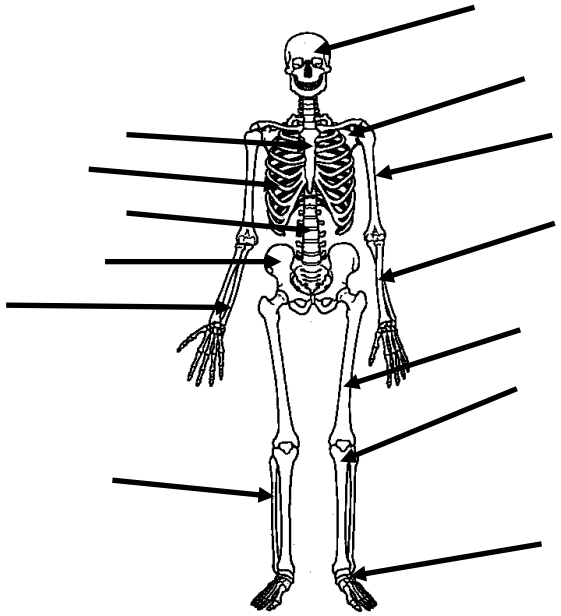
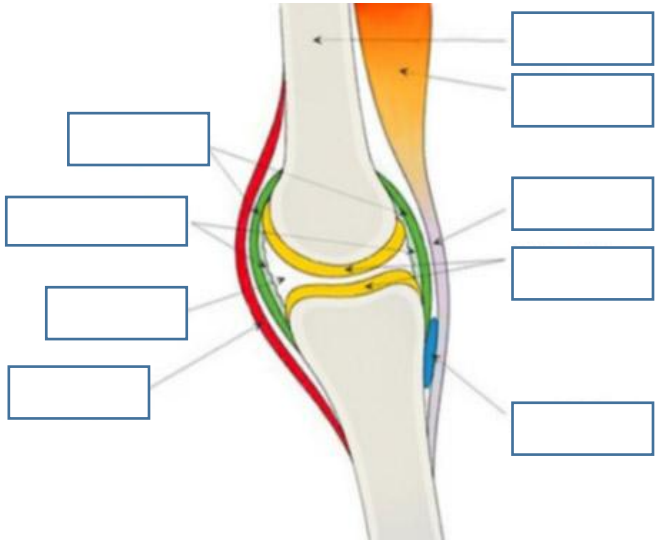
Anatomy and Physiology



Functions of the Skeletal System
S
S
P
M
M
P

2 Types of Joints

3 Muscle Contractions



Joint	Antagonistic Pairs	Agonist Muscle	Movement
Shoulder			
Elbow			
Hip			
Knee			
Ankle			

8 Types of Movement
F
E
Ab
Ad
C
R
D -F
P -F

Anatomy and Physiology

Identify the structure of the skeletal system

- ……
- ……
- ……
- ……
- ……

Explain the function of the skeletal system

- ……
  ……
- ……
  ……
- ……
  ……
- ……
  ……
  ……
- ……
  ……

What is meant by the term 'antagonistic pairs'?

……

……

……

Using 2 sporting examples, explain how Antagonistic pairs work.

1……

……

……

……

……

……

……

2……

……

……

……

……

……

Muscle contractions

Explain the following terms-

- Isotonic……
  ……
- Isometric……
  ……
- Concentric muscle contractions……
  ……
- Eccentric muscle contraction……
  ……
- Provide a sporting example for a concentric and eccentric muscle contraction……
  ……

  Eccentric……
  ……

Draw a picture of a synovial joint and label it below

Explain the role of the following parts of a joint;

Cartilage-

……

……

Ligaments-……

Joint capsule-

……

……

Synovial fluid-

……

……

Bursae-

……

……

Provide a definition for each of these joint movements;

Flexion-

……

……

Extension-

……

……

Abduction-

……

……

Adduction-

……

……

Rotation-

……

……

Provide a sporting example below

……

……

……

……

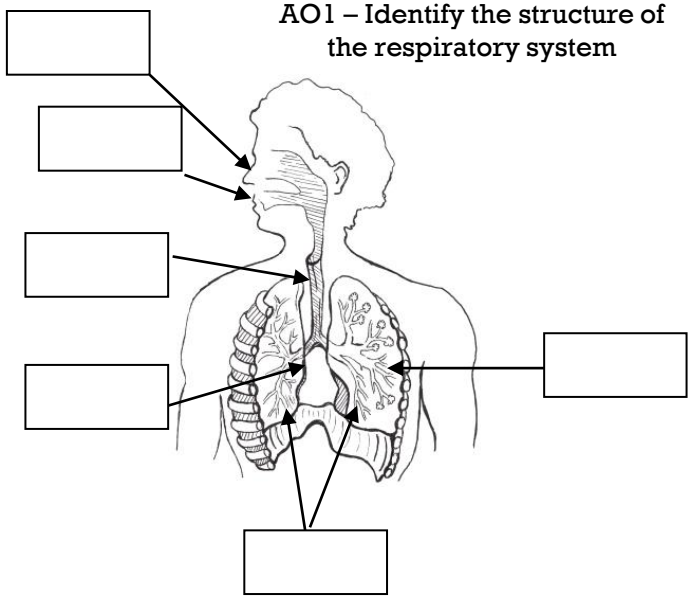
……

……

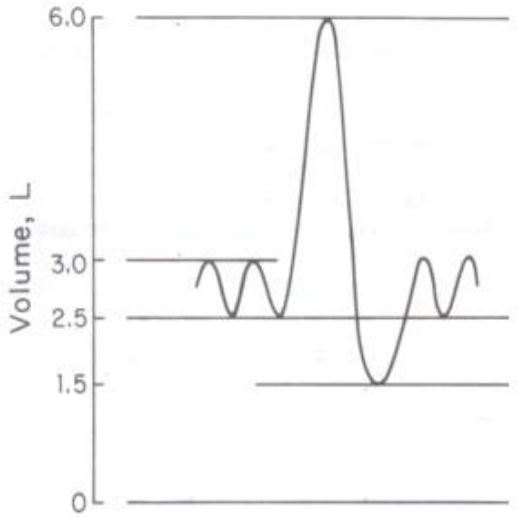
.

AO1 – The structure and functions of the cardio-respiratory system

AO1 – Identify the structure of the respiratory system



AO1 – Identify the different volumes of a spirometer trace



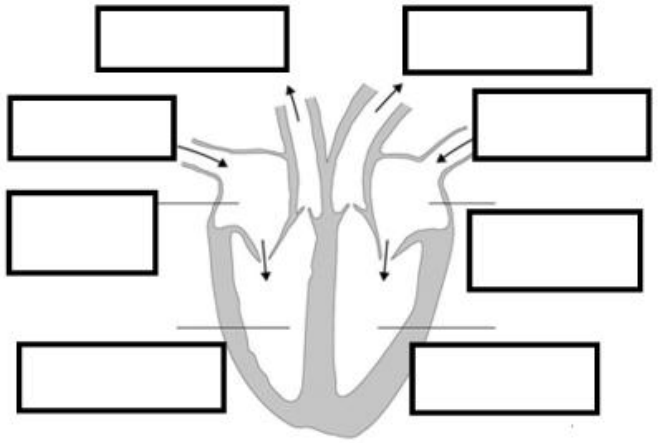
AO1 – Define the terms

	Definition
Tidal Volume	
Expiratory Reserve Volume	
Inspiratory Reserve Volume	
Residual Volume	

AO1 – Describe the mechanics of breathing

	Inspiration	Expiration
Diaphragm		
Intercostal Muscles		
Rib Cage		
Air Pressure		

AO1 – Identify the parts of the cardio system



AO1 – Define the terms

	Definition
Diastole	
Systole	
Cardio Output	
Heart Rate	
Stroke Volume	

Draw and label the pathway of air below and explain the role of each part

Trachea-

Bronchi-

Bronchioles-

Lungs-

Alveoli-

Explain the mechanics of breathing

Inspiration

Expiration

Redistribution of blood

Vasoconstriction

……

……

……

Vasodilation

……

……

……

Heart structure and the cardiac cycle

Draw and label and picture of the heart.

Explain the pathway of blood below

- .
- .
- .
- .
- .
- .
- .

Explain the process of gaseous exchange

Identify the key features that allow gaseous exchange to take place

- .
- .
- .

Explain the structure and function of the following blood vessels

Arteries-

……

……

Veins-

……

……

Capillaries -

……

……

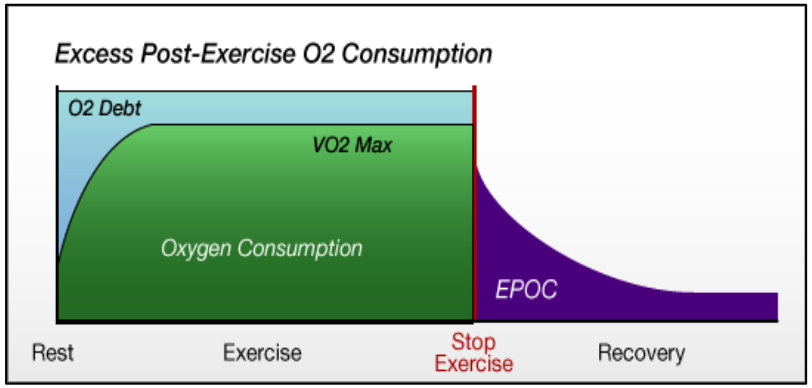
Aerobic and Anaerobic Exercise



Aerobic Equation

Anaerobic Equation

Name 3 anaerobic sporting activities	Name 3 aerobic sporting activities



EPOC

What does EPOC stand for?

……

When does EPOC occur? ***(aerobic OR anaerobic exercise)***

……

Explain the process of EPOC

……

……

……

……

……

Name the 5 recovery processes

1. ……
2. ……
3. ……
4. ……
5. ……


Recovery Process	Name one benefit of each recovery process
1.	
2.	
3.	
4.	
5.	

Immediate, Short and Long Term Effects of Exercise

Immediate	Short	Long

Immediate Effects of Exercise Notes

DURING EXERCISE

Short Term Effects of Exercise Notes

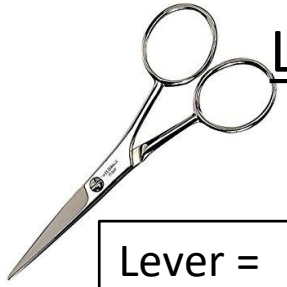
24-36 HOURS

Long Term Effects of Exercise Notes

MONTHS & YEARS

Lever	Part of Body	Symbol
	Bone	▬
	Joint	▲
	Muscle	⇅
	Weight or resistance	■

Lever Systems

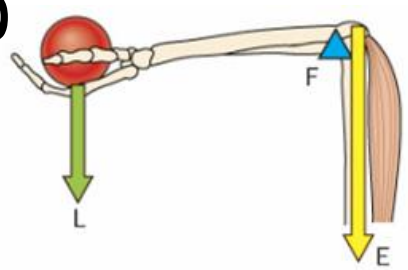


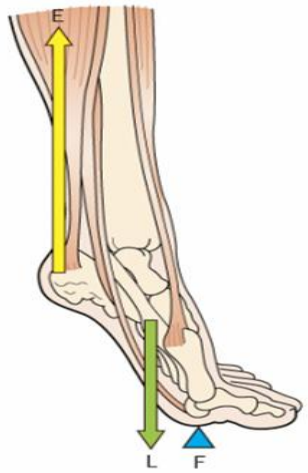
Lever =

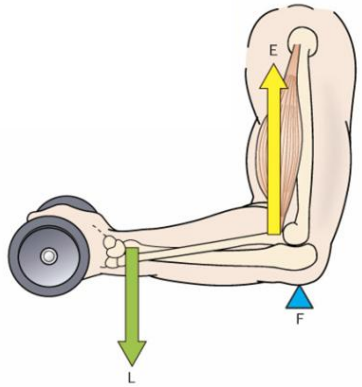
Lever =

Lever =

Label the following







Lever =

…… at the elbow

Draw the lever system below

Lever =

……&…… at the ankle

Draw the lever system below

Lever =

…… at the elbow

……&…… at the knee

Draw the lever system below

Mechanical Advantage

……

Health	Fitness

	The training must be <u>specific</u> to the needs of the <u>individual</u> and the demands of the <u>sport</u> ALL training must be specific to the muscles that are being used and the energy demands of the activity.
	<u>Working harder than normal</u> whilst gradually and sensibly increasing the intensity of training.
	This occurs if an individual <u>stops</u> or reduces their level of training. Once training has stopped, fitness and performance level will then drop.
	Training should be altered and varied to <u>prevent</u> an individual from suffering from <u>boredom</u>.

	How <u>OFTEN</u> you train.
	How <u>HARD</u> you train.
	How <u>LONG</u> you train for.
	The <u>TYPE</u> of training you use.

This is the period leading up to peak season or the competition phase, where high intensity fitness training takes place. • Develop general fitness to increase aerobic fitness • Develop skills specific to the sport • Develop strength and muscular endurance

This part of the season is during competitions and matches • The aim is to maintain fitness levels • The athlete should be at peak fitness and should aim to maintain this • Experience of game situations including set plays etc.

This is a period of rest, active recovery and light aerobic work after the competition phase of the season. • Rest happens to recover from the gruelling season • Light aerobic exercise to maintain general fitness

Component of Fitness	Definition
	The ability to move and change direction quickly (at speed) whilst maintaining control
	The maintenance of the centre of mass over the base of support
	The ability of the heart and lungs to supply oxygen to the working muscles
	The ability to use (two or more) parts of the body together smoothly and efficiently
	The range of movements possible at a joint
	Ability of a muscle or muscle group to undergo repeated contractions, avoiding fatigue
	Strength x speed
	The time taken to initiate a response to a stimulus
	Calculated by: distance / time
	The ability to overcome a resistance
	The ability to hold a body part in a static position.

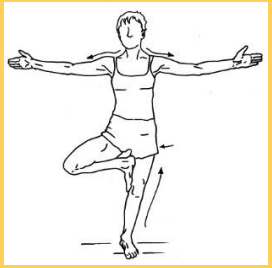
Reasons for fitness testing

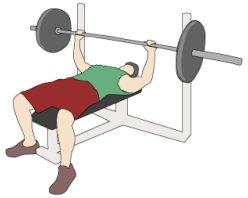
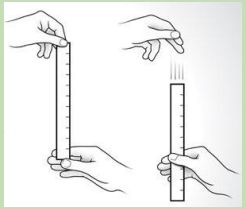
Limitations of fitness testing

Warm up

Cool down

Training Method	Description	Advantages	Disadvantages	Sport
	This method involves the use of free weights, resistance machines or objects that can be safely lifted in order to train individual muscles/muscle groups.	-Improves muscular endurance, strength & power -Can be easily adapted to needs of the individual	-Heavy weights can increase blood pressure -If weights are too heavy or lifted incorrectly, injury can occur	Sports: -All sports dependent on whether you are training for strength or endurance
	A form of aerobic training which involves training at a high altitude (high above sea level) commonly done by endurance athletes.	-Improves cardiovascular endurance -Trains the Aerobic energy system	-Benefits can be lost quickly, red blood cells decrease at sea level -Some athletes can suffer from altitude sickness	-Long distance events -Games players
	A series of exercises performed one after the other with a rest in between	-Each station can work on either the same or multiple components of fitness to suit the individuals needs. -Can be easily adapted to suit age/fitness level/sport	-Appropriate amount of space is needed -May require specific equipment e.g. medicine balls/benches	All sports -General fitness
	This training involves any activity that can be sustained without rest over an extended period of time (20+ mins).	-Improves cardiovascular endurance -Improves general stamina & fitness	-It can be quite tedious (boring) -It is also time consuming	-Long distance events -Games players
	A form of continuous training where the speed, intensity and terrain are varied. Also known as 'speed play'	-Improves cardiovascular endurance -Can also improve the aerobic & anaerobic systems	-Running on unsafe terrain may cause injuries	Games players
	Involves alternate periods of high intensity work with periods of rest or lower intensity work HIIT = high intensity interval training	-Burns body fat and calories quickly -Improves muscular endurance	-Extreme work can cause dizziness & injury -High levels of motivation are needed	-Sprints -Games players
	A type of training that usually takes the form of bounding, hopping or jumping. Using your body weight and gravity to stress the muscles involved	-Improves power	-Constant high impact exercises can cause stress injuries to muscles/joints	-Games players -Certain athletics events e.g. long jump
	This is when a limb is stretched beyond its normal range and held isometrically for a period of time	-Improves **flexibility** -Stretching can be done by anyone	-It is time consuming to stretch the whole body -Overstretching can cause injury	-Dancers -Gymnasts -Component of a warm up

Component of Fitness	Fitness Test	Image	Fitness Test Procedure
Balance			Stand on both feet with hand on hips and lift one leg. Place the toes of that foot against the knee of the other. Time starts with the heel is raised off the floor. Balance for as long as possible without either, moving the foot away from the knee of placing the heel on the ground Equipment: Stopwatch Measurements: Seconds
Flexibility			The feet are placed flat against a box, shoulder width apart and both knees are flat against the floor. With the hands on top of each other and palms facing down, the performer reaches forward as far as possible. After 3 practises, the 4th is held for at least 2 seconds and the result is recorded Equipment: Sit and reach box Measurements: CM
Muscular Endurance			Performer lies on their back, with their knees bent at a 90-degree angle and feet are flat on the floor. Performer's arms are placed at either side of the head. One repetition: curl trunk forward until sat in an upright position and the return back to the floor. The activity is repeated until the performer can no longer continue Equipment: Mats, sit-up bleep test recording and music player Measurements: Number of times
Strength			The device is squeezed with maximum isometric effort for 5 seconds with no other body movement allowed. Record the result from 2 attempts Equipment: Handgrip dynamometer Measurements: kg or lbs
Cardiovascular Endurance			A 20m section is marked out with cones being placed at either end of this section. The bleep test recording is then started and the performer participates in the test. If the performer arrives at the end of the section before the beep they must wait for the beep before setting off again. If the performer fails to reach the end of the section before the beep, they should be allowed 2 or 3 further attempts Equipment: Cones, multi-stage fitness test recording and music player

Component of Fitness	Fitness Test	Image	Fitness Test Procedure
Power			Performer stands sideways on to the vertical jump test and reaches up as high as possible with the hand closest to the wall but keeping the feet flat on the ground. The performer then jumps up vertically as high as possible using both arms and legs to help momentum. The performer then touches the wall at the highest point of their jump Equipment: Vertical jump measurement board Measurements: CM
Agility			The performer has to lie down on their front (head towards the start line) with hands by their shoulders. When told to start, they have to get up as quickly as possible and run around the course of set out cones to the finishing line where the watch is then stopped. The course is 10m by 5m with 4 cones marked out at the start, finish and turning points. Another 4 cones are placed down the centre an equal distance apart Equipment: Stopwatch and cones Measurements: Seconds
Coordination			A mark is placed 2m from the wall and the performer stands behind the line and faces the wall. The ball is thrown from 1 hand in an underarm action against the wall and caught with the opposite hand. The ball is then thrown back against the wall and caught again with the initial hand Equipment: Tennis balls and cones Measurements: Number of times
Maximal Strength			Performer lifts the maximum weight they can lift in one repetition. Rests should be taken in between the lifting of weights. This is repeated until the performer cannot lift one repetition of their chosen weight Equipment: Free weights Measurements: KG
Reaction Time			1m ruler to be held by an assistant between the outstretched index finger and thumb of the performer's dominant hand. The performer's thumb should be level with the zero CM line of the ruler. The performer has to catch the ruler as soon as possible after it has been dropped Equipment: 1m ruler Measurements: CM
Speed			30m length is marked out. The performer starts in their own time and sprints as fast as possible over 30m. The stopwatch is started on the first stride and stopped once the performer crosses the 30m line Equipment: Cones and stopwatch Measurements: Seconds

Types of training

Circuit training
How is it carried out?
……
……
……
Which component of fitness does it improve?
……
Which athletes would use it (A02)and why (A03)?
……
……
……

Continuous training
How is it carried out?
……
……
……
Which component of fitness does it improve?
……
Which athletes would use it (A02)and why (A03)?
……
……
……

Fartlek training
How is it carried out?
……
……
……
Which component of fitness does it improve?
……
Which athletes would use it (A02)and why (A03)?
……
……
……

Circuit training
How is it carried out?
……
……
……
Which component of fitness does it improve?
……
Which athletes would use it (A02)and why (A03)?
……
……
……

Circuit training
How is it carried out?
……
……
……
Which component of fitness does it improve?
……
Which athletes would use it (A02)and why (A03)?
……
……
……

Circuit training
How is it carried out?
……
……
……
Which component of fitness does it improve?
……
Which athletes would use it (A02)and why (A03)?
……
……
……

Principles of training
Complete and explain each letter below

S

P

O **F**

I

R **T**

T

T

Training intensities
Calculating maximum heart rate = ……
Aerobic training zone = ……..% to ……% of maximum HR
Anaerobic training zone = ……..% to ……% of maximum HR

Explain the following training seasons

Pre season
……
……
……

Peak season
……
……
……

Post season
……
……
……

Explain why an athlete would use high altitude training
……
……
……
……
……
……

Sports Psychology

Types of Guidance

Visual(seeing)……

……

……

Verbal(hearing)……

……

……

Manual……

……

……

Mechanical……

……

……

Skill classifications- Identify 4 skills on each line

Basic — Complex

Open — Closed

Self-paced — Externally paced

Gross — Fine

Explain the following letters providing a sporting example (A02)

S-

M-

A-

R-

T-

Explain the following providing a sporting example (A02)

Performance goals

……

……

……

Outcome goals

……

……

……

Definition of skill

……

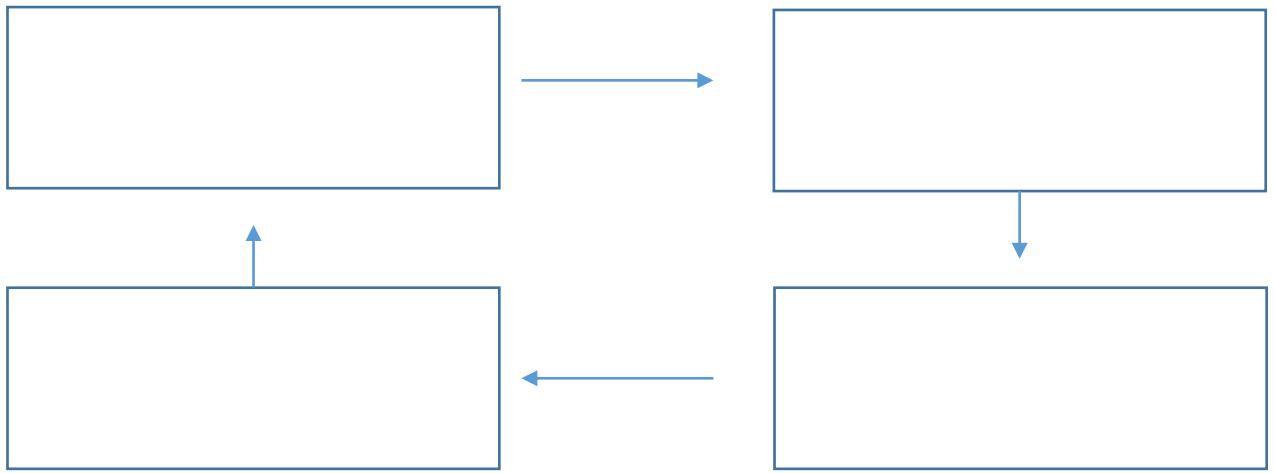
……

Definition of Ability

……

……

Basic information procession model- use each box to explain each stage



Types of feedback

Compare the types and feedback stating the type of athlete that it would benefit

Positive/negative……
……
……
……

Knowledge of results /knowledge of performance
……
……
……
……

Extrinsic/intrinsic……
……
……
……

Explain how following stress management techniques are carried out

Deep breathing
……
……
……
……

Mental rehearsal / visualisation / Imagery
……
……
……
……
……

Deep breathing
……
……
……
……
……

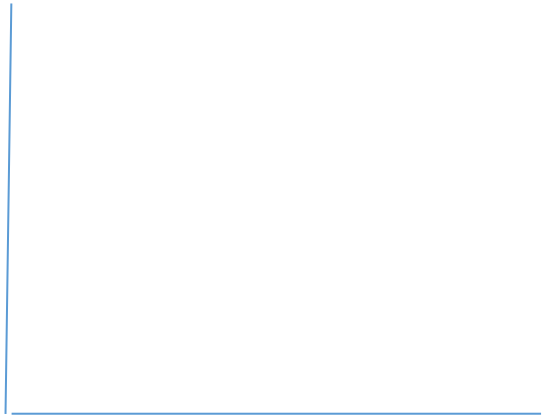
Definition of arousal

……
……
……

Explain a sport that requires high levels of arousal (A02)

……
……
……

Draw and explain the inverted U. Link to a sporting performance



……
……
……
……
……
……

Compare the difference between intrinsic and extrinsic.motivation……
……
……
……
……
……
……
……

Personality

Explain they key differences between an introvert and extrovert
……
……
……
……
……
……
……
……
……

Using sporting examples (A02), analyse the difference between direct and indirect aggression (A03).

……
……
……
……
……
……

Engagement Patterns

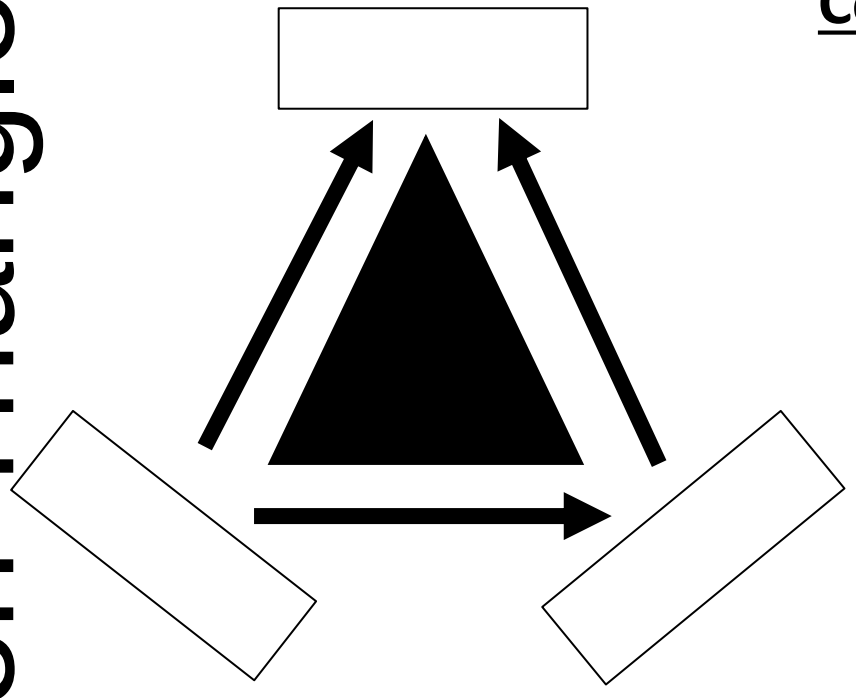
Name the 5 social groups

1. ……
2. ……
3. ……
4. ……
5. ……

F	
A	
C	
T	
E	
R	
S	

Social group	**A factor that can influence engagement patterns**	**Positive influence of factor**	**Negative influence of factor**
F……	Socio-economic status	…… …… ……	…… …… ……
R……	Attitudes	…… …… ……	Some religions may not approve of certain physical activities or the clothing worn.
D……	Accessibility	Sports and leagues with specific disabled teams have been set up, such as wheelchair basketball teams.	…… …… ……
G……	Media coverage	Sports such as tennis have televised games that include both women and men.	…… …… ……
A……	Adaptability	Sports and leagues such as over-60 football teams have been set up specifically for certain age groups.	…… …… ……

The Golden Triangle



Commercialisation

Definition of commercialisation
……
……
……

Definition of sponsorship
……
……
……

Definition of Media
……
……
……

Name the four types of sponsorship

Sport
……
……
……
……
……
……
……
……
……

Media
……
……
……
……
……
……
……
……
……

Sponsor
……
……
……
……
……
……
……
……
……

Name the five types of media

1)……

2)……

3)……

4)……

5)……

Advantages & Disadvantages of Commercialisation

	Advantages	Disadvantages
Player/Performer		
Sport		
Sponsor		
Spectator		
Official		

Advantages & Disadvantages of Technology

	Advantages	Disadvantages
Player/Performer		
Sport		
Sponsor		
Spectator		
Official		

Conduct of Performers

Conduct of Performers	Definition	Examples
Etiquette		
Gamesmanship		
Sportsmanship		
Contract to Compete		

Conduct of Performers:
Performance Enhancing Drugs

Advantages

Disadvantages

Performance Enhancing Drug	Reason for Use	Positive Effects	Sport	Side Effects
Anabolic steroids				
Stimulants				
Beta blockers				

Performance Enhancing Drug	Reason for Use	Positive Effects	Sport	Side Effects
Diuretics				
Narcotic analgesics				
Peptide hormones				
Blood doping				

Definition of **etiquette**

……

Sporting example-……

Definition of **Sportsmanship**

……

Sporting example-

……

Definition of **Gamesmanship**

……

Sporting example-……

Prohibited substance	Positive and negative effects	Athletes that would use them (A02)

Advantages / disadvantages of taking PEDs

Advantages	Disadvantages
1)……	1)……
2)……	2)……
3)……	3)……
4)……	4)……

Spectator behaviour

Positive influences of spectators at events / matches

1)……

……

2)……

……

The negative influence of spectators at matches

1)……

……

2)……

……

3)……

……

4)……

……

Why does hooliganism occur at sporting events? (3marks)

……

……

……

……

Evaluate strategies used to combat hooliganism

1)……

……

……

2)……

……

……

Health and wellbeing

Reasons for participating in physical activity

Physical	**Mental**
Social	**Fitness**

What is meant by the term 'sedentary lifestyle'?

……

……

Explain the consequences of a sedentary lifestyle

- ……
  ……
  ……
- ……
  ……
  ……
- ……
  ……
  ……
- ……
  ……
  ……

Somatotypes

Explain the somatotypes below and explain how their body type would influence their performance in a selected sport

Obesity

How does obesity impact on the following?

Physical	**Mental**
Social	**Fitness**

Energy use

Average calories per day male ……
Average calories per day female ……..

But calorie intake can be dependent on
1)……
2)……
3)……

Explain 3 reasons for consuming a balanced diet
1……
……
2……
……
3……
……

The role of Carbohydrates, fat, protein and vitamins / minerals- provide an example of each type of food.
Carbohydrates……
……
….
Fat……
……
Protein……
……
Vitamins / minerals……
……

A balanced diet contains
……..% Carbohydrates
……..% Fats
……..%Protein

Hydration

What is the definition of hydration?
……
……
……
……

Explain the consequences of dehydration
1……
……
2……
……
3……
……
4……
……

Explain the term carbohydrate loading and why a specific athlete would do it
……
……
……
……
……
……
……
……
……
……
……
……
……
……

Provide an example of each type of food and explain why a specific athlete would consume it.
Carbohydrates
……
……
……
Fat
……
……
……
Protein
……
……
……
Vitamins / Minerals
……
……
……