problems |
| Reduce stress | Can feel guilty & depressed if you overeat |
| Improve sleep pattern | Can negatively affect sleep |
| Help lose or maintain weight | Increase in weight & body fat |

| Active Lifestyle | Inactive Lifestyle |
|--|--|
| Lowers risk of diseases | Increase risk of disease |
| Lower risk of mental health issues | Increase risk of low self-esteem, anxiety & depression |
| Boosts self-esteem, sleep, energy levels | Decreases components of fitness levels |
| Reduces stress & anxiety | |
| Improves fitness levels | |

| Good Work/Rest/Sleep Balance | Poor Work/Rest/Sleep Balance |
|--|------------------------------------|
| Improves physical, emotional & social health | Increase risk of depression |
| Makes you feel more in control; stress, productive, decision-making, stronger & longer lasting relationships | Lead to weight gain |
| | Increase stress & anxiety |
| | Poor sleep quality |
| | Increase risk of illness & disease |

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?

Shortness of breath
Reduced O₂ carrying capacity

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?

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

What is a sedentary lifestyle?

A lifestyle with little, irregular or no physical activity

Can you list the long term health problems linked to a sedentary lifestyle?

High blood pressure

Heart disease

Obesity

Diabetes

Osteoporosis

Loss of components of fitness

Loss of muscle tone and posture

Depression

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.

What is Coronary Heart Disease?

Narrowing of the arteries

What is Depression?

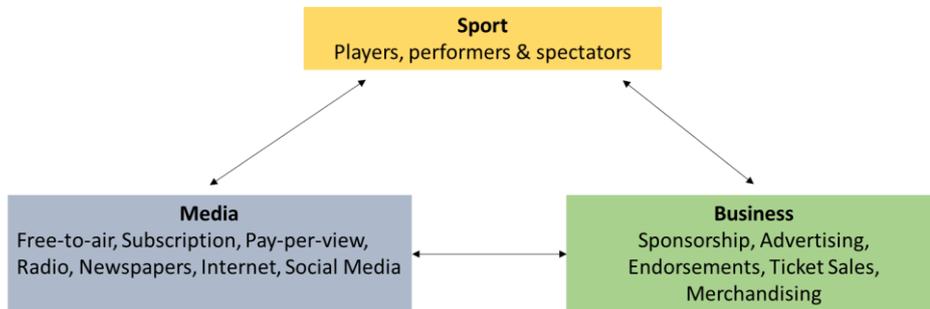
A persistent feeling of sadness and loss of interest in life

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?



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 many 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 Positive Deviance? Example?

Deviance where there is no intention to cause harm or break the rules

What is Negative Deviance? Example?

Deviance that has a detrimental effect

What is Sportsmanship? Example?

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

What is Gamesmanship? Example?

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

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

Can you define the term 'Complex Skill'?

Skills that are difficult, require a lot of information to be processed and require a lot of decision making.

Which one of the following is an Open Skill?

- A Penalty flick in hockey
- B Vault in gymnastics
- C Receiving a serve in tennis
- D Serve in badminton

Can you define the term 'High Organised Skill'?

Skills that are difficult and have phases which are not clearly broken down without affecting the skill.

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 'Massed Practice'?

Practice with few or no breaks in a session. The same skill is repeated over and over again.

What type of performer is distributed practice most suited to and why?

Novice/beginners. The session will contain breaks providing time to rest and process the information about a skill.

Can you define the term 'Fixed Practice'?

When the whole movement of a skill is repeatedly practised in the same way so it becomes learned. The skill is not broken down into parts.

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'?

This is when a coach physically support or moves the performer to help them get into the correct position.

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

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 'Extrinsic Feedback'?

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

Can you describe the term 'Terminal Feedback'?

Feedback which is given after the performance.

Which one of the following is the most appropriate statement about concurrent feedback?

- A. information about the quality of the skill from a performer's muscles
- B. information given to the performer during a performance
- C. information given to the performer after they have completed the skill
- D. information given to the performer by the coach or audience

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