PE AS and A Level (Year 1) | Edexcel | 8PE0 / 9PE0

Starters and Plenaries

For AS and A Level (Year 1) Edexcel PE

Co-Teachable A Level + AS

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POD 7463

Contents

Teacher's Introduction

This resource contains 66 starters and plenaries which cover all of the theory content of the AS and A Level (Year 1) Edexcel PE specifications (2016).

The activities follow the specification order and give the teacher a clearly defined structure to work from. All activities are fully co-teachable with Edexcel's AS Level Physical Education.

The starter activities offer a way to grab the students' attention prior to learning the core information of the specification. The plenaries help to challenge the students, testing their understanding. While each activity is specified as either a starter or a plenary in the resource, these are adaptable to the teacher's needs.

The wide range of activities helps to stimulate each of the students' interest, by offering fresh and enjoyable methods of learning. The activities help to promote discussion, explanation, application and critical thinking skills, meaning that each student can learn to deeply analyse the information that they have been taught, which gives them a solid foundation from which to work for the following lessons. The activities target each type of learner, enabling every student to benefit from this resource.

J Robertson, May 2017

Remember!

Always check the exam board website for new information, including changes to the specification and sample assessment material.

Specification Cross-reference

This table will enable you to pick and choose starters or plenaries relevant to the specification topic you are teaching. While each activity has been selected as either a starter or a plenary you should be aware that many starter and plenary tasks may be interchangeable dependent on how you teach the content of the specification. Some may not work so well as a starter or plenary. It is at the teacher's discretion when to use each task.

Specification reference		Activity		Extra Resources	Suggested Use	Group Size
AS Level: Paper 1 / A Level: Paper 1	**Topic 1: Applied Anatomy and Physiology**					
	1.1 Muscular Skeletal system	1	Joints, movements and muscles: Body movements		Plenary	Individual
		2	Functional roles and types of muscle contraction: Unscramble the terms		Starter	Individual
		3	Movement and muscles: Analyse it		Plenary	Groups
		4	Lever systems in sport: Draw the levers		Starter	Individual
		5	Biomechanics and movement: Quiz		Plenary	Individual
	1.2 Cardio-respiratory system and cardiovascular systems	6	The respiratory system: Inspire or expire	Scissors	Starter	Pairs
		7	Gaseous exchange: Gap-fill comparison		Plenary	Individual
		8	Lung volumes and exercise: Table and graph		Plenary	Individual
		9	Cardiac cycle and the conduction system: Order the stages		Starter	Individual
		10	Blood: Note cards		Starter	Individual
		11	Structure and function of blood vessels: Identify the notes		Starter	Individual
		12	Vascular shunting: Fill in the boxes		Plenary	Individual
		13	Venous return during exercise: Starling's law		Plenary	Individual
		14	Heart rate, stroke volume and cardiac output at rest and during exercise: Complete the table		Starter	Individual
		15	Bradycardia: Exam-style question		Starter	Pairs
		16	Response of cardiorespiratory and cardiovascular systems to physical activity: Make your point		Plenary	Individual
		17	Impact of training on lifestyle diseases: Healthcare discussion		Plenary	Pairs
	1.3 Neuromuscular system	18	Muscle fibre types: Which fibre type?		Starter	Individual/ Pairs
		19	Fibre recruitment patterns: Draw the graphs		Starter	Individual
		20	Anatomy of the neuromuscular system: Annotate the diagrams		Plenary	Pairs
		21	The physiology of muscular contractions: Q&A		Plenary	Individual
		22	Structure and function of muscle fibres: Mark the work		Plenary	Individual
		23	Physiological adaptations to training: Training circles		Plenary	Individual

Specification Reference		Activity		Extra Resources	Suggested Use	Group Size
AS Level: Paper 1 (Component 1) / A Level: Paper 1	**Topic 2: Exercise Physiology and Applied Movement Analysis**					
	2.1 Diet and nutrition and their effect on physical activity and performance	24	Components of a healthy, balanced diet and energy intake: Promote your component		Starter	Groups
		25	Maintaining hydration and performance: Forbidden words		Starter	Pairs
		26	Dietary supplements/manipulation: Research and complete		Starter	Individual
	2.2 Preparation and training methods in relation to maintaining physical activity and performance	27	Training methods to improve physical fitness and health: Evaluate and train	Scissors	Plenary	Individual
		28	Fitness tests: Number the wall		Starter	Individual
		29	Fitness test data: Data handling		Starter	Pairs
		30	Running performance: Create a diagram		Starter	Individual
		31	Principles of training: Case study		Starter	Individual
		32	Calculating intensities: Calculations		Plenary	Individual
		33	Periodisation of training: Spot the aspects of training		Starter	Pairs
		34	Altitude, heat and humidity: Research and compare		Starter	Pairs
		35	Recovery: Annotate		Starter	Individual
AS Level: Paper 2 (Component 2) / A Level: Paper 2 (Component 2)	**Topic 3: Skill Acquisition**					
	3.1 Coach and performer	36	Coach and performer: Coaching skills		Starter	Individual
		37	Dissecting skills: Draw and identify		Plenary	Individual
	3.2 The classification of skills	38	Classification of skills: Classify the skills		Plenary	Individual
		39	Transfer of skills: Sport to sport		Starter	Individual
	3.3 Learning theories	40	Theories of learning: Applying theories		Plenary	Individual
		41	Thorndike's laws of learning: Group explaining		Starter	Groups
		42	Stages of learning: Place the characteristic on the continuum		Starter	Individual
	3.4 Practices	43	Types and methods of practice: Identify the practice		Starter	Individual
	3.5 Guidance	44	Guidance: Be the coach		Starter	Pairs
	3.6 Feedback	45	Feedback: Flow diagram		Plenary	Individual
		46	Modern technology for guidance and feedback: Discussion points		Plenary	Pairs
		47	Feedback models: Drawing models		Starter	Individual

Specification Reference		Activity		Extra Resources	Suggested Use	Group Size
AS Level: Paper 2 (Component 2) / A Level: Paper 2 (Component 2)	**Topic 4: Sports Psychology**					
	4.1 Factors that can affect an individual in physical activities	48	Personality: Noughts and crosses		Plenary	Class
		49	Attitudes in sport: Be the psychologist		Plenary	Pairs
		50	Arousal: Draw a graph		Plenary	Groups
		51	Anxiety: Key term steal		Starter	Groups
		52	Aggression: Research the theories		Starter	Groups
		53	Motivation: Sporting diary		Plenary	Individual
		54	Social facilitation: Flow diagram		Plenary	Individual
	4.2 Dynamics of a group/team and how they can influence the performance of an individual and/or team	55	Group and team dynamics in sport: Identify the stages of a group		Starter	Individual
	4.3 Goal-setting	56	Goal-setting in sports performance: What's the goal?		Starter	Individual
	Topic 5: Sport and Society					
	5.1 The factors leading to the emergence and development of modern day sport	57	Views towards recreational activities: Debate		Plenary	Groups
		58	Social class and gender's role in shaping sport through time: Timeline		Plenary	Individual
		59	Law and order and education's role in shaping sport through time: Make a speech		Plenary	Groups
		60	Availability of money and time in shaping sport participation through time: Diary entry		Plenary	Groups
		61	Transport's role in sports participation through time: Snapshot		Starter	Individual
		62	Equality and diversity: Policy forming		Plenary	Pairs
	5.2 Globalisation of sport	63	Globalisation of sport in the twenty-first century: Around the globe		Starter	Individual
		64	The modern Olympic games: Complete the timeline		Plenary	Individual
		65	Hosting global sporting events: Case study		Starter	Individual
	5.3 Participation and health of the nation	66	Participation and health of the nation: Jumping the barriers		Starter	Groups

Activity 1 – Joints, Movements and

Teacher's Notes

Plenary Activity: Body Movements	
Aim of the activity	To test the students' understanding of the different types o system performs during different sporting activities and the
Teacher's instructions	Photocopy the activity sheet on the next page and hand a c students 10 minutes to complete the table. Allow students moving and practising.

Answers

Joint	Articulating bones	Muscles used at joint	Types of m possible
Shoulder	Clavicle, scapula and humerus	Posterior deltoids, anterior deltoids, latissimus dorsi, pectoralis major, trapezius and teres minor	Horizontal flexi horizontal exte abduction, add rotation and ci
Elbow	Humerus, radius and ulna	Biceps brachii and triceps brachii	Flexion and ext
Hip	Femur and pelvis	Iliopsoas, gluteus maximus, medius and minimus, adductor longus, brevis and magnus gluteus, hamstrings and psoas major	Flexion, extens abduction, add rotation and ci
Leg and Knee	Femur, tibia, patella and fibula	Hamstring group (biceps femoris, semimembranosus, semitendinosus), quadriceps group (rectus femoris, vastus lateralis, vastus intermedius and vastus medialis), gastrocnemius and soleus	Flexion and ext
Ankle	Tibia, fibula, tarsals, metatarsals and phalanges	Tibialis anterior, soleus and gastrocnemius	Dorsi flexion, p flexion, eversio inversion
Wri	Radius, ulna, carpals, metacarpals and phalanges		Supination and
Core	Vertebral column – cervical, thoracic, lumbar, sacral and coccyx	Rectus abdominis and latissimus dorsi	Flexion, extens rotation

Joints, Movements and Muscles: Bo

Complete the table by listing the articulating bones and muscles found at each joint location. Then list a movement of your choice give an example of that movement in sport.

Joint	Articulating bones	Mu[illegible]used at joint	Types of m
Shoulder			
Elbow		*Biceps brachii and triceps brachii*	
Hip			
Leg and Knee			*Flexion and*
Ankle		*Tibi[illegible]te[illegible]or,[illegible]and [illegible]mius*	
Wrist			
Core			

Tip: If it helps, get up on your feet and try working out what each joint's movements are.

Activity 2 – Functional Roles and Types of M

Teacher's Notes

Starter Activity: Unscramble the Terms	
Aim of the activity	To test the students' understanding of the different types o
Teacher's instructions	Photocopy the activity sheet on the next page and hand a c students 10 minutes to unscramble the words and provide should then use the highlighted letters in each word to form question.

Answers

1. i) **Isotonic** contraction: A change in muscular length when the muscle u
   ii) **Antagonist** muscle: The muscle that opposes the action of the agonis
   iii) **Concentric** contraction: As the muscle contracts, its length decreases
   iv) **Isometric** contraction: When the muscle contracts, there is not a cha
   v) **Fixator** muscle: The muscle that gives stability to the joint when it mo
   vi) **Eccentric** contraction: As the muscle contracts, its length increases
   vii) **Prime mover**: The muscle which is responsible for moving a limb
   viii) **Synergist**: A muscle which plays a supporting role in a movement by agonist
   ix) **Agonist** muscle: The muscle that primarily starts the movement at th

2. The force of a muscular contraction is thought to be **increased** if it occurs A stretch shortening cycle occurs when a muscle is stretched by performin rapidly **shortened** by performing a **concentric** muscle contraction. This is muscles which are able to store the energy produced during the initial con second phase.

Functional Roles and Types of Muscl
Unscramble the Terms

1. Unscramble each of the words below to find the different types of muscul roles muscles take on. Provide a definition for each term below in the spa

i) **STOIOINC**

Definition .....

ii) **NTAATNIOSG**

Definition .....

iii) **NTCNROC**

Definition .....

iv) **SMIRCITEO**

Definition .....

v) **XARIFOT**

Definition .....

vi) **CETCRNIEC**

Definition .....

vii) **MIRPE REVMO**

Definition .....

viii) **GISNYSERT**

Definition .....

Take the letters that are in the black boxes and unscramble these to find a definition for this muscle type.

ix) **Type of muscle**

Definition .....

2. Fill in the blanks below in order to complete the text relating to the stretch

The force of a muscular contraction is thought to be _____ if shortening cycle. A stretch shortening cycle occurs when a muscle is stret _____ contraction and then rapidly _____ by p muscle contraction. This is possibly due to the _____ of the energy produced during the initial contraction and release it during the se

Teacher's Notes

	Plenary Activity: Analyse It
Aim of the activity	To get students to understand how to analyse sporting mov type, movement, agonist and antagonist involved and type
Teacher's instructions	Photocopy the activity sheet on the next page. Split the cla out a copy to each student. Allow the students 15 minutes annotating the sporting actions with the key analysis points

Answers

The drive phase of sprinti (drivi g back leg):

Joi pe)	Movement	Agonist	Ant
Ankle *(Hinge)*	Plantar flexion	Gastrocnemius/ Soleus	Tibiali
Knee *(Hinge)*	Extension	Quadriceps group (rectus femoris, vastus lateralis, vastus medialis, vastus intermedius)	Hamstr (biceps semimer semite
Hip *(Ball and socket)*	Extension/ Hyperextension	Gluteus (maximus)	Ilio

The preparation phase during a javelin throw (throwing arm):

Joint *(type)*	Movement	Agonist	Ant
Elbow *(Hinge)*	Extension	Triceps brachii	Bicep
Shoulder *(Ball and socket)*	Horizontal hyperextension	Posterior deltoids and teres minor	Pector

The pull-back phase of kicking (kicking leg):

Joint *(type)*	Movement	Agonist	Ant
Ankle *(Hinge)*	Plantar flexion	Gastroc u /Soleus	Tibiali
Knee *(Hinge)*	Fl xio	Qua ric ps group (rectus emoris, vastus lateralis, vastus medialis, vastus intermedius)	Hamst (bicep semime semite
Hip *(Ba ocket)*	Extension/ Hyperextension	Gluteus (maximus)	Ilio

Movement and Muscles: Ana

In your groups, annotate the images below with the type of joint being used, ty
the agonist and antagonists of the movement, and the type of muscle contract

The drive phase of sprinting (driving back leg)

Joint *(type)*	Movement	Agonist	Antagonist	Agonis Muscl contract

The preparation phase during a javelin throw (throwing arm)

Joint *(type)*	Movement	Agonist	Antagonist	Agonis Muscl contract

The pull-back phase of kicking (kicking leg)

Joint *(type)*	Movement	Agonist	Antagonist	Agonis Muscl contract

Activity 4 – Lever Systems in S

Teacher's Notes

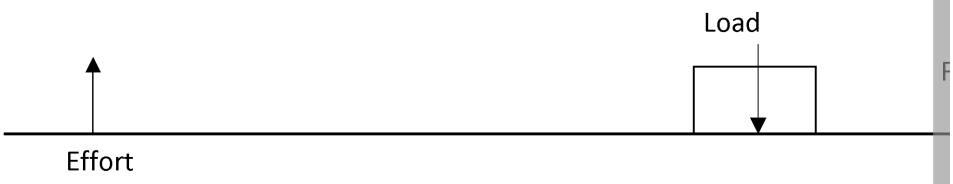
Starter Activity: Draw the Levers	
Aim of the activity	To get the students to understand the different lever syste
Teacher's instructions	Photocopy the activity sheet on the next page and hand out students 10 minutes to complete the activity by drawing ea example of each and explaining the mechanical advantage o

Answers

First-class lever

Explanation of the **mechanical advantage/disadvantage** for the first-class leve
This system can be at either a mechanical advantage or disadvantage dependi
positioned. This lever system can, therefore, produce a high amount of force t
(advantage) or produce smaller amounts of force but they can act quickly and
(disadvantage).

Second-class lever



Explanation of the **mechanical advantage** for the second class lever system:
The load is closer to the fulcrum than the effort. This lever system can, therefo
to overcome a heavy load.

Third-class lever

Explanation of the **mechanical disadvantage** for the third-class lever system:
The effort is closer to the fulcrum than the load. This lever system can, therefo
force but they can act quickly and move loads a greater distance.

Lever Systems in Sport: Draw th

Draw the three different levers below and provide an example of each in sport
system is under a mechanical advantage or disadvantage and explain what the

First-class Lever

Mechanical advantage or disadvantage?

Second-class Lever

Mechanical advantage or disadvantage?

Third-class Lever

Mechanical advantage or disadvantage?

Teacher's Notes

	Plenary Activity: Quiz
Aim of the activity	To allow students to test their understanding of the biom
Teacher's instructions	Photocopy the multiple-choice questions on the next pag Allow the students 10 minutes to complete the quiz indep

Answers

1. **c**
2. **b**
3. **d**
4. **a**
5. **c**
6. **a**
7. **d**
8. **c**
9. **a**
10. **d**
11. **b**
12. **b**
13. **d**
14. **a**
15. **c**

Answer the questions by ticking the correct statement.

1. **What is Newton's first law of motion?**
   a) An object's velocity will be equal to the force acting on it
   b) An object will accelerate in the same direction as the force applied on
   c) An object stays in a constant state of motion unless an external force
   d) For every action there is an equal and opposite reaction

2. **What equation summarises Newton's second law of motion?**
   a) Force = velocity x mass
   b) Force = mass x acceleration
   c) Acceleration = mass x velocity
   d) Force = inertia x acceleration

3. **Wh[illegible]ewton's third law?**
   a) [illegible]bject's velocity will be equal to the force acting on it
   b) An object will accelerate in the same direction as the force applied on
   c) An object stays in a constant state of motion unless an external force
   d) For every action there is an equal and opposite reaction

4. **Which explanation of net force is correct?**
   a) The overall force that is exerted on an object
   b) The force that makes an object decelerate
   c) The force that opposes movement
   d) When the balance of forces is not equal

5. **Which of the following factors does not affect air resistance?**
   a) Velocity
   b) Mass
   c) Friction
   d) Streamlining

6. **What does a free body diagram show?**
   a) The vertical and horizontal forces that are acting on a body, and their
   b) How friction and air resistance can be minimised
   c) The balance of the forces that are causing the body to accelerate
   d) The reason for the reaction forces on a body

7. **What is the correct calculation of weight?**
   a) Weight = mass x acceleration
   b) Weight = force x mass
   c) Weight = mass x 9.81 m/s^2
   d) Weight = mass x 9.81 m/s^2

8. **Which two factors affect a body's centre of mass?**
   a) The base of support of the body, the reaction forces acting on the bo
   b) The position of the body, the reaction forces acting on the body
   c) The base of support, the mass of the object
   d) The body position, the effect of gravity

9. **Which calculation for momentum is correct?**
   a) Momentum = mass x velocity
   b) Momentum = mass x moment of inertia
   c) Momentum = moment of inertia x velocity
   d) Momentum = velocity x 9.81 m/s^2

10. **Which is the correct definition of stability?**
   a) The likelihood of an object to quickly decelerate
   b) The point at which the base of support can be moved
   c) The point at which the total mass is concentrated
   d) A body's resistance to changing position

11. **In which sport would it be most beneficial to have a low centre of mass?**
   a) Long-distance running
   b) Rugby
   c) Long jumping
   d) Swimming

12. **What force is the effect that gravity has on an object?**
   a) Friction
   b) Weight
   c) Air resistance
   d) Reaction force

13. **How is a force described if the forces acting on an object in opposite directions mean the object stays in constant motion?**
   a) Net forces
   b) Reaction forces
   c) Unbalanced forces
   d) Balanced forces

14. **Which two forces will oppose the movement of a cyclist cycling downhill?**
   a) Friction and air resistance
   b) Weight and friction
   c) Friction and reaction forces
   d) Weight and air resistance

15. **What is the correct definition of the centre of mass?**
   a) The likelihood of an object to quickly decelerate
   b) The point at which the base of support can be moved
   c) The point at which the total mass is concentrated
   d) A body's resistance to changing position

Teacher's Notes

Starter Activity: Inspire or Expire	
Aim of the activity	To allow students to test their understanding of the stages i expiration at rest and during exercise of different intensitie
Teacher's instructions	Photocopy the activity sheet on the next page, cut out the s set into an envelope. Hand an envelope to each pair of stu pairs to put the stages of inspiration and expiration in the c at rest. They will need to separate the inspiration stages fr them 10 minutes to complete the activity.

Answers

Inspiration	
1. Th ernal intercostal muscles and diaphragm contract	1. The external in relax
2. The ribs move upwards and outwards, and the diaphragm flattens	2. The ribs move i diaphragm mov
3. The thoracic cavity increases in volume	3. The thoracic ca
4. The lungs' air pressure is lower than that of the atmospheric air	4. The lungs' air p atmospheric ai
5. Air enters the mouth and nose and passes down the pharynx and through the larynx	5. Air leaves the l breathed out
6. Air moves down the trachea	
7. Air enters the lungs through the bronchus which passes into the bronchioles and then the alveoli	

i) The forcefulness of inspiration and expiration is increased.
ii) The sternocleidomastoid and the pectoralis minor contract in order to fur
iii) The internal intercostal muscles and the rectus abdominis contract in order t

The Respiratory System: Inspire

Cut out the stages of inspiration and expiration and put the steps in the correc
questions below to explain how the mechanics of breathing change during exe

Air enters the lungs through the bronchus which passes into the bronchioles and then the alveoli	The thoracic c
The external intercostal muscles and diaphragm relax	The thoracic c
The ribs move inwards and downwards, and the diaphragm moves upwards	The lungs' air pre at
Air leaves the lungs through the trachea and is breathed out	The lungs' air pre at
The external intercostal muscles and diaphragm contract	The ribs move up dia
Air enters the mouth and nose and passes down the pharynx and through the larynx	Air mov

i) What happens to inspiration and expiration as the intensity of exercise inc

.....

ii) How does this change occur during inspiration?

.....

iii) How does this change occur during expiration?

.....

Teacher's Notes

	Plenary Activity: Gap-Fill Comparison
Aim of the activity	To allow students to test their understanding of how gaseo exercise and at rest.
Teacher's instructions	Photocopy the activity sheet on the next page and hand a c minutes for students to complete the activity individually. S answers with the person sitting next to them. Once studen swapped answers with their partner, go through the answe

Answers

Gaseous exchange:

	Alveoli	
At rest	The partial pressure of oxygen (PO_2) is **higher** at the alveoli than in the capillaries surrounding the alveoli, meaning that **oxygen** diffuses from the **alveoli** into the **blood.** The partial pressure of carbon dioxide (PCO_2) is higher in the surrounding **capillaries** than in the alveoli, meaning that CO_2 diffuses from the **blood** into the **alveoli**.	The PO_2 is lower i surrounding the r diffuses from the The PCO_2 in the m compared to the that CO_2 diffuses capillaries.
During exercise	As the capillaries have a high **PCO_2** and low **PO_2** due to the working muscles consuming a larger amount of O_2, more CO_2 travels to the **alveoli** to be expired.	The exercising sk and produce mor into the muscles the capillaries. This increases the dissociation.

Gaseous Exchange: Gap-Fill Co

Work independently and fill in the gaps in the sentences and the comparison t

Gaseous exchange:

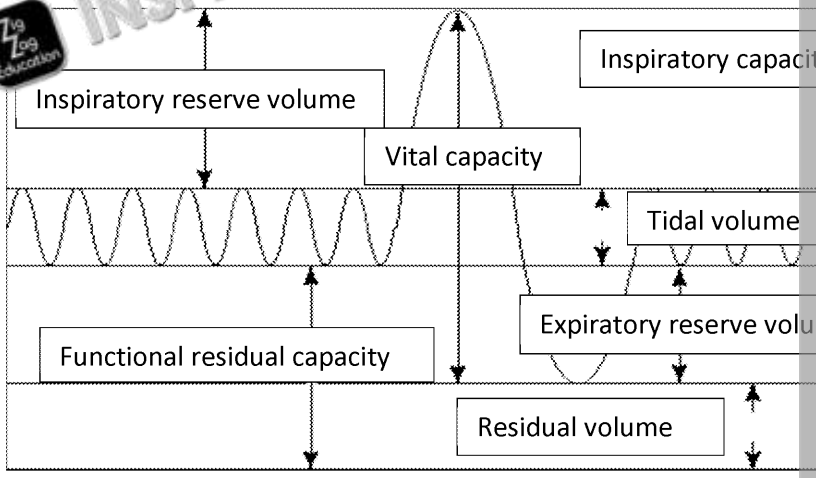
	Alveoli	
At rest	The partial pressure of oxygen (PO_2) is _____ at the alveoli than in the capillaries surrounding the alveoli, meaning that _____ diffuses from the _____ into the _____. The partial pressure of carbon dioxide (PCO_2) is higher in the surrounding _____ than in the alveoli, meaning that CO_2 diffuses from the _____ into the _____.	The PO_2 is lower in the capillaries meaning that ox capillaries into t The PCO_2 in the the muscles com capillaries, mean _____
During exercise	As the capillaries have a high _____ and low _____ due to the working muscles consuming a larger amount of O_2, more CO_2 travels to the _____ to be expired.	The exercising sk _____ This results in O_2 of the capillaries This increases th dissociation.

Activity 8 – Lung Volumes and E

Teacher's Notes

Plenary Activity: Table and Graph	
Aim of the activity	To get students to understand how the different lung values c
Teacher's instructions	Hand each student a photocopy of the activity page. Allow th activity. They should identify each of the lung volumes which trace provided. They should then define each lung volume, p males and indicate how this value wo change during exerc

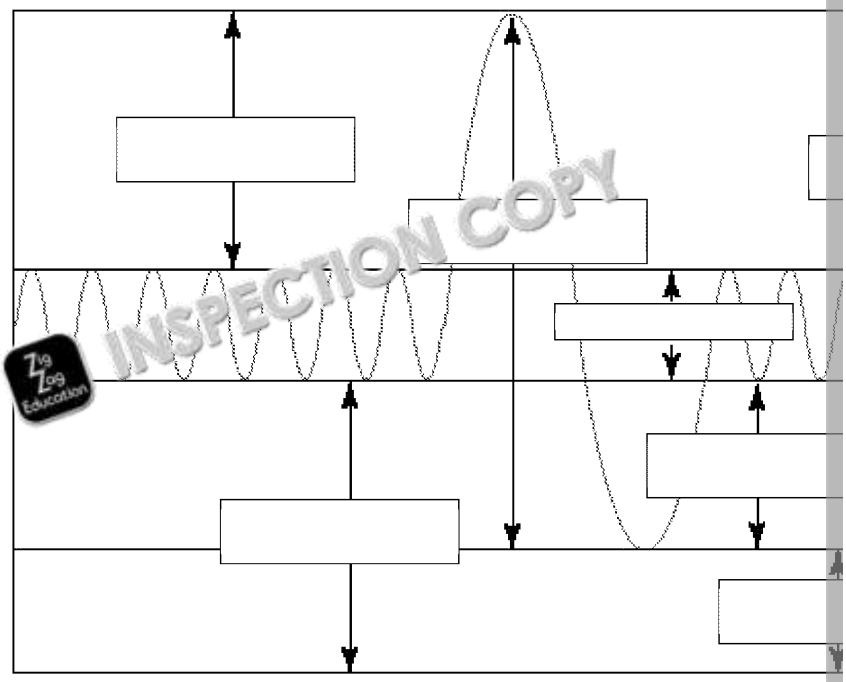
Answers



	Definition	Typic
Tidal Volume	The amount of air normally breathed in/out with each breath	
Inspiratory Reserve Volume	The amount of air that can be inspired on top of the tidal volume	
Expiratory Reserve Volume	The amount of air that can be expired on top of the tidal volume	
Residual Volume	The volume of air that remains in the lungs after maximal expiration	
Vital Capacity	The largest amount of air that can be exhaled	
Inspiratory Capacity	The volume of air a person can inhale after they have breathed out	
Functional Residual Capacity	The volume of air left in the lungs after expiration	
Total Lung Capacity	The maximum volume of air that can be held by the lungs	

Tidal Volume during Rest and E
Table and Graph

Identify the different lung volumes which can be seen on the spirometer trace



Now complete the table below by writing a definition for each lung volume, pr
indicating how the volume changes when a person takes part in exercise.

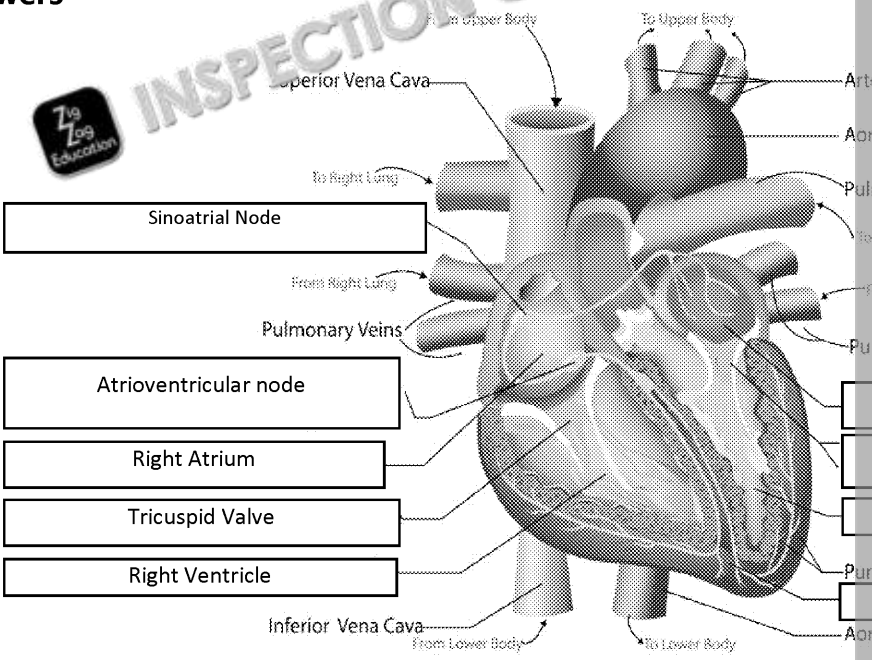
	Definition	Ty Va
Tidal Volume		
Inspiratory Reserve Volume		
Expiratory Reserve Volume		
Residual Volume		
Vital Capacity		
Insp y Capacity		
Functional Residual Capacity		
Total Lung Capacity		

Activity 9 – Cardiac Cycle and the Cond

Teacher's Notes

	Starter Activity: Order the Stages
Aim of the activity	To get students to understand the sequence of the cardiac conduction system link to cause the cardiac cycle.
Teacher's instructions	Photocopy the activity sheet on the next page and hand ea minutes to complete the activity. Students are required to the stages of the cardiac cycle and the conduction of the he

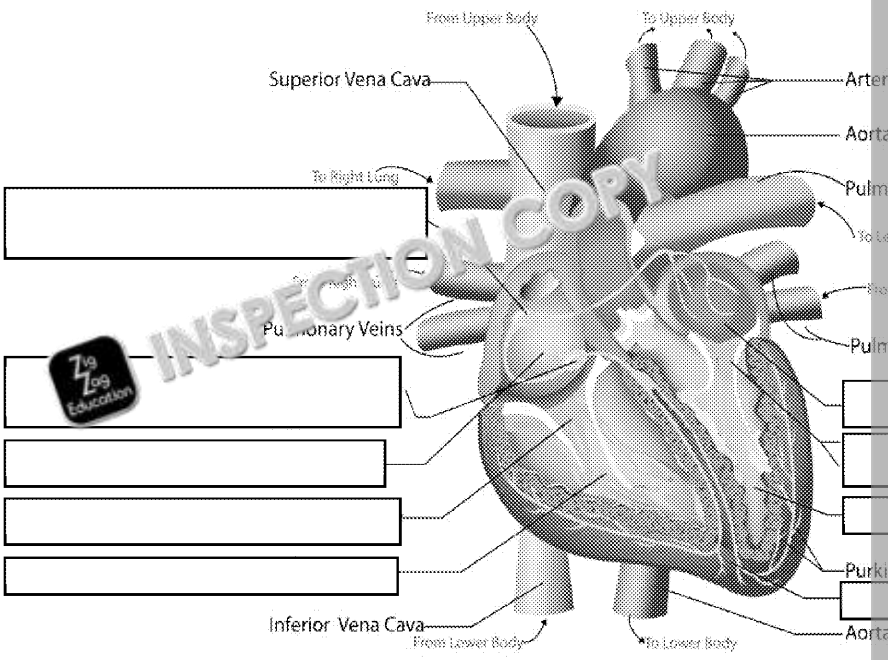
Answers



Stage
The atrioventricular valves are closed and the atria fills with blood
The pressure in the atria increases
The atrioventricular valves open
Blood flows into the ventricles
The semilunar valves are shut to prevent blood from entering the aorta or pu
The sinoatrial node (the pacemaker of the heart) initiates an electrical stimul
This stimulus passes over the atrial muscle cells, resulting in atrial contraction
Systole of the atria occurs to force any remaining blood into the ventricles
The stimulus reaches the atrioventricular node, where after a delay it passes
The stimulus passes down the bundle of His, branching out into the Purkinje f
The Purkinje fibres conduct the stimulus, and stimulate ventricular contractio
The myocardium in the walls of the ventricles contracts which increases the b within them
The semilunar valves open
Blood flows into the aorta and pulmonary artery
Blood is transported to the body via the systemic circulatory system and the pulmonary circulatory system

Cardiac Cycle and the Conductio
Order the Stages

Label the missing components of the cardiac system below and then using the
the cardiac cycle and the processes of the conduction system into the order in



Stage
Systole of the atria occurs to force any remaining blood into the ventricles
The atrioventricular valves are closed and the atria fills with blood
Blood flows into the aorta and pulmonary artery
The myocardium in the walls of the ventricles contracts which increases the b within them
The atrioventricular valves open
The Sinoatrial node (the pacemaker of the heart) initiates an electrical stimul
The pressure in the atria increases
Blood is transported to the body via the systemic circulatory system and the l pulmonary circulatory system
The semilunar valves are shut to prevent blood from entering the aorta or pu
The stimulus passes down the bundle of His, branching out into the Purkinje f
The stimulus reaches the atrioventricular node, where after a delay it passes
Blood flows into the ventricles
The semilunar valves open
This stimulus passes over the atrial muscle cells, resulting in atrial contraction
The Purkinje fibres conduct the stimulus, and stimulate ventricular contractio

Activity 10 – Blood

Teacher's Notes

	Starter Activity: Note Cards
Aim of the activity	To get students to understand the structure and function o make up the blood.
Teacher's instructions	Photocopy the activity sheet on the next page and hand ea 5–10 minutes to make notes about each of the four compo the students to feed back their notes to the class.

Answers

Plasma:

- The fluid wh… …blood cells are suspended in
- Allo… …od cells to be transported around the body
- Larg… …mprised of water
- The viscosity will change depending on hydration levels which can affect t
- It helps maintain body temperature
- It helps maintain blood pressure
- Contains clotting factors which aid platelets to form blood clots when an i

Platelets:

- They are responsible for clotting wounds which can occur when taking pa
- Prevent major blood loss from cuts
- Having a low platelet count can result in excessive blood loss when open v fainting or other serious consequences
- Having a high platelet count can result in the formation of blood clots whe prevent the cardiovascular system from delivering oxygen to the tissues w

Red blood cells:

- These are the oxygen-carrying components of the blood
- They contain haemoglobin which is a protein which can associate with bo order to transport them around the body
- Oxygen is accepted by haemoglobin at the lungs and then transported to dissociates due to the lower partial pressure which causes the red blood c seen in the oxyhaemoglobin dissociation curve)

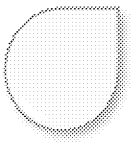
White blood cells:

- These cells play a major role in the immune response of the body
- They react to the invasion of foreign bodies and respond in order to remo
- They are responsible for maintaining the general health of the body
- Moderate exercise can help to increase the circulation of white blood cells
- Taking part in long-lasted strenuous activity such as ultramarathon runnin whi… …d cells and lead to infection

Blood: Note Cards

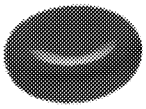
Make some note cards about each of the four components of the blood. Make their functions within the blood.

Plasma



Platelets

Red Blood Cells



White B

Activity 11 – Structure and Function of

Teacher's Notes

	Starter Activity: Identify the Notes
Aim of the activity	To understand the structure and function of the three bloo capillaries.
Teacher's instructions	Hand each student a photocopy of the activity page and giv note relating to the structure and function of the three diff then indicate which statements are relating to which vessel to the class once they have completed the activity.

Answers

Arteries:

- Small diamet
- No
- Bloc er very high pressure
- Thick walls
- Walls can vasodilate/vasoconstrict
- Have three layers
- Thick smooth muscle and elastic tissue (tunica media)
- Usually carry oxygenated blood

Veins:

- Large diameter
- Large volumes of blood carried
- Blood under low pressure
- Walls not very thick
- Contain valves
- Walls can be manipulated by the muscle pump
- Have three layers
- Transport oxygen to the heart
- Usually carry deoxygenated blood

Capillaries:

- Very large surface area
- Very thin walls
- Small diameter
- Slow blood through them
- Alter the shape of the blood cells
- No valves
- Walls can vasodilate/v con ict
- Site of gas ex h

Structure and Function of Blood
Identify the Notes

Read the notes below and decide which relate to the following blood vessels:

- Arteries
- Veins
- Capillaries

Next to each point, put the letter of the blood vessel which you think it relates
one blood vessel).

Small diameter		Larg
Bl der very high pressure		Very larg
Blood under low pressure		Have
Thick smooth muscle and elastic tissue (tunica media)		Large volum
Alter the shape of the blood cells		Th
Slow blood through them		Site of
No valves		Usually carry
Walls can vasodilate/ vasoconstrict		Walls can be mus
Walls n t ck		Usually carry
Transport oxygen to the heart		Very
Contain valves		

Teacher's Notes

Plenary Activity: Fill in the Boxes	
Aim of the activity	For students to understand the mechanisms of redistributio shunting.
Teacher's instructions	Photocopy the activity sheet on the next page and hand ou the students 10 minutes to complete the activity by explain blood distribution.

Answers

Vascular shunt mechanism

- The vascular system transports or 'shunts' the blood towards the exercisi for (O_2) from these muscles increases, via vasodilation
- Bloc to lower priority organs such as the kidney and liver is restricte

Role of the vasomotor centre

- Responds to the concentration of carbon dioxide (CO_2) in the blood/body
- The concentration of carbon dioxide in the blood is detected by chemorec information to the vasomotor centre
- Stimulates the sympathetic nervous system to either cause vasoconstricti

Role of arterioles

- Constrict at the site of low priority organs to restrict blood flow in this dir
- Dilate at the site of the muscles to direct blood flow in this direction

Role of pre-capillary sphincters

- Act like valves, which control if blood flows into the capillaries or not
- Therefore, the open sphincters allow blood flow into the capillaries surrou closed sphincters do not allow blood to flow into the capillaries surroundi

Vascular Shunting: Fill in the

Explain how the following mechanisms have a role in redistributing blood arou

Vascular shunt mechanism

The vasomotor

Arterioles

Pre-capillary sp

Activity 13 – Venous Return during

Teacher's Notes

	Plenary Activity: Starling's Law
Aim of the activity	To understand the mechanisms of venous return during exe during recovery.
Teacher's instructions	Photocopy the activity sheet and give one to each student. first activity by filling in the missing words in order to produ Law. Then apply Starling's Law to venous return during exe during recovery. Give them 10 minutes to complete the act the correct answers.

Answers

*Starling's law refers to the increased **stroke volume** as a result of an increased This occurs as a result of the cardiac muscles **stretching** before **contracting** (the increased volume of blood in the **ventricles**. This leads to an increase in the for heart to eject a higher volume of blood. Therefore, the increased stroke volum **exercising** heart rate results in the regulation of a higher level of **cardiac outpu***

Venous return during exercise of different intensities:
Venous return is the rate at which the blood returns to the heart. When exerc apparent that there is a greater need for quicker and efficient venous return. T increases, venous return increases. This is important because if the blood took volume and, therefore, cardiac output would be reduced.

Venous return during recovery:
A decrease in venous return at rest leads to a decreased stroke volume. This c which suggests that a slower venous return leads to a lower preloading of the ventricles stretch before contraction), thus leading to less blood being ejected return is also aided by the valves situated in the veins. This ensures that blood (towards the heart).

Venous Return during Exercise: St

Fill in the missing words about Starling's Law and then describe what effect thi
exercise of different intensities and during recovery.

contracting	***blood***	***contraction***
stretching	***ventricles***	***exercising***

Starling's Law refers to the increased _____ as a result of an increa

filling the heart. This occurs as a result of the c d ac uscles _____

(the preload stage), which lead t i reased volume of blood in the _____

increase in fo t he _____, allowing the heart to eject a hig

increased roke volume which accompanies the increased _____ h

of a higher level of _____.

Venous return during exercise of different intensities:

Venous return du

Activity 14 – Heart Rate, Stroke Volume and C
and during Exercise

Teacher's Notes

Starter Activity: Complete the Table	
Aim of the activity	To get students to understand the relationship between he cardiac output at rest and during exercise.
Teacher's instructions	Photocopy the activity sheet on the next page and hand ou Students are required to complete the table showing how h cardiac output differ during rest an exercise. Students ma to help them research the typical values.

Answers

	Heart rate	Stroke volume	Cardiac output
Definition	The number of times the heart beats per minute	The volume of blood that is ejected from the heart each beat	The volume of blood ejected from the heart per minute
At rest	*Typical value*: **70 bpm**	*Typical value*: **70 ml**	*Typical value*: **4,900 ml/min**
During moderate-intensity exercise	*Typical value*: **115 bpm**	*Typical value*: **90 ml**	*Typical value*: **10,350 ml/min**
During high-intensity exercise	*Typical* value: **135 bpm**	*Typical value*: **110–160 ml**	*Typical value*: **14,850–21,600 ml/min**
How to calculate values	Measuring pulse rate over one minute	Stroke volume = cardiac output ÷ heart rate	Cardiac output = stroke volume x heart rate

Karvonen's theory: A formula which can be used to work out the heart rate you work in a certain training zone – Target Heart Rate = (Max HR – resting HR) × %

Heart Rate, Stroke Volume and Card
Rest and during Exercise: Complet

Complete the table below by providing details regarding heart rate, stroke volu
and exercise. You may use textbooks or other sources to help you.

	Heart rate	Stroke volume	Cardiac output	Er
Definition				
At re	*Typical v...e*	*...ypical value:*	*Typical value:*	*Typica*
During moderate-intensity exercise	*Typical value:*	*Typical value:*	*Typical value:*	*Increa*
During high-intensity exercise	*Typical value:*	*Typical value:*	*Typical value:*	*Increa*
How to calculate values	*Calculation:*	*Calculation:*	*Calculation:*	

Outline Karvonen's theory:

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Now calculate your own training zone if ... wanted to work between 60–80%
rate reserve using Karvonen's th... Make sure you show your workings.

Your a...	
Your maximum heart rate	
Your resting heart rate	
Your heart rate reserve	
Heart rate to train at 60–80%	

Teacher's Notes

	Starter Activity: Exam-style Question
Aim of the activity	To understand what bradycardia is, what causes it and how
Teacher's instructions	Photocopy the activity page and hand one to each student. answer the question and then instruct them to swap their a the correct answer to the students and then give them five work.

Answers

Any four from: (maxim[illegible])

- Brad[illegible]dia is [illegible]ing heart rate of 60 beats or less per minute (1)
- Car[illegible]tput increases due to cardiac hypertrophy of the heart (1)
- That leads to increased strength of the ventricular contractions (1)
- Increased strength of the cardiac muscle allows for a greater stroke volum
- This will allow the athlete's heart to work at a lower level when exercising same cardiac output with fewer heart beats (1)

Bradycardia: Exam-style Que

Answer the exam question below and then swap with a partner and mark each provide a score out of four and indicate which parts of the answer were right a then try to correct the wrong parts.

1. Outline how bradycardia can impact cardiovascular function of an athlete

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Marker's Notes:

Activity 16 – Response of Cardiorespiratory a Systems to Physical Activit

Teacher's Notes

	Plenary Activity: Make your Point
Aim of the activity	To understand the responses of the cardiorespiratory and c to physical activity.
Teacher's instructions	Hand each student a copy of the activity sheet and give the structural changes which occur and how these structural ch engage the class in a group discussi here they feed bac

Answers

Vascular shunting:

- Vas hunting occurs within the arteries – this increases the blood sup the most at the expense of areas where it is less important.
- Arteries supplying non-essential organs and other tissues of the body vasc flow to these tissues and reduces their functioning.
- Arteries supplying the working tissues, e.g. the contracting muscles, vasod flow to these tissues and increases their functioning, e.g. muscles can pro

Venous return and stroke volume:

- The veins are squeezed by the respiratory and muscle pumps – this increa which allows oxygen to be circulated at a higher rate.
- Stroke volume increases and, as more blood is being returned to the hear increased, which stretches the ventricular wall and increases the preload.
- This is known as the Frank–Starling mechanism.

Elevated breathing rate:

- The sternomastoid muscles and the abdominals contract during physical a the rib cage up and out and the abdominals force the diaphragm up which inspiration and expiration respectively.

Increased cardiac output:

- Heart rate increases linearly with exercise intensity.
- Stroke volume increases (mentioned above), up until around 40–60% ther
- Cardiac output increases linearly with exercise.
- After 60% exercise intensity any further increase in cardiac output is as a r
- Cardiac output increases to meet the demand for more oxygen at the mus

Response of Cardiorespiratory and C
Systems to Physical Activity: Make

Highlight the main points regarding each of the cardiorespiratory responses on

Vascular shunting

Venous re

Elevated breathing rate

Incr

Activity 17 – Impact of Training on Life

Teacher's Notes

Plenary Activity: Healthcare Discussion	
Aim of the activity	To test students' understanding of the impact of unhealthy respiratory diseases.
Teacher's instructions	Split the class into pairs and hand a photocopied version of next page to each pair. One student of each pair is to adop professional, and should tell the other student about the im lifestyle on the cardiovascular system. Following this, the o adopt the role of the healthcare professional, telling their p leading an unhealthy lifestyle on the respiratory system. Q by the note-taker and answered by the speaker, before swa 10 minutes to complete the activity.

Answers

The impact on cardiovascular diseases

- Increased blood pressure, which can in turn increase the likelihood of card atherosclerosis and heart attacks
- Lowered good cholesterol (HDL) and increased bad cholesterol (LDL)
- Reduced width of blood vessels which can increase the risk of blood clotti
- Reduced cardiac output as a result of a reduced stroke volume
- A less efficient cardiac muscle which means that the muscle needs to beat same amount of blood

The impact on respiratory diseases

- A reduced efficiency of gaseous exchange at sites of gas exchange (the tiss
- Reduced lung volume which allows less oxygen to enter the lungs
- Less oxygen is available to enter the bloodstream
- Breathing rate is increased, which can lead to shortness of breath – a sym

Impact of Training on Lifestyle Diseases: He

In your pairs one of you should adopt the role of a healthcare professional and
lifestyles and unhealthy habits can have on the cardiovascular system or the re
speaking the other should make notes and list any questions they have in the s
have finished speaking, the note-taker should ask their questions to the health

After you have discussed one of the systems, swap roles and repeat the proces

Notes:

Quest

Notes:

Questions:

Activity 18 – Muscle Fibre Ty

Teacher's Notes

Starter Activity: Which Fibre Type?	
Aim of the activity	To test students' understanding of the characteristics of dif
Teacher's instructions	Print out a copy of the activity sheet on the next page and h Allow the students 5–10 minutes to complete the activity, e partner, by filling in the type of muscle fibre that the charac

Answers

Slow Twitch Fibres – Type I	
• Longest time to contract • High oxidative capacity • Low resistance to fatigue • Low glycolytic capacity • Suited for aerobic/endurance activities • Small stores of phosphocreatine and glycogen	• High capillary d • Low productio • Contain large a • Red in colour • High concentra • Important for a endurance, e.g
Fast Oxidative Glycolytic Fibres – Ty	
• Quick time to contract • High oxidative capacity • Short time to fatigue • High glycolytic capacity • Suited for activities which require powerful movements • Medium stores of phosphocreatine and glycogen	• Medium capill • High productio • Contain mediu • Red in colour • High concentra • Important for a contraction, e.g
Fast Glycolytic Fibres – Type IIx	
• Quickest time to contract • Low oxidative capacity • Shortest time to fatigue • High glycolytic capacity • Suited for activities which require even more powerful movements • Large stores of phosphocreatine and glycogen	• Low capillary d • Highest produc • Contain small a • White in colour • Low concentrat • Important for a contraction spe

Discussion:

- Recruited from type I to type IIa to type IIx as the need for force increases
- Recruitment of muscle fibres can be trained by taking part in extended low duration exercise with heavy loads / resistance / pace (type IIa) or rapid ex

Muscle Fibre Types: Which Fibr

Below lists a number of characteristics of the different muscle fibre types. For
fibre is a slow twitch (type I), fast oxidative glycolytic (type IIa) or fast glycolyti
boxes provided.

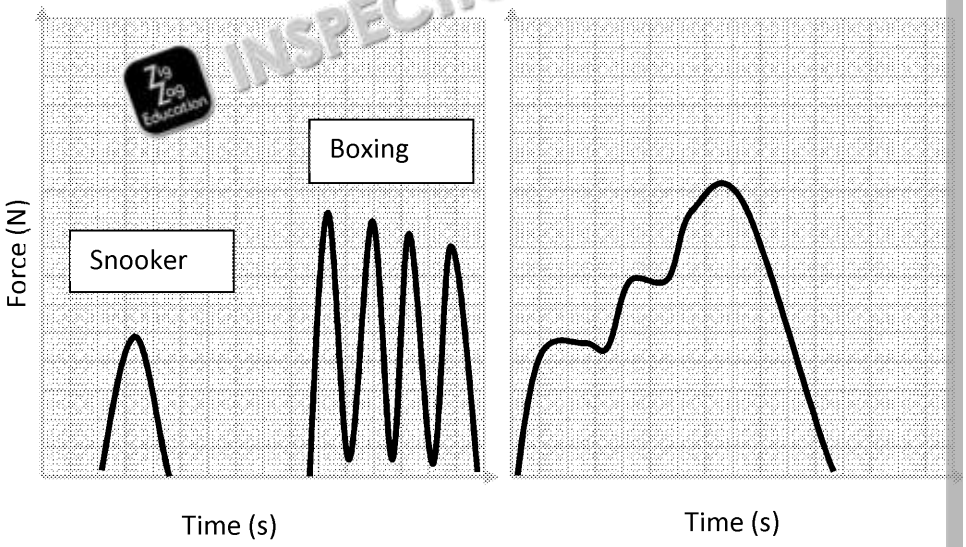
Longest time to contract		High capillary density	
Low concentration of mitochondria		Short time to [illegible]ue	
Shorte[illegible]		Medium capillary density	
High oxidative capacity	and	High production of force	
Contain medium amounts of myoglobin		Low production of force	
Large stores of phosphocreatine and glycogen		Suited for activities which require even more powerful movements	
Long time to fatigue		White in colour	
Low oxidative capacity		Important for athletes who need muscular end[illegible]nce, e.g. 5,000 m r[illegible]	
Contain large amount[illegible] myoglobi[illegible]		Suited for aerobic / endurance activities	
Suited for activities which require powerful movements		Red in colour	and
Important for athletes who require rapid contraction, e.g. 800 m runners		Important for athletes who need maximal contraction speeds, e.g. 100 m runners	

Activity 19 – Fibre Recruitment P

Teacher's Notes

Starter Activity: Draw the Graphs	
Aim of the activity	To understand the muscle fibre recruitment patterns (spati physical activities.
Teacher's instructions	Hand each student a copy of the activity page and give ther which represents each of the three types of fibre recruitme an explanation of which type of physical activities would inv recruitment pattern and how it could b e trained.

Answers



Spatial

The size of the muscular contraction is altered by either recruiting more motor units or by recruiting different types of motor units.

For example:
A snooker shot would recruit a smaller number of type I motor units than a punch in boxing which would recruit more type ix motor units.

Can b d by performing free weight ises designed to train muscular endurance. These will involve a high number of repetitions performed with a low load and a short rest period between each set.

Wave

The size of the muscular contraction is increased by stimulating one motor unit to fire continuously.

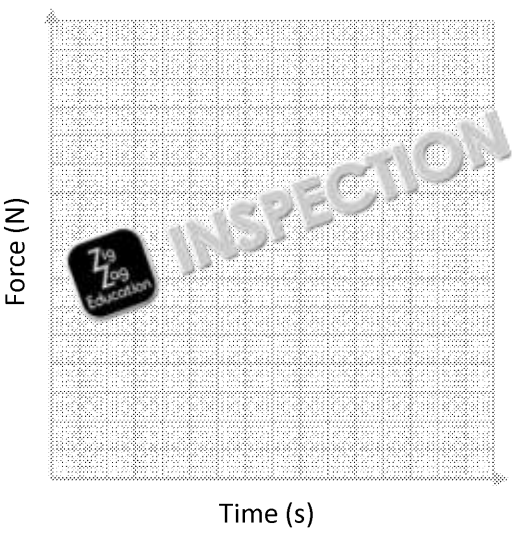
For example:
During a sprinting event, the quadriceps and hamstrings are not able to fully relax before the next cycle of stimulation and, therefore, the size of the contraction increases.

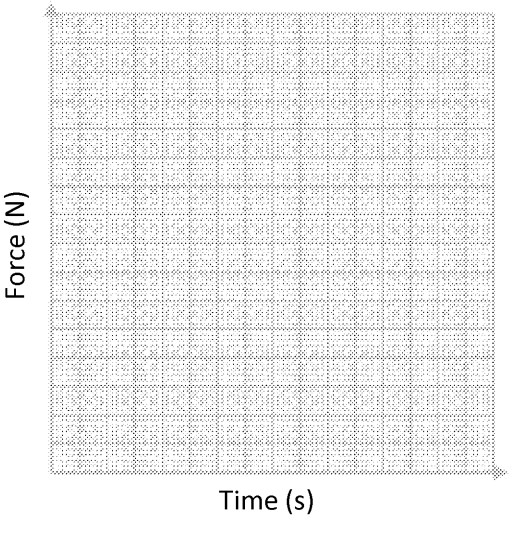
Can be trained by performing power based free weight exercises which are performed very quickly without time for full recovery between each set.

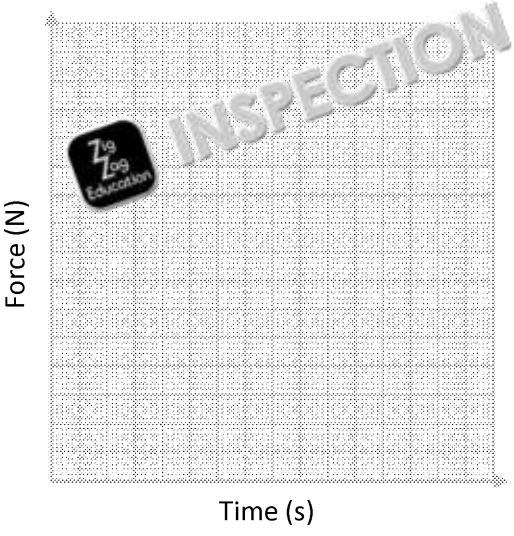
Fibre Recruitment Patterns: Draw t

1. Draw a graph which represents each of the following fibre recruitment pa
   - Spatial
   - Wave
   - Tetanic

Then explain each graph discussing whether the fibre recruitment pattern wou
based events and how different training methods could be used in order to im







Activity 20 – Anatomy of the Neuromus

Teacher's Notes

	Plenary Activity: Annotate the Diagram
Aim of the activity	To understand the anatomy of the neuromuscular system.
Teacher's instructions	Photocopy the activity pages and hand one copy to each pa 10 minutes discussing the diagrams and making notes abou the diagram.

Answers

Students should provide notes simila to the following:

Central nervous system and motor neurons:

- The al nervous system (CNS) is comprised of the brain and spinal colu
- The responsible for initiating muscular contractions
- The CNS innervates muscles by sending nerve impulses to the muscles via
- Motor neurons are cells which are able to propagate nerve impulses
- Motor neurons are found within the spinal column of the CNS
- Motor neurons can interact with numerous muscle fibres

Muscular end plate:

- This is the point where the motor neuron and the muscle fibres meet
- In order for a nerve impulse to innervate the muscle fibre, it must be pass
- The nerve impulse is transferred across the pre-synaptic cleft by stimulati (ACh) from pre-synaptic vesicles which crosses the synaptic cleft
- The ACh is able to depolarise the muscle cell and produce an action poten contraction

Muscle fibres, myofibrils and motor units:

- A motor unit comprises a motor neuron and the skeletal muscle fibres
- Myofibrils are contractile fibres that contain many repeated sarcomere un

Sarcomeres:

- Part of the myofibril
- Consist of actin and myosin
- Made up of different bands of muscle fibres
- Made up of a Z-line, M-line, I-band, A-band and H-zone

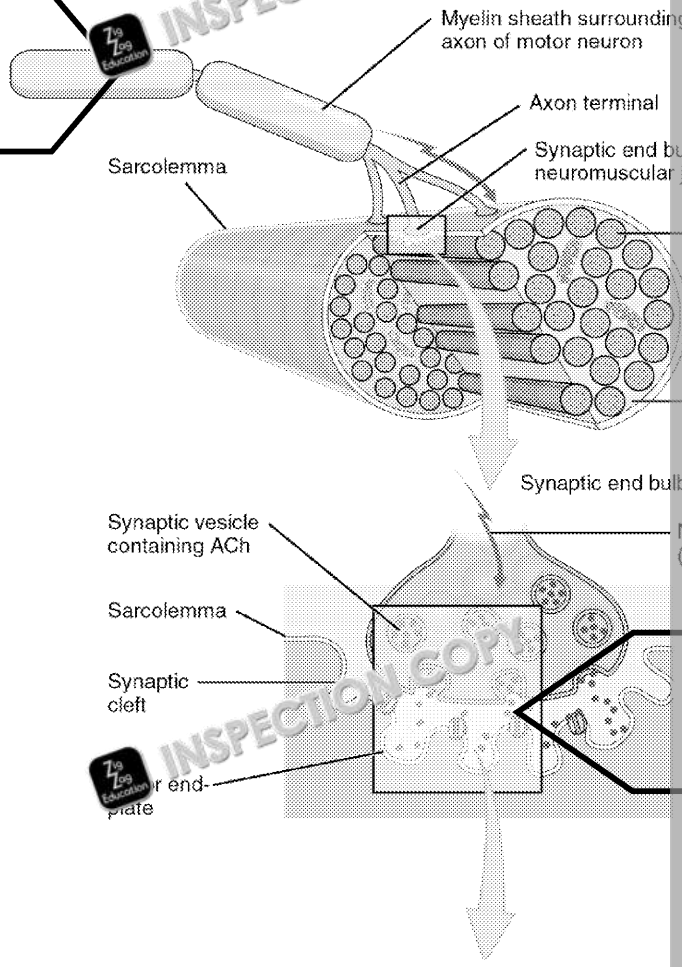
Myosin, actin, troponin and tropomyosin:

- Myosin is a thick filament
- Actin is a thin filament
- Myosin consists long tails and heads
- Actin contains sites where the myosin heads can attach
- Troponin is found on the actin filaments
- Tropomyosin is found on the actin filaments
- Tropomyosin covers the myosin binding site at rest and stops actin heads
- Troponin combines with calcium when the muscle is active
- The combination of troponin with calcium leads to structural changes to tr binding site on the actin filaments which allows the myosin heads to attach

Anatomy of the Neuromuscular System: A grams

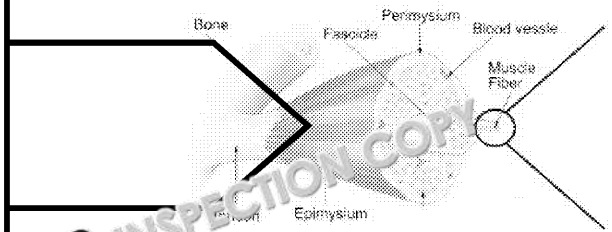
Discuss the two diagrams of the neuromuscular system below with a partner. During your discussion, ation as you can about the highlighted parts and fill in the relevant boxes with brief notes. Consider the structure and anatomy o

Notes on: *Central nervous system and motor neurons*

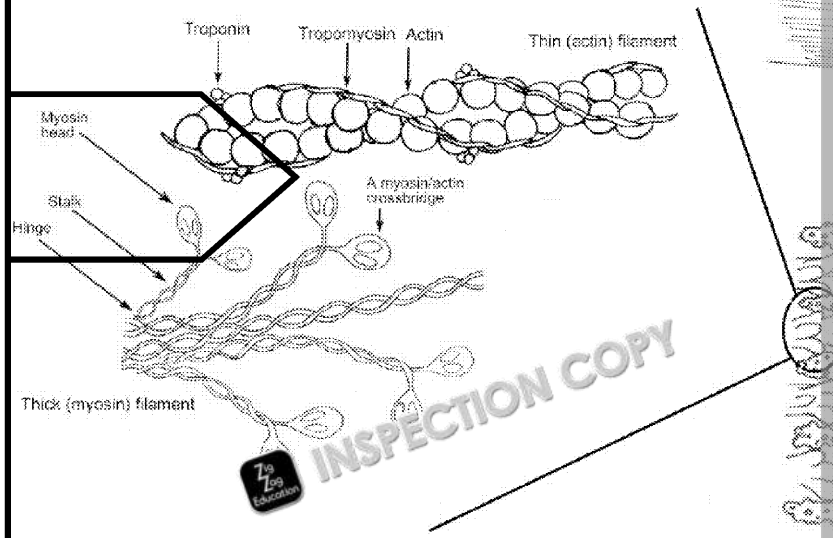


s on: *Muscular end plate*

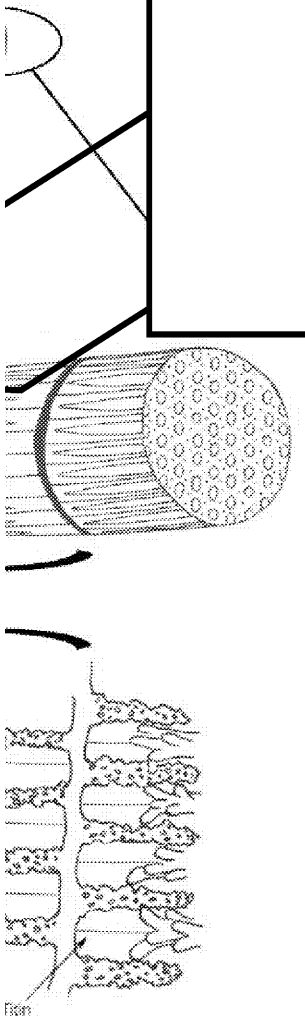
Notes on: *Muscle fibres, myofibrils and motor units*



Notes on: *Myosin, actin, troponin and tropomyosin*



Notes on: *Sarcomeres*



Activity 21 – The Physiology of Muscula

Teacher's Notes

	Plenary Activity: Q&A
Aim of the activity	To understand the physiology of a muscular contraction.
Teacher's instructions	Photocopy the activity sheet and hand one to each student answer the questions about nervous stimulation of motor u contraction and the 'all or none' law.

Answers

Nervous stimulation of a mot

- Signals (action po e sent from the nervous system to cause a mu
- The reaches the neuromuscular junction
- Ace ne is released from the synaptic vesicles and is transported acr
- Acetylcholine binds with receptors on the motor end plate which causes c the generation of an action potential
- This action potential travels to the myofibril and will cause the muscle to c threshold
- If it does not exceed this threshold, the muscle will not contract. This is kn

Muscular contraction (sliding filament theory):

- The sliding filament theory states that muscles contract when actin slides
- At rest, tropomyosin is covering the binding sites on the actin filaments w from binding
- Neural stimulation of the muscle fibres results in the release of calcium wh in the myosin binding sites on the actin filaments being exposed due to a s tropomyosin
- Actin forms a crossbridge with myosin when its protein head attaches to t
- The actin pulls the myosin as the head moves and then ATP attaches to th attached from the myosin and cocked back as the ATP is broken down into
- This results in the sarcomeres becoming shorter
- There are five stages of muscular contraction: resting, excitation, contract

'All or none' law:

- The 'all or none' law explains that a muscle fibre is either stimulated to cont the threshold is overcome
- Any further stimulation above the threshold w in ease the strength c
- Once stimulation exceeds the thresh ld fo contraction, the force of contra recruiting more muscles fibr m ting the fibres at a faster rate in orde recruiting more forc f fibre types (type IIa / IIx)

Explain the process of the nervous stimulation of a motor unit:

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Explain the process of muscular contraction (sliding filament theory):

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Describe the 'all or none' law:

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Activity 22 – Structure and Function of

Teacher's Notes

	Plenary Activity: Mark the Work
Aim of the activity	To understand how the structure and function of muscle fib
Teacher's instructions	Students read an exam-style answer about the structure an fibres. They must then mark it, indicating any wrong inform order to gain full marks.

Answers

The answer should receive [illegible] mark [illegible] two out of a possible four.

Student[illegible]d [illegible]ntify the following points as being correct:

- If ty[illegible]uscle fibres are recruited, the muscle will be able to contract for myoglobin and are, therefore, the most fatigue resistant.
- They (type I) will not be able to contract rapidly due to their low phospho

Students should provide the following comments:

- Type IIa fibres have medium phosphocreatine stores which allow them to suited to 400 m running.
- Type IIx can contract very rapidly but this is due to the high glycolytic capa of phosphocreatine and glycogen.

Structure and Function of Musc
Mark the Work

Read the exam-style answer to the question below and then mark it yourself.
correct and put a cross next to any points which you think are incorrect. Use t
of the incorrect points and indicate what mark this answer should receive out

Consider how different muscle fibres impact on the response to immediate physical activity.

The type of muscle fibres recruited will have an impact on the response to physical activity. For example, if type I muscle fibres are recruited, the muscle will be able to contract for longer as they have more myoglobin and are, therefore, the most fatigue resistant. However, they will not be able to contract rapidly due to their low phosphocreatine stores.

If type IIa muscle fibres are recruited, they will also not be able to contract rapidly due to their very low stores of phosphocreatine which will be depleted immediately. Therefore, these fibre types are not suited to high-intensity running events such as the 400 m.

If type IIx fibres are recruited, they will be able to contract very rapidly due to their high oxidative capacity as a result of a high concentration of mitochondria within the muscle.

(4 marks)

Comments:

Activity 23 – Physiological Adaptation

Teacher's Notes

	Plenary Activity: Training Circles
Aim of the activity	To understand how the cardiorespiratory, cardiovascular, m neuromuscular systems adapt to different types of training.
Teacher's instructions	Photocopy the activity page and hand one to each student. fill in the page with as many adaptations to training that co systems as they can think of and then identify which trainin adaptation. Then spend five minutes engaging the student can feed back the adaptations they've identified.

Answers

Below are examples of adaptations which the students could provide and the t identify with adaptation.

Cardiorespiratory:

- Increased size of the lungs (continuous, cross, fartlek)
- Increased alveoli density (continuous, cross, fartlek)
- Increased functioning of the muscles which assist breathing (continuous,

Cardiovascular:

- Increased diameter of the arteries (continuous, cross, fartlek)
- Increased capillary density (continuous, cross, fartlek)
- Hypertrophy of the heart (continuous, cross, fartlek)
- Increased stroke volume (continuous, cross, fartlek)
- Reduced resting heart rate (continuous, cross, fartlek)
- Increased cardiac output (continuous, cross, fartlek)

Muscular-skeletal:

- Increased myoglobin (continuous, cross, fartlek)
- Increased type I fibres (continuous, cross, fartlek, weight)
- Increased type IIa fibres (weight, resistance, circuit, interval, speed agility
- Increased type IIx fibres (plyometrics, weight, resistance, circuit, interval,
- Muscular hypertrophy (plyometrics, weight, resistance, circuit, interval, sp

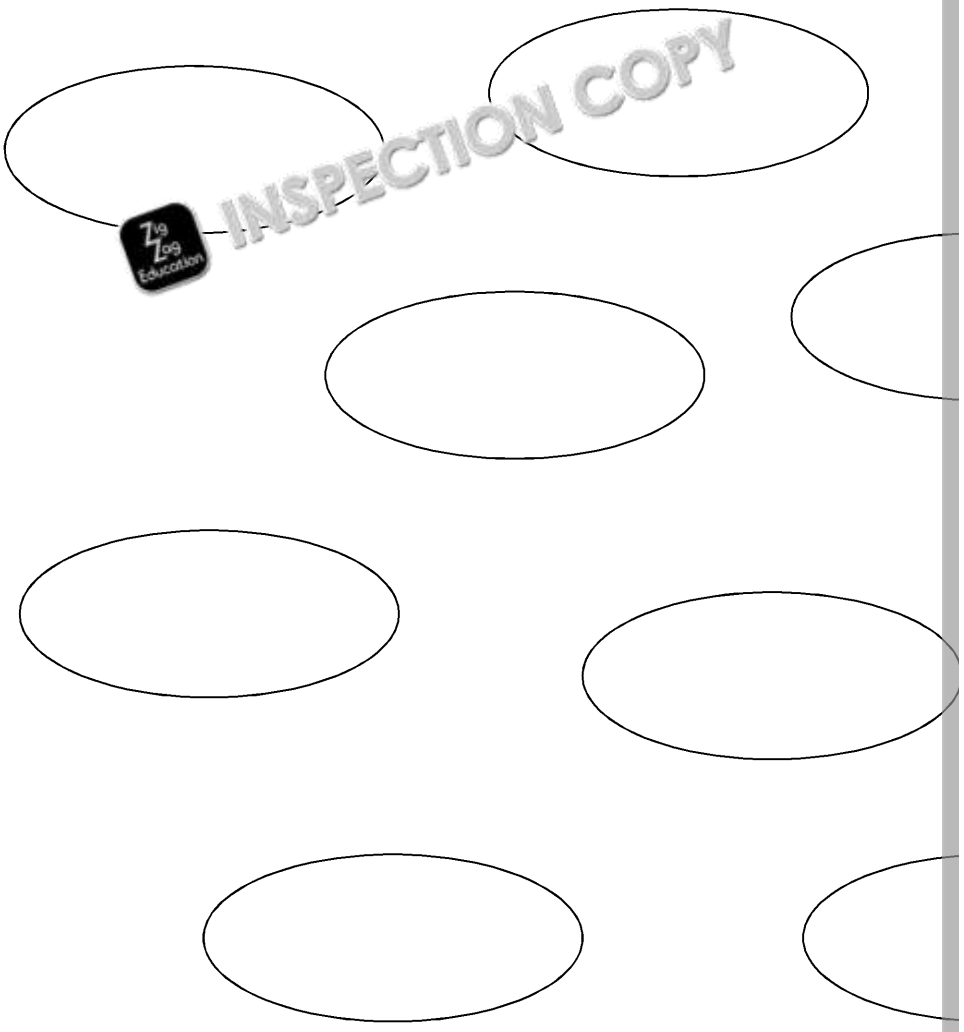
Neuromuscular:

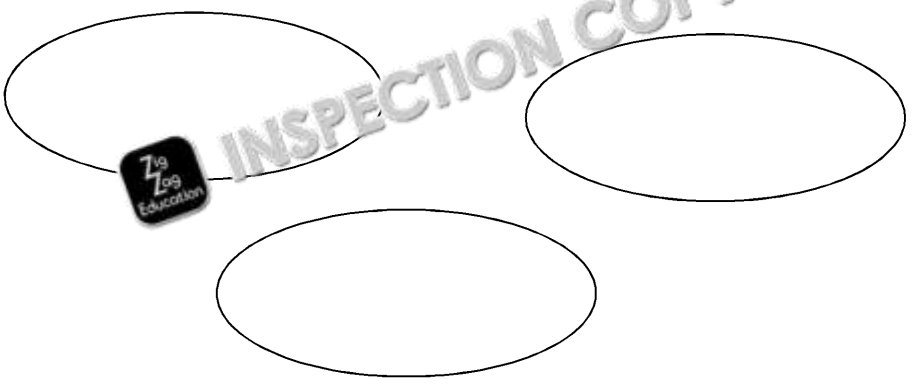
- Greater synchronisation of motor unit firing (plyometrics, weight, resistan quickness, assisted)
- Greater motor unit recruitment (plyometrics, weight, resistance, circuit, in assisted)
- Preferential recruitment of large motor units (plyometrics, weight, resista qui assisted)
- More efficient transfer of nerve stimulation (plyometrics, weight, resistan quickness, assisted)
- Greater ability to perform summation (plyometrics, weight, resistance, cir quickness, assisted)

Physiological Adaptations to Training:

Fill in the circles below with as many adaptations of the cardiorespiratory, card
neuromuscular systems as you can think of. Once you have filled in the circles
each one to the types of training which would be best used in order to facilitat

Interval | Circuit | Cross | Continuous | Fartlek





Functional stability | Speed Agility Quickness | Plyometrics

Activity 24 – Components of a Healthy, and Energy Intake

Teacher's Notes

Starter Activity: Promote Your Compone	
Aim of the activity	To get students to understand the different components th balanced diet.
Teacher's instructions	Photocopy the activity sheet on the next page. Split the cla each student a copy of the activity. Students are required t explaining how the component may have been given contri They should also make a note on every component of a hea sources of each component. Allow them 10 minutes to con

Answer

Carbohydrates	
Function	The main source of energy. They are broken down into glucose which enters the blood, providing the fuel for some energy systems.
Sources	Potatoes, pasta, bread.
When / How are they used?	Consumed before exercise for energy, during exercise through the use of isotonic and hypertonic energy drinks for quick-release energy and after exercise to replenish glycogen stores.

Function	A small s reducing exercise protein s
Sources	Meat, m
When / How are they used?	Mostly c order to

Fats	
Function	A major source of energy while exercising at low intensity. Fat metabolism helps to spare glycogen. Following glycogen depletion, stored adipose tissue is the energy source used.
Sources	Butter, confectionery, avocados and vegetable oil.
When / How are they used?	Consumed prior to endurance exercise in order to provide an energy source. Also consumed after exercise in order to replenish energy stores.

Function	Most co sodium balancin increasi electrol metabol Aid mus Accept c
Sources	Beans, w
When / How are they used?	Mostly c balanced minerals exercise, can cont calcium.

Vitamins	
Function	Most common vitamins include vitamin D, E and K. Functions include maintaining the immune system, fighting infections, increasing bone strength, blood regulation, improving oxygen transport efficiency, cell growth, haemoglobin synthesis, energy metabolism etc.
Sources	Fruit, vegetables, nuts, seeds.
When / How are they used?	Mostly consumed before exercise as part of a balanced diet.

Function	Improve contribu body co
Sources	Nuts, wh
When / How are they used?	Mostly c balanced

	Wa
Function	ve dehydration and heat illness, ntains optimal functioning, replaces lost fluid, regulates body temperature, maintains blood circulation, removes waste, and carries nutrients and oxygen.
Sources	Any fluid (do not accept caffeine and/or alcohol, as these are diuretics).
When / How are they used?	Consumed before, during and after exercise to maintain hydration. Consumed during and after exercise in order to replace water lost as sweat. Hypotonic sports drinks are usually consumed during exercise and hypertonic and isotonic drinks are consumed after as these replenish glycogen stores as well.

Discussion answers:

- Energy intake is the amount of calories you consume.
- Energy expenditure is the amount of calories you burn which is increased
- When you expend more energy than you take in, you lose weight. This m needs to lose weight to fall into a weight category.
- When you consume more energy than is expended, you gain weight. This weightlifting.

Components of a Healthy, Balanc
Energy Intake: Promote Your Co

In your groups each person should choose a different component of a healthy
you should write down the functions of your chosen component in the corresp
After five minutes, come together as a group and each member should briefly
positively contributes to a balanced, healthy diet. Make notes on your worksh
are talking about their component in order to complete all components.

Carbohydrates	
Function	
Sources	
When / How are they used?	

Function	
Sources	
When / How are they used?	

Fats	
Function	
Sources	
When / How are they us	

Function	
Sources	
When / How are they used?	

Vitamins	
Function	
Sources	
When / How are they used?	

Function	
Sources	
When / How are they used?	

Water	
Function	
Sources	
When / How are they used?	

Now in your groups discuss what is meant by energy expenditure and energy i
performers require different energy bala s.

Activity 25 – Maintaining Hydration an

Teacher's Notes

	Starter Activity: Forbidden Words
Aim of the activity	To understand how different sports drinks can be used to m levels.
Teacher's instructions	Photocopy the tables on the next page and give to one mem students 10 minutes to complete both parts of the activity i classroom listening to the students to check that they are p is up, ask students to feed back their ideas for part b.

Answers

Keyword	Example of description	Importa
Electrolytes	Ions which are found in solutions and can be replaced by sports drinks.	Electrolytes c sweat such as therefore, all be effective f exercise.
Isotonic	A solution which will be taken up by the blood as quickly as water.	This is a good stores during marathon run to exercise fo produce ener of time.
Hypotonic	A solution which contains small amounts of glucose and quickly rehydrates the body.	This is the bes exercise as it and, therefor sweat. This w performance and temperat
Hypertonic	A solution which can be consumed post-exercise to replenish glycogen stores due to the high levels of glucose.	Replenishes g performer to have enough in their next b

Maintaining Hydration and Perfo
Forbidden Words

Part a:
Describe each of the keywords (without saying the keyword or forbidden word
them. You must describe the words in relation to hydration and sport.

Keyword	Forbidden Words
Electrolytes	Calcium, minerals, salts
Isotonic	Glucose, sugars, o[illegible]is
Hypotonic	E[illegible]ating, sodium
Hyperto[illegible]ic	After, energy, drink

Part b:
For each of the keywords below, provide an explanation for how each function
hydration levels and participating in sport.

Keyword	How can it help to maintain hydration and p
Electrolytes	
Isotonic	
Hypotonic	
Hypertonic	

Activity 26 – Dietary Supplements/M

Teacher's Notes

Starter Activity: Research and Complete	
Aim of the activity	To get students thinking about the reasons why athletes mi dietary supplements, and the risks to their health from taki
Teacher's instructions	Internet access is required for this activity. Print out a copy page and hand a copy to each student at the start of the les minutes to list as many benefits and risks of each of the die strategies given as possible.

Answers

	Benefits to the athlete	When they would be used	
Creatine	• Increased phosphocreatine stores, lengthening the time to fatigue when working at a high intensity • Improved muscular strength and power • Aids recovery • Increased muscle mass	Before and after training/ competition	• • •
Caffeine	• Reduction of the rate of perceived exertion • Improved nervous stimulation • Promotes glycogen sparing, by stimulating fat metabolism	Before training/ competition	• • • •
Sodium bicarbonate	• Can improve high-intensity performance • Buffers lactic acid which reduces the fatiguing effect	Before competition	• • •
Carbohydrate loading	• Large benefits if consumed within two hours of exercise • Increases muscle glycogen stores • Increases energy stores • Can increase time to exertion • Can allow athletes to work at a higher intensity for longer	Before competition	• • •
Protein supplements	• Increased muscle tissue development • Increased muscle mass • Increased muscle strength • Improved recovery from exercise	After training/ competition	• •

Dietary Supplements/Manipu
Research and Complete

Complete the table by providing the benefits and risks to the athlete of taking
supplements / manipulation strategies provided.

	Benefit to the athlete	When they would be used
Creatine		
Caffeine		
Sodium bicarbonate		
Carbohydrate loading		
Pro supplements		

Activity 27 – Training Methods to Imp
Fitness and Health

Teacher's Notes

	Plenary Activity: Evaluate and Train
Aim of the activity	To understand the different training methods which can be u components.
Teacher's instructions	Cut out the training method cards on the first activity page a locations around the room. Photocopy the second activity pa student. Instruct the students to work their way around the training method station and discuss it with the method with othe should aim to write a point explaining what it is and one adva training method. They will have 15 minutes to complete as m

Answers

Students should include the following points in their notes:

Interval training: • Short periods of work • Short periods between the exercise bouts • Periods between exercise bouts can involve complete rest or light recovery + It improves the body's ability to recover from rapid bursts of exercise + Useful for games players + Improves ability to handle lactic acid through improved removal and increased tolerance + Can be used to improve power and anaerobic fitness + Fitness improvements can be made with relatively little time spent exercising – Physically demanding – Requires high levels of motivation	**Continuous training** • Extended perio • Exercise session intensity + Used to im muscular e + Useful for endurance – Can becon
Fartlek training: • Extended periods of work • Exercise sessions can be performed at various intensities • Exercise sessions can be performed on a variety of terrains + More varied than continuous traini g + Used to improve aerobic e d ce and muscular endura e + Useful fo athlet that compete in lur ce events such as long distance ng + Useful for games players – Requires access to different terrains – Can't be performed in all weather conditions	**Circuit training:** • Short periods o • A range of exer stations + The statio the athlete + Used to im primarily b of fitness exercises p + Skills can a make it sp – Requires ec

Weight training:

- Athletes perform repetitions of resistance exercises
  - + The number of reps and sets can be adjusted to train specific components of fitness
  - + Used to improve strength
  - + Can also be used to improve power and muscular endurance
  - – Requires equipment
  - – Can require a spotter
  - – Not appropriate for young athletes

Plyometrics trainin

- Athletes perfor platforms
- The muscles ar
  - + Useful for
  - + Useful for
  - – There is a
  - – Should onl individuals

Assisted training:

- The use of equipment or the envir perform training
- Can be performed using bungee cords or weighted v
- Ca performed using hills, e.g. downhill runn
  - + It increases the training load and the demand placed on the athletes
  - + Results in greater adaptations than non-assisted training
  - – Equipment is required which may be expensive

Speed Agility Quickn

- Sprint training p
- Involves turning ladders
  - + Increases s
  - + It is a usefu players as i more than
  - – Requires e will have a

Functional stability:

- Performance of a range of stability exercises in dynamic positions
  - + Good for developing core strength
  - + Good for developing control of movements
  - + Good for rebuilding strength and stability at a joint after injury
  - – Can be difficult to perform for beginners with limited stability

Cross training:

- Using various m performing runn training
  - + It reduces t
  - + Develops a componen
  - – Some impr for the spo
  - – Training in from the ar the most re spend less performing

Flexibility training:

- Performance of a range of stretching exercises
  - + Static stretching and proprioceptive neuromuscular facilitation can improve flexibility
  - + Increased flexibility can reduce the risk of injury
  - + Increased range of motion at a joint can improve performance of a range of skills, e.g. reaching for a shot in tennis
  - – Ballistic stretching should be avoided as it can lead to injury

Resistance training:

- A form of trainin Pulleys and para training
  - + It increases must exert resistance
  - + Can improv and power
  - – Requires sp expensive a

Training Methods to Improve Physic
Health: Evaluate and Trai

Cut out and place the following training methods around the room.

Interval Training	Continu
rtlek Training	Circu
Weight Training	Plyomet
Assisted Training	Spe Qu
Functional Stabilit	Cros
Flexibility Training	Resista

Training methods to Improve Physic
Health: Evaluate and Trai

Move around the classroom to each of the stations (each station will represen
up by your teacher. At each station, interact with your classmates who are als
method with them aiming to write one point suggesting what it is and one adv
each method. You will have 15 minutes to complete as many methods as you

Interval Training	**Continuous Trainin**
Fartlek Training	**Circuit Training**
Weight Training	**Plyometrics Trainin**
Assisted Training	**Speed Agility Quick**
Functional Stability	**Cross Training**
Flexibility Training	**Resistance Training**

Activity 28 – Fitness Tests

Teacher's Notes

	Starter Activity: Number the Wall
Aim of the activity	To understand the different fitness tests which can be used fitness and which training methods can be used to improve
Teacher's instructions	Photocopy the worksheet and give one to each student. Ins components of fitness, the testing methods and the trainin on the fitness test wall and training method wall with the n that relate to them.

Answers

Functional thresholds	Lact. t. threshold 4	Anaerobic threshold 4	Maximum steady state 2,15
Step tests 1,2,8,15	Yo-yo test 1,2,8,15	Cooper 12-minute run 1,2,8,9,15	Wingate test 2,4,8	Ma accu oxyg
Cunningham and Faulkner 4	Vertical jump test 5	Margaria-Kalamen 5	1 repetition maximum 6,7

Interval training 1,2,4,8,9,15	Circuit training 1,2,4,5,6,7,8,13, 14,15	Cross training 1,2,8,15	Continuous training 1,2,8,15	Far
Weight training 4,5,6,7,8	Resistance training 4,5,6,7,8	Assisted training 4,5,6,7,8	Plyometrics training 5,6,7,9	

Fitness Tests: Number the

Below are a list of components of fitness which you will need to use for this ac

1 Submaximal aerobic fitness	2 Maximal aerobic fitness	3 Exercise economy	4 An ca
6 Maximum strength	7 Strength	8 Localised mu ular dur ance	9 S
11 Coo lina	12 Reaction time	13 Balance	14 Fle

Match the fitness test and training methods below on the wall to the compone putting the number on the brick. Each component of fitness can be used more

Functional thresholds	Lactate threshold	Anaerobic threshold	Maximum steady state	
Step tests	Yo-yo test	Cooper 12-minute run	Wingate test	M acc oxy
Cunningham and Faulkner	Vertical jump test	Margaria-Kalamen	1 repetition maximum	

Interval training	Circuit training	Cross trainina	Co tinuous training	Fart
Weigh ng	Resistance training	Assisted training	Plyometrics training	

Teacher's Notes

	Starter Activity: Data Handling
Aim of the activity	To understand how to use fitness test results to aid perform
Teacher's instructions	Photocopy the worksheet and hand one to each pair of stud analyse the fitness test results against the tables of normati implications of these results for an 800 m runner. They sho guide their discussions.

Answers

Students should ma[illegible] points during their discussions:

- Tim[illegible] highly in maximal and submaximal aerobic fitness.
- Tim[illegible] w scores in power and anaerobic capacity.
- Tim currently only performs continuous training which is a method used t individual. This has had positive effects on his maximal and submaximal a power and anaerobic capacity.
- Although the 800 m requires good aerobic fitness in order to supply the m anaerobic capacity are also required in order to run at a high speed. Tim m time as he will not be able to maintain a high speed during the event.
- Tim could use a wider range of training methods which include methods u power and speed. He could, therefore, use: interval training, weight traini quickness.
- The vertical jump and Wingate tests may not be the most appropriate as t during the 800 m (jumping and cycling). More appropriate tests which us include repeat anaerobic sprint tests, Cunningham and Faulkner test, lacta Magaria-Kalamen power test.

Fitness Test Data: Data Han

Tim is an 18-year-old 800 m runner who usually only trains by performing cont
a battery of fitness tests and his test results are displayed below.

Study the following fitness test results. Then use the normative results below
areas of fitness Tim should try to improve and how he could alter his training p
those improvements.

Tim's Test Results:

Cooper 12-minute test	2845 m
Wingate test	3 W
Vertical jump test	48 cm
VO_2 Ma	52 ml/kg/min

Normative data for relevant tests:

Cooper 12-minute test

Age	Excellent	Above Average	Average
17–19	>3,000 m	2,700–3,000 m	2,500–2,699 m

Wingate test

Age	90%	80%	70%
Young adults	822 W	777 W	757 W

Vertical jump test

Age	Excellent	Above Average	Average
16–19	>65 cm	50–65 cm	40–49 cm

VO_2 Max

Age	Superior	Excellent	Good
13–19	>55	51–55	45–50

Discuss the following points with your partner:

- Which components of fitness does Tim score high
- Which components of fitness does Tim have low scores in?
- How have Tim's current training methods affected his scores?
- What impact will Tim's low scores have on his performance in the 800 m?
- How could Tim alter his training in order to improve his performance in th
- Are the tests used the most appropriate for testing Tim's fitness fo

Teacher's Notes

	Starter Activity: Create a Diagram
Aim of the activity	To understand the determinants of sprint, endurance and i
Teacher's instructions	Photocopy the worksheet and hand one to each student. T three diagrams by identifying which determinants of runni the three types of running performance (sprint, endurance also explain how each determinant will affect the performa

Answers

Sprint performance is affec[illegible] by:

- Anaerobic capa[illegible] th[illegible] athlete will need to produce as much energy as t fue[illegible] p[illegible]rmance. Having a large anaerobic capacity will allow the a or n[illegible]n a high speed for longer.
- Anaerobic power – this is required in order to perform maximal sprint for until creatine stores can no longer support ATP–PC energy production. Th performance will, therefore, allow the athlete to achieve maximal sprint s
- Maximum speed – this is required in order to run as fast as possible. The the faster an athlete will be able to cover a certain distance.

Endurance running performance is affected by:

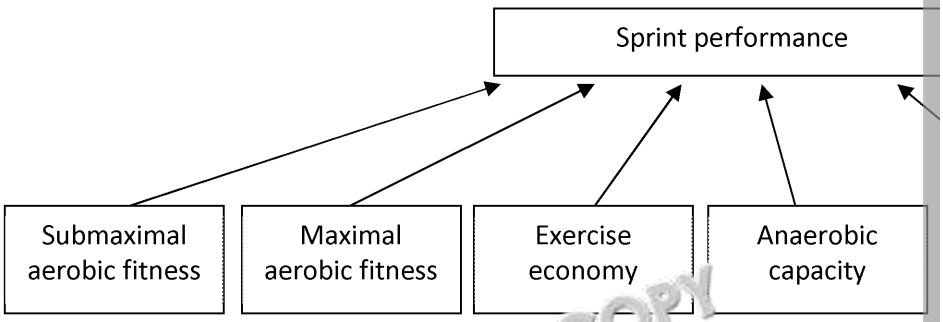
- Submaximal aerobic fitness – this will allow the athlete to perform endura working at levels below their maximum. The higher an athlete's maximal of submaximal exercise they can maintain will be.
- Maximal aerobic fitness – the higher the maximal aerobic fitness of an ind be able to maintain during an endurance running event.
- Exercise economy – the greater the oxygen economy of an athlete, the gr performance. This is because they will require less oxygen to move at a gi to maintain this speed for longer or utilise the available oxygen to move a events.

Intermittent running performance:

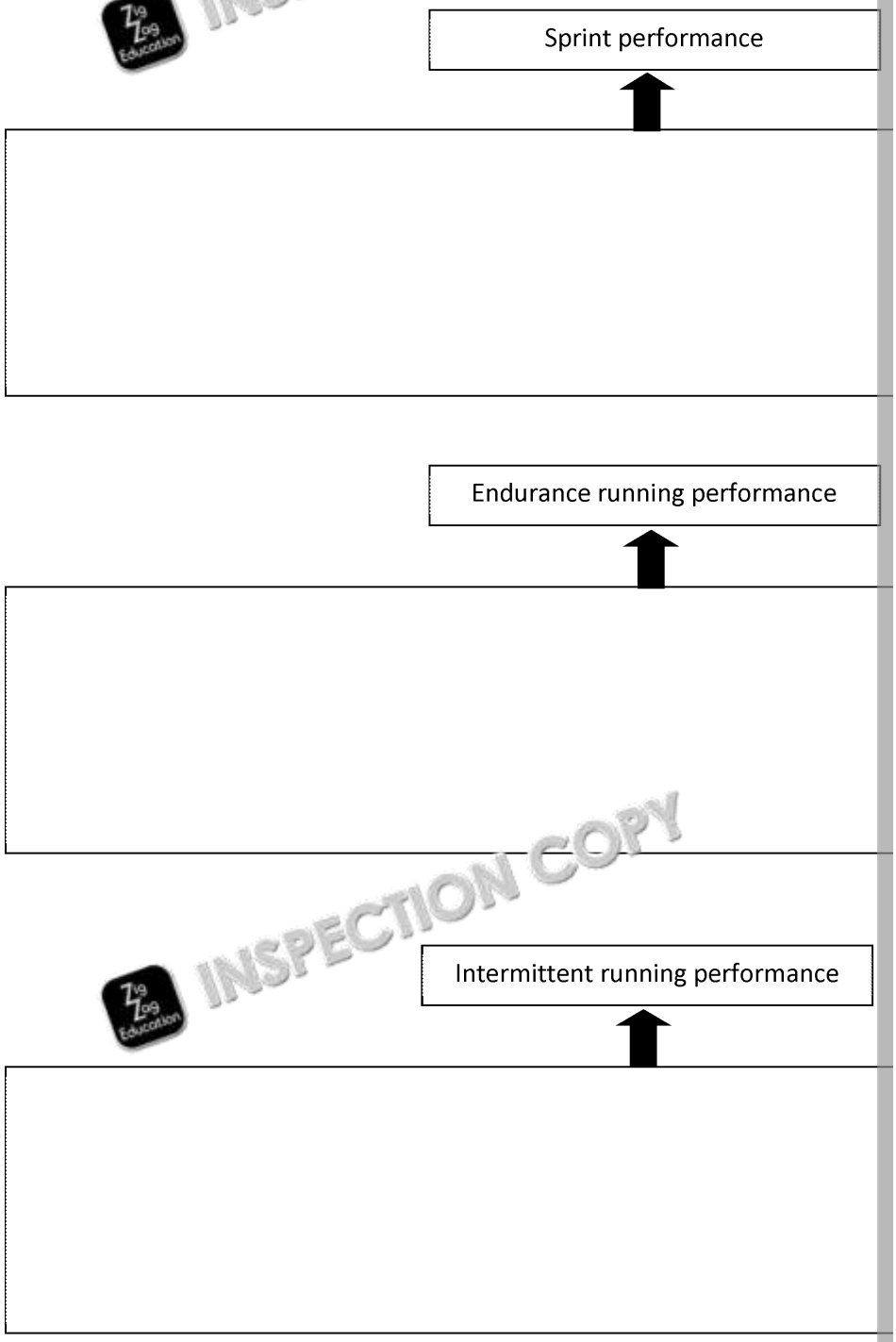
- Intermittent running performance will require all of the determinants of r both endurance running and sprint performance. An example of intermitt athletes are required to perform submaximal aerobic fitness (affected by exercise economy) for the majority of the event but th is is interspersed wi by the athlete's anaerobic capacity, anaerobic p[illegible]er [illegible]nd maximum speed

Running Performance: Create a

The diagram below shows how running performance is affected by a range of



Fill in each of the empty boxes b[illegible] by identifying and explaining which facto
the sprint, endurance an[illegible]mittent running performance of an athlete.



Activity 31 – Principles of Tra

Teacher's Notes

	Starter Activity: Case Study
Aim of the activity	To understand the principles of training and how they can b
Teacher's instructions	Students should spend 5–10 minutes reading each of the sr responding to each person with their own advice. The advi relevant principle of training for each individual and sugges to their situation.

Answers

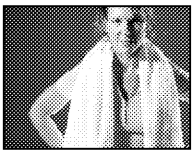
Students should identify the correct training principle and apply it to the situat given below:

1. Pro[illegible]e overload – the weight should be gradually increased so that y mus[illegible]ystem.
2. Intensity – the level of work during a session should be challenging but yo which pushes you too far.
3. Type of training – increase the variation in your training by performing hig running training.
4. Specificity – try to incorporate the ball into running drills so that you are pr
5. Frequency – it would be more beneficial to do less work but go to the gym
6. Reversibility – try not to take long breaks from training during the season holiday.
7. Overtraining – it is important not to increase your training load too much can adapt and adjust to the demands being placed upon it without becom
8. Time – try to increase the length of each session by five minutes in order t
9. Individual needs – it is important to tailor the training programme to the n that the training is beneficial for the sport that they are training for.

Principles of Training: Case S

Read what each of the athletes below say about their training and then give th
they could apply the most relevant principle of training to their situation.

1.



I always lift the same weights at the gym as I'm comfortable with this but I don't seem to feel any fitter.

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.....
.....

2.

My trainer is trying to get me to perform sprints but I find this really difficult at the moment.

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.....
.....

3.

I usually like varying my training routine but at the moment I'm only being allowed to do running drills.

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.....
.....

4.

I play basketball but most of my training is performed without a ball and I feel like I'm losing my ability.

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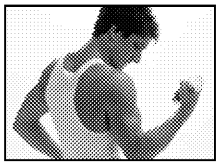
.....
.....

5.



I try to fit a week's worth of exercise into one gym session so that I can do other stuff the rest of the week.

.....
.....
.....
.....
.....

6.

I took a month off training and playing during the season and now it is so hard to complete 90 minutes.

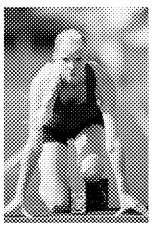
7.

I try to train as hard as I can every day in preparation for my marathon but recently I've picked up some injuries which are stopping me.

8.

I only manage to spend about 10 minutes doing yoga in each session as I don't have the patience for more.

9.



I take part in training with the rest of the athletics club but most of the training focuses on long distance running and I prefer sprinting.

Activity 32 – Calculating Inten

Teacher's Notes

	Plenary Activity: Calculations
Aim of the activity	To be able to perform calculations relating to exercise inten modern technology to monitor fitness and performance.
Teacher's instructions	Photocopy the worksheet and hand one copy to each stude question by performing the relevant calculations. They will discuss the different forms of modern technology and how fitness and performance.

Answers

1. 137 bpm
2. Over 70%
3. Un %
4. Fair
5. 136–157 bpm
6. 2 minutes of rest
7. 147 bpm

Students should discuss the following:

- Heart rate monitors can be used to determine heart rates in order to supp
- Heart rate monitors can be used during exercise in order to ensure that th predetermined training zones. This will allow the athlete to maximise the ensuring that they are training the correct components of fitness.
- Mobile phone apps can be used to track the distance covered, elevation a
- Mobile phone apps will allow an athlete to ensure that they are performin marathon runner will be able to track how far they have gone during their running at the correct pace during their recovery runs.
- Any other relevant forms of technology which can be used to monitor fitn

Calculating Intensities: Calcul

Answer the following questions by performing the appropriate calculations.

A 25-year-old athlete wants to work at 70% of their max heart rate in order to

1. Calculate their target heart rate.

.....

.....

.....

.....

Sally has a bench press one repetition maximum of 48 kg.

2. Calculate the range of weight she should lift in order to train for strength.

.....

.....

.....

.....

3. Calculate the range of weight she should lift in order to train muscular end

.....

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.....

.....

4. How intense would an exercise be considered if an athlete rated it 11 on t exertion scale?

.....

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.....

A cyclist completes a functional threshold test with an average heart rate of 13 Max, they need to work between 105–121% of their average heart rate during

5. What heart rate range should the cyclist ensure they are between when tr

.....

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.....

.....

A 1,500 m runner is performing high-intensity interval training with a work-to-

6. If they perform four minutes of high-intensity running, how long should th

.....

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.....

7. Use Karvonen's formula to work out the target heart rate for a 32-year-old of 70 who wants to train at an intensity of 65%.

Karvonen's formula:

Target Heart Rate = ((max HR − resting HR) × % intensity) + resting HR

.....

.....

.....

.....

Now, with a partner, discuss how different forms of modern technology can be monitor fitness.

Activity 33 – Periodisation of Tr

Teacher's Notes

Starter Activity: Spot the Aspects of Trainin	
Aim of the activity	To get the students to understand the different stages of pe
Teacher's instructions	Photocopy the passage on the next page. Split the class int activity to each pair. Students are required to identify and different stages of periodisation and phases of training, and Allow them 10 minutes to complete the activity.

Answers

17th July 2014

- Preparation phase (general)
- *'I just remembered how much I hate pre-season fitness training'* shows it i fitness levels is a priority.

4th August 2014

- Microcycle
- *'I concentrated on improving the accuracy of my long passing'* shows that

18th September 2014

- Competition phase
- *'We've made a good start to the season, with five wins from seven'* and *'d throughout the season'* show that this is mid-season and that the focus is performance.

12th December 2014

- Mesocycle
- *'I've been working on my defensive play for just over a month now'* and *'a and defend set pieces'* show that training consists of a number of mesocyc

7th May 2015

- Tapering
- *'Coach has reduced the number of times we train, but we're still training a 'we've […] got the cup final in two weeks' time'* show that the amount of t intensity has stayed the same, and that this is happening within two week

14th May 2015

- Peaking
- *'We're all performing at the highest level I have seen recently'* and *'every p best of their abilities'* show that the whole team have reached their highes time in order to perform optimally for the cup final.

21st May 2015

- Macrocycle
- Peaking
- *'This season's training'* and *'we won the championship, just like we had al* referring to a number of mesocycles that have targeted a season-long goa
- *'We also reached our potential just at the right time'* shows that they peak league and cup.

22nd May 2015

- Transition phase
- *'Time to take some much needed rest. Roll on next season!'* shows that th recovery before next season starts.

Periodisation of Training: Spot the Asp

Alice plays for her university football team. Below are sections from her traini

1. Read the different sections, indicating which 'principle of periodisation' a section relates to from the list given below. You should also provide a jus

Macrocycle	*Mesocycle*	*Microcycle*
Competition phase	*Transition phase*	*Tapering*

Alice's training diary:

Date: 17th July 2014

I just remembered how much I hate pre-season fitness training! I complete the first time of our five-mile run. I need to improve on m reckon the first team!

Answer: .....

Reason for Choice: .....

.....

Date: 4th August 2014

Today I concentrated on improving the accuracy of my long passin also going to focus on this in tomorrow's session to make sure tha accurate.

Answer: .....

Reason for Choice: .....

.....

Date: 18th September 2014

We've made a good start to the season, with five wins from seven all maintain our attacking focus and don't let our performance dro

Answer: .....

Reason for Choice: .....

.....

Date: 12th [illegible] 2014

I've been working on my defensive play for just over a month now competitive! All I've done recently is tackle, head and defend set pie difference to my game, but I would definitely find it more enjoyabl

Answer: .....

Reason for Choice: .....

.....

Date: 7th May 2015

We've got the last game of the season in one week and the cup f
Coach has reduced the number of times we train, but we're still t
the sessions.

Answer: .....

Reason for Choice: .....

.....

Date: 14th May 2015

We're all performing at the highest level I have seen recently. Ev
playing to the best of their abilities and we're really confident th
of the season today and hopefully the cup final next week.

Answer: .....

Reason for Choice: .....

.....

Date: 21st May 2015

This season's training has been much harder with the new coach
ago! But at least it has paid off! We won the championship, just
to! We also reached our potential just at the right time and play
We won the cup as well!

Answer: .....

Reason for Choice: .....

.....

Date: 22nd May 2015

What a season! I cannot believe we won the double! Time to ta
Roll on next season!

Answer: .....

Reason for Choice: .....

.....

Activity 34 – Altitude, Heat and H

Teacher's Notes

	Starter Activity: Research and Compare
Aim of the activity	To get students to understand the effects and reasons for a
Teacher's instructions	Photocopy the activity sheet on the next page and hand a c Students are required to research either altitude training o conditions and then complete an information card with inf of training. Allow the students 10 minutes to complete the should present and explain their [illegible] their partner.

Answers

Altitude training

What is [illegible] training?

- Trai[illegible]at take place at an altitude of at least 2,400 m above sea level.
- There is a lower partial pressure of oxygen (O_2) at high altitude than at sea
- A method which aims to acclimatise athletes to conditions with low oxyge

Effect on the cardiorespiratory system:

- The low partial pressure of oxygen makes performing more difficult, as ox and the body has to adapt by increasing both breathing rate and heart rat
- At high altitude, the body compensates for the lower volume of oxygen by blood cells.
- Red blood cells help to increase the efficiency of oxygen transport, enabli the working muscles.
- Acclimatisation is the body positively adapting to environmental changes. blood cells by the body is, therefore, a form of acclimatisation.

The benefits:

- The increased red blood cell count can last for up to 14 days, even upon re
- This gives the athlete an advantage when competing at sea level, as they h the working skeletal muscles.
- Useful for those who work aerobically, e.g. marathon runners.

The limitations:

- The intensity of training cannot be kept the same as it is at sea level due t
- Altitude sickness can occur.
- Training may be negatively affected if the athlete becomes sick and cannot
- The effects are not long-lasting.

Training in heat and humidity

What does this involve?

- Training in hot environments either in naturally occurring locations or in h control the temperature.
- Training in humid environments such as in desert conditions.
- A method which aims to acclimatise athletes to exercise in hot and humid the body to maintain thermoregulation.
- Acclimatisation takes around two weeks to occur.

Effect of training in hot and humid conditions on the body:

- Increased levels of sweating and an early onset of the sweat response.
- Plasma volume is reduced which makes it harder [illegible] ansport oxygen arou
- Increased heart rate and increased strain on the heart due to the need for order to overcome the low plasma volume and supply the body with oxyg
- The core body temperature increases.

The ben

- The [illegible] will adapt to the stress placed on the body when exercising in th
- The plasma volume will be increased.
- The strain on the heart will be reduced.
- Greater cardiac output.
- Earlier onset of sweating.
- Improved thermoregulation which will reduce the increase in core temper
- Will lead to improved performance.
- Increased time to fatigue.
- Reduced risk of hyperthermia and heat stroke.

The limitations:

- Requires access to hot and humid environments or a heat chamber which
- The athlete is placed at increased risk of heat stroke and hyperthermia wh
- If the athlete becomes ill during training due to heat illness, their training
- Requires two weeks of training in order for benefits to occur.

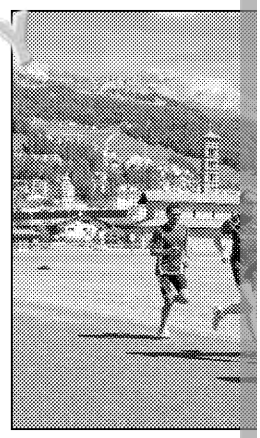
Altitude, Heat and Humidity: Research

You and your partner should complete the two information cards by picking o

Complete the information card on altitude training below. Identify the effects
and respiratory systems and the benefits and the disadvantages of this form o

Training at altitud

What is altitude training?



Effect on the cardiorespiratory system:

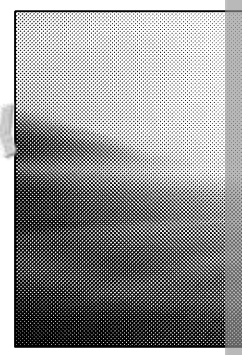
The benefits:

The limitations:

Complete the information card on heat and humidity training. Identify the effe
body and the benefits and the disadvantages of this form of training.

Training in heat and hu

What does this involve?



Effect of training in hot and humid conditions on the body:

The benefits:

The limitations:

Activity 35 – Recovery

Teacher's Notes

	Starter Activity: Annotate
Aim of the activity	To understand how different strategies can speed up recov
Teacher's instructions	Photocopy the worksheet and hand one to each student. In the photos of different recovery methods (cooling down, m compression clothing) with information about their use and process.

Answers

Cool down:

- Allows the heart rate to gradually return to baseline levels
- Allows respiratory rate to gradually return to baseline levels
- Allows oxygen to continue to be circulated to the working muscles
- Allows lactate to be removed from the body
- Allows carbon dioxide to be removed from the body
- Reduces the effects of delayed onset of muscle soreness

Massage:

- Reduces the effects of delayed onset of muscle soreness
- Reduces tension within the muscles
- Leads to vasodilation of the blood vessels which increases blood flow, pro around the body and promotes the removal of lactic acid and carbon diox
- Gradually reduces the heart rate as the athlete relaxes
- Reduces inflammation of damaged muscle tissues and therefore stimulate

Ice baths:

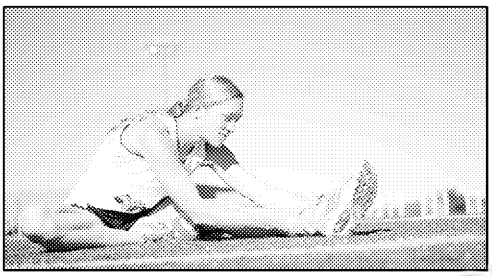
- Reduces inflammation of damaged muscle tissues and therefore stimulate
- Allows lactate to be removed from the body
- Allows carbon dioxide to be removed from the body
- Causes vasoconstriction of the blood vessels which leads to improved bloo vasodilate after leaving the ice bath

Compression clothing:

- Improves circulation by compressing the blood vessels
- Improves the delivery of oxygen to the working tissues
- Improves the removal of carbon dioxide and lactic acid
- Reduces muscle soreness

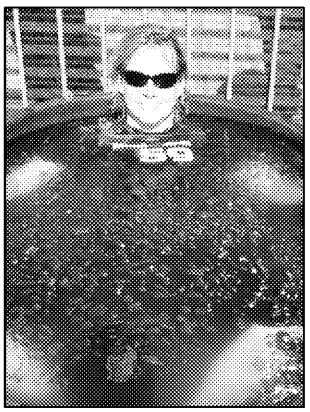
Recovery: Annotate

For each of the images below, annotate them with some information about ho
recovery process.

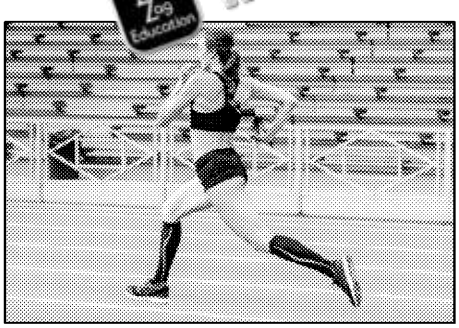


Cool down:

Massage:



Ice baths:



Compression clothing:

Activity 36 – Coach and Perfo

Teacher's Notes

	Starter Activity: Coaching Skills
Aim of the activity	To understand how different coaching styles are used.
Teacher's instructions	Photocopy the worksheet and hand one to each student. S information about each of the coaching styles and then ide sporting skill which a coach could use each style to teach. E discussion once all students have fi ed.

Answers

Command:

- Coach tes autocratic role
- No om the performer
- Requ es discipline
- Coach acts in an authoritative manner

Example of use: Teaching young children how to perform a dangerous skill suc

Reciprocal:

- Learners have an input
- Learners involved in decision making
- The coach still leads the training sessions
- Can involve an initial demonstration and then time for students to practis overseeing
- The coach is onhand to provide advice at all points

Example of use: Teaching intermediate athletes how to use skills they already teaching a football player to shoot with their weaker foot.

Guided discovery:

- Learners have a large input
- The coach provides limited information, mostly restricted to hints and clu
- Learners are responsible for decision making
- Coach provides the students with the expected outcome but allows the st their own way
- Provides opportunity for experimentation
- Only one correct outcome but different w ys o oduce that outcome

Example of use: A gymnastics c a ha have created a specific routine but te individual components i routine so that they can develop a better unders

Problen g:

- Lear s have a large input
- The coach provides limited information
- Learners are responsible for decision making
- Coach provides the students with the problem and allows them to work t
- Multiple possible solutions
- Provides opportunity for experimentation

Example of use: Allowing experienced athletes to develop new tactics, e.g. pre their opposition and ask them to develop different strategies to stop a particul

Coach and Performer: Coachin

For each of the following coaching styles, outline the key characteristics of the sporting skill which could effectively be taught using each style.

Command

Notes:

Example of use:

Notes:

Example of use:

Guided discovery

Notes:

Example of use:

Notes:

Example of use:

Teacher's Notes

Plenary Activity: Draw and Identify	
Aim of the activity	To understand how to dissect a skill into its key component higher-level performers.
Teacher's instructions	Photocopy the worksheet and hand one to each student. In the three parts of the activity by drawing and annotating th of a golf swing and by comparing the image of the executio performer. If students are not inclined to draw the correct notes in the spaces provided in... Students may also ne to research golf swing tech... If students struggle, get t

Answers

i) Pre...on:

- ...thlete should grip the club with their dominant hand lower dow their non-dominant hand and palm of their dominant hand pointing t hit the ball
- This phase involves the preparation of the stance where the perform width apart with the ball in the middle of the body
- Body weight should be spread evenly over both feet
- The performer should remain relaxed during this phase
- Slight flexion at the knees in order to lower the centre of gravity
- Slight hip flexion
- Their body should be facing the ball
- Shoulders should point towards the target

ii) Execution:

- This performer should have greater flexion at the knee
- The performer is too upright, which could be overcome by greater fle
- This performer should have less rotation at the hip as the power shou flexion
- The performer's feet are aligned correctly
- The performer's head is positioned correctly (looking at the ball)

iii) Recovery:

- Rotation of the dominant arm occurs so that it moves over the non-d
- The head should remain focused on the ball ... the swing is over
- Rotation at the hips as the club move... ab... the body will move the the swing is complete
- The golfer should co...tinue to swing and maintain momentum of the height

Dissecting Skills: Draw and l

i) Draw an image of the perfect preparation phase of a golf swing and annot to the key components of this phase.

ii) The execution phase of a novice performer's golf swing can be seen below information about the important components of the execution phase and execution compares to that of an elite golfer.

iii) Now, draw an image of the perfect recovery phase of a golf swing and an pointing to the key components of this phase.

i) Preparation

ii) Execution

iii) Recovery

Activity 38 – Classification of S

Teacher's Notes

	Plenary Activity: Classify the Skills
Aim of the activity	To classify sports against each skill continuum.
Teacher's instructions	Photocopy the activity sheet on the next page and hand one minutes to think of sports skills and then classify each skill a While they are doing the activity, copy the skill continua ont struggling, define each type of skill. After 10 minutes, call st their sports skills on the board on the continua and explain their de

Answers

Skill classificati	Explanation	
C	Can be influenced by the environment requiring the performer to adapt	Ca pi
Closed	Not influenced by the environment, self-paced	A
Internally-paced	Performer is in control of the timing and speed of the skill, closed skills	C sh
Externally-paced	Performers are not in control of the timing and pace of the skill, open skills	Sc re
Gross	Use large muscle groups, control is not a priority	Sw sn
Fine	Use small muscle groups, control and accuracy are high priorities	D
Discrete	Obvious at which point the skill starts and ends	A w
Serial	Made up of numerous discrete skills, sequential	A ro
Continuous	It is not obvious where the skill starts or ends	Cy

Classification of Skills: Classify t

Think of skills in sport and then classify each skill against each of the continua b

Environmental influence

Open

Pacing

Internally-p

Muscular involvement

Gross

Continuity

Discrete

Serial

After 10 minutes you will share your skill classifications with your peers, so be s
classification.

Teacher's Notes

	Starter Activity: Sport to Sport
Aim of the activity	To get students thinking about the different types of skill tr sport. They will also understand how to optimise the effect the effect of negative transfer.
Teacher's instructions	Photocopy the activity sheet on the next page and hand on should work with a partner for 10 minutes to complete the of each type of transfer. They shou[illegible]n spend five minut how to optimise positive tr[illegible]

Answers

Type trans	Explanation	Exam
Positive	A previously learned skill has a beneficial effect on the learning of a new skill	• A punt in rugby / goalkeeper p • Bowling a ten-pin bowling ball • (Any example where a previou impact on the learning of a ne
Negative	A previously learned skill makes the learning of a new skill more difficult	• Cricket bowling / baseball pitch • Badminton forehand / tennis f • (Any example where a previou impact on the learning of a ne
Proactive	A previously learned skill has an impact on the learning of a future skill	• How a child learns to catch a b catch a Frisbee • The action when throwing a ba • (Any example where a previou learning of a future skill)
Retroactive	A recently learned skill has an impact on a previously learned skill	• A hockey shot / golf swing • A cricket shot / baseball hit • (Any example where the learn previously learned skill)
Bilateral	A skill is transferred from one limb to the opposing limb	• Shooting with the left foot in f right foot • Catching with the left hand in r right hand • (Any exam[illegible]le where the learni [illegible] to the opposite limb)
Zero	A previously learned [illegible] has no impact on t[illegible] learni[illegible] future skill	• Shooting in football / front cra • Cartwheel in gymnastics / arch • (Any example where a previou the learning of a new skill)

Exam-sty[illegible]uestion

Discussion points should be about:

- Highlight the key similarities
- Highlight the key differences
- Begin with the basic skills/requirements
- Refine the athlete's key motor skills
- Provide positive reinforcement
- Ensure clear demonstrations

Transfer of Skills: Sport to S

Define what is meant by each type of skill transfer below. Then provide an exa
of transfer can occur and explain how it would work in relation to each exampl
you). Then discuss the discussion point below.

Positive → **Explanation:**

Hockey shot — *A hockey shot uses similar actions to a golf swing and can, there*
learning of a golf swing

Negative → **Explanation:**

Proactive → **Explanation:**

Retroactive → **Explanation:**

Bilateral → **Explanation:**

Zero → **Explanation:**

Discuss with a partner:
How might a sports coach optimise the effects of positive transfer and limit t

Teacher's Notes

	Plenary Activity: Applying Theories
Aim of the activity	To understand the associative theories of learning and reinf
Teacher's instructions	Photocopy the worksheet and hand one to each student. In information cards with an explanation and a real world exa explanation, real world example and explanation of the effe for each type of reinforcement.

Answers

Classical conditioning:

- **Explanation:** Involves stimuli being presented before an action. This will res[illegible]bond.
- **Real world example:** When the starter calls 'on your marks' before a 100 take their positions and prepare to sprint.

Operant conditioning:

- **Explanation:** Involves stimuli being presented after an action has occurre athlete can be encouraged or discouraged to display a certain response in whether it results in a positive or negative impact upon them.
- **Real world example:** If a hockey player often scores when in a 1 on 1 situ likely to continue to shoot in the future. However, if they often receive ne in this situation, they are likely to perform alternative actions such as pass

Positive reinforcement:

- **Explanation:** Providing positive stimuli after the correct outcome has occ likelihood of the correct outcome being repeated.
- **Real world example:** Providing a trophy to a winning player.
- **Effect on stimulus-response bond:** Strengthens the bond.

Negative reinforcement:

- **Explanation:** Removing negative stimuli after the correct outcome has oc likelihood of the correct outcome being repeated.
- **Real world example:** A coach may provide criticism of a golfer's techniqu
- **Effect on stimulus-response bond:** Strengthens the bond.

Punishment:

- **Explanation:** Providing negative stimuli after an incorrect response has oc likelihood of the incorrect outcome being repeated.
- **Real world example:** Taking a football player off in front of the rest of the mis[illegible] any passes.
- **Effect on stimulus-response bond:** Weakens the bond.

Theories of Learning: Applying

Explain each of the terms below and provide a sporting example which can be relevance within the real world.

Classical conditioning

Explanation:

Real world example:

Operant conditioning

Explanation:

Real world example:

Positive reinforcement

Explanation:

Real world example:

Effect on stimulus-response bond:
Weakens the bond ☐
Strengthens the bond ☐

Negative reinforcement

Explanation:

Real world example:

Effect on stimulus-response bond:
Weakens the bond ☐
Strengthens the bond ☐

Activity 41 – Thorndike's Laws of

Teacher's Notes

	Starter Activity: Group Explaining
Aim of the activity	To understand and apply Thorndike's three laws of learning
Teacher's instructions	Photocopy the worksheet and hand one to each student. In groups of three and each take one of Thorndike's laws of le notes on their law before explaining it to the rest of the gro group has explained their law and the others have made no in a group discussion about tim[illegible]er these laws have ap within sport.

Answers

i) Law of readiness:
- Learner can only start learning when they are willing to begin doi
- The willingness to learn must come from within the individual
- A willingness to learn can not easily be passed onto someone
- The learner must be responsible for taking the first steps towards lea
- Requires motivation to initiate a change

Law of exercise:
- Practice must be performed in order to learn
- Practice helps to strengthen the stimulus-response bond
- Practice provides an opportunity for responses to be adjusted
- Learning can be undone if practice stops
- Requires repetition
- Requires motivation to keep practising

Law of effect:
- The outcome of learning can either strengthen or weaken the desire
- If there is a positive outcome, the individual is more likely to want to
- If there is a negative outcome, the individual is more likely to want to
- The coach should pay attention to the preferences of the learner in o learning experience
- The coach should try to maximise the amount of learning that occurs

ii) Any practical application of the three laws.
These will be different for different studer[illegible]s s[illegible]ould be discussed as an ex

Thorndike's Laws of Learning: Grou

i) Work in groups of three to teach each other about Thorndike's three laws
one law, write down some notes about the law and then explain it to the
Make sure you take notes while the other laws are being explained to you

Law of Readiness

Law of Exercise

Law of Effect

ii) Now work together to discuss an example of a time you have experienced
to learn a new skill in sport.

Activity 42 – Stages of Learn

Teacher's Notes

Starter Activity: Place the Characteristic on the Co	
Aim of the activity	To get students to understand the different characteristics
Teacher's instructions	Photocopy the activity sheet and hand out a copy to each st minutes to complete the activity by copying the characteris the corresponding place on the learning continuum.

Answers

Cognitive

- Use of mental pr... n...derstand the key principles of the skill
- Reg... se... ...ance from the coach
- Bes... of feedback: external, terminal or positive
- Find an open environment difficult to perform in
- The skill performance needs to be greatly attended to
- Inconsistent performances, with trial and error being used
- Only small improvements in performance (can also be placed in autonom

Associative

- Starts to perform more successfully in an open environment
- More consistent performance
- Fewer errors are made during the simple skills, but errors are still made d
- The skill moves between being under conscious and autonomous control
- An understanding of the key parts of the skill is gained
- More of an emphasis on physical practice needed
- Largest improvement in performance
- Best types of feedback: positive or intrinsic

Autonomous

- Best types of feedback: intrinsic, negative or concurrent
- The performer can regularly successfully perform in an open environment
- Skill is autonomously controlled
- Errors made very infrequently
- Performer understands the skill completely
- Only small improvements in performance (can also be placed in cognitive)
- Consistent performances at a high level
- Physical practice alongside perfor... a...lysis

Stages of Learning: Place the Characteris

Read the characteristics at the bottom of the page, and copy them to the corresponding place on the s

below (one has been done for you).

Best types of feedback:
Positive or intrinsic

Cognitive | Associative | nomous

Best types of feedback: intrinsic, negative or concurrent	More of an emphasis on physical practice	edback: external, terminal or positive
Only small improvements in performance	Fewer errors are made during the simple sk errors are still made during the complex	between being under conscious and autonomous control
An understanding of the key parts of the skill is gained	Starts to perform more successfully in a environment	formances, with trial and error being used
Use of mental practice to understand the key principles of the skill	The skill performance needs to be greatly at	mprovement in performance
Physical practice alongside performance analysis	Consistent performances at a high le	consistent performance
Errors made very infrequently	Skill is autonomously controlled	nderstands the skill completely
Find an open environment difficult to perform in	The performer can regularly successfully per open environment	se of guidance from the coach

Activity 43 – Types and Methods o

Teacher's Notes

Starter Activity: Identify the Practice	
Aim of the activity	To get students to understand the different methods of pra each method.
Teacher's instructions	Photocopy the activity sheet on the following page and han Allow the students 10 minutes to complete the activity by m practice with the corresponding descriptions, and then prov for each practice method.

Answers

Part practice
- Breakdown of ... le skill into its individual su... nes
- Ma... dangerous skill safer to perform
- *Disadvantage: loss of kinaesthetic feel*

Whole-part-whole practice
- The skill is practised in its entirety, then broken down into its subroutines, then practised in its entirety again
- Helps to develop a kinaesthetic feel for complex skills
- *Disadvantage: the longer spent using this method, the less of a kinaesthetic feel the performer can gain*

Distributed practice
- Includes regular breaks within the session when practising complex skills
- Enables breaks to reinforce the understanding of the skill and to enable physical recovery
- *Disadvantage: does not benefit the learning of discrete skills*

Varied practice
- Enables the coach to alter the practice of open skills
- Improves cognitive processes such as sel... attention and decision-maki...
- *Disadvantage: often ... ircs prior practice in a closed envi... he...*

Mental ... ce:
- Includes the use of imagery to picture future events
- Can improve readiness for competition and self-confidence
- *Disadvantage: it can be a hard skill to learn and can be detrimental if the athlete thinks negatively*

Whole practice
- The entire skill i...
- Helps to develo...
- *Disadvantage: i... understanding ...*

Progressive-part pra...
- Chronological le... a chronological ... subroutines
- The skill is then ...
- *Disadvantage: t... practice*

Massed practice
- Continuous pra...
- No or very few ... physical recove...
- *Disadvantage: ...*

Fixed practice
- Includes the lea...
- Improves the co... performance of ...
- *Disadvantage: ... performed in an...*

Students should ... measuring effecti...
- Quantity – ... performe... well a ski...
- Quality – ... it is condu...

Types and Methods of Practice: Identi

The cards below outline the characteristics and uses of different types and me options provided below, identify which type of practice each card is describing disadvantages to each of the types of practice.

Types of practice

- Varied practice
- Massed practice
- Fixed practice
- Mental practice
- Progressive-part practice
- Whole-part-whole practice
- Whole practice
- Distributed practice
- Part practice

Disadvantages

- Loss of kinaesthetic feel
- Time-consuming method of pract
- Difficult to gain an understanding
- The lo... spent using this meth... ...former can gain
- May not improve the skills when
- Requires a high level of fitness
- Often requires prior practice in a
- Does not benefit the learning of
- Can be a hard skill to learn and ca... thinks negatively

Type of practice:	**Type of practice:**
.....	.....
• Breakdown of a whole skill into its individual subroutines • Makes a dangerous skill safer to perform	• The entire skill is • Helps to develop
Disadvantage:	**Disadvantage:**
.....	.....
.....	.....
.....	.....

Type of practice:	**Type of practice:**
.....	.....
• The skill is practised in its enti... broken down into its subrou... practised in its entirety agai... • Hel... evelop a kinaesthetic feel for complex skills	• Chronological lea... a chronological li... subroutines • The skill is then l...
Disadvantage:	**Disadvantage:**
.....	.....
.....	.....
.....	.....

Type of practice:

.....

- Includes regular breaks within the session when practising complex skills
- Enables breaks to reinforce the understanding of the skill and to enable physical recovery

Disadvantage:

.....

.....

.....

Type of practice:

.....

- Continuous pract
- No or very few b rehearsal or phys

Disadvantage:

.....

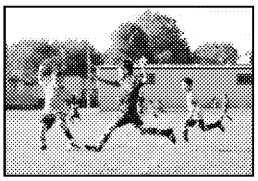
.....

.....

Type of practice:

.....

- Enables the coach to alter the practice of open skills
- Improves cognitive processes such as selective attention and decision-making



Disadvantage:

.....

.....

.....

Type of practice:

.....

- Includes the lear
- Improves the cog performance of

Disadvantage:

.....

.....

.....

Type of practice:

.....

- Includes the use of imagery t tu ture events
- Can improve s for competition and self-con

Disadvantage:

.....

.....

.....

Now discuss with a partner how the effectiveness of different practice method

Activity 44 – Guidance

Teacher's Notes

	Starter Activity: Be the Coach
Aim of the activity	To get students to understand the different types of guidan Students will also identify the advantages and disadvantage
Teacher's instructions	Photocopy the activity sheet on the next page and hand a c group into pairs and allow the students five minutes to com guidance type. Students should then decide who will be th performer in their pairs. The performer will call a sports ski performer, using one of the guidance methods. This will re acting if no equipment is available. After each has been tau advantages and disadvantages of each method.

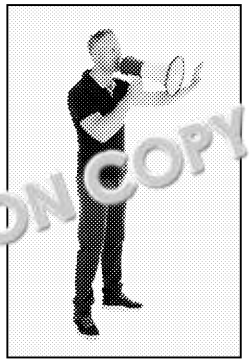
Answe

Guidan Type	Explanation	Advantages
Verbal	Verbal explanation of how to complete a skill that involves both direct and indirect prompting	• Useful to use alongside visual guidance • Can be used with large groups • It can improve specific areas that the performer is finding difficult to perform • It can provide more detail to a compet performer
Visual	Using visual cues to help the performer learn the skill	• Effective when the skill is simple • Can be used with large groups • Key components of the skill can be eas worked on
Manual	Physically moving the performer to demonstrate how the skill should feel when performing	• A complex skill can be broken down • Useful when demonstrating different subroutines • Useful when confidence levels need to improved • Allows a kinaesthetic feel to be develo
Mechanical	Use of equipment to demonstrate how the skill should b p rmed	• U ul en the skill is complex or angerous • Allows a kinaesthetic feel to be develo

Guidance: Be the Coach

In your pairs explain each of the types of guidance given below. Then decide w
be the performer. The performer should name a sports skill. It will then be th
the performer, using one of the guidance methods below. The performer shou
is being used. After a short role play of each guidance type discuss the advanta
method and write them down on the sheet.

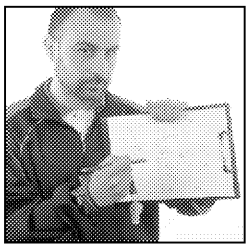
Verbal Guidance



Advantages:

Disadvantages:

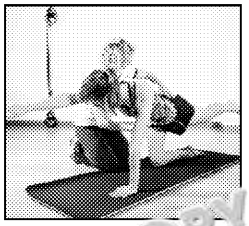
Visual Guidance



Advantages:

Disadvantages:

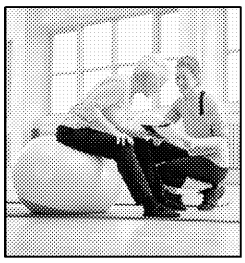
Manual Guidance



Advantages:

Disadvantages:

Mechanical Guidance



Advantages:

Disadvantages:

Activity 45 – Feedbac

Teacher's Notes

	Plenary Activity: Flow Diagram
Aim of the activity	To understand the different types of feedback and identify the advantages
Teacher's instructions	Get students into pairs. Photocopy the activity page and give one copy to complete. Give the students 10 minutes to complete as much of the flow type of feedback. If students are struggling, give them the opportunity to five minutes getting stud to feed back. Students should complete any discussion.

pe.

ld choose one of the pages to in all of the empty boxes for each cuss with their peers. Then spend r flow diagrams during this

Answers

	Intrinsic	Extrinsic		Negative
What is it?	Comes from within the performer, and relates to the feel of the movement	Comes from an external source such as a coach	Feed perf	Feedback used after an unsuccessful performance to criticise negatives
Examples of its use in sport	E.g. how controlled a golf swing feels	E.g. where a golf ball lands in relation to where you were aiming	E.g. for a	E.g. being told off by the coach for a bad performance
Type of learner it is useful for	Elite athletes	Novice athletes	Novi	Elite athletes
Advantages of method	• Improves the 'feel' of a movement. • Elite performers can use it without the need for the coach's or external feedback.	• It can be used during the earlier stages of learning. • Positive extrinsic feedback can improve motivation and focus.	• In m at • In su	It can improve focus and motivation to complete goals for performers at the autonomous stage of learning.
Disadvantages of method	Inexperienced athletes may be unaware of how the movement should feel, therefore, do not know if they have performed successfully. This is also the case for less-skilled ath	• It does not help create a kinaesthetic awa e of a movem e performer can al become too reliant on external feedback. • Negative extrinsic feedback can result in a loss of confidence.	If us suff	It can have a negative impact on motivation and confidence for those at the earlier stages of learning.

	Knowledge of performance	Knowledge of results	
What is it?	Feedback which relates to the quality of skill execution	Extrinsic form of feedback based on the outcome of a match	Come
Examples of its use in sport	E.g. knowing that you played as well as you could despite losing	E.g. the final score of a match	E.g. t deep
Type of learner it is useful for	Novice performers	Elite athletes	Elite
Advantages of method	• It can provide the performer with additional and specific information to refine technique. • Explains why a performance is successful, which is particularly useful for those in the cognitive stage of learning.	• Success can be evaluated easily. • Early success can improve task persistence.	• Ch th
Disadvantages of method	• It can overload the performer with information, particularly if they are at an early stage of learning. • It can break up the overall feel of the whole movement. • Success cannot be evaluated easily.	• Does not provide an explanation of why a performance was successful or unsuccessful. • Poor results can cause a lack of motivation.	• It pe • It ba co

Terminal
Comes after a performance
E.g. telling a football team that they should defend deeper during a post-match analysis
Novice and elite athletes
• You have time to assess what is important and needs to be addressed
• Changes can't be made when they are noticed, i.e. during a competition

Feedback: Flow Diagr

Feedback is used in sport to motivate, reinforce behaviour and detect and correct technique errors. C
low and overleaf to discuss the types of feedback.

	Intrinsic	Extrinsic	
What is it?			
Examples of its use in sport	E.g. how controlled a golf swing feels.		
Type of learner it is useful for			Novice
Advantages of method		• It can be used during the earlier stages of learning. • Positive extrinsic feedba[illegible] improve motiv[illegible] focus.	• Increa motiv at the • Increa succe
Disadvantages of method			

Negative
Feedback used after an unsuccessful performance to criticise negatives.

	Knowledge of performance	Knowledge of results	Terminal
What is it?			
Examples of its use in sport	E.g. knowing that you played as well as you could despite losing.		
Type of learner it is useful for		Elite athletes	
Advantages of method			
Disadvantages of method		• Does not provide an explanation why a performance was successful or unsuccessful. • Poor results can cause a lack of motivation.	

Activity 46 – Modern Technology for Guida

Teacher's Notes

	Plenary Activity: Discussion Points
Aim of the activity	To get the students to understand how technology is used f
Teacher's instructions	Split the class into pairs. Hand out a copy of the activity she minutes for the students to complete the activity. During th take notes on the points that the other person is making on

Answers

Guidance:

Limb kinematics

- Stu e of a body's limbs
- Util h-speed cameras / wearable motion capture material which is analysed using computer software
- The joint angles of movement of limbs can be closely analysed to refine te
- This is used to increase the efficiency of sporting movements

Force plates

- Used to show the ground reaction force
- An athlete stands on the force plate, with actions such as striding or jump reaction force
- These readings can be analysed using computer software
- This is used to help refine technique and get an understanding for how th
- Particularly in sports which use jumping and where an athlete's stride pat

Feedback:

Video recorder

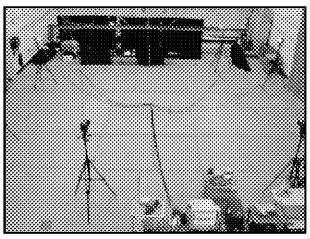
- Allows coaches and athletes to assess performance during matches in the inform future performance
- Provides visual feedback on performance
- Technique can be adjusted
- Tactics can be altered
- Can provide information about opponents
- Can provide a greater awareness of surroundings for the athlete

Fitness testing equipment

- Can determine current level of fitn e.g ing a metabolic cart to deter
- It can inform fitness goals
- It can be used to ess towards goals
- It ca vic vation for the athlete
- It ca ide variety to training sessions
- Athlete may enjoy being able to track their progress
- Can be used to determine the fitness levels of athletes in talent identificat their potential

Modern Technology for Guidance a
Discussion Points

Work with a partner to fill in the information boxes below with all of the uses
which can be used for guidance and feedback in sport. Make sure that you bo
down.



⬅ Guidance ➡

Kinematics

⬅ Feedback ➡

Video recorder

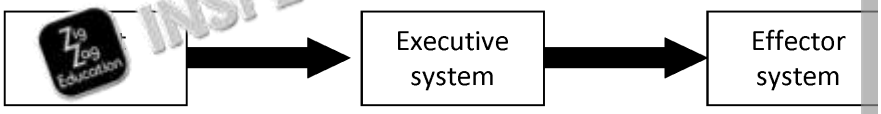
Fitn

Teacher's Notes

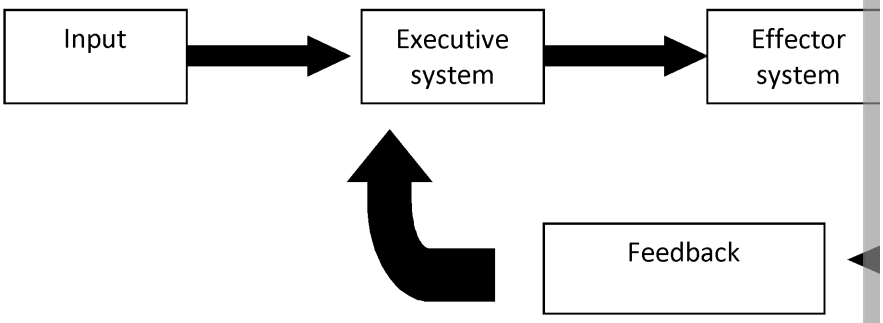
	Starter Activity: Drawing Models
Aim of the activity	To understand open and closed loop feedback models and performance in sport.
Teacher's instructions	Photocopy the worksheet and hand one to each student. In annotate a diagram for both open loop and closed loop fee identify and explain which feedback model would be used i examples.

Answers

i) Open loop control:



Closed loop control:



ii)
- Marathon running would predominantly involve the closed loop syste time and involves continuous skill performance. This will allow the at running technique as they receive feedback after each stride.
- A tennis shot would predominantly involve the closed loop system as of time and involves discrete skill performance. This will allow the at instinctively.
- However, no skill occurs in isolation so student should indicate that will also involve the opposite control ma ent to some extent.

i) Draw and annotate a diagram of the open loop and closed loop feedback below.

Open loop

Closed loop

ii) Discuss which of the models identified above would be used in the followi they would be used.

Marathon running

F

Teacher's Notes

Plenary Activity: Noughts and Crosses	
Aim of the activity	To get students to understand the definition and the differe
Teacher's instructions	Split the group into two teams and draw a noughts and cros the activity sheet and hand a copy to each student. Nomina one team to be 'crosses'. Take it in turns asking each team below. If a team gets the question right, they can ask for th 'cross' to be placed where they like on the grid. If the ques new question is asked of the other team and the game cont same fashion as a traditional game of noughts and crosses. question and correct answer down on their copy of the grid

Answe

Q: **Provide a definition for the term 'personality'.**
A: The collection of distinctive characteristics of an individual which are spe

Q: **How can the trait theory of personality be summarised as an equation?**
A: Behaviour = Function of Personality.

Q: **Provide a definition for the term 'trait'.**
A: The enduring quality that characterises an individual.

Q: **What does the trait theory of personality suggest?**
A: An individual is predisposed to behave in a specific way when faced with

Q: **What is meant by nature vs nurture?**
A: This is a debate about whether a person is born with their personality tra due to the conditions that they are exposed to.

Q: **What are the two dimensions of Eysenck's trait theory?**
A: Introvert–extrovert and neurotic–stable.

Q: **How many common personality factors did Cattell identify?**
A: 16.

Q: **What type of sports are introverts more likely to enjoy than extroverts**
A: Introverts are more likely to enjoy individual sports which involve fine sk concentration than extroverts.

Q: **What does the interactionist theory of personality suggest?**
A: That an individual's behaviour is determined by their personality in combi environment that they are in at the time.

Q: **How is the interactionist theory of personality summarised in an equat**
A: Behaviour = Function of (Personality × Environment).

Q: **Identify the four levels of Hollander's model.**
A: Social environment, role-related behaviours, typical responses, psycholo

Q: **How can performance be improved with the knowledge of the interact**
A: The typical response of the athlete can be altered through training so th displayed in a given situation.

Personality: Noughts and Cr

Write the question and the correct answer given in the space on the grid belov
same space as the teacher has placed a nought or cross on the board.

Q:	Q:	Q
A:	A:	A
Q:	Q:	Q
A:	A:	A
Q:	Q:	Q
A:	A	A

Teacher's Notes

	Plenary Activity: Be the Psychologist
Aim of the activity	To get students to understand the different techniques tha
Teacher's instructions	Photocopy the activity sheet on the next page. Split the cla to each student. Allow the students 10 minutes to work to identifying the possible factors affecting the formation of t the scenarios and the Affective, Behavioural and Cognitive explain the cognitive dissonance th uld be used to chan

Answers

1. **Possible factor affecting formation of attitude:** Social influences – Sarah's rub ff c and has changed the way she views sport as a whole
   Affective component: Love of sport
   Behavioural component: She now proactively participates in more sport
   Cognitive component: She believes sport is a positive thing and is not mas

2. **Possible factor affecting formation of attitude:** Past experiences – watchi playing sport has had a long-lasting negative impact on Andrew
   Affective component: Scared of taking part
   Behavioural component: He does not take part in any non-compulsory sp
   Cognitive component: He thinks that sport is dangerous

3. **Possible factor affecting formation of attitude:** Change in circumstances motivation to take part in hockey now that it is not as accessible after leav other things in her free time
   Affective component: No longer enjoys hockey as much as she used to
   Behavioural component: Not motivated to take part
   Cognitive component: Does not view it as an important part of her life

4. **Possible factor affecting formation of attitude:** Past experiences – she ha lessons when she was younger and as a result does not like taking part in
   Affective component: Hates taking part
   Behavioural component: Does not take part in any extracurricular physica
   Cognitive component: She does not understand the positives of physical a

Cognitive dissonance

- Aims to imbalance a person's beliefs
- Creating dissonance makes an individual m y to change their attitu
- The idea is to form an imbalance be en the attitude components
  - affective
  - behavioural
  - co iti e
- The nce between these makes the individual feel uneasy, and make back

Attitudes in Sport: Be the Psych

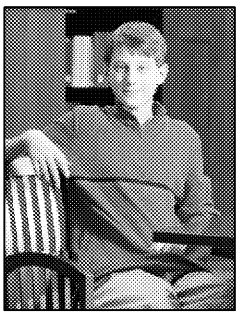
For each of the scenarios below work together to discuss and identify the poss
and the affective, behavioural and cognitive components of their attitude.

1.

Sarah loves sport. She began to love sp... when her friends introduced h... the local rugby club. However, ... she viewed sport as ... was, therefore, not intere... it. She now takes part in her PE lessons with more enthusiasm and is looking to start competing in athletics during her rugby off-season.

Possible factors affecting formation of attitude:

2.



Andrew thinks that taking part in sport is dangerous. He saw his dad break his leg while playing football and now Andrew is scared of taking part. He does not take part in any sport outside of PE lessons and he does not get very involved during PE lessons.

Possible factors affecting formation of attitude:

3.

Francesca used to enjoy taking part in hockey. However, now that she has left school, she does not have the motivation to take part any more as she does not enjoy it as much as she used to. She now takes part in different social activities with her friends and does not consider hockey an important part of her life any more.

Possible factors affecting formation of attitude:

4.

Chelsea had a PE teacher who she did not like when she was younger. As a result, she has always hated taking part in PE lessons since being taught by that teacher. She does not understand that physical activity can have positive effects and instead just thinks that it is a painful experience. Because of this, she does not take part in any extracurricular physical activity.

Possible factors affecting formation of attitude:

Now explain how the technique of cognitive dissonance could be used to change the people above.

Cognitive Dissonance

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Activity 50 – Arousal

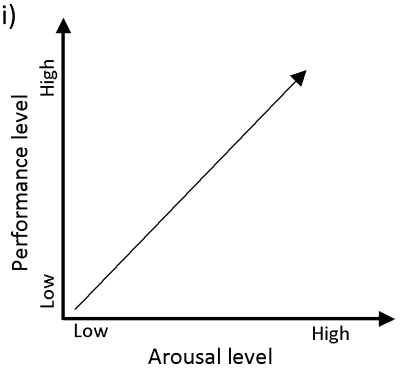
Teacher's Notes

	Plenary Activity: Draw a Graph
Aim of the activity	To be able to define arousal and understand the effects of ar
Teacher's instructions	Photocopy the activity page and give one to each student. complete the activity page, by drawing and explaining each then feed back to their group on their work.

Answers

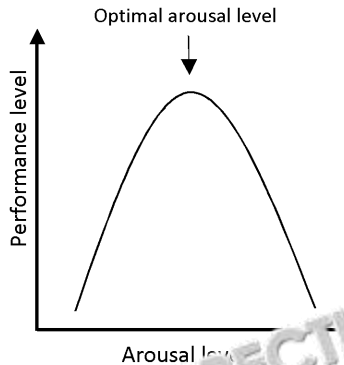
1. Arousal is a state of physic[illegible] psychological readiness to compete in ph readiness include i[illegible] heart rate and breathing rate and signs of psy increa[illegible] fo[illegible] narrowed attention.

2. i)



- This theory suggests that as arou increase proportionally.
- It is suggested that as arousal inc dominant response.
- A performer of higher ability, i.e. learning, generally has a stronger performer at the cognitive stage correctly helps improve performa
- A performer of lower ability has a is more likely to be used incorrec
- E.g. a skilled basketball free-thro taking an important free throw w be more likely to miss.

ii)



- Increased arousal leads to greate optimal point of arousal.
- After the optimal level of arousal arousal will decrease the level of
- The optimal level of arousal varie sport / sporting activity being pe
- Experienced individuals, i.e. thos learning, will have a higher level novice performers, i.e. those at t
- Sports / sporting activities which have a higher level of optimal ar
- E.g. a darts player will increase th to the stage which will provide th However, if they do not control t and harm their performance.

3. Effect of personality:
   - Introverts tend to prefer to take part in individual physical activities concentration and the performance of fine skills.
   - Introverts are, therefore, more likely to have a lower optimal level
   - Extroverts tend to prefer to take part in group physical activities wh concentration and the performance of gross skills.
   - Extroverts are, therefore, more likely to have a higher optimal level

Arousal: Draw a Graph

1. Define the term 'arousal':

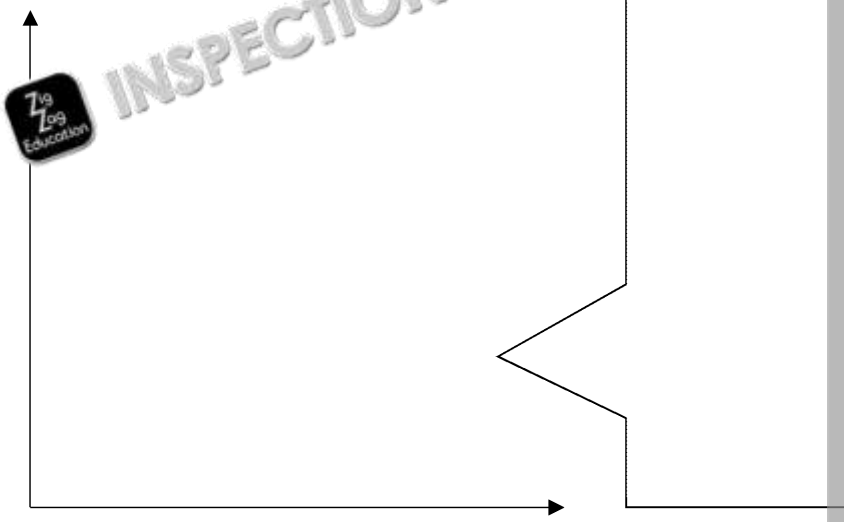
.....

.....

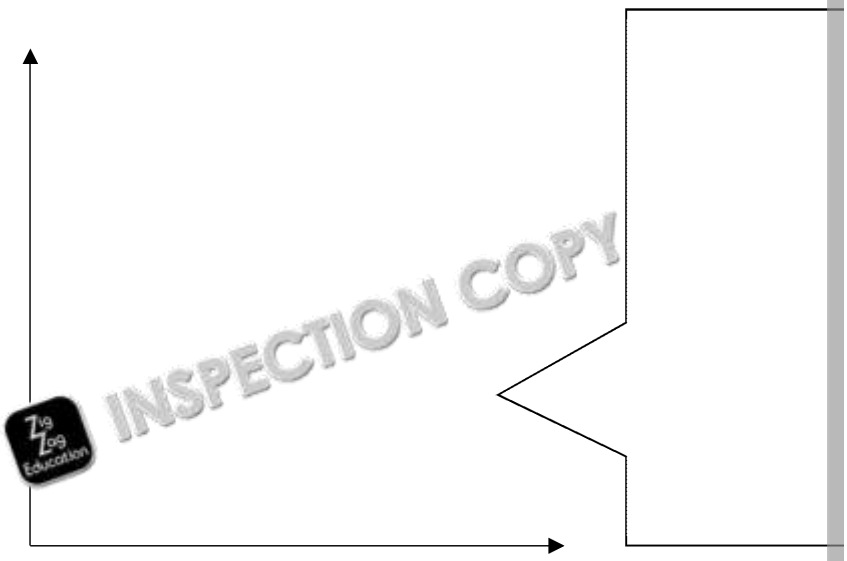
.....

2. Draw a graph which represents each of the theories below and then expla
provide a practical example of this theory occurring in sport in the box pro

i) **Drive theory**



ii) **Inverted-U theory**



3. **Effect of personality:** Now discuss with a partner how you think personali
the optimal level of arousal.

Activity 51 – Anxiety

Teacher's Notes

	Starter Activity: Key Term Steal
Aim of the activity	To allow students to test their understanding of the key ter
Teacher's instructions	Divide the class into groups of four and give each group two then split into pairs. Each pair should use the worksheet an down a short definition of each of the key terms. Once com the key terms and place them face down on the table in fro pair should choose a card from the other team. That team read out the definition they wrote. If the other team guess that read the card gets to keep it as a reward for writing a c incorrect, the card can be placed back down in front of the Students should spend 10 minutes taking it in turns. The w most cards collected off the other pair. Students should the disadvantages of the different ways that anxiety can be me

Answers

Example answers to support (if required):

- **Anxiety:** A feeling of apprehension when faced with a stressor
- **Cognitive anxiety:** The psychological reaction to anxiety
- **Somatic anxiety:** The physiological effects that anxiety can have on an ind
- **State anxiety:** How an individual reacts to a specific stressful situation
- **Trait anxiety:** An individual's tendency to react to stress in a certain way
- **Behavioural symptoms:** Changes to how a person acts when they are anx
- **Physiological stress:** When the body is pushed beyond its capabilities by t
- **Psychological stress:** When a person is not able to cope with the mental p
- **Catastrophe theory:** A proposed relationship between arousal and perfor performance increases with arousal up to an optimal point and then any f a sudden drop in performance
- **Choking:** A dramatic reduction in ability compared to an individual's poten stressful situation
- **Over arousal:** A level of readiness for action which is too high and will neg
- **Behavioural anxiety:** The way that a person acts when anxious

Students should discuss the following:

- High levels of arousal can lead to high levels of anxiety if the athlete is not arousing situations
- The level of anxiety experienced can be reduced by using cognitive strateg
- The following cognitive strategies can be used:
  - Mental practice – Running through the skills that will be required in y
  - Imagery/visualisation – Imagining yourself performing in an upcomin
  - Self-talk – Trying to encourage yourself by saying positive words to yo
  - Pre-game routines – Having a set of actions which you perform befor prepare yourself and make yourself feel at ease
  - Relaxation – Using techniques such as deep breathing to calm yourse
  - Centring
  - Thought stopping – Avoiding negative thoughts by using techniques s they occur
  - Progressive muscular relaxation – The process of repeatedly contract major muscle groups in your body and focusing on the feeling of rela

Anxiety: Key Term Steal

1. In your pairs write a definition on each of the cards below to explain the k cards and place them face down in front of you. You will now take it in tu out one of your cards to your opponent.

   Your opponent should pick out one of your cards and you should read the correctly guess the key term, your team gets to keep the card. If they are again and mix them up. The winning pair is the one who has won the mos

Anxiety	Cogniti anxiety
State anxiety	Trait anxiety
Physiological stress	Psychological stress
Choking	Ov ousal

2. Now, as a group, discuss the relationship between arousal and anxiety an used to control them.

Activity 52 – Aggression

Teacher's Notes

Starter Activity: Research the Theories	
Aim of the activity	To get the students to understand the different theories of ag
Teacher's instructions	Photocopy the activity sheet on the next page. Split the class i copy to each student. Each student should start by explaining and assertive behaviour. Then tell them that each member of different theory of aggression. Allow the students five minute five minutes to discuss their findings with the rest of their grou of aggression and strategies which could be used in order to re

Answers

1. **Differ[illegible] aggression and assertive behaviour:**
   - [illegible]ssion is any act which is carried out with the main aim of hurtin
   - [illegible]ressive acts are outside the laws of the sport
   - Assertive behaviour is a forceful act which is carried out in order to g
   - Assertive behaviour is within the laws of the sport

2.
   - Hostile
   - Reactive
   - Channelled
   - Instrumental

3. **Instinct theory** (Lorenz, 1966)
   - Every individual has an innate characteristic of acting aggressively
   - This aided survival during evolution
   - This feeling of aggression has a need to be released
   - Acting aggressively cannot be helped
   - Sports which involve aggressive actions allow this natural release of a
   - Does not take into account premeditated aggressive actions
   - Levels of aggression can increase throughout a sporting game, levels decrease following an act of aggression

   Frustration–aggression hypothesis (Dollard et al., 1939)
   - The sole reason for aggression is the feeling of frustration
   - Once an athlete feels frustrated, they will always act aggressively
   - A key source of frustration is when a goal is blocked
   - Does not take into account that there are other reasons for aggressio
   - It does not consider other emotions which are related to frustration s

   Aggressive cue theory (Berkowitz, 1969)
   - Frustration leads to an increase in arousal level, which in turn leads t aggressive behaviour
   - When at this level of arousal, if an aggressive cue is present, the perf
   - Always if arousal levels can be controlled, aggression can be cont
   - Does not take into account that aggression may be justified, and is no

   Social learning theory (Bandura, 1977)
   - Aggressive behaviour is learned
   - Observing others with lots in common with the observer leads to an i aggressive behaviour
   - Aggression can be controlled
   - Does not take into account aggressive behaviour which occurs withou
   - It does not explain why some individuals will replicate the behaviour wh same behaviour

4. **Causes of aggression:**
   - Over arousal, e.g. when competing against a rival
   - Lack of morals
   - A loss of morals when taking part in a competitive environment (brac
   - The importance of winning, e.g. a cup final
   - Frustration with the acts of the opposition, yourself or the officials

   Strategies that could be used to reduce aggression:
   - Imagery
   - Positive self-talk
   - Mental practice
   - Removing yourself from the situation
   - Progressive muscular relaxation
   - Deep breathing
   - Physiological measures
   - Punishments for [illegible] of aggression
   - Praise for [illegible] calmly
   - [illegible]otion of role models who do not act aggressively
   - [illegible]cation

Aggression: Research the Th

1. Explain the difference between aggression and assertive behaviour.

   .....

   .....

   .....

2. List the types of aggression.

   1. .....

      .....

   2. .....

      .....

   3. .....

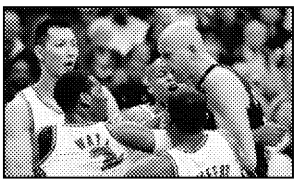
      .....

   4. .....

      .....

3. In your groups, decide which member is going to research which theory o
   researching your theory online, and fill in the relevant box below with as
   theory. After five minutes, discuss your findings with the rest of your grou
   notes in the other boxes with the findings that your team mates come up

Instinct theory



Frustration–aggression hypothesis	Soc
	

4. Now, with your group, discuss the causes of aggression and the different s
order to reduce the amount of aggression displayed during sporting event

Activity 53 – Motivation

Teacher's Notes

Plenary Activity: Sporting Diary	
Aim of the activity	To understand different types of motivation and theories o
Teacher's instructions	Photocopy the worksheet and hand one to each student. I sporting diary by filling in each section with appropriate ex experience.

Answers

i) Any appropriate example of:
- Self-motivation, e.g. wanting to improve your fitness levels so that y
- Positive motivation, e.g. trying hard during training sessions because commented that you are a good trainer
- Negative motivation, e.g. trying hard during training sessions becaus criticised your work ethic during training
- Intrinsic motivation, e.g. attending training on a rainy night as you kn performance during competition
- Extrinsic motivation, e.g. trying hard during a match due to the appla

ii) Any appropriate example of:
- Internal rewards, e.g. feeling good about yourself after achieving a p
- External rewards, e.g. receiving a medal for winning a race
- Tangible rewards, e.g. receiving prize money for winning a golf tourn
- Intangible rewards, e.g. receiving praise from teammates after a goo

iii) Any appropriate example of:
- Need to avoid failure, e.g. not volunteering to take a penalty during a s
- Need to achieve, e.g. asking to take a free kick as you want to try and
- Incentive value can increase the need to achieve response if there is
- Probability of success can increase the need to achieve response if th performing well

iv) Any appropriate example of behaviour being influenced by:
- Situation, e.g. acting differently during a golf tournament compared t
- Personality, e.g. being an introvert means they were less willing to ta
- Behaviour, e.g. if the rest of the team do not take training sessions se
- Expectation, e.g. being the captain meant they attended every trainin be there

v) Any appropriate example of motivation and performance being enhanced
- Achievement goal theory, e.g. displaying a need to achieve improved match as they were willing to call for the ball and try to dribble past p every time
- Goal-setting, e.g. having a goal to spend half an hour more training e continue training

Motivation: Sporting Dia

Write a personal account of when you have experienced each of the terms rel
sporting involvement.

i) Describe a time when you have experienced the following types of **moti**
negative, intrinsic and extrinsic.

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ii) Describe a time when you have experienced each of the following types
tangible/ intangible.

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iii) Describe a time when you have displayed a **need to avoid failure** and a
these can be affected by **incentive value** and the **probability of success**.

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iv) Describe some different factors which have influenced your **behaviour** a
in sport.

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v) Describe how you could use **achievement goal theory** and **goal-setting** t
performance.

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Teacher's Notes

	Plenary Activity: Flow Diagram
Aim of the activity	To allow students to test their understanding of social facili audience has on performance.
Teacher's instructions	Photocopy the activity sheet on the next page and hand a c end of the lesson. Allow 10 minutes for the students to fill

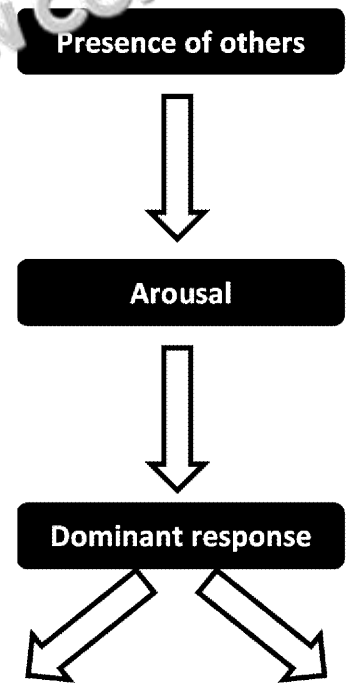
Answers

Who are the 'others'?

- Passive others, e.g. ple watching on T
- I tiv members, e.g. others w competing and those chanting in the stands

What factors determine the effect they will have?

- Significant others, i.e. those the athlete respects or feels close to will have a greater impact
- Home audiences will have a greater effect due to the home-field advantage
- The closer an audience is to the action, the greater effect they will have



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Social Facilitation
Definition:
The beneficial impact on sporting performance caused by performing in front of an audience. This is more likely to occur for experienced athletes who have a correct dominant response.

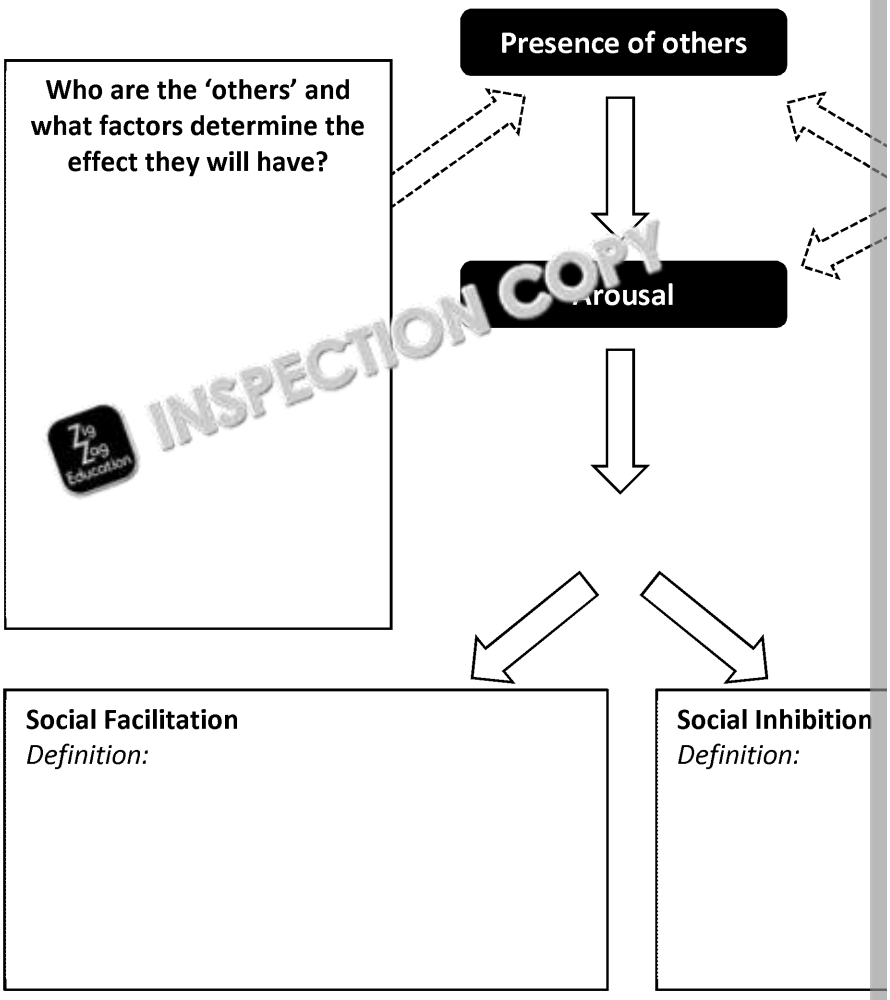
Social Inhibition
Definition:
The negative impact c
caused by performing
more likely to occur fo
more likely to have a

Strategies to minimise social inhibition

- Mental rehearsal
- Improved selective attention
- S
- In g self-efficacy
- Relaxation techniques
- Overlearning
- Replicating match situations when practising
- Anxiety-reduction techniques

Social Facilitation: Flow Dia

Complete the flow diagram by providing detail in the spaces provided regardin
and social inhibition when performing in front of an audience.



Strategies to minimise social inhibition

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Activity 55 – Group and Team Dynam

Teacher's Notes

	Starter Activity: Identify the Stages of a Gro
Aim of the activity	To get students to recognise the different stages of group f
Teacher's instructions	Photocopy the activity sheet on the next page and hand a c students 15 minutes to answer the questions on group forn

Answers

1. Any two of the following:
   - Cooperative
   - Clear communic
   - Co mo
   - d oles
   - d beliefs
   - Appreciation of each other
   - Any other relevant characteristics

2. One mark each for the following:
   - Environmental factors
   - Personal factors
   - Leadership factors
   - Team factors

3. Any three of the following:
   - Ensure the whole team communicates effectively
   - Create shared goals for the team
   - Involve all members of the team in goal-setting
   - Ensure all members of the team are aware of their role
   - Ensure all members of the team are aware of what role other members perf
   - Include the team in decision-making
   - Create togetherness through the use of team kits, etc.
   - Appoint effective leaders
   - Create an understanding that team performance is more important than ind

4. One mark for each of the following:
   - Individual attraction to the group (task) – how close a member of the team fee
   - Individual attraction to the group (social) – how close a member of the team fe
   - Group integration (task) – how close a member of e eam thinks the group i
   - Group integration (social) – how close a e be f the team thinks the grou

5. One mark for each of the fo
   - Steiner's mod effectiveness shows how the productivity of a tean
     t m d the way in which team members interact with each oth
   - be summarised as: actual productivity = best potential productivity – loss
   - s can be due to coordination defects when individuals within the team cohesive manner
   - The Ringelmann effect shows that losses can also be due to motivational de less effort as the size of the group increases
   - Motivational defects can also occur in large groups due to social loafing. So effort by individuals in large groups due to the belief that their efforts have

Group and Team Dynamics in
Identify the Stages of a Gr

1. Describe the characteristics of a cohesive group.

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2. List four factors which aff... h... fo...nation of a group.

Factor 1: .....

Fact.....

Factor 3: .....

Factor 4: .....

3. Explain three strategies for improving group cohesion in a team which is s

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4. Explain the four task and social factors which affect cohesion.

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5. Explain Steiner's model of group effectiveness using the Ringelmann effec
model.

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Activity 56 – Goal-setting in Sports P

Teacher's Notes

	Starter Activity: What's the Goal?
Aim of the activity	To get students to understand the importance of goal-setti in a sporting setting.
Teacher's instructions	Photocopy the activity sheet on the following page and hand the students 10 minutes to complete the activity by filling in th of goal-setting is and by identifying the SMARTER principles of

Answers

	What they are
Subjective	Goals which are less specific and not based on achieving something wh attending and doing training.
Objective	Goals which are set in order to directly improve performance and whic 30 m sprint times by one second.
Outcome goals	Goals which are based on performing to a certain level in relation to ot e.g. reaching the final of a tournament.
Performance goals	Goals which are based on performing to a certain level in relation to e.g. increasing serve accuracy by 10%.
Process goals	A goal which, if achieved, will allow the athlete to progress towards increasing one rep max for a leg press by 10 kg when the athlete has their 100 m sprint time by 0.5 seconds.
Realistic	Goals which should be achievable if an athlete puts in the required wo
Aspirational	Long-term goals which the athlete hopes to achieve but will be hard other factors, e.g. being selected to represent your country in an int
Short-term	Goals which the athlete can achieve in a short period of time as they goals, e.g. spending 30 minutes more a week performing aerobic ex
Medium-term	Goals which build upon short-term goals as an athlete works toward e.g. improving VO_2 max score by 10% when an athlete has a long-ter by four seconds.
Long-term	The overall goal which an athlete wants to achieve and will set short work towards, e.g. getting 15 assists in the season.

Specific: The specific aspect of performance that the student wants to improve

Time-bound: There should be a time in which the goal is aimed to be complete

Evaluate: After measuring how well the athlete is performing, the goal should be adjusted if needed

Below is the goal that was agreed upon by yourself and coaching staff:

In order to reach your long-term target of reaching the next Olympic Games we have decided to attempt to reduce your personal best time by five seconds over the next six months. We believe that you have the necessary resources and skills required to reach this goal. In order to track your progress, you will complete 12 testing sessions over this six-month period during which your time will be logged. The log of results will be put into a graph so that you can have a visual display of your progress which we will use to check that you are on track. If you are not progressing towards the goal, we will adjust it at this point.

This goal was agreed upon by all parties concerned due to your previous improvements over the last six months.

Realistic: The goal must be able to be achieved, while still providing a challenge

Goal-setting in Sports Performance: W

Fill in the table below by identifying what the different types of goals in sports
example of each.

	What they are
Subjective	
Objective	
Out goa	
Performance goals	
Process goals	
Realistic	
Aspirational	
Short-term	
Mediu m	
Long-term	

The following is an abstract of a goal given by an elite-level coach to a perform
at the next Olympic Games. Identify the SMARTER principles of the goal by un
principle.

Below is the goal that was agreed upon by yourself and the coachi

In order to reach your long-term target of reaching the next Olymp

decided to attempt to reduce your personal best time by five secon

six months. We believe that you h ve he ecessary resources and

reach this goal. In ord r t rack your progress, you will complete

er month period during which your time will be logged.

will be put into a graph so that you can have a visual display of you

we will use to check that you are on track. If you are not progressi

goal, we will adjust it at this point.

This goal was agreed upon by all parties concerned due to your pre

improvements over the last six months.

Activity 57 – Views towards Recreatio

Teacher's Notes

	Plenary Activity: Debate
Aim of the activity	To understand the view of different segments of society to pre-industrial Britain.
Teacher's instructions	Photocopy the worksheet and hand one copy to each group students to assign each other the role of landowner, aristoc of the debate. They should then spend 10 minutes taking pa view towards rational recreation while the chair makes note

Answers

Debate should include the following points:

Peasants:

- Mob activities were preferred
- Mob activities included Shrovetide football
- Transport was limited so games were played within local communities
- Mob activities allowed communities to form bonds and provided an oppo active on their days off
- Mob activities required little equipment and facilities and could therefore limited disposable funds for recreation

Aristocracy/landowners:

- Rational recreation was preferred by the aristocracy and landowners
- The aristocracy considered rational recreation as a form of social control v with an outlet
- Rational recreation involved more skilful performances as the participants more frequently
- Rational recreation was more civilised and, therefore, fitting for the upper
- Rational recreation often required more equipment and facilities than pop available to landowners and the aristocracy
- Mob activities were violent in nature with little rules and often resulted in of property

Church:

- Rational recreation was preferred by the church
- Church teams and competitions were organised
- Games could be played on religious holidays
- Rational recreation was more sophisticated and allowed individuals to imp
- Rational recreation involved more skilful performances as the participants frequently
- Rational recreation was beneficial for the promotion of Christian values
- The church was willing to provide land for rational recreation to take place du
- Mob activities were violent in nature with little rules and often resulted in of property

Views towards Recreational Activit

Work in groups of five and give each other the role of **chair, landowner, aristo** chair should ask the questions below to other participants and listen to their a finished, the chair should summarise the points made and decide who won the

1. Are mob activit[illegible] popular recreation more worthwhile to play?
2. Wh[illegible] o[illegible]ctivities should be played?
3. Wh[illegible]he positives and negatives of taking part in popular recreation?
4. What are the benefits of taking part in recreational activity?
5. Is recreational activity good for society?

Chair's Summary Notes:

1.

2.

3.

4.

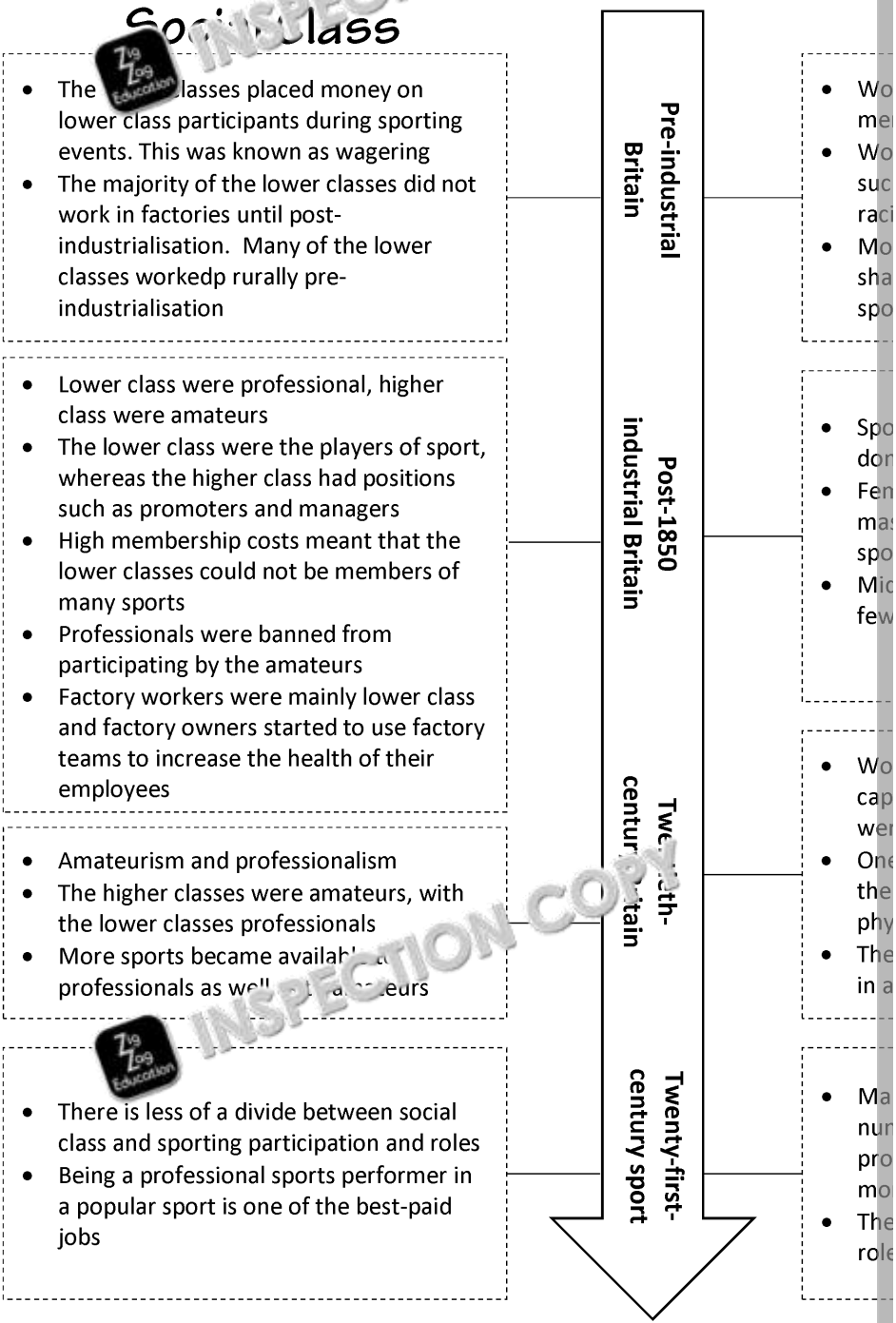
5.

Activity 58 – The Role of Social Class and Gen
Sport through Time

Teacher's Notes

	Plenary Activity: Timeline
Aim of the activity	To allow students to assess their knowledge on the roles of each shaped sport from pre-industrial Britain to twenty-firs
Teacher's instructions	Photocopy the timeline on the next page and give a copy to 10–15 minutes completing the timeline explaining how gen participation in the given time period

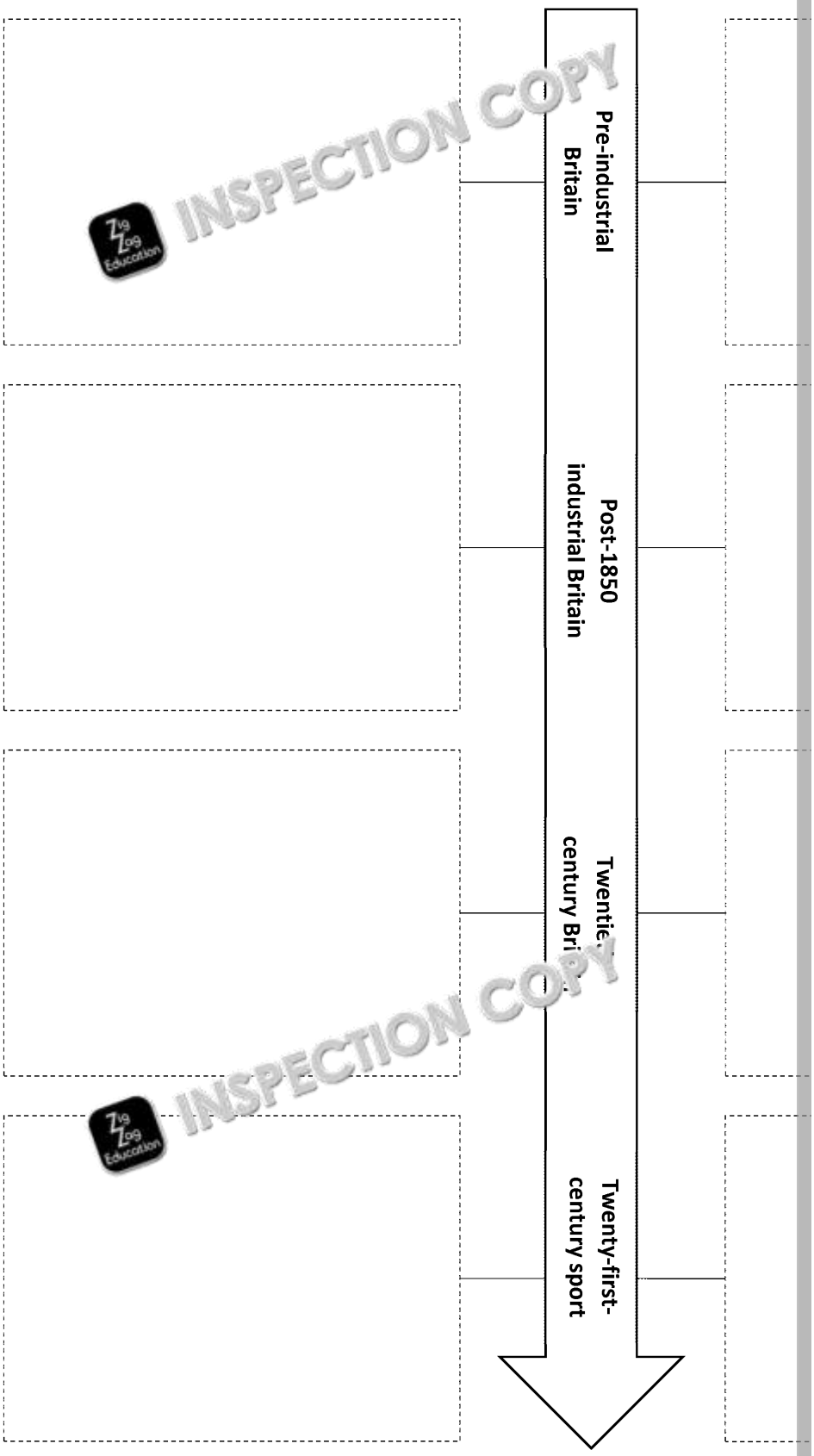
Answers



The Role of Social Class and Gende
Sport through Time: Timel

Using the timeline outline how gender and social class impacted on the emerg
given time periods.

Social Class



Activity 59 – The Role of Law and Order a
Shaping Sport through Tim

Teacher's Notes

	Plenary Activity: Make a Speech
Aim of the activity	To get students to explore and test their understanding of the impac education have had over time and how they have helped shape mod
Teacher's instructions	Photocopy the activity on the next page. Split the class into groups of group. Instruct the students to split into further pairs and each pair sh speech about how law and order and education have changed and he today. Then get one or two groups to feed back their speeches for fiv

Answers

Speeches should reference the following for e[illegible] topic area:

Law and Order:

Pre-industrial Britai	Sports did n[illegible]ve rules that prevented violence. There was not much and th[illegible]s filled with violent and cruel living conditions meant that spor The violent nature of sports meant that upper-class individuals partici the lower classes.
Post-185 industrial Britain	Sporting rules reflected the increase in law and order by becoming mo The emergence of the middle class as a result of industrialisation led t sport as the middle class strived to be more like the upper class.
Twentieth-century Britain	Law and order improved, with a stricter lifestyle and improved enforc more disciplined workforce helped to promote a more disciplined env
Twenty-first-century sport	Punishment of violent behaviour, from either spectators or players, ha of sports. Punishments include fines, banning orders, arrests, etc.

Education:

Pre-industrial Britain	The rules were not complex; they were kept simple to compensate for
Post-1850 industrial Britain	These rules became more complex as the population became more ec **Influence of public schools:** **on the promotion and organisation of sports and games:** • Schools were influenced by the physical training performed at m • There was a preoccupation with improving health during the Vic of society, including schools • Clarendon report was commissioned which required the leading understand the conditions. The report led to improvements in p the schools • Thomas Arnold introduced physical activity as a form of social co leadership roles in order to reduce the unruliness of the student reflected in the rest of society • Sports were promoted by schoolmasters to curb the bad behavi • Inter-house competitions were introduced between schools, wh rules **on the promotion of ethics through sports and games:** • The sportsmanship nature of sports w[illegible]mphasised • This meant that the sports w[illegible]re played fairly, with rules in place **on the cult of athleticism:** • Ensuring th[illegible]participating tried their hardest while also c • This [illegible]t fair play was of utmost importance when partici **on the spread and export of games and the games ethic:** • Ex-public school boys that were at universities introduced their g • This led to universities becoming a melting pot of all variations i rules • Ex-public school boys that were army officers also spread the im maximal effort across the British empire • Ex-public school boys also established NGBs, further structuring
Twentieth-century Britain	The population was becoming more literate, with schools becoming st
Twenty-first-century sport	Physical Education is a compulsory subject, with a focus on the benefi important in schools. This has led to an increase in participation rates general population is more educated about the benefits of physical ac have increased.

The Role of Law and Order and E
Shaping Sport through Time: Mak

In your groups of four split into pairs. One pair should write a speech to sugge
over time and helped shape modern sport, while the other pair writes a speec
over time to help shape modern sport.

Use the following timeline to ensure your speech flows from pre-industrial Brit

Pre-industrial Britain → **Post-1850 industrial Britain** → **Twentieth-century Britain**

*How **law and or** as developed over time to help shape mo*

*How **education** has developed over time to help shape mo*

Activity 60 – Availability of Money and Tim
Participation through Tim

Teacher's Notes

	Plenary Activity: Diary Entry
Aim of the activity	To get students to explore the impacts money and time woul and how this impacts participation in sport and physical activ
Teacher's instructions	Photocopy the activity on the next page. Split the class into g photocopy to each individual. Instruct the students to choos minutes writing a diary entry to docum t how availability of would have impacted on their a ti ation during their chos two groups to feed ba t ei eeches for five minutes.

Answers

	Availability of time	
Pre-industrial Britain	• Playing sport was mainly restricted to public holidays and holy days • Long working hours meant that little time was available to take part • The lack of time also meant that sporting events were local affairs between neighbouring villages	• Wagering s sport in Brit • Those with (bets) on th • Wagering s individuals some mone • Wagering a classes betv the sport in lower class
Post-1850 industrial Britain	• Industrialisation caused an increased amount of factory work – increasing the hours spent working by the lower classes • These longer hours meant that the lower class had less free time • Middle-class factory owners recognised the beneficial impact that sport can have on workers' morale, and encouraged their workers to participate • Increased leisure times and half days meant that the lower classes had more time to participate and spectate	• Wages imp the lower c that could b in sport • The introdu classes mor improved fi
Twentieth-century Britain	• The working week became m re tr ctured which enabled mor ure to be spent playing or w ng sport. This also meant that a gre r mber of fixtures could be played ro ghout the year, as there was more free me to organise games in	• Higher wag disposable the populat sport as the
Twenty-first-century sport	• The amount of free time, due to increased holiday allowance, has allowed many people to have more free time to spectate and participate in physical activity and sport	• An increase more peopl higher costs many peop sport

Availability of Money and Time in S
Participation through Time: Dia

In your groups of four, each choose a time period. You should now write a dia
and time in your chosen time period would have impacted on your participatio

Pre-industrial Britain

Post-

Twentieth-century Britain

Tw

Make notes on the other time periods you did not write a diary entry for.

Activity 61 – Transport's Role in Sports Partici

Teacher's Notes

	Starter Activity: Snapshot
Aim of the activity	To get students thinking about how transport would have i development has revolutionised sport in the modern day.
Teacher's instructions	Photocopy the worksheet on the next page and give a copy 10–15 minutes drawing snapshots of images that display ho participation at given time periods. They should also provid summarises the characteristics of transport during the time

Answers

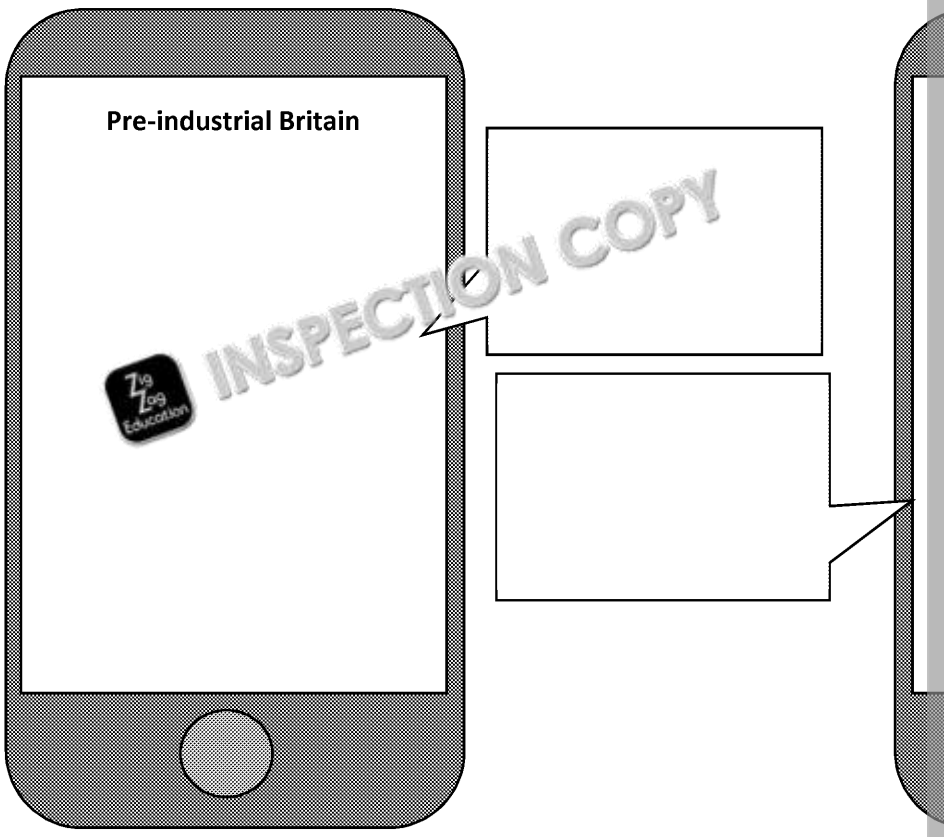
i) Images and captions should reference the following:

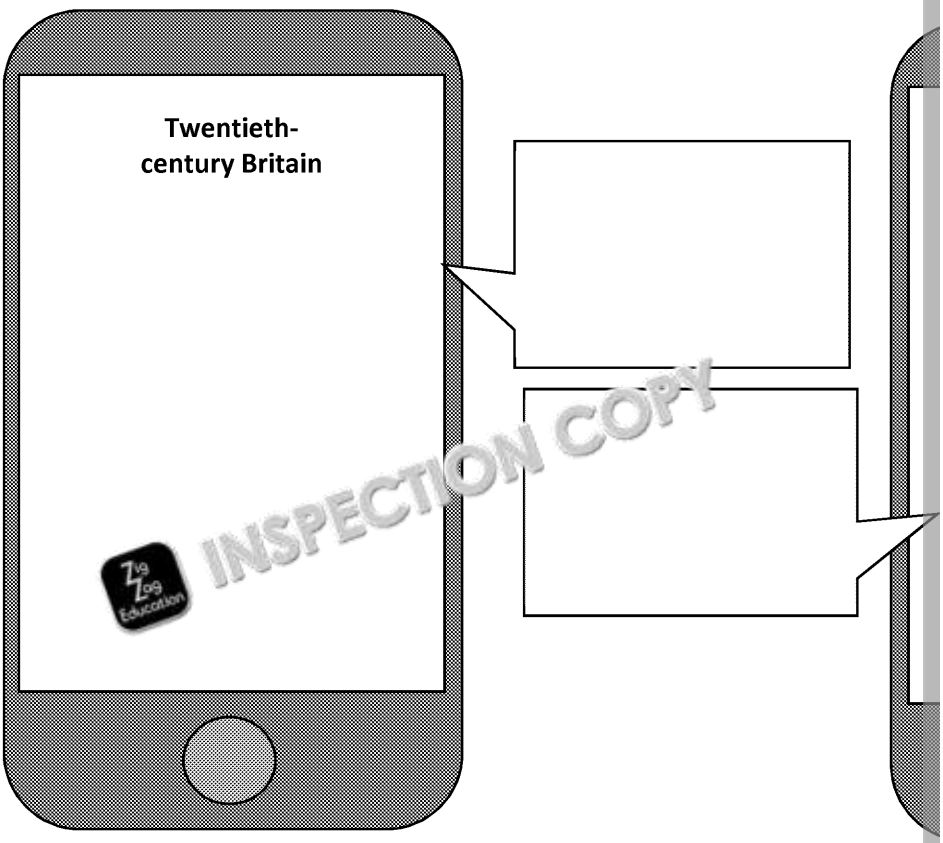
dustrial Britain	The lack of available transport meant that it was dif distances to take part in or watch sporting events. As a result, sport tended to be a local affair which v village or neighbouring villages.
Post-1850 industrial Britain	• Improved railways meant that sport became les nationally. • This meant that the number of opposition team number of sporting fixtures. • Improved transport increased the spectatorshi • The sporting press was developed and able to t reporting on sporting events.
Twentieth-century Britain	Improvements in railways and transport generally m could travel further to watch and participate in spo became more nationwide, with teams from across t
Twenty-first-century sport	Improvements in transport have allowed for *interna* and spectators can fly and take trains all over the w as corporations rather than local teams due to their

ii) Discussion should include the following points:
- Sports were spread to other countries
- Members of the army and navy spread British sports to other areas o
- These sports were then adopted by the locals and local teams and co
- International matches were developed, e.g. the shes between Engla

Transport's Role in Sports Participat
Time: Snapshot

i) Draw a snapshot and add a caption for each of the given time periods to h
and has influenced participation in physical activity and sport.





ii) Discuss with a partner the changes in migration patterns of sporting labou
sporting competitions and national teams.

Teacher's Notes

	Plenary Activity: Policy Forming
Aim of the activity	To understand how participation rates can be increased in
Teacher's instructions	Photocopy the worksheet and hand one to each pair of stu work together in order to formulate some key policies whic to increase the sporting provisions for disabled and female feed back some of their policies to the group.

Answers

Students to provide any rel nt p cies such as:

- Increase the pr isions for adaptable sports such as wheelchair tennis
- Imp cc routes to make them accessible for disabled participants
- Pro ucation for the importance of physical activity
- Make funding to national governing bodies dependent on achieving increa and female participants
- Increase funding to the governing bodies of popular female sports
- Provide funding for the training of female sports leaders, coaches and offi
- Increase the number of female policy makers within sport
- The government can ring-fence popular competitions so that they can be
- Any other appropriate suggestions

Equality and Diversity: Policy F

Work with a partner to create some policies which could be implemented by th
the ParaSport movement and the role of women within sport.

Outline your key policies:

Activity 63 – Globalisation of Sport in the T

Teacher's Notes

	Starter Activity: Around the Globe
Aim of the activity	To understand the impact that globalisation has had on twe
Teacher's instructions	Photocopy the activity page and hand out one copy to each minutes to complete the activity by writing down the impac exposure, and freedom of movement for performers has ha the twenty-first century. Then spend five minutes discussin any answers which they did not [illegible]

Answers

Greater exposure:

- Ex-[illegible] school students went on to set up national governing bodies for the [illegible] form of sports which we are familiar with today. This standar the sport to be played across the world
- Colonial diffusion occurred when ex-public school students served in the B the sports that they played at home to every corner of the British empire local population, e.g. playing cricket in India
- Due to increased media coverage which allows people to view more even
- Due to improved transportation which allows people to attend events
- Due to increased disposable income and leisure time which allows people
- This has led to a greater number of elite athletes due to the increased size clubs and teams can pick athletes

Changing migration patterns of sporting labour:

- Athletes are able to take part in sporting competitions in countries outside of
- Athletes are no longer restricted to competing for their local club
- As sports clubs have developed into large corporations they have develope with scouts located around the world. Their job is to spot young talent and to a new country to train and compete
- Sports teams are now very diverse with athletes from around the world, e.g regularly field more foreign players than British players
- This has allowed large tournaments such as the Olympics and FIFA World and increase the popularity of sports within the host country
- Sports teams also embark on pre-season tours to different areas of the wo popularity of a sport

Media coverage:

- Increased media coverage has allowed more people to be involved in spo
- It has led to increased popularity for those sports which receive large-scal
- 24-hour sports news channels highlight this increased popularity
- Dedicated sports channels also highlight the popularity of sports
- Increased media coverage has also increased the ability of sports to gener
- Advertising money has been used to increase the quality of sports which h

Globalisation of Sport in the Twenty
Around the Globe

Using the annotations and titles given, explain each further to suggest how sp
twenty-first century.

Greater exposure

Changing migrati

Media coverage

Activity 64 – The Modern Olympi

Teacher's Notes

	Plenary Activity: Complete the Timeline
Aim of the activity	To allow students to test their knowledge of the context an and the Commonwealth Games.
Teacher's instructions	Photocopy the activity on the next page and hand a copy to to work in pairs and choose one sporting competition (Olym Games) each. They should then spend five minutes each re competition before presenting their findings to their partne notes while their partner is presenting their findings.

Answers

Modern Olympic Games:

- An international competition taken part in by nations and athletes from a
- Initially taken part in by amateur athletes but now contains professionals
- The International Olympic Committee is responsible for organising the ga
- Each nation has a national Olympic Committee which looks after its athlet
- The Olympic symbol contains five interlocked rings which is designed to sh competing continents
- The Olympic motto is 'faster, higher, stronger' and represents the focus o
- The Olympic ideal is to focus on taking part and performing to the best of outperforming others and winning

Other ideals of the Olympic Games include:

- Opposing commercialisation of sport
- Improving opportunities for women in sport
- Developing sporting ethics

Answers should not be limited to these points; students may provide any othe

Commonwealth Games:

- An international competition taken part in by former territories of the Brit
- It was initially known as the British Empire Games but changed as the terr became independent states
- It is run by the Commonwealth Games Federation (CGF)
- The CGF aims to 'raise the bar' for all sporting involvement
- The games aim to focus on fair play and respect rather than sporting achie

There is a 'trinity of values':

- Unifying humanity
- Giving all people the chance to realise their destiny
- Promoting equality

Answers should not be limited to these points; students may provide any othe

The Modern Olympic Games: Comple

Work in pairs to research the Modern Olympic Games and Commonwealth Ga
should each take one of these two competitions, go away and research it and t
partner who will take notes while you are talking.

Modern Olympic Game

Commonwealth Game

Activity 65 – Hosting Global Sporti

Teacher's Notes

	Starter Activity: Case Study
Aim of the activity	To get students thinking about the different ways in which have an impact on the host nation.
Teacher's instructions	Photocopy the activity sheet on the next page and hand a c students 10 minutes to complete the activity by providing c event that they have thought of, and the impact of this eve

Answers

Impact		
Sporting	+ Hi[illegible]verage for minority sports + [illegible]eual winners can inspire others to participate in sport + More role models for the sport + A chance for athletes to compete against the best + Feelings of pride for representing the country	– Minori coverag – An inte perfor behavi enhanc – Perfor press c
Social	+ Improves the health of the nation due to a more active nation + Improves the mood and feelings of pride of the nation following successful performances, bringing the population together + Facilities can be used after the event which can improve the health of local residents	– Mood i level, a public – Human pressu
Economic	+ Increased job opportunities + Increased revenue through tourism, trade and investment + Regeneration of public services + Improved sporting facilities, as well as the development of new facilities with new technology	– The na the hig – Local ta
Political	+ Securing the global games improves the public's perception of the current political power + Provides a platform to promote politi[illegible]deals	– Politica elsewh – Poorly public

Hosting Global Sporting Events: C

For a global sporting event of your choice, highlight the positives and negatives against the categories given below.

Impact on sport:	Impact on econom
Impact on social factors:s	Impact on political

Activity 66 – Participation and Health

Teacher's Notes

Starter Activity: Jumping the Barriers	
Aim of the activity	To understand the barriers to participation for underrepres these barriers can be overcome.
Teacher's instructions	Students should get into groups of four and take one of the They should then spend five minutes identifying the barrier overcome barriers and the participation rates of their grou feed back their information to the rest of the group who sh notes. Next, the students should w[illegible] together to discuss technology and how this ca[illegible]ce participation rates.

Answers

Students should provide answers similar to those provided in the table below.

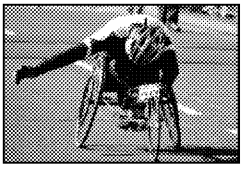
	Disability	Ethnicity	Gender
Barriers	• Poor access • Lack of adaptable sports • Discrimination • Lack of self-confidence	• Stereotyping • Discrimination • Lack of role models in certain sports • Being pushed towards certain sports • Being pushed towards certain positions within sports	• Different fam commitments • Lack of femal role models i some sports • Greater popularity of male sport in mainstream media • Stereotyping
Initiative/ programme to promote participation	Increased investment from Sport England into disability sport	The 'Kick it Out' campaign in football to remove racism from the sport	'This Girl Can' is a Sport England initiative to increase female participation
Strategies	• Greater disabled access • Provision of sports such as wheelchair tennis • Beginner sessions which can build confidence	• Promotion of role models from ethnic minority groups in a range of sports • Judging individuals on their talents rather than stereotypes	• Providing women only gyms/classes • Promotion of more female role models within the media
Participation rates	Any relevant data, e.g. 17.2% of disabled people over 16 take part in phy[illegible] acti[illegible]	Any relevant data, e.g. 36.7% of bl[illegible] individuals and individuals from other ethnic minority groups are physically active at least once a week	Any relevant dat e.g. 40.7% of me and 31.7% of women are physically active least once a wee

Students should discuss the following benefits of wearable technology:

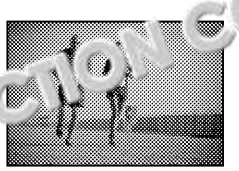
- Can inform individuals if they are not doing enough physical activity
- Can be motivating
- Can be engaging and fun
- Allows improvements to be tracked
- Allows amount of work to be tracked
- There are cheap alternatives to the most recognisable brands
- Any other relevant points

Participation and Health of the
Jumping the Barriers

Get yourselves into groups of four and then take one of the groups below (disa
disadvantaged). You will each have to fill in the information cards about your g
your information to the other members of the group (write down notes while
information).

Disability
Barriers to participation: 
State one initiative/programme to promote participation:
Strategies to overcome barriers:
Participation rates:

Barriers to p
State one ini participation
Strategies to
Participation

Gender	
Barriers to participation: 	Barriers to p
State or iative/programme to promote participation:	State one ini participation
Strategies to overcome barriers:	Strategies to
Participation rates:	Participation

Now work together to think about the benefits of wearable technology and ho rates.