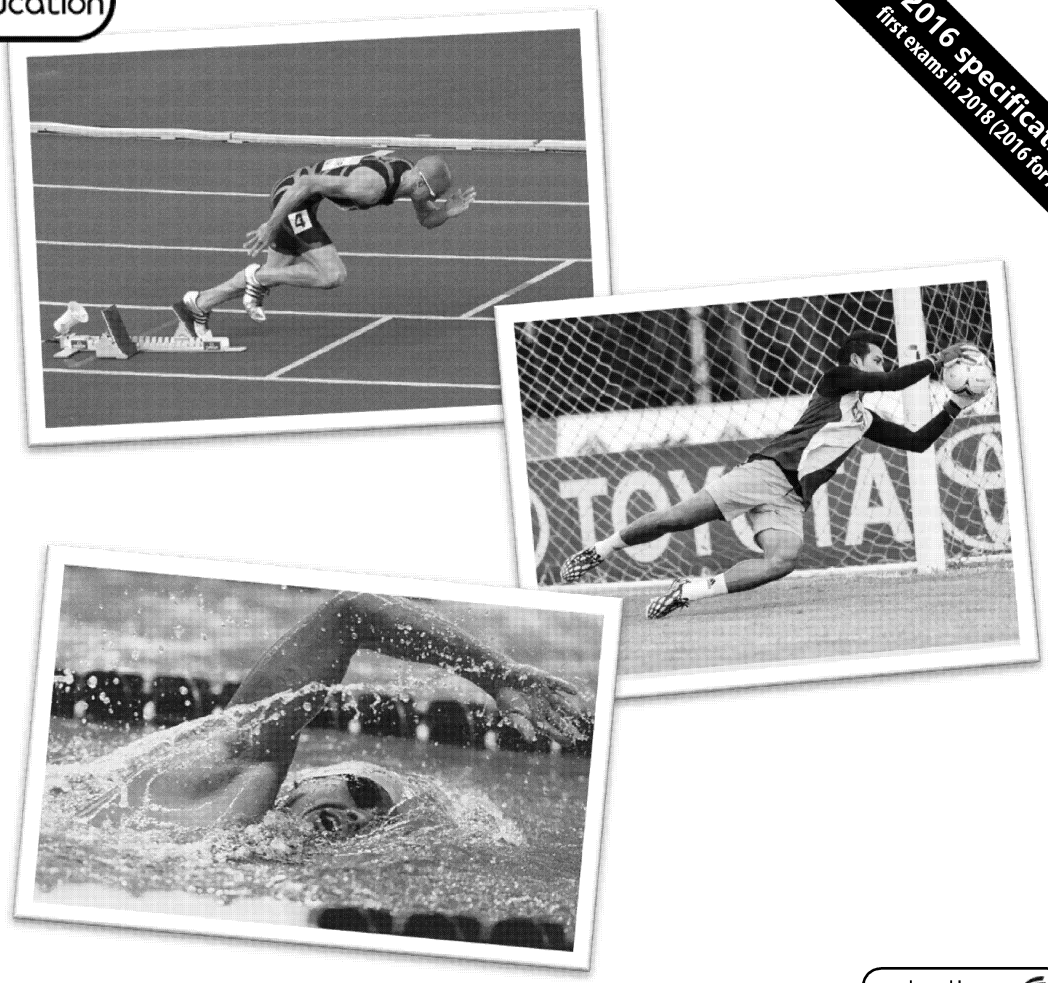
Zig Zag Education

PE

AS Level | Eduqas | B550/A550

2016 specification
first exams in 2018 (2016 for AS)



Course Companion

endorsed by eduqas

For AS Level Eduqas PE Component 1

zigzageducation.co.uk

POD 7908

Contents

Teacher's Introduction

This course companion is designed to support the AS Level Theory Content for
companion has been divided into chapters and clearly split into topics coverin
AS Level qualification. This resource is fully co-teachable and relevant to both

The course companion provides a detailed set of notes covering the specificati
used in class by your students. Opportunities to put their learning into practic
chapters in the form of application of knowledge and questions at the end of e

You will also come across 'Did you know' and 'Case study' boxes during chapte
stimulate the students' interest, encourage them to apply their knowledge to
make them aware of real-life implications of the content they are learning. Fur
boxes provide opportunities for in-class discussion springboards.

At the end of each chapter will be a set of questions to reinforce your students
testing students' knowledge of the content they have learnt throughout the co
set of questions has been provided in the Answers section.

This course companion includes:

- detailed notes which fully cover the specification in depth and at a level that i
- application of knowledge boxes encouraging students to apply their knowle
- key terms which highlight the important definitions to be aware of throug
- 'Did you know' and 'Case study' boxes stimulating the students' interest a
- 'Things to think about' boxes providing providing opportunities for in-clas
- visually stimulating diagrams to aid the learning of difficult topics
- 'Checking your understanding' questions to reinforce students' understan

Chapter 1.1: Contribution of Phy
Health and Fitnes

Overview

In this chapter you will learn about the influence that physical activity has on a person's health and fitness.

We will also cover the short-term and long-term effects of exercise on an individual's cardiovascular, respiratory, neuromuscular and musculoskeletal systems.

Learning outcomes

After studying this chapter, you shou

- ❑ Understand the impact that an u person's health and well-being
- ❑ Be able to describe the physical a of exercise
- ❑ Understand how physical exercis

Key Terms

Body image:	How a person interprets their own body and hov based on their body
Cardiac atrophy:	A decrease in size, strength and ability of the hea
Cardiac hypertrophy:	An increase in the size and strength of the heart
Coronary heart disease:	A disease which involves the restriction of the co supply blood to the heart) due to a build-up of c
Endorphins:	Hormones released following exercise. They give and satisfaction.
Hypertension:	High blood pressure which puts pressure on the 140/90 mm Hg
Obesity:	Having a BMI of over 30
Oxyhaemoglobin:	The molecule produced when oxygen binds with

Impact of an Unhealthy Lifestyle on the Body

It is vitally important to look after our health, and one way of doing this is by a
negatively impact on it. While physical activity can contribute to a healthy lifes
choices such as smoking or having a sedentary lifestyle can outweigh these be

Smoking, Drinking and Drugs

The primary negative effect of smoking is the development of cancers. Smoking can also damage the efficiency of the respiratory system via a number of mechanisms. One of these is the effect that carbon monoxide (a gas found in cigarette smoke) has on oxygen transport. Carbon monoxide binds to haemoglobin, reducing the affinity for haemoglobin to pick up oxygen, thus reducing the oxyhaemoglobin content in the bloodstream. This results in the gas exchange of oxygen at the alveoli being less effective.

Another toxin found in cigarettes is tar. Tar destroys cilia (small hairs which ar
that the lungs are no longer filtering out toxins and other harmful particles wh
lungs, contributing to diseases such as lung cancer and emphysema.

Excessive alcohol consumption has both long- and short-term effects on the bo
alcohol is generally a feeling of happiness. However, alcohol can also act as a d
inhibitions, which could lead to reckless behaviour.

Long-term effects of alcohol consumption include cancer, liver disease, chroni
dependency (addiction).

Recreational drugs are all considered to have damaging effects on the body. D
overdoses and a variety of other health problems.

Understanding the impact of physical activity and sport on the heal and fitness of the individual

A major cause of the worrying trend of obesity is the shift towards a sedentary that accompanies a modern lifestyle. For example, there has been an increase number of people who are sitting and using technology such as their phones a rather than doing sport and being active. Obesity is a major contributor to ma cardiovascular diseases, such as coronary heart disease, stroke, atherosclerosis heart attacks. Encouragingly, physical activity can lessen the likelihood of suffe from these cardiovascular diseases, as well as from respiratory diseases such a and chronic obstructive pulmonary disease.

The impact of training and exercise on cardiovascular health

Regular training helps to improve an individual's cardiac output, via the increase improve the efficiency of the transport of oxygen. Alongside this is the reduced which helps to put less strain on the cardiac muscle. Regular training also helps which can contribute to cardiovascular diseases such as coronary heart disease (heart attacks. One of these risk factors is high blood pressure. Training can lowe lipoproteins (LDL) in the blood, which helps to lower blood pressure. It can also (HDL), referred to as 'good cholesterol', which help to regulate blood pressure. increase the size of the coronary artery, reducing the risk of artery blockages an be unrestricted. Training helps to lower body fat levels, which helps to reduce th

1 http://www.nhs.uk/news/2011/08August/Pages/half-of-uk-predicted-to-be-obese-by-2030.aspx

Let's take a look at each of these health issues and how exercise can help reduce

Cardiovascular health issue	What it is	
Coronary heart disease	A disease which involves the restriction of the coronary arteries (the arteries that supply blood to the heart) due to a build-up of cholesterol / fatty substances.	Exer of e the size
Hypertension / High blood pressure	A blood pressure of 140/90 mm Hg or above that puts strain on the heart muscle and blood vessels, increasing the likelihood of heart attacks or strokes. Also known as hypertension.	Exer othe and to bl
Cholesterol build-up	When cholesterol combines with fatty substances and forms a plaque that builds up in the arteries and causes blockages that can lead to heart attacks and strokes.	Exer good fat c chol
Stroke	An urgent medical condition that involves blood flow to the brain being restricted or cut off, leading to a reduction in oxygen that causes brain cells to die.	Exer obes bein up i bloo bloo
Cardiac atrophy	A decrease in size, strength and ability of the heart muscle.	Regu hype

So it is clear that in order to lead a healthy lifestyle, it is important to avoid neg and to take part in regular physical activity. This will reduce the risk of develop diseases and thereby improve the quality of life that a person experiences.

Influence of exercise on psychological issues

It is well documented that exercise has a positive influence on the psychologica health of an individual. Exercise releases 'feel-good' hormones (endorphins) which can help to lower stress, increase satisfaction and increase happiness.

Having good health can also increase the self-image of a person. Having a goo self-image can increase self-esteem, leading to reduced rates of depression an low self-confidence.

Contribution of Physical Activity to He
Checking your understan

1. Describe the effects that smoking has on the health of a person. *(4*

2. Define 'hypertension'. *(1 mark)*

3. Describe the effects that physical activity has on the psychological h

Chapter 1.2: Cardiorespiratory and Systems in Response to E

Overview

In this chapter we will consider how the cardiovascular system and respiratory system adapt during exercise to maintain our body's physiological processes, how these processes are regulated, and how they can contribute to our health.

We will also examine the structure, anatomical components and physiology of both systems, as well as processes such as vascular shunting, and how these contribute to the process of physical activity.

Learning outco

After studying this chapter yo to do the following:

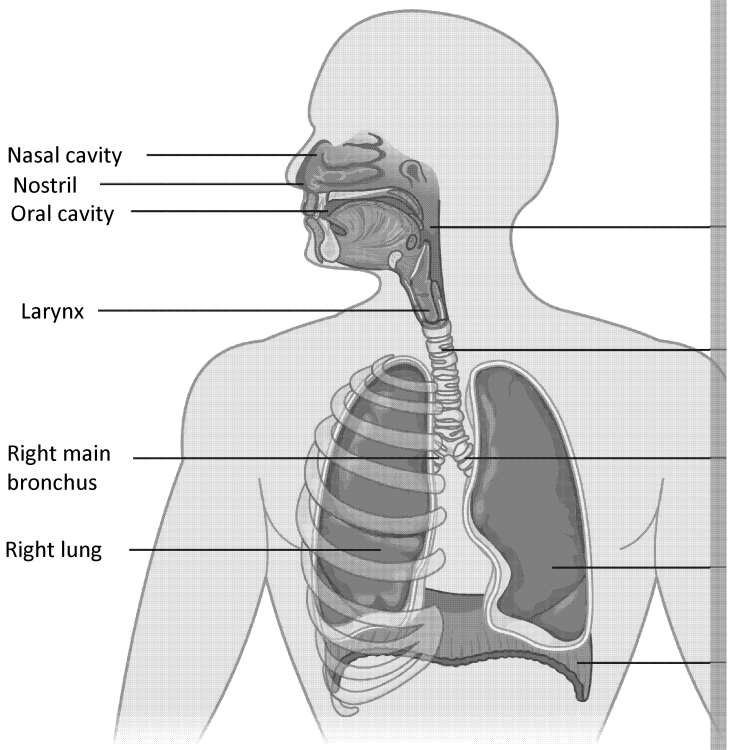
- ❑ Understand the structu respiratory system and
- ❑ Understand how oxyge mechanisms involved in
- ❑ Understand the differen impact these have on pl
- ❑ Describe the process of the muscles
- ❑ Understand Starling's la oxygen difference, and structurally and functio

Key Terms

Anticipatory rise:	The release of adrenalin via the sympathetic n prior to exercise
Arteriole:	Small blood vessel which extends from an arte
Atrial and ventricular	Occurs during a brief time period following de
Atrial depolarisation:	The effect that the SA node has on the atria, c providing an electrical stimulus across them
Baroreceptors:	Sensors detecting changes in blood pressure
Cardiac output:	The volume of blood ejected by the heart per
Cardiovascular drift:	The 'drift' effect of cardiovascular responses t exercise, despite exercise intensity not increas
Chemical regulation:	The control of physiological processes via the
Chemoreceptors:	Sensors detecting chemical changes within the
Expiration:	The process of breathing out
Expiratory reserve volume:	The extra air that can be exhaled after normal
Heart rate:	The number of times the heart beats per minu
Inspiration:	The process of breathing in
Medulla oblongata:	An extension of the spinal cord found in the sk for the heart and lungs
Minute ventilation:	The volume of air inspired or exhaled per min
Myogenic:	Originating in muscle tissues, rather than thro myogenic, as it creates its own impulses intrin
Neural control:	The control of physiological processes via the parasympathetic nervous systems
Oxyhaemoglobin:	A combination of oxygen and haemoglobin
Pre-capillary sphincter:	Smooth muscle that regulates capillary blood
repolarisation:	electrical impulse returning to a baseline valu
Residual volume:	The amount of air left in the lungs prior to forced
Stroke volume:	The amount of blood ejected from the heart p
Tidal volume:	The volume of air displaced from the lungs du and expiration

Structure and Function of the Respiratory System

If you've ever completed high-intensity exercise, you will be familiar with the f
immediately afterwards. The diagram below shows the key structures of the r



Nasal cavity: Air firstly enters the nasal cavity, where tiny hairs act as a filter not move towards the lungs

Larynx: Also known as the voice box, it consists of cartilage which help

Pharynx: Acts as a passage for air to move from the mouth to the lungs

Trachea: A mucous lining helps to prevent toxins from entering the lung

Bronchi: A pair of bronchi exists at the bottom of the trachea, before sp as **bronchioles**. These bronchioles then supply the air to the al

We will learn more about the alveoli later, when we discover how gases are ex

Physiology of the Respiratory System

The body must change the respiratory rate of a person depending on the level
The rate of respiration is determined by receptors in the body that detect nece
system. These are:

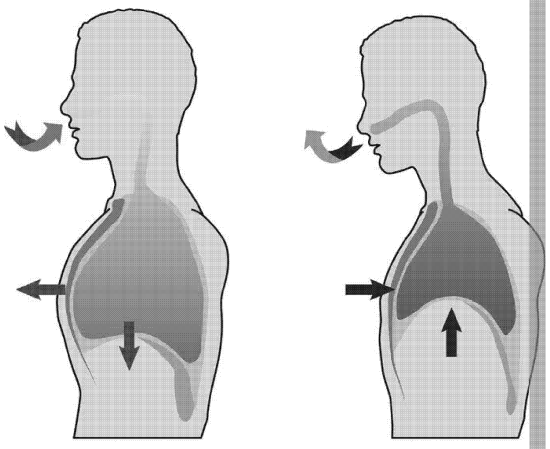
- Chemoreceptors – detect changes in levels of gases in the body; for examp
  dioxide in the blood.
- Proprioceptors – detect changes in the movement of a body. If a person is
  more oxygen at the muscles, so the respiration rate is increased.
- Thermoreceptors – detect changes in the temperature of nerve cells. An i
  increased exercise intensity.
- Baroreceptors – detect changes in arterial pressure. If the pressure inside
  more blood is being returned to the heart to be oxygenated.

It is important that we understand how the volume of air in the lungs changes
relationship between the different values for ventilation, and how oxygen and
between the air and the blood in the lungs and in the muscles.

Mechanics of breathing at rest

The mechanism of breathing involves a number of processes, which differ in o
The diagram below shows the process at each.

The movements of the chest during breathi



Inspiration **Expiration**

The diaphragm This contracts and becomes flatter, causing the lungs to be pulled downwards.	**The diaphragm** The diaphragm rel
External intercostal muscles These muscles contract, which causes the ribs to move up and out, allowing the thoracic cavity to enlarge in volume.	**External intercost** These muscles rela downwards and in cavity volume.
Air pressure The larger lung volume decreases the lung's air pressure below that of the atmospheric air, causing air to enter the lungs from the atmosphere.	**Air pressure** The lower lung volu pressure above tha air to be expelled fr atmosphere.

Mechanics of breathing during exercise

We all know we need more oxygen when we exercise, but did you know that t assisted as the intensity of exercise increases? Specific muscles are drawn upo demand for oxygen. Each is explained below.

Inspiration:

During exercise, it is important to increase the oxygenation of the blood, which is achieved with the help of the sternocleidomastoid and the pectoralis minor and the effect that these muscles have on inspiration.

The sternocleidomastoid, a muscle found in the neck, works alongside the scalene when an individual is working at a high intensity. These muscles help t lift the sternum, which lifts the rib cage, helping to expand the thoracic cavity. This increase in thoracic cavity reduces the pressure within it, creating a pressure gradient between the atmospheric air and the thoracic cavity. Air therefore flows from where the pressure is high (the atmospheric air) to where it is low (the thoracic cavity).

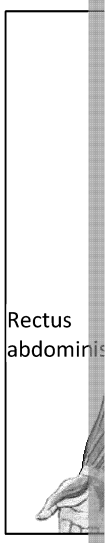
The pectoralis minor has a similar action in lifting the ribs, which occurs as a re of stimulation from the anterior thoracic nerve. This, therefore, has the same effect of increasing the thoracic cavity as the sternocleidomastoid.

Expiration:

During exercise, it is important to rid the body of the growing concentration of carbon dioxide in the blood, which is being produced by the exercising skeletal muscles. This is achieved through the effect that the internal intercostals and the rectus abdominis muscles have on expiration.

The internal intercostals are not activated during breathing at rest, only during exercise when respiration becomes forced. These muscles lower the ribs and bring them inwards, reducing the thoracic capacity and causing air to be expired from the lungs, due to the pressure gradient (high within the thoracic cavity and low in atmospheric air).

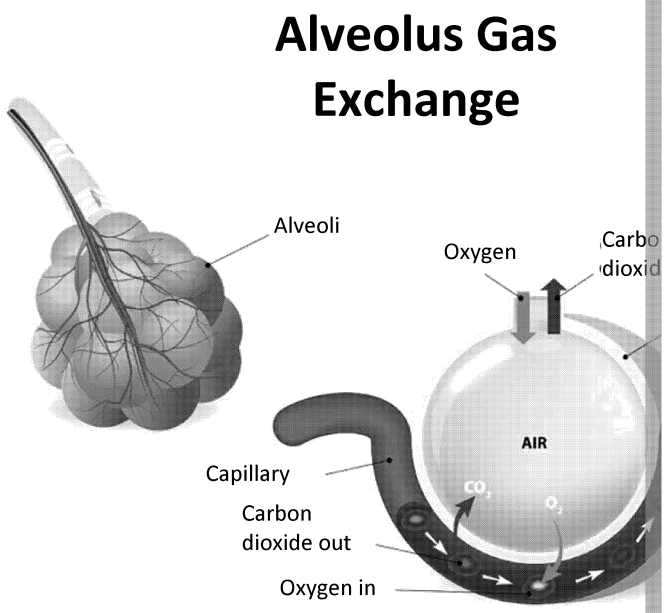
The rectus abdominis muscle, found in the abdominal wall, contracts due to ring expiration. This causes the intra-abdominal pressure to increase, resulting in the diaphragm being raised, thereby reducing the thoracic pressure.



Gaseous exchange

Gas exchange in the lungs occurs between the alveoli and blood as a result of d
moves from an area of high concentration (alveoli) into an area of low concent
moves from an area of high concentration (in the capillaries) into an area of lo
takes place due to the pressure gradient that exists between the two sites of g
alveoli is increased by the following:

- There is a large number of alveoli, which creates a large surface area for d
- There is a large number of capillaries, which are very thin, meaning that b
  thereby lengthening the time for diffusion.
- The membrane between the alveoli and capillaries is very thin, reducing t



Gaseous exchange in the muscles

When gas is delivered to the muscles, oxygen dissociates from haemoglobin thr
of oxygen in the working muscles means oxygen diffuses down the concentratio
while carbon dioxide diffuses from a high concentration in the muscle to a low c

Efficient gaseous exchange in the muscles is influenced by:

- thin capillary walls – makes the diffusion distance shorter
- a high-capillary network around the muscles – increases the surface area

Effect of differing intensities of exercise and recovery on gas excha the muscles

As exercise intensity increases, so does the demand of the skeletal muscles for o
rates undergo changes, so too do the sites for gas exchange within the body at t

Changes in partial pressure

Gas exchange occurs as a result of a gradient formed between the differences
between two sites; for example, the alveoli and the blood. Partial pressure ref
gas exerts within a combination of other gases, and, according to Dalton's law,
combination of gases is the sum total of the individual gases' pressures. Oxyge
concentration (in this example, the alveoli) to an area of low concentration (th
diffuses from an area of high concentration (the blood) to an area of low conce
pressure gradient is increased as we exercise, due to oxygen levels in the blood

Respiratory Values and Capacity

The respiratory system is closely linked to the cardiovascular system, as the bloo
heart and lungs to replenish the blood with oxygen. This system is vital, not jus
needed oxygen to the body's cells, but because it helps to dispel from the body
product of the exercising cells. There are three values we must first consider wh

Breathing frequency: the number of breaths per minute
Tidal volume: the volume of air displaced from the lungs during steady-state
Minute ventilation: the volume of air inspired or exhaled per minute

There is a relationship between the key terms above, which can be explained b
minute ventilation = tidal volume x breathing frequency

Breathing frequency		Tidal volume	
Definition: the number of breaths per minute	×	**Definition**: the volume of air displaced from the lungs during steady-state inspiration and expiration	=
Average resting value: 12 breaths per minute		**Average resting value:** 500 ml	
The resting breathing frequency can vary for each individual, but generally, the fitter the individual, the lower their breathing frequency.		Having a higher tidal volume allows a larger amount of carbon dioxide to be expelled from the lungs per breath.	

At rest, Megan's tidal volume is 600 ml, and she has an average breathing frequency of 14 breaths per minute.

Using the equation above, we can determine the average value for Megan's minute ventilation at rest.

- Minute ventilation = tidal volume × breathing frequency
- Minute ventilation = 600 ml × 14 breaths per minute
- Minute ventilation = 8.4 l/min

Apply

Record your own minute ventilation by firstly recording your breathi
average value for tidal volume provided above, and complete the equation.

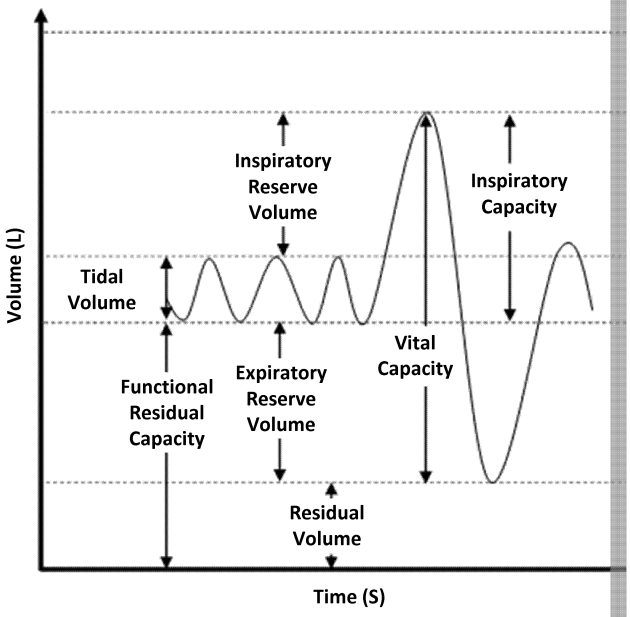
The changes in lung volume during physical activity and sport

The respiratory system during exercise works alongside the cardiovascular syst
oxygen. The increased demand for oxygen from the working muscles results ir
respiratory system. These include changes to the resting values of the previou
tidal volume and minute volume. These changes are summarised in the table

Respiratory measurements	At rest	Typical value at moderate-intensity exerci
Breathing frequency (per minute)	12	28
Tidal volume (ml)	500	3000
Minute ventilation (l/min)	6	8.4 (untrained)

It is also important that you understand the other respiratory measurements v

- **Residual volume**: The volume of air that is left in the lungs after forced ex
- **Expiratory reserve volume:** The volume of air that can be expired forceful
- **Inspiratory reserve volume:** The volume of air that can be inspired forcef
- **Vital capacity:** The maximum volume of air that can be expired following
- **Inspiratory capacity:** The maximum volume of air that can be inspired fol
- **Functional residual capacity**: The amount of air within the lungs following
- **Total lung capacity**: The amount of air that can be held in the lungs follow



The above lung volumes all have an impact on the performance of sport and ph
all have an effect on the process of gas exchange, and, therefore, on the efficie
muscles. The more efficient this system, the longer your skeletal muscles can p

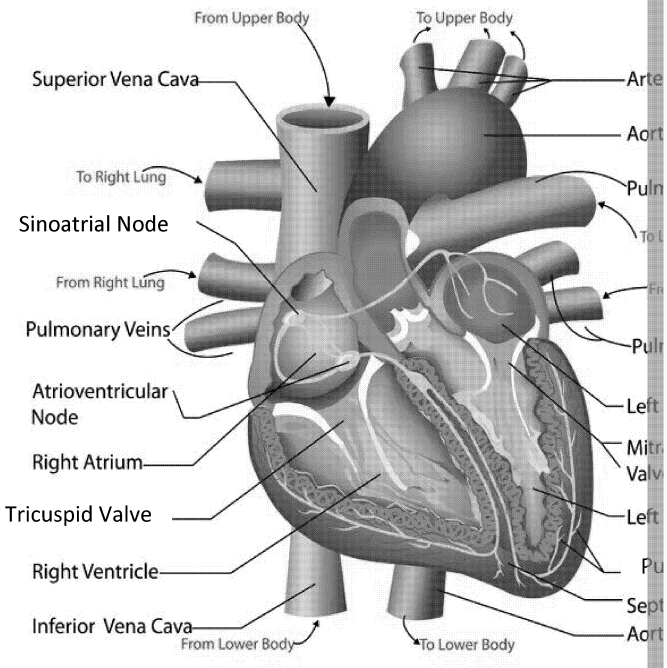
While we can see the effects that moderate-intensity exercise has on the respi
important to consider how these change for high-intensity exercise. The table
differences between respiratory measurements at rest and during high-intensi
measurements for high-intensity exercise differ from those for moderate-inter
to note that recovery allows for the decrease of the figures above and below, a
the quicker the return to resting values for each of the respiratory measureme

Respiratory measurements	At rest	Typical value at high-intensity exercise
Breathing frequency (per minute)	12	40
Tidal volume (ml)	500	~4500
Minute ventilation (l/min)	6	~18

The Anatomical Components and Structure of the

Structure of the heart

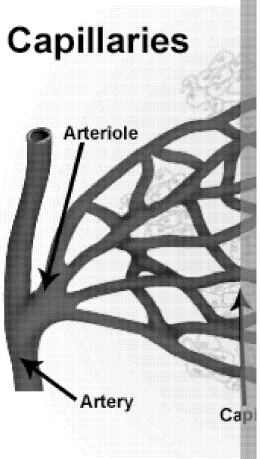
The heart is made up of four chambers which are separated by valves and are
to accept deoxygenated blood from the body (right atrium) and eject it to the
oxygenated blood from the lungs (left atrium) and eject it to the body (left ven



Blood vessels

It is also important to understand the structural differences between the differ
summarises these differences:

Arteries	• Walls consist of smooth muscle • Highest elasticity • Narrow lumen • Transports blood away from the heart at high pressure
Veins	• Thinner walls than arteries • Contain valves to prevent backflow of blood • Mostly consist of fibrous tissue • Less elastic than arteries • Wide lumen • Carry blood back to the heart at low pressure
Capillaries	• Walls are one cell thick • Very narrow lumen • Remove waste product (e.g. carbon dioxide) • Supply cells with necessary oxygen and nutrients



The Physiology of the Cardiovascular System

Cardiac cycle

The transport of blood to the lungs and the working muscles is controlled by, a conduction system. If you have ever listened to your heart, you may notice it r sound of the two stages of the cardiac cycle: systole and diastole.

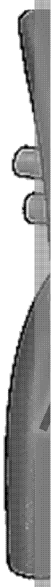
'Lub' – diastole – this is where the heart relaxes and fills with blood.

Firstly, blood flows into the right and left atria, filling them with blood. The **atr** to aid this process. The blood pressure in the atria now exceeds that in the ve open. This means that blood can now flow into the ventricles – but not the ao the **semilunar valves** being shut.

The amount of blood that is in the ventricle following diastole is known as end-

Semilunar valves are the valves found in the pulmonary artery and the aortic a

Atrioventricular valves are found between the upper chambers of the heart (atria)



There are two types of atrioventricular valves:

- the t**R**icuspid valve is found on the **R**ight
- the bicuspid valve is found on the left

'Dub' – systole – this is the process in which the heart contracts and blood is ejected from the heart.

The contraction of the atria ensures that any residual blood in the atria moves to the ventricles. The ventricles then contract, resulting in a raised blood pressure in the ventricles. This causes the semilunar valves to open, allowing blood flow to the aorta and pulmonary artery. When the ventricles relax, any returning blood is stopped from flowing into the ventricles as a result of the semilunar valves shutting. The blood now travels to the body's tissues and the lungs through the aorta and pulmonary vein respectively. The amount of blood that is in the ventricle following systole is known as end-systolic volume.

While the above describes the cardiac cycle, it is important to understand that circulation – pulmonary and systemic. Pulmonary circulation describes the cir the lungs, then the return of this blood to the heart, while systemic circulation from the heart to the body, then the return of this blood to the heart.

The pathway of blood in the pulmonary circulation is as follows:

Deoxygenated blood is transported to the lungs from the right ventricle, via th then can become oxygenated, and is returned to the left atrium of the heart vi pulmonary circuit can then continue.

Systemic circulation consists of a different pathway of blood:

Oxygenated blood is transported out of the left ventricle, via the aorta. This ox transported to the cells and tissues of the body via the capillaries. Deoxygenat via the vena cava, into the right atrium of the heart.

Conduction stages

We have now learnt about the cardiac cycle of the heart; however, this doesn'
home, it doesn't work unless powered by electricity. Don't worry, your heart c
generates its own electrical impulses to stimulate the muscle and allow the car
body sends numerous signals to the brain to either increase or decrease the he

- Chemoreceptors – detect changes of chemicals in the blood, mainly carbo
- Baroreceptors – found inside arteries, these detect changes in blood press
  exercise intensity
- Proprioceptors – detect changes in movement, e.g. if someone starts movi
  that the body needs to increase the heart rate

The rate of cardiac output is controlled by the cardiac control centre (CCC), wh
sympathetic and parasympathetic nervous systems. The sympathetic system i
parasympathetic nervous system decreases heart rate.

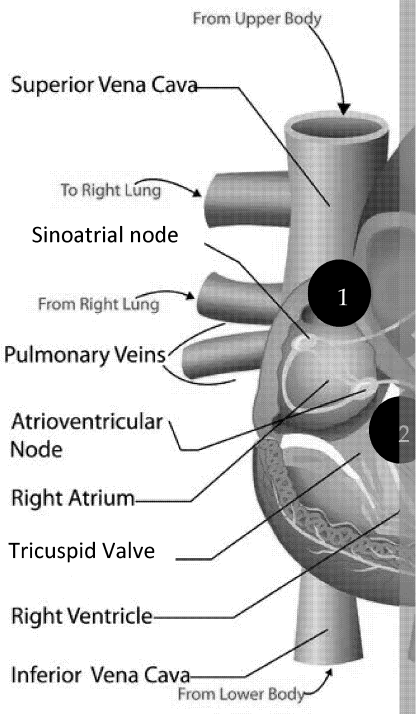
The cardiac muscle of the heart is described as myogenic (or intrinsic), meanin
muscles (myocardia). Let's take a look at how this happens.

The electrical stimulus in the cardiac cycle takes the following pathway:

1. **Sinoatrial (SA) node:**
   Often referred to as the pacemaker of the heart, it regulates the heart rate in line with the body's demand by sending out an electrical stimulus which travels across the muscle cells in the atria, causing the atria to contract (atrial depolarisation).

2. **Atrioventricular (AV) node**:
   The impulse travels to the AV node, where it delays the next contraction to allow the ventricles to fully fill with blood. Once the AV valves have closed, the stimulus travels to the bundle of His and Purkinje fibres.

3. **The bundle of His:**
   The stimulus travels down the bundle of His, which is a group of conduction cells. This bundle separates into right and left branches, which consist of the Purkinje fibres.



4. **Purkinje fibres**:
   These are found in the ventricular walls and cause ventricular contraction
   electrical impulse in the ventricles (ventricular depolarisation).

Atrial depolarisation: the effect that the SA node has on the atria, causing t
electrical stimulus across them

Ventricular depolarisation: the effect that the AV node has on the ventricle
providing an electrical stimulus

Atrial and ventricular repolarisation: occurs during a brief time period follo
describes the electrical impulse returning to a baseline value

Venous return

Venous return is the process of the blood returning to the heart. There is a nu
contribute to venous return. These are shown in the table below:

Mechanism	Description
Pocket valves located in the vein	These help to stop the blood flowing backwards (b flows the correct way.
Skeletal muscle pump	The skeletal muscles surrounding the veins contra pressure which causes the blood to flow quickly ba
Respiratory pump	There is a pressure gradient between the abdomi which acts as a pump for blood to be transported
Gravity	Blood which is being returned from above the leve
Pressure gradient	A pressure gradient exists between venous pressu and/or venous resistance, which aids the process
Smooth muscle in the veins	The smooth muscle layer found in the walls of vei back towards the heart.

Venous return at different intensities of exercise

Venous return is the rate at which the blood returns to the heart. When exe
becomes apparent that there is a greater need for quicker and efficient veno
intensity increases, venous return increases. This is important as, if the bloo
stroke volume and therefore cardiac output would be reduced.

Starling's law *refers to the increased stroke volume as a result of an increase
heart. This occurs as a result of the cardiac muscles stretching before contract
leads to an increased volume of blood in the ventricles. This leads to an increa
allowing the heart to eject a higher volume of blood. Therefore the increased
accompanies the increased exercising heart rate, results in the regulation of a*

Venous return during recovery

A decrease in venous return at rest leads to a decreased stroke volume. This
Starling law of the heart, which suggests that a slower venous return leads to
(the amount that the ventricles stretch before contraction), thus leading to l
heart per beat. Venous return is also aided by the valves situated in the vein
in only one direction (towards the heart).

Redistribution of blood during exercise (vascular shunting)

While the amount of blood stays constant within the body, there is an increase transported to specific areas during exercise. In terms of sports performance, t oxygen to be supplied to the parts of the body that have a greater demand for muscles.

The vascular system 'shunts' oxygenated blood to where it is needed the most, namely the working skeletal muscles. Situated in the medulla oblongata, the **vasomotor centre** regulates the blood flow by causing the sympathetic system to cause the arterioles to vasoconstrict or vasodilate, depending on factors such as the increased presence of carbon dioxide in the blood, or an increase in body temperature. This can result in blood being directed away from the lower-priority organs (kidney, stomach) and towards the higher-priority working skeletal muscles.

The sy
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nervo
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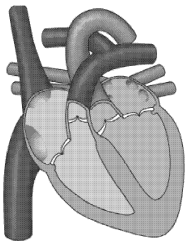
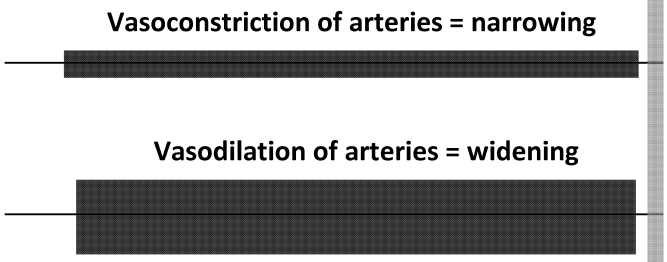




The **arterioles** also have an important role, as they can widen or narrow to hel flow towards the higher-priority tissues. Blood flow is further regulated via th **sphincters**. They do this by either allowing or not allowing the blood to flow in oxygen exchange at the muscles. Think of these as valves; if they are closed, b localised capillaries, so instead it flows through the open sphincters at a differe

Cardiovascular Values

It is important to firstly gain an understanding of the baseline values of the ke
way, it is easier to determine the magnitude of the effect that each form of ex
values which can be considered most important are those of heart rate, stroke
have a close relationship, which will be explained in more detail below.

Heart rate		Stroke volume	
Definition: the number of times the heart beats per minute	×	**Definition:** the amount of blood ejected from the heart per beat	=
Average resting value: 70 beats per minute (bpm)		**Average resting value:** 70 ml	
The resting heart rate can vary for each individual, but generally the fitter the individual, the lower their resting heart rate. For example, Olympic time-trial champion and Tour de France winner Miguel Indurain recorded a resting heart rate of just 28 bpm. Having a low resting heart rate demonstrates that the heart is efficient in transporting blood around the body, which means that the heart undergoes less undue strain, lessening the risk of cardiovascular diseases.		Having a higher stroke volume allows the heart rate to be lowered, due to the relationship that stroke volume and heart rate have in determining cardiac output. The benefits of a lowered heart rate have been mentioned to the left.	

Exam Tip

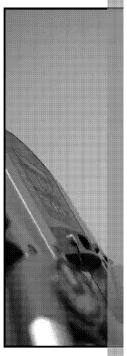
Think about how this calculation may be altered in the exam if different valu
would you use if you were asked to work out the stroke volume? Or the he

To explain this equation in greater detail a worked example has been comple

Jim, an amateur cross-country runner, has a resting heart rate of 65 bpm an

Using the equation above, Jim's cardiac output can be calculated:

- Cardiac output = heart rate x stroke volume
- Cardiac output = 65 × 85
- Cardiac output = 5525 ml/min



Most people are aware that the heart rate changes during exercise; however, there is a number of changes that take place in the cardiovascular system due to the stresses put on the body during exercise. As our body demands more oxygen to be delivered to the working skeletal muscles, adaptations have to occur within the cardiovascular system in order to redistribute blood to the muscles that need it. This is because of the greater demand for oxygen from the working skeletal muscles. However, it is also important to understand how the mechanisms of blood return are affected by exercising and the changes to the cardiovascular system that these result in.

We know that from the equation previously mentioned, cardiac output is incre
stroke volume increasing as we begin to exercise. However, did you know that
approximately 60% of maximal exercise intensity and then plateaus (levels off)
millilitres (ml) of blood per heartbeat. This means that any additional increase
result of the continuing increase in heart rate.

The table below helps to demonstrate the difference between the cardiovascu
during moderate-intensity exercise.

Cardiovascular measurements	At rest	Typical value at moderate-intensity ex
Heart rate (bpm)	70	115
Stroke volume (ml)	70	90
Cardiac output (ml/min)	4900	10 000 (10 l/min)

While we can see the effects that moderate-intensity exercise has on the cardi
to consider how these change for high-intensity exercise such as sprinting. The
differences between cardiovascular measurements at rest and during high-inte
measurements for high-intensity exercise differ from those for moderate-inter

Cardiovascular measurements	At rest	Typical value at high-intensity exerc
Heart rate (bpm)	70	135
Stroke volume (ml)	70	110 (untrained) 160 (trained)
Cardiac output (ml/min)	4900	17 500 (17.5 l/min)

A useful heart rate to be aware of is the maximum heart rate. A lot of fitness p
designing training programmes, to ensure that the individual is training at a su
rate can be calculated by the following equation:

Maximum heart rate = 220 – age
Therefore, the maximum heart rate of a 20 year old would be 200 bpm

The Karvonen formula can be used to calculate an individual's heart rate reser

Heart rate reserve = maximum heart rate – resting heart rate

This heart rate reserve is then used to determine individualised training zones.
equation:

(Heart rate reserve × training %) + resting heart rate

To give a practical example of this latest equation, we can imagine that a 25-ye
rate of 60 bpm wants to train at 60% of their maximum heart rate.

We firstly need to calculate this athlete's maximum heart rate:
220 – 25 = 195 bpm

We can then determine the training zone heart rate by doing the calculatio

The above equation fits an individual who would be working within a heart rat
into the 60–70% range.

Things to think about

What effect can an improvement in the cardiovascular and respir
sporting performance?

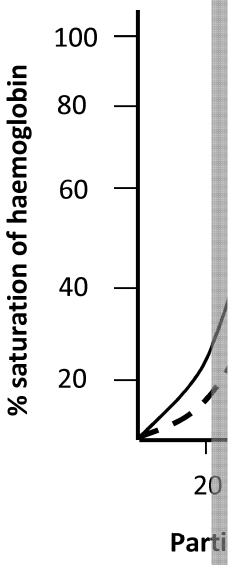
The transport of oxygen

Haemoglobin is the protein that is found within red blood cells, and its role is t body. It does this by combining with oxygen to become oxyhaemoglobin. Whi within the bloodstream, it is important to note that oxygen is carried in the exe known as myoglobin.

As exercise intensity increases, there is a change in the dissociation of oxyhaem **oxyhaemoglobin** involves, as the name suggests, the relationship between oxy on the partial pressure of oxygen in the blood, either oxygen is released by the tissue cells or the blood absorbs oxygen from the surrounding tissues.

In areas of high partial pressure, the oxygen is readily bound to the haemoglob partial pressure, the oxygen is released from the haemoglobin as the surround demand for its presence.

The oxyhaemoglobin dissociation graph demonstrates how, when the partial pressure of oxygen increases, haemoglobin becomes more saturated. The levelling off at the top of the graph, and hence the graph's 'S' shape, can be explained by less oxygen being able to bind to the haemoglobin as it becomes fully saturated.



The *Bohr shift* is a term used to describe the movement of the curve shown on the graph to the right (shown by the dotted line). This Bohr effect is a result of an increase in blood acidity and suggests that oxygen less readily binds to haemoglobin when in an environment which has low pH levels.

Remember: di**SS**ociation of oxygen requires an '**S**'-shaped graph that shows haemoglobin is fully **S**a

Arteriovenous oxygen difference (a-vO_2 diff)

Gas exchange at the muscles can be determined by the arteriovenous oxygen **oxygen difference** is a term that refers to the difference in the levels of oxyger blood. At rest, there is a small arteriovenous oxygen difference due to a relati used by the muscles. As the muscles undergo exercise, they consume a much that there is an increase in the amount of oxygen in the capillaries surrounding amount of oxygen in the veins. This reduced amount of oxygen in the veins, in oxygen in the arteries staying constant, results in a larger difference between t arteries (and, thus, a larger a-vO_2 diff).

A trained individual is likely to have a higher a-vO_2 diff than that of an untraine response of cardiovascular training, in which the muscle fibres undergo capillia capillaries), allowing a greater blood supply to reach the muscles, along with a trained individual can, therefore, utilise a larger amount of oxygen from the bl

Bradycardia

Bradycardia is a term used to describe an abnormally slow heart rate, under 6
have such a heart rate, as a result of a heart consisting of stronger cardiac mus
chamber. As this increased chamber size allows more blood to be pumped out
maintained through the reduction of heart rate (remember, cardiac output = s
means that the heart does not have to work so hard to ensure that oxygen-rich
skeletal muscles, helping to prevent the early onset of fatigue.

Cardiorespiratory and Cardiovascular Responses t

When athletes begin exercising, either at the start of a match or during a warm
cardiovascular systems respond acutely. These structural and functional respo

- Vasoconstriction of the blood vessels restricts the blood flow to less-esser
increases the amount of oxygenated blood being transported to the work
process of vascular shunting (*structural*). This ensures that enough oxyge
muscles to produce energy aerobically (*functiona*l).
- Cardiac output is increased, due to an increase in heart rate and stroke vo
blood to be transported to the exercising muscles (*functional*).
- An increase in thoracic cavity volume as the sternocleidomastoid pulls the
outwards (*structural*) reduces the partial pressure of oxygen in the lungs a
the external environment at a higher rate (*functional*).
- More powerful contraction of the internal intercostals and rectus abdomi
forceful expiration, which helps to expel more air (*functional*).

Long-term Adaptations to Exercise

After months and years of frequent exercise, positive adaptations occur to the
will cover the musculoskeletal and cardiorespiratory changes in response to ex

Musculoskeletal system

Musculoskeletal adaptations occur as a result of both aerobic training (using o
(without using oxygen). These adaptations are of benefit to particular sports s
marathon running (aerobic).

The adaptations are outlined below:

Anaerobic Training	A
• Increased muscle mass • Increased cross-sectional fibre size (fast-twitch muscle fibres) • Increased number of fast-twitch muscle fibres • Increased strength • Increased speed of muscle contractions • Increased bone density • Increased creatine phosphate and glycogen stores for energy	• Increased effici (increased mus • Increased bone • Increased force

Apply

Think of anaerobic and anaerobic sports and
each of the training adaptions benefit performan

Cardiorespiratory system

Physiological adaptations in response to exercise can also occur in the cardiore
benefit from these adaptations will normally be aerobic forms of exercise, but

Adaptation	How it Aids P
Bradycardia – a lowered heart rate (<60 bpm)	A lower resting heart rate means tha pumping blood around the body. Th heart has to work less intensely to m
Cardiac hypertrophy	The increased size of the heart mea and more blood can be pumped to t
Increased stroke volume	Each heart beat pumps out more blo (and, therefore, more oxygen) reach
Increased lung volume	More air can be inhaled per breath, that can be delivered to the body an removed from the body.
Increased VO_2 max	VO_2 max is directly related to aerobi an increased VO_2 max increases the during performance, increasing the
Increased myoglobin content	Oxygen binds to myoglobin to be tra increased myoglobin content means be transported during exercise.
Capillarisation	The increased number of capillaries and carbon dioxide can be diffused i increases the efficiency of the cardio

Cardiorespiratory System: Checking yo

1. If Sally's resting cardiac output is 4800 ml/min, and her resting heart
resting stroke volume? *(3 marks)*

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2. Explain the roles that the sinoatrial node and atrioventricular node

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3. Explain the vascular shunt mechanism of the blood during exercise.

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4. Identify **three** structural characteristics of the alveoli that allow the
exhange *(3 marks)*

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5. Explain the process of gas exchange from the alveoli into the blood.

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Chapter 2.1: Performance Analysi
Analysis in Sport

Overview

In this chapter you will learn how and why performance analysis is carried out on athletes. This includes the type of data used and the positive and negatives of different tests.

We will also discover the joint types found in the body and the movement that can occur at synovial joints. We will also look at lever systems found in the body and the planes and axes that movements can occur in, while applying them to sporting situations.

Learning outcomes

After studying this chapter, you shoul

- ❑ Understand how data can be coll
- ❑ Describe the coaching process ar
- ❑ Identify the advantages and disa
- ❑ Understand how different tests behavioural and physical aspect
- ❑ Describe the types of joint found the joints
- ❑ Identify the locations of joints in possible at each joint
- ❑ Draw the three different types o mechanical advantages of lever s
- ❑ Describe the planes and axes tha specific sporting situations

Key Terms

Axes of movement:	The collective name for the points the body can
Coaching process:	The steps an effective coach takes to identify fla collecting and interpreting data to improve the f
Data integrity:	The data that is collected and stored remains bo the performer
Effort arm:	The distance from the effort to the fulcrum
Effort:	The force that is needed to move the load
Fulcrum:	Where the rotation or movement of the lever ta
GPS:	Global Positioning System – which helps to dete
Load arm:	The distance from the load to the fulcrum
Load:	Any weight that needs to be moved in a lever sy
Objective data:	Data which is collected via someone seeing or he
Planes of movement:	The collective name for the dimensions the body
Qualitative data:	Data which is descriptive in nature
Quantitative data:	Data which is in the form of a numerical value
Reliability:	The degree to which a test can be repeated and
Subjective data:	Cannot be heard or seen but is generally told to
Synovial joint:	The most common joint type in the body, allowi
Validity:	The ability of a test to measure what it is suppos
Video analysis:	The use of video footage to assess an individual
VO_2 max:	The maximum amount of oxygen that can be co
Weight:	The force of gravity acting on an object

Performance Analysis in Sport

Recent technological advancements have led to a significant increase in the us technology is used to analyse sporting performance by collecting data. This pe allowing coaches to assess a performer's physical, technical and psychological own tactical approaches.

Most of the data collected via technology is **quantitative**, and **objective**, as the numerical values. Objective data is factual, with clear numerical evidence back analysis of the data collected can occasionally be **qualitative** and **subjective**, su performance which has been analysed via a video analysis programme. Subjec perceptions of others.

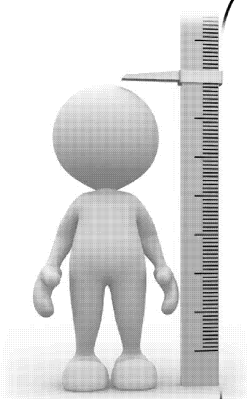
Maintaining data integrity: qualitative and quantitative approaches

While many performers like the idea of technology being used to measure thei important that the software or hardware that they choose to do so has eviden helps to maintain data integrity, which is a term used to describe the accuracy throughout its storage duration. Therefore when data integrity is maintained, and stored will remain both accurate and relevant to the performer. Data inte software or hardware errors or mistakes upon data entry. The best methods t include ensuring that data is stored on separate hardware to protect against ha using personal protected computers to protect against external influences.

When the majority of elite performers train or perform, they will have access t which shows their level of performance, which can then be compared to other under laboratory conditions and field tests, an athlete will regularly hear differ data. The main terms are outlined below:

- **Quantitative data** refers to data which is in the form of a numerical value, whereas **qualitative data** involves data that is descriptive in nature.
- **Objective data** involves data which is collected via someone seeing or hearing the data being collected, whereas **subjective data** cannot be heard or seen but is generally told to someone.
- **Validity** refers to the ability of a test to measure what it is supposed to, e.g. its relevance, whereas **reliability** refers to if the test was repeated in the exact same conditions, the result would be exactly the same.

Case Study



Use the following example to help you remember the differenc qualitative data, and between validity and reliability. Imagine a s the height of an athlete.

Qualitative data: the sports scientist looks at the athlete and athlete is 'quite tall'. He doesn't measure anything.

Quantitative data: the sports scientist uses a method of meas thus putting a **value** to the athlete's height.

Reliable test: the method used by the sport scientist to obtai same or a similar result on more than one occasion.

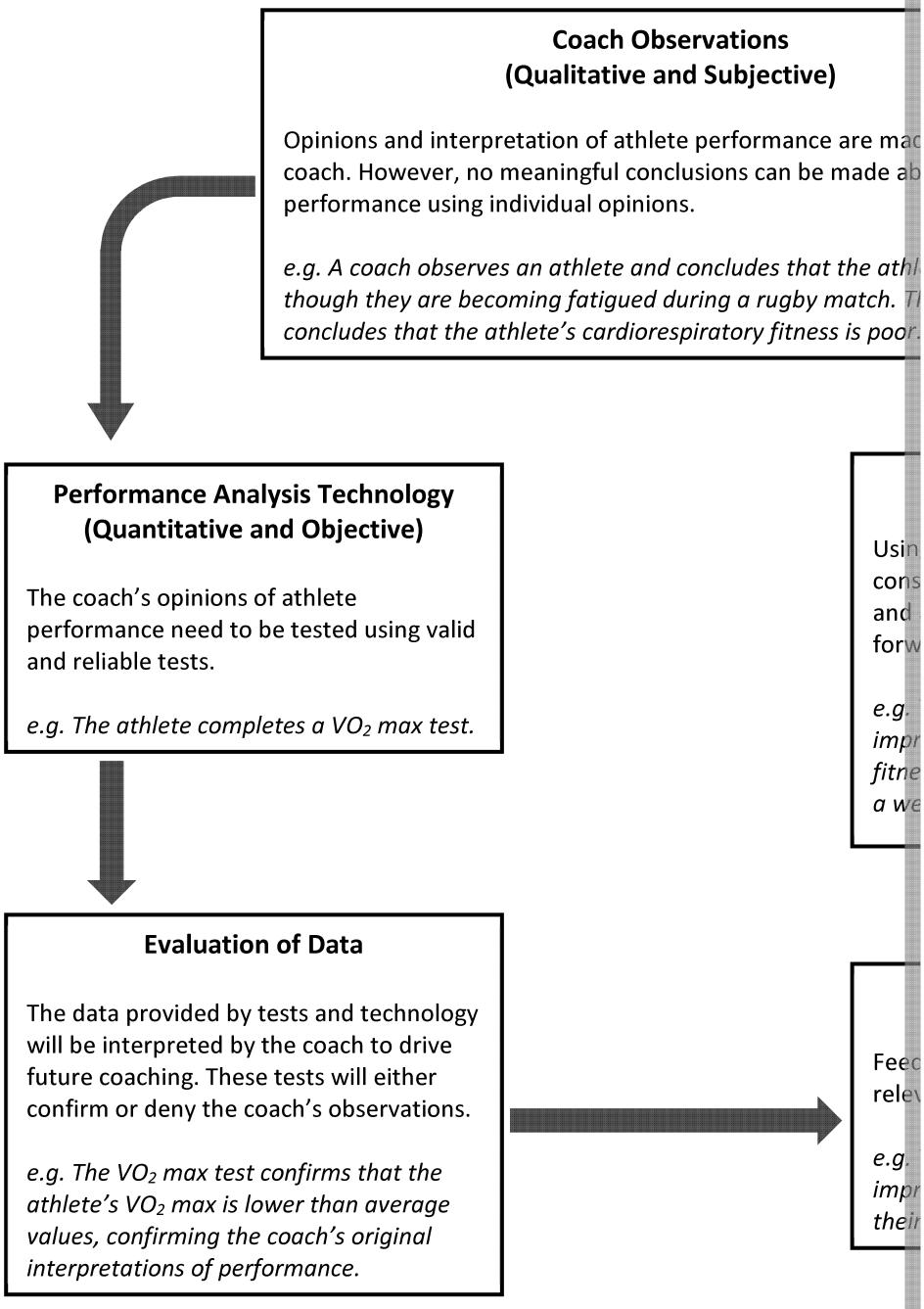
Valid test: the sport scientist uses a tape measure to measure measure uses units of distance, the same units that height is me scientist estimated height based on the weight of a person (e.g. (cm)), this would be an **invalid** test as it is using the measurem

The coaching process and its limitations

Coaches need to monitor athlete performance for a number of reasons:

- to monitor progress
- to monitor drops in performance
- to assess rehabilitation from injury
- to assess and improve technique

Coaches can make real-time (as it happens) observations of performance and u
athlete. This means that observations are qualitative and subjective. Therefor
must also be collected to support findings and analyse performance. The coac
steps coaches should take to maximise the performance of an athlete.



Monitoring and analysing key aspects of performance

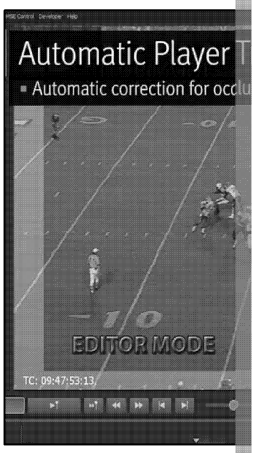
Coaches and athletes want to monitor and analyse the most important factors
The key areas of performance are:

- Tactical
- Technical
- Behavioural or psychological
- Physical (fitness testing)

Some important tests and analysis methods used to analyse aspects of perfor

Video analysis (technical and tactical)

As the popularity and use of technology in sport has increased, so has the use of performance-analysis software. This can give the performers and coaches an in-depth insight into individual and team performance levels. Much of this analysis is done post-match, although it is possible to analyse performances during the game. The software used can provide data on a number of performance factors, such as player position, the intensity of performance, distance covered, number of sprints, etc. The performer can also look through the video evidence of their performance with the coach, highlighting points for technique improvement.



An example of video a

Video analysis can be carried out using a split screen to compare techniques (e
swing compared to an amateur's golf swing). Slow-motion and frame-by-fram
technique at exact time points in a skill.

Advantages of Video Analysis	Disadva
• Coaches and athletes can *see* aspects of performance, instead of having to interpret numerical data • Cheaper video cameras are becoming available • Can be adapted to film different aspects of performance (e.g. tactics of a whole football team / positioning or technical skills of an individual	• The highest-q expensive • Can be time-c • Doesn't provi • Sometimes qu • High level of e needed to ma

Global Positioning System (GPS) and motion tracking software (tac

Perhaps the most popular method of measuring motion and distance is throug
Positioning System). This software can be used to provide information such as
at which the athlete was travelling, providing a heat map of positioning throug
include the use of small chips placed in an individual's shoe for example, whic
a specified amount of time. Software can include mobile phone apps, which w
with information about their performance.

Cognitive questionnaires (behavioural)

Questionnaires are commonly used by sports clubs to monitor the behaviour p
normally used to monitor aspects that cannot be measured using other tests (e
are used to analyse player mood, sleep patterns, happiness and job satisfactio
highlight any cognitive issues a player may have, and lead the athlete to work
to be in the best mental state possible, aiding performance.

Fitness Testing: Laboratory-based testing and its a

Technology can be used to test and record the body's physiological reaction to used to determine the fitness levels of the athlete.

1. VO_2 max tests (cardiovascular endurance)

VO_2 max is the maximal volume of oxygen that can be consumed and utili measurement of VO_2 max is through indirect calorimetry (gas analysis). M estimate VO_2 max. These tests are outlined below.

Fitness test	Meth
Indirect calorimetry (gas analysis)	Gas analysis involves an athlete mea they are breathing out, by using a m specialised bag. This bag can then b measures such as VO_2 max.
Multi-stage fitness test	Two sets of cones are spaced 20 m a emitted from a recording. The perfo of cones to the other by the time th process is repeated, with the time b shortened as the performer comple continues until exhaustion. The leve recorded.
Step tests	The performer keeps to a steady pa minute (for males and females respe box (with the right then the left foot box (with the right then the left foot minutes. Once the test is finished, t recorded and compared to a fitness
Yo-yo tests	This is a similar procedure to the mu major difference being that this test quicker pace before altering the spe exhaustion, at which point the level recorded.
Cooper 12-minute run	The performer runs around a runnin cover as great a distance as they pos

2. 30-second Wingate test

The 30-second Wingate test is a measure of anaerobic power using a cycle ergometer. The participant cycles at 60 revolutions per minute (rpm) on the bike for 10 seconds. Following a countdown, weights are dropped onto the bike (making it harder to pedal) and the athlete must cycle with maximum effort and speed for 30 seconds. Power output can then be calculated for the athlete using the following equation:

Power output (kpm/min) = [revs × resistance (kg) × dist (m) × 60 (sec)] / time (sec)

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Fitness Testing: Field-based testing

Many components of fitness can be tested in field-based environments. Field-
performed in environments similar to those found in an actual match / compe
normally cheaper, quicker to perform and easier to analyse than laboratory-ba
based-testing are:

- Cheap
- Quick
- Can be performed by multiple people at the same time
- Limited equipment required
- Specialised knowledge not essential
- Can be compared to normative data

Some disadvantages of field-based testing are:

- May not be as reliable or valid as laboratory-based testing
- Different tests may be used to assess the same components of fitness, ma
  (e.g. sit-up bleep test and press-up bleep test)

The other fitness tests you should be aware of are:

Fitness Component	Fitness Test
Strength	Hand grip dynamom
Muscular endurance	Sit-up bleep test
Flexibility	Sit and reach test
Agility	Illinois agility test
Balance	Stork balance test
Speed	30 m sprint test
Power	Vertical jump test
Reaction time	Ruler drop test
Coordination	Wall toss test

Once fitness tests results have been collected, the data for athletes must be ar
levels. The results can be compared to previous results from the same athlete
decreases in performance. Results can also be compared to normative tables
the average results for people and gives you an idea of how you compare agai

Chapter 3.1: Sports Psychology: Attitudes and Group Dyn

Overview

This chapter will uncover the link between personality and sporting performance and examine how personality can be used to establish individuals' sporting preferences. You will learn about the theories of personality and how these are used to explain certain behaviour traits seen in sport. You will also learn how personality can be measured and begin to evaluate these profiling methods.

We will also look into how attitudes are formed in sport and physical activity and how we can work to change these. Also, we will touch on group dynamics, what makes an effective group and problems with dysfunctional groups.

Learning outcome

After studying this chapter, you sho

- ❑ Define personality
- ❑ Understand the theories of pe
- ❑ Describe how personality type types of sports different pers
- ❑ Describe and evaluate method
- ❑ Understand origins of attitud
- ❑ Describe methods of changing
- ❑ Understand the six 'I's of a gr
- ❑ Understand how groups form
- ❑ Understand problems with gr dysfunctional group

Key Terms

Attitude:	An enduring emotional feeling that alters the towards a specific situation
Behaviour:	The manner in which an individual acts, predo
Cognitive dissonance:	A method of attitude change that aims to crea individual's beliefs
Cohesion:	The united nature of a group of individuals wh
Extrovert:	Somebody outgoing and loud; they enjoy bein
Group:	A collection of individuals who work together
Introvert:	Somebody who tends to be quiet and shy and
Personality profiling:	The use of questionnaires, observations and in having a certain personality
Personality:	The collection of distinctive characteristics of a specific to them
Persuasive communication:	A method that uses encouragement and an inf person's beliefs
Ringelmann effect:	The larger the group size, the greater the losse of each individual
Social learning:	The learning of behaviour based on observing expressed by other people
Social loafing:	A reduction in the effort of individuals when p
Somatotypes:	The physical build of a person which is used by
Stable:	Characteristics that are unchanging or fixed
Trait:	An enduring quality that characterises an indiv
Unstable:	Characteristics that are easily changed

Theories of Personality

Personality can be defined as the collection of distinctive characteristics of an i
There has been a longstanding debate regarding whether behaviour is inherite
when we are born or learned (nurture), i.e. outside environmental influences, e
have been linked with sports performance, with the question being asked if the
optimal sports performance. While an answer to this question is often debated
theories of personality and the effect that each of these may have on sporting p

Trait theory

A **trait** can be defined as an enduring quality that characterises an individual. Therefore the trait theory of personality proposes that behaviour is innate, with individuals being predisposed to act in a certain way to specific situations. This theory is from the nature side of the debate. It was suggested by Cattell (1965) that the different traits are organised into a hierarchical structure, with the more dominant traits having a larger effect than the less intense traits. This suggests that the environment that the individual finds themselves in does not have any effect on their personality or behaviour.

Trait personality can be summarised by the equation:

Behaviour = Function of Personality

However, trait theory does not explain the influences the environment has on personality and behaviour are always predictable. It also does not explore the modified and adapted to meet certain situations or environments that someb

The traits that an individual is more predisposed to exhibit are known as perso below.

Social learning theory of personality

Social learning theory proposes that behaviour is determined by previous obse behave in a variety of social situations. Therefore behaviour can be modified t performer (or model), or through observing the behaviour of this model being negatively socially reinforced. Social learning can be summarised as the equat

Behaviour = Function of Environment

Social learning is enhanced if the model being observed shares the same chara status and the observer is motivated to learn. An example of social learning ta player dramatically falling to the ground when they are tackled, due to observi a similar situation.

However, social learning theory does not acknowledge that people may be bor that can then be adapted through social learning. It assumes that a personalit

Biological theory (Sheldon)

Biological theory categorises people based on their body type – known as a so
somatotypes are:

- ectomorph
- mesomorph
- endomorph

Sheldon used these three somatotypes to help describe the personality traits c

Somatotype	Physical Description
Ectomorph	Slim in build, narrow hips and shoulders and carrying little body fat
Mesomorph	Broad shoulders and narrow hips with a high percentage of muscle mass and low percentage of body fat
Endomorph	Narrow shoulders and wide hips with a low percentage of muscle mass and high percentage of body fat

Sheldon's biological theory does not, however, consider the effects other peop
previous experiences (learning) have on personality and behaviour. It also doe
people's body shapes can change – does this mean that their personalities cha

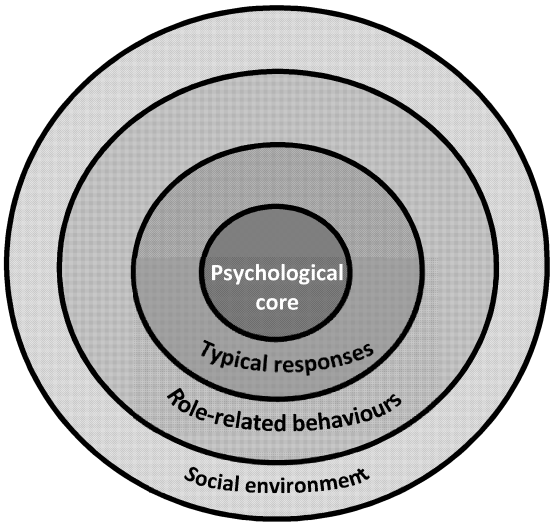
Interactionist theory of personality (Lewin)

Interactionist theories propose that an individual's behaviour is governed by the relation between their personality and the situation's environment. This theory is from the nurture side of the debate. This can be demonstrated by the equation:

Behaviour = Function of (Personality × Environment)

In th pe its

This theory is closely linked to Hollander's model, which supports the alteration in behaviour in different circumstances.



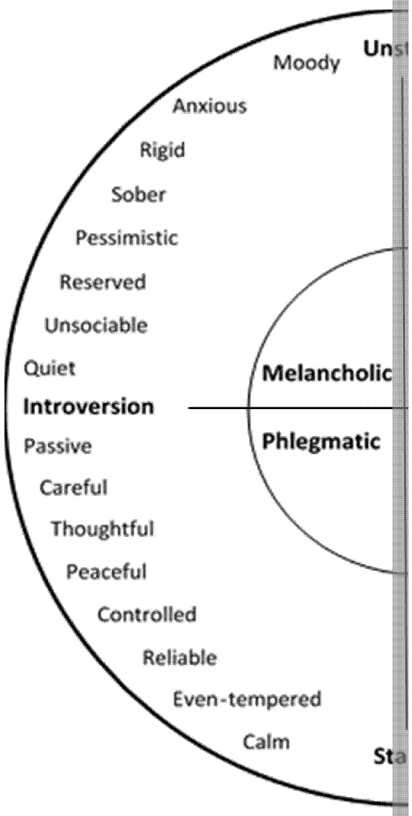
The psychological cor
underlying and enduri
affects the typical res
exhibit in specific situ
behaviours section of
describes how an indi
varying situations and
find themselves in.

How interactionist theory can impact on performance

The theory therefore suggests that, although individuals' traits cause the beha behaviour is altered by changeable situations. For example, just because an A calm and timid character in normal match situations, a more hostile environm aggressive. If the performer, such as in the example above, can learn to positi sporting environment they find themselves in, their performance levels can im

Personality types

The concept of extroversion and introversion is a branch of Eysenck's Theory, which proposed two dimensions of personality, extroversion/introversion and stable/unstable.



Extroversion/introversion refers to how energy is generated and used in social situations. For example, extroverts gain energy from being outgoing in social interactions in large social groups, whereas introverts are energised through spending time on their own, and their energy is drained in social situations.

The stable/unstable dimension refers to how calm and steady an individual's emotions are. Unstable personality types are characterised by having high anxiety levels and mood swings, whereas stable personality types are often calm and have unchanging moods.

A further trait theory was proposed by Girdano et al. (1990), which divided pe theory is known as the narrow-band theory of personality. The characteristics table below.

Type A	
Demands high levels of control	Prefers to be led
Competitive	Non-competitive
High need to achieve	Low need to achiev
More easily stressed	Less easily stressed
Likes to work quickly	Prefers to work slow
Can become angry quickly	Calm

Personality Profiling

Personality profiling is used to categorise people based on their personality. T
personality profiling, especially at elite-level sport. The reason for this is that s
personalities are more suited to particular sports. For example, introverts may
snooker and archery, and extroverts may be more suited to rugby, football and

Personality profiling can be completed using interviews, questionnaires and ob
include:

- Profile of mood states (POMS) (McNair et al., 1971) – this test requires pa
emotions they have felt over the last week. Using a scoring system, the o
stable your emotions are.
- Cattell's 16 personality factors (16PF) – this test asks individuals to rate ho
about themselves. It is used to determine the trait personality of a perso
- Sport competition anxiety test (Martens, 1977) – this test determines the
competitive situations. The test asks athletes to rate how often they agre
get nervous before competing.'

Benefits of Personality Profiling	Limitatio
• Cheap and easy to complete • Easy to interpret results • Can be self-assessed • Identifies the sporting environments someone performs best in • Helps to guide training/goals (communication between trainer and athlete)	• Personalities o be accurately r • Personality is n influence perfo • Cannot predict environment/s • Individuals can is self-assessed

Research

Try to find the POMS test, 16PF test and t
competition anxiety test online, and comp
tests to assess your own personality – did
surprise you at all?

Aspects of Personality
Checking your understan

1. Explain how trait theory suggests that personalities are formed. *(4*

2. Provide an equation to represent the social learning theory of pers

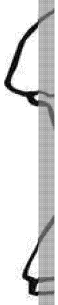
3. i. Describe personality profiling. *(2 marks)*

   ii. Cattell's 16 personality factors test and the profile of mood st profile someone's personality.

   Give two advantages and two disadvantages of personality pro

Attitudes

The **attitude** of a performer can be defined as an enduring emotional feeling that alters the response given towards a specific situation. It is important for a performer to have a positive attitude, as this has a beneficial impact on goal motivation and task persistence. It is, therefore, important to understand how an attitude is formed, the components of attitude and how these can be modified to form a more positive attitude towards sporting situations.



The formation of an attitude is dependent on a number of factors:

- **Personality type:** As covered earlier, there are many different types of personality. It has been suggested that extroverts are more likely to have a positive attitude towards sport.
- **Social influences:** An individual is more likely to form an attitude that is si through the process of social learning. For example, if a young girl's frien playing sport is masculine, the young girl is likely to adopt this same attitu can also have a similar effect.
- **Personal experiences**: If an individual has had a high amount of positive p situation, they are more likely to form a positive attitude towards this situ experience, the more likely that an attitude will be formed.
- **Conditioning:** Reinforcement can promote the formation of a particular a situation is reinforced as being positive, an individual is more likely to kee

Triadic model

Every attitude consists of three components – affective, behavioural and cogni triadic model.

The **affective** component concerns the emotional reaction held towards an attitude object. A positive emotional reaction would promote the formation of a positive attitude, for example.

Rememb attitude **ABC:** **A**ffective **B**ehaviou **C**ognitive

The **behavioural** component concerns how an individual acts when faced with an attitude object. Previous behaviour can affect the formation of a positive attitude.

The **cognitive** component concerns the individual's thoughts towards an attitu individual's attitude being influenced by either positive or negative beliefs that

Methods of attitude change

It is possible to alter an individual's pre-existing attitude. This can be done via persuasive communication and cognitive dissonance.

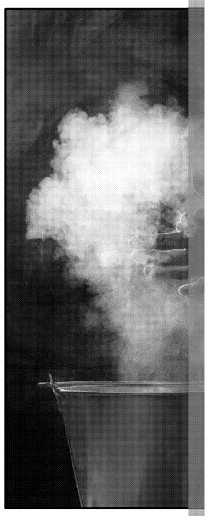
Persuasive communication:

As the name suggests, this method involves using communication to persuade attitude. The success of this method is dependent on the following factors:

- The characteristics of the receiver: if the receiver is willing to change their be persuaded to do so. Therefore, a strong pre-existing attitude will be ha
- The characteristics of the persuader: if the persuader is of a higher status more likely to be persuaded.
- The quality of the message: the message must be clear, accurate and con will not be overloaded with information.
- The situation: a positive environment, with the social support for a change is more likely to change their attitude.

Cognitive dissonance:

The basis of this method is to create an imbalance in one's beliefs, i.e. create d experiences this dissonance, they will be more prepared to change their behav created by causing a conflict between two attitude components. This causes a create a balance between the components to lessen the stress. The process of one or more of the components of attitude (affective, behavioural, cognitive). dissonance is dependent on the persuasive abilities of the teacher/coach and t giving an athlete. An example of how each component of attitude can be chan



A teenage boy has a pre-existing negative attitude towards gymnastics, as he believes that it is a feminine sport and males do not participate in it. This attitude can be changed by creating cognitive dissonance by altering the components in the following ways:

- **Affective:** the boy can be presented with visual evidence of the many male gymnasts performing impressive routines successfully.
- **Behavioural:** the boy can perform in a setting which enforces the masculine aspect of gymnastics, e.g. attempt the rings, which require high levels of muscular strength.
- **Cognitive:** the boy can be taught about the positive effect that gymnastics can have on strength and flexibility, and relate this to the sports that he enjoys doing.

Attitudes: Checking your unde

1. Provide a definition for the term 'attitude'. *(1 mark)*

2. Why is it important for a performer to have a good attitude? *(2 mark*

3. Identify and describe four factors which contribute to attitude forma

4. Explain the three components of the triadic model. *(3 marks)*

5. Describe the process of cognitive dissonance to change an attitude. *(*

Group Dynamics in Sport

Understanding how individuals work together in a group helps a coach effectiv interactions to provide successful team performances. A **group** can be define work together to achieve a common goal. If a group is not a cohesive unit, bre occur due to simple errors being made as a result of the group members not b each other. Therefore, it is important to understand how a group is formed a group formation.

The Six 'I's

A group is made up of people who share similar ideas, goals or feelings. To re

1. Interaction – how the group members communicate with each other. Pos and cohesive group.
2. Interdependence – members of a group recognise that they need each ot
3. Interpersonal relationships – the closeness of team members. If member relationships, the group is more likely to be happy and cohesive.
4. Identical norms, values and goals – the members of a group will share the the same goal.
5. Identity – the members of a group should recognise themselves as having members, on the basis that the group is working towards a shared goal.
6. Independence – members should understand their own roles within the g them effectively.

Tuckman's stages of group formation

Forming: The initial stage of the meeting of group members, with interactions forming interrelationships within the group and sharing opinions. At this stage, an individual's focus is on what they can contribute to the team.	**Storming:** Leadership styles might clash at this stage, with certain team members being drawn to each other due to sharing similar opinions. Problems begin to be identified at this stage, with a focus on teammates' performance rather than the member's own performance. Progressing from this stage is difficult, but needs to be done to ensure successful team formation.	**Norming:** This involves probl by working tog find answers t problems that from the storm This stage help members iden own roles with team, while te cohesion has i

Group Formation

Cohesion

Cohesion can be defined as the united nature of a group of individuals who ai
two types of cohesion: task cohesion and social cohesion. Task cohesion refer
team working together to complete a task successfully. Social cohesion refers
the group members. A cohesive team is one in which the individual team mem
this can be beneficial in competition as it ensures that the team members are
important for a team to have strategies in place which can help encourage and
strategies can include:

- improving the communication between the individual team members
- using shared goals within the team
- making sure that each of the members knows how their role can impact o
  team performance
- including each of the team members
- using the correct leadership style
- promoting the importance of team performance over individual performa
- allowing the team members to be involved in the decision-making proces

Steiner's model of group effectiveness

Steiner's model of group effectiveness considers the relationship between the
members to a team's productivity, and the successfulness of the team membe
summarised as the equation:

Actual productivity = best potential productivity – losses due to faulty proces

These faulty processes are either **coordination** losses or **motivational** losses. L
the individuals not successfully directing their efforts in a cohesive or efficient
team that is the favourite to win the World Cup due to its abundance of indivi
inability to successfully work together. Losses of motivation can be a result of
number of team members has on motivation (**the Ringelmann effect**), i.e. whe
team, each individual exerts less effort. Related to this, **social loafing** suggests
though their own role is not recognised within a larger group, and they perceiv
being diminished. This model also suggests that team sports which rely on hig
greatly impacted by faulty group processes than those sports which do not rel

Group Dynamics in Sport: Checking yo

1. Identify and describe the four stages of group formation. *(8 marks)*

2. Provide an equation to summarise Steiner's model of group effective

3. Explain the terms 'Ringelmann effect' and 'social loafing'. *(2 marks)*

4. Provide six strategies for improving cohesion. *(6 marks)*

Chapter 3.2: Sports Psychology: S and Anxiety and Aggre

Overview

Even elite athletes get stressed. In this chapter you will learn what is meant by the terms 'stress', 'arousal' and 'anxiety' and their relationship in sports performance. You will uncover the theories behind arousal and the different factors affecting arousal levels. You will also learn how stress and anxiety influence sporting performance, including the effect of an audience's on sports performance, linked to different personalities. And finally, you will discover methods of controlling the above in order to improve performance in sport.

We will also look at aggression in sport, what it is, what can potentially cause it and methods to manage it.

Learning outcome

After studying this chapter, you sho the following:

- ❑ Describe drive theory, inverte catastrophe theory of arousal
- ❑ Describe stress and understa
- ❑ Describe the difference betwe
- ❑ Identify cognitive and somatic
- ❑ Understand how stress, arous
- ❑ Explain the effect an audience beginners/amateurs
- ❑ Explain and apply stress mana negative impacts of stress, an
- ❑ Define types of aggression an
- ❑ Evaluate theories behind the c examples
- ❑ Identify strategies behind con

Key Terms

Aggression:	Behaviour which has the goal of harming other
Anxiety:	A feeling of apprehension when faced with a sti be threatening
Arousal:	A raised state of physiological and psychologica
Assertion:	Forceful behaviour in order to achieve a goal w another individual
Cognitive anxiety:	The mental reactions a person has to anxiety
Evaluation apprehension:	An athlete believing the audience is judging the negative effect on their actual performance
Social facilitation:	The beneficial impact on sporting performance of an audience
Social inhibition:	The negative impact on sporting performance of an audience
Somatic anxiety:	The physical responses a person has to stress
State anxiety:	How an individual reacts to a specific stressful
Stress:	Psychological or physiological tension in respon
Stressor:	The name given to the stimulus that is causing
Trait anxiety:	The general tendency of how an individual resp
Zone of optimal functioning:	The level of arousal that each individual perso perform to the best of their ability

Arousal

Arousal can be defined as a raised state of physiological and psychological rea
of arousal (and therefore ready for physical performance) is seen as a benefici
lead to rapid decreases in the level of performances.

There are a number of theories that attempt to explain the close relationship b
performance, and the effect that being either over-aroused or under-aroused
performance.

Drive theory (Hull, 1943; Spence and Spence, 1966)[3]

This theory suggested that as arousal increases, performance levels increase proportionally. It was suggested that as arousal increases, so does the performer's dominant response. This dominant response is the natural respons provided by an athlete in the quickest time, when faced with a specific stimulus.

A performer of higher ability generally has a stronger dominant response which, due to being used correctly, helps improve performance. However, a performer of lower ability has a weaker dominant response, which is more likely to be used incorrectly, and thus less likely to positively impact on performance. For example, if an experienced and elite basketball player's arousal increases, their performance is likely to improve. However, the drive theory has since been made redundant, due to the lack of explanation for the concept of over-arousal; that is, once a performer's level of arousal becomes too great, performance will inevitably start to drop.

Exam Tip

It might be useful to remember the associated equation **performa**
Habit refers to the dominant response, whereas drive refers to lev

Inverted U theory (Yerkes & Dodson, 1908)

This theory also suggests that as arousal rises, so does performance. However, this theory answers the questions that were a result of the drive theory, what happens when a performer becomes too aroused? The inverted U theory states that performance rises alongside arousal, up until the level of optimal arousal. This point is where performance is at its optimal level. If arousal continues to rise beyond this point, performance will decrease.

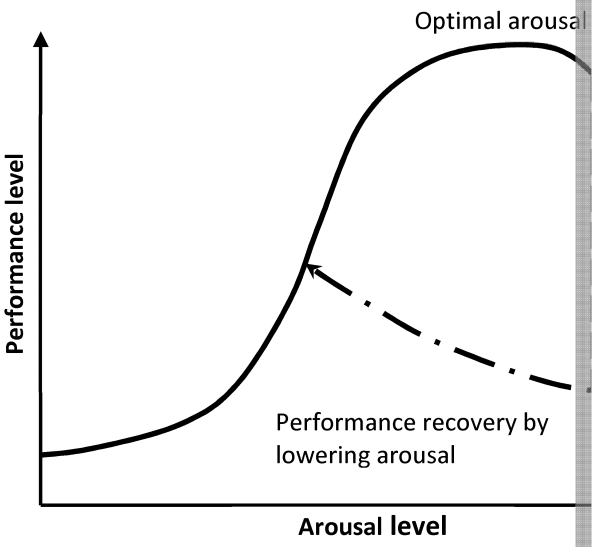
However, the arousal level at which optimal performance is dependent on the athlete affects optimal performance. For example, an inexperienced athlete w low level of arousal. This is because they have to devote their concentration t This contrasts to an experienced athlete whose actions are more autonomous, less about the skill performance. Also the type of sport affects at which point Sports which require a greater amount of control, such as putting in golf, requi which engage large muscle groups to produce powerful movements, such as ir levels of arousal. However, this theory can be criticised as it views arousal as u into account the different effects of somatic and cognitive anxiety.

[3] Spence, J T and Spence, K W, 1966. *The motivational components of manifest anxiety: Drive ar* pp. 291–326.

Catastrophe theory (Hardy & Fazey, 1987)[4]

This theory clarifies the issue of arousal being perceived as unidimensional, as because it addresses the need to include the effect that both somatic and cogr levels. The catastrophe theory suggests that as cognitive anxiety increases so long as somatic anxiety remains low. However, if both cognitive and somatic a catastrophic effect on performance, with performance levels rapidly declining. performer can salvage performance levels by reducing their anxiety. As shown result in immediately returning to an optimal level of performance, but it does least temporarily somewhat rectified. If anxiety is not reduced, performance v

Criticism of this theory includes that it does not offer an explanation of why the two



Apply

Think of a time you competed. Can you relate to any of the you have a catastrophe or did you perform better as your arou

Zones of optimal functioning

Zones of optimal functioning suggest that individual will respond to increases i athletes will perform differently dependent on how they react to the level of a athlete may experience low levels of arousal and succeed, while others may ex also succeed in the same sport. The optimal levels of functioning are an indivi an athlete's psychological awareness. However, one criticism of the theory is t individuals perform better in certain emotional states than others.

Peak flow

Peak flow is a branch of positive psychology, and is a state of mind which athle during competition. This is because experiencing this state can have beneficial athlete feeling as though they are at the top of their game. Characteristics of t

- high self-awareness
- high level of control over the performance
- having maximum focus on the activity
- the performance feels effortless
- state of relaxation
- time feels slowed-down

Things to think about

What are the impacts of arousal and anxiety on performance in

[4] Hardy, L, 1990, A catastrophe model of performance in sport.

Stress and Anxiety

Stress

Stress can be defined as either psychological or physiological tension in response to a stimulus. This stimulus can either be external or internal, and is referred to as a **stressor.** There are multiple stressors that exist and they have a varying effect which can be dependent on the individual's trait and state anxiety. Some key stressors that can affect sporting performance could include: adverse environmental conditions, opposition player behaviour, coach behaviour, etc. The list is endless and contains different stressors for different individuals.

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Anxiety

It is likely that you will have experienced anxiety at some point in your lifetime it was prior to taking an important exam, or having to speak in front of a large people, causes of anxiety are wide-ranging. In sport, experiencing anxiety can direct impact on sporting performance. Athletes are often aware of when they anxious, as they have learned to understand how their body reacts to anxiety. example, if an athlete is aware of their heart rate rising, they understand that anxious and associate this with a positive step towards a positive performance example, an Olympic sprinter's heart rate may increase minutes before they ha perform, which they associate with their body preparing itself to perform.

Anxiety can be defined as a feeling of apprehension when faced with a stimulu

Anxiety can be separated into state or trait anxiety:

- **State** anxiety refers to how an individual reacts to a specific stressful situation. State anxiety is a temporary response to a temporary threatening situation, which can therefore differ depending on the situation.
- **Trait** anxiety refers to an individual's tendency to react to stress in a specific way. This means that those with high levels of trait anxiety are predisposed to finding stressful situations highly stressful, whereas those who have low trait anxiety are less affected.

Rem
Don't
it's on

There are two types of anxiety which have different symptoms – cognitive and concerns the mental reactions to anxiety, whereas **somatic** anxiety involves th can have on an individual. Below is a table summarising the key symptoms of

Cognitive anxiety symptoms	Somatic anxiety symptoms
Loss of concentration or focus	Headache
Confusion	Muscular tension
Feelings of uneasiness	Raised heart rate
Negative thoughts	Raised ventilation rate
Feelings of weakness	Increased sweating
Indecision	Feelings of nausea
Feelings of being unsatisfied	Irritability
	Increased need to urinate
	Feelings of 'butterflies' in the stomach
	Loss of appetite

Social Facilitation – The Effect of an Audience

Social facilitation can be defined as the beneficial impact on sporting performance caused by performing in front of an audience. This contrasts with **social inhibition**, which can be defined as the negative impact on sporting performance caused by performing in front of an audience. The presence of an audience can often lead to an increase in arousal, which can have an effect on performance level. This is because increased arousal levels increase the likelihood of the occurrence of the dominant response. Not everybody reacts in the same way when faced with performing in front of an audience, with personality factors, level of experience and the type of skill affecting the performance level.

The effect of an audience on…	
… introverts/extroverts	**… b**
Introverts: the presence of an audience increasing arousal leads to social inhibition. This is because introverts struggle to perform at higher levels of arousal. **Extroverts:** the presence of an audience increasing arousal leads to social facilitation. This is because extroverts tend to thrive and be energised in high-arousal situations.	**Beginners:** the prese arousal leads to soci This is because arou beginners need to b **Experts:** the presenc arousal leads to soci This is because expe attentional focus to
… complex/simple skills	**…**
Complex: the presence of an audience increasing arousal leads to social inhibition. This is because complex skills require more attention due to the multitude of actions needed. **Simple:** the presence of an audience increasing arousal leads to social facilitation. This is because simple skills are often more habitual and so require less attention.	**Fine:** the presence o leads to social inhibi This is because fine decision-making and lower arousal levels. **Gross:** the presence leads to social facilit This is because gross information process

Evaluation apprehension refers to the perceived judging by others that negati Evaluation apprehension leads to an increased level of arousal, and the effect perceived to be evaluating are of a higher status than the performer. Perform evaluation apprehension if they suffer from high anxiety or low self-confidence have suffered from previous negative experiences in similar situations.

Arousal, Stress and Anxiety: Checking y

1. Provide a definition for 'social facilitation'. *(1 mark)*

2. Provide a definition for the term 'anxiety'. *(1 mark)*

3. Explain the difference between state anxiety and trait anxiety. *(2 ma*

4. Identify three symptoms of cognitive anxiety, and three symptoms o

5. Explain the theory of the zones of optimal functioning, and provide a

6. Describe the catastrophe theory of arousal. *(4 marks)*

Measuring Stress, Anxiety and Arousal

It is important for athletes to be able to measure and monitor their anxiety lev
allow them to assess where they need to improve and which stress manageme
their anxiety (see 'Controlling Stress, Anxiety and Arousal').
Arousal can be monitored using physiological measures. For example:

- Heart rate and breathing rate – will increase significantly if someone is hig
- Sweating – people who are nervous begin to sweat profusely
- Muscle response – when nervous, athletes' muscles can become tense, w
- Hormone levels – the level of hormones in the blood can be monitored to
  adrenaline levels are high, the athlete is likely to be aroused.

The table below summarises the most popular methods of measuring anxiety,
disadvantages of each method.

Method	Description	Advantages
Sport competition anxiety test (SCAT)	This test is a self-report questionnaire which evaluates how they feel prior to competing, and their views towards participating in competitive sport in general.	This measure has hig levels of reliability as individual is likely to repeat the same ans each time, and high validity as it has bee shown to be a stron predictor of compet state anxiety.
Competitive state anxiety inventory (CSAI-2)	A test that divides anxiety into three individual components: cognitive anxiety, somatic anxiety and self-confidence.	Categorises anxiety three separate components. It is ch quick to complete ar can be self-assessed
Physiological tests	This method includes tests such as measuring heart rate response to a variety of environments, i.e. determining the physiological signs of anxiety.	This type of measurement has th advantage of provid real-time and accura measurements.
Observational methods	This is when another person watches the performance of an individual, recording their signs of anxiety.	This method has an advantage of being a to give an insight int how the performer r during a live performance.

Controlling Stress, Anxiety and Arousal

Stress can have a negative impact on sports performance, depending on how t
occurrence. Similar to anxiety, there is also cognitive and somatic stress.

To prevent the detrimental effects that stress can have on performance, there
management techniques that can be used. It is best to look at these techniqu
between cognitive and somatic techniques.

Cognitive stress management technique	How it works
Positive thinking/self-talk	Saying positive statements out loud helps to imp interpreting actions or stressors as positive redu may have. Statements such as 'I can do this' hel result, improve task persistence.
Imagery	Imaging a peaceful and relaxing scenario can hel stress, such as lowering the heart rate and ventil
Goal-setting	Using the SMART technique helps to improve sel stress. This can be stress-specific, with the long- amount of stress felt during competition.

Somatic stress management technique	Description
Progressive muscular relaxation	This enables the performer to understand how t using muscular relaxation techniques. **Process:** • This requires finding a comfortable and qui • The performer tenses a particular muscle or • After this tension has been held for roughly allowing the tension to disappear. The performer can use this technique when they performance, reducing their stress levels.
Biofeedback	This enables the performer to control their arous physiological symptoms of stress and how to con
Breathing control	Increasing the depth of breathing while slowing stress. Focusing on altering the breathing patter from stressors.

Apply

Think of a time you have been stressed. Wh
do to try and control it? Did it work?

Things to think about

Why is it important to manage stress and how does the appro
individual's situation?

Measuring and Controlling Stress, Anxi
Checking your understand

1. Explain how positive self-talk is an effective stress management tech

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2. Why is imagery an effective stress management technique? *(2 marks)*

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3. Identify three somatic stress management techniques and explain wh

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Aggression

Aggression in a sporting context can be defined as behaviour which has the go
the rules of the game. It is important not to get this type of behaviour mixed u
behaviour in order to achieve a goal, and does not include injuring another ind
aggression, with each aiming to achieve a particular goal:

- Hostile aggression – hostile aggression's sole purpose is to cause injury to
  sporting goal. For example, a fight in a rugby match.
- Instrumental aggression – instrumental aggression is aggressive behaviou
  For example, a football player injuring the opponent's best player to help
- Assertive behaviour – assertive behaviour is the use of legal aggression to
  example, a rugby player making a hard, but legal, tackle on an opponent,
  opponent's mind.

Theories of aggression

There are a number of theories that explore the causes of aggression:

Instinct (Lorenz, 1966)

The instinct theory of aggression proposes that each individual has the innate (natural) characteristic of the act of aggression within themselves. Concerning the 'instinct' element of this theory, Lorenz argued that the evolution of the instinct of aggressive behaviour enabled survival through fighting and gaining territory. He explained the theory as the necessary release of aggression that is continuously developing within an individual, proposing that acting aggressively is unavoidable. Therefore, perceived aggressive sports (e.g. ice hockey) allow the athletes to let off steam through the game (catharsis), enabling them to be more peaceful post game in other aspects of their life.

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Cue arousal hypothesis (Berkowitz, 1969)

This theory suggests that the result of frustration is increased arousal, with this arousal resulting in a readiness for aggressive behaviour. The increased arousal is combined with aggressive cues, and when faced with these cues the individual is conditioned to respond in an aggressive manner. For example, if a basketball player recognises an opposition player who they have argued with before, this could be an aggression-related cue which leads to aggressive behaviour. An example of an environmental aggressive cue may be a hot day, which may result in more aggressive behaviour.

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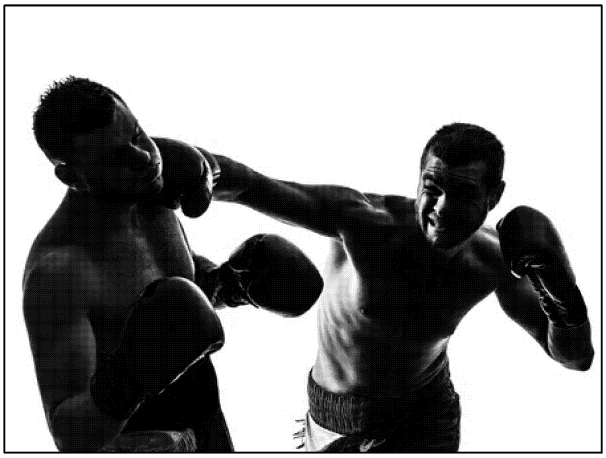
Social learning (Bandura, 1977)
Bandura (1977) proposed that aggression is a learned behaviour. To expand on this, it is suggested that individuals learn aggressive behaviour through observing others who display such behaviour. Observers tend to identify more closely with those they have more in common with, or a role model, for example. This theory takes a more flexible approach towards prompting aggression, suggesting that aggressive behaviour is learned and thus controlled.

Frustration–aggression hypothesis (Dollard et al., 1939)
This hypothesis, originally developed by Dollard et al. (1939) explained the link between frustration and aggression. The premise of this link is that aggression is solely the direct result of feeling frustrated, and that this feeling of frustration inevitably results in aggressive behaviour. A primary source of frustration in this hypothesis is the obstruction of goal achievement; for example, in football the striker's shot may be cleared off the line, which could result in the striker becoming frustrated.

Did you know?

Some sports performers who have a tendency to act aggress
sports psychologists to try to prevent them from doing so.



Things to think about

- Why does aggression happen in some sports and not othe
  the development of different sports in terms of rules and
- How can these studies and theories be applied by sports
  sports clubs?

Causes of aggression

Aggression can be caused by a number of factors, some of which have been c (e.g. cue arousal). Other causes of aggression are:

- Anger and aggression towards an opponent as a result of being over-arou this cause of aggression is normally displayed in contact and invasion spor lacrosse.
- Morals of a player – if a player has lower moral values than another, they aggressive behaviours as they may not see any problem with displaying th
- Officiating – if a player thinks an official is making bad decisions, this can l
- Temperature – in hot or humid climates playes can become increasingly h and under pressure.
- Partisan crowd – if a team is playing in a location where the crowd is heav aggression can develop as players become frustrated or angry towards th

Apply

Think of any examples where you have ex aggression due to one of these reasons. How to control your aggression?

Controlling aggression

As aggressive behaviour can have a number of associated negative impacts, it i occurrence when possible. The spider diagram below summarises strategies t

Fining a player/club that regularly displays aggressive actions
However, highly paid sport stars may not be dissuaded by fines as they earn so much money that they are not affected by a loss of earnings

Educat asserti
This ca benefi as wel harm t

Rewarding non-aggressive actions
This form of positive reinforcement can help players learn to not act aggressively in the future

Strategies to control aggression

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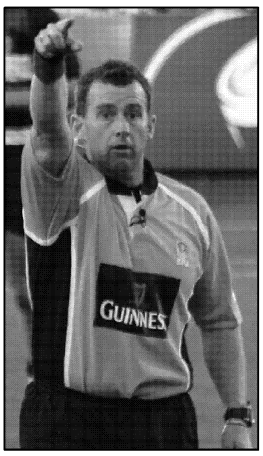
are

Removing a player from an situation potentially involving an aggressive cue
This ensures that the player will not act aggressively; however, coaches are sometimes reluctant to do this as it could mean taking their best player off the pitch



Aggression: Checking your und

1. Give an example of Agression in sport *(1 mark)*

2. Explain the difference between assertion and aggression. *(2 marks)*

3. Explain the frustration–aggression hypothesis, and provide a criticism

4. Provide a sporting example for the social learning theory of aggressio

5. Identify four methods for controlling aggression. *(4 marks)*

Chapter 3.3: Sports Psychology

Overview

In this chapter you will learn about the different types of motivation used by individuals to maintain participation in sport. You will learn the different theories of motivation and explore how motivation is linked to personality types.

The chapter also covers self-efficacy and how previous experiences can affect somebody's motivation towards something in the future.

Learning outcomes

After studying this chapter, you should be

- ❑ Describe intrinsic and extrinsic moti
- ❑ Describe tangible and intangible rew
- ❑ Assess the use of different rewards
- ❑ Understand the difference between
- ❑ Understand how behaviour can be in
- ❑ Understand Bandura's model of self- on performance

Key Terms

Extrinsic motivation:	Motivation that comes from sources externa
Intangible rewards:	Rewards which are not physical
Intrinsic motivation:	Motivation that comes from within the perfo
Motivation:	A willingness to display certain behaviour
Need to achieve (NAch):	People who actively seek success in performa to do so
Need to avoid failure (Naf):	People who look to avoid failing a task at all
Self-efficacy:	The level of belief an individual has in their a situation
Tangible rewards:	Rewards which are materialistic

Motivation

What motivates an athlete to succeed? Commentators of Olympic sports ofte
levels of the athletes, saying that they had a desire to win ever since they were
as a willingness to exhibit a particular behaviour.

Two forms of motivation are intrinsic and extrinsic.

1. **Intrinsic** motivation comes from sources within the performer. Intrinsic motivation includes wanting to experience the feelings of pride and satisfaction that are associated with a successful performance. The performer will also want to participate due to the fact that they enjoy playing the sport. Personal goal-setting can be used to maintain intrinsic motivation. Intrinsic motivation can lead to improved task persistence and more enjoyment in tasks.

2. **Extrinsic** motivation comes from sources external to the performer. Extri source of reinforcement. That is to say that a successful performance wil reinforce this behaviour and maintain motivation. The rewards used as ex separated into tangible and intangible.
    1. **Tangible** rewards concern materialistic rewards; for example, trophie
    2. **Intangible** rewards are not physical and include praise from others.

Intangible rewards are preferred to tangible rewards in terms of encouraging r extrinsic rewards can lead to less satisfaction from participation and therefore

Generally, intrinsic motivation is the optimal type of motivation for an athlete lasting effect, but this is not to say that extrinsic motivation does not have its b

Case Study

Motivation can come in many different forms. For example, professional b was motivated to perform well so he could win over his opponent's fans.

'Coming to his hometown is more motivation for me because I want to win his f

Things to think about

How do personality and attitudes affect an individual's motivatio

[7] http://www.mightyfighter.com/amir-khan-quotes/

Achievement Motivation

A major theory of motivation is the achievement motivation theory. Achiever amount of competitiveness an individual displays in relation to their personalit McClelland's theory of achievement, motivation is a personality trait which is s situation that the individual finds themselves in. This situation contains two co

1. **The probability of success** – the likelihood that the individual will perform performer finds the task easy
2. **The incentive value of success** – the intrinsic value that the individual feel the performer believes the task they successfully completed was difficult

Atkinson and McClelland believed that two personality traits affected achiever (NAch) and 'need to avoid failure' (Naf) personalities.

Each displays the following characteristics:

Need to achieve (NAch)	Need t
Set clear goals	Do not have clear goa
Willing to take risks	Unwilling to take risks
Use intrinsic rather than extrinsic motivation	Prefer extrinsic motiv
Do not mind negative feedback	Dislike negative feedb
Optimistic	Pessimistic
Confident	Low levels of self-con

In sport, high achievers generally have a NAch personality trait, whereas low a personality trait. However, that is not to say that an individual can only displa achieve or need to avoid failure personality trait. For example, if a task was pe avoid failure personality trait as being extremely simple to complete, they wou optimism and self-confidence, which are two characteristics of a need to achie

It can, therefore, be important for a coach to understand whether their athlete If their athletes have a NAch personality, it will be important to challenge them are on the outer limits of their potential. This will motivate them to push them which can aid their performance. On the other hand, if the athletes have a Na that the coach focuses on improving the athlete's self-confidence by setting th achieve and thereby allow the athlete to regularly experience success.

Behaviour can be influenced by four factors:

1. **Situation –** this can influence the way that a person behaves, as people re example, if an athlete is in a stressful situation, they are more likely to be urgency than if they are in a situation which is less stimulating.
2. **Personality –** the way that a person behaves can be greatly affected by wh extrovert. Introverts are likely to behave in a more controlled and metho more likely to behave in a more excited manner. This can influence the m personalities as introverts and extroverts will be motivated by different fa
3. **Behaviour –** previous behaviours which have been displayed by an individ behaviours in a similar situation and can lead to the formation of habits. sedentary habits and is trying to change their lifestyle may struggle to stay the gym and could fall back into their previous behaviours.
4. **Expectation** – this can influence the way that a person behaves, as they w complete a task depending on how they expect the outcome to turn out. to be easy, they will complete the task with much less effort than if they h difficult. Outcomes that differ from expectations can also influence beha interacts with someone who is not behaving within social norms, they ma

Goal-setting is an important technique employed by many coaches to help dire and efforts in improving their performance. Goal-setting can, therefore, have athlete's motivation, giving them clear paths for progress while also providing made. We will explore goal-setting in more detail later on.

Self-efficacy

Self-efficacy can be defined as the belief that an individual has concerning their ability to be successful when faced with certain situations. It is an alternative way of describing someone's confidence.

Having high levels of confidence can do wonders for many aspects of a sporting performance, whereas a lack of it can stifle the creativity and assuredness of any sporting action. Below we will take a closer look at the impact that sports confidence has on performance, participation and an athlete's self-esteem.

Bandura's theory of self-efficacy (1997)[5]

Albert Bandura suggested that there are four main factors that contribute to a are previous performances, vicarious experience, verbal persuasion and physic

Previous performance

The level of success that the athlete has previously experienced in similar circu confidence when faced with a similar specific situation (i.e. their self-efficacy). already positively experienced success when completing a specific skill, when f have a higher level of self-efficacy that they can repeat this successful perform

Vicarious experience

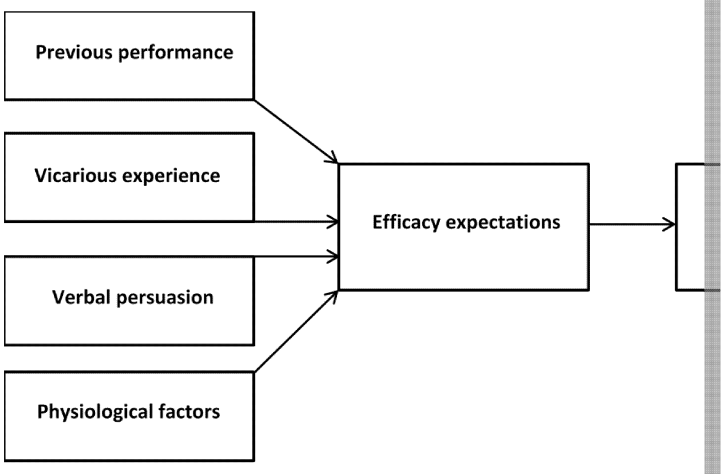
This type of experience is a result of an athlete viewing another person comple they hope to complete. Once the athlete sees that this other person can succe self-efficacy is increased, as they believe that they too can be successful. Vicar those being observed are of similar standard to, and have much in common wi

Verbal persuasion

Verbal persuasion involves the use of verbal feedback, either prior to, during o encourage the athlete and to highlight any of their successes. This helps the at belief in their ability, stimulating an increase in their own self-efficacy by provo says I can do this, and he knows what he's talking about, so I must be able to d ways, as verbal forms of discouragement are an effective form of reducing an i

Emotional arousal

This refers to how an athlete interprets their physiological symptoms of arousa increased arousal, such as increased heart and ventilation rate, are interpreted skill, the athlete will be encouraged by any increase in arousal which they are l sporting event. On the other hand, if these signs are interpreted negatively, su can have a detrimental performance on self-efficacy and/or performance.



[5] Bandura, A (1977) *Self-efficacy: Towards a unifying theory of behavioural change.* Psycholo

Improving Self-efficacy in Athletes

Teachers and coaches will want to improve the self-efficacy of athletes to allo
competitive situations and perform to the best of their abilities. To improve s
should consider the following:

- Set realistic goals – if an athlete can reach a set target or goal, their self-e
  the belief that they can reach targets and improve their performance.
  - This increases motivation of an athlete as they will actively want to r
- Have realistic expectations – athletes should be aware of their limits and
  athlete has unrealistic aims, their motivation and self-efficacy decrease a
  enough. This links to setting realistic goals.

Apply

If you were coaching a youn
noticed a player suffering from lo
you improve their self-efficacy le

Motivation: Checking your und

1. Provide a definition for 'motivation'. *(1 mark)*

.....

2. Explain the difference between intrinsic motivation and extrinsic mo

.....

.....

3. Explain the difference between tangible rewards and intangible rewa

.....

.....

4. Which type of motivation is better for an athlete to use, intrinsic o answer. *(2 marks)*

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5. Give three characteristics of NAch performers and three characteris by Atkinson and McClelland. *(6 marks)*

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Chapter 4: Skill Acquisi

Overview

What is a skill and what is an ability? In this chapter you will discover the characteristics of a skill and an ability and learn how skills can be categorised on continua matched to specific factors. You will explore the theories of learning and stages of learning an athlete will progress through as they attempt to improve their sports skills.

This chapter will also explore how skills can be transferred across sports, as well as how coaches and teachers can apply different practice structures to support athletes in improving their skill sets. You will also begin to assess the different methods of guidance and feedback that coaches and teachers use to reinforce motivation of athletes in order to advance their skills effectively.

Learning outcomes

After studying this chapter, you should be a

- ❑ Identify the characteristics of a skilled
- ❑ Understand the difference between sk
- ❑ Classify skills on given continua and gi their placement
- ❑ Understand theories of learning and b stages of learning
- ❑ Understand how linear graphs can be u performance and training
- ❑ Describe different types of transfer of
- ❑ Understand which methods of practice different athletes
- ❑ Understand the advantages and disad
- ❑ Show an understanding of how reinfor in athletes
- ❑ Assess the types of feedback, and unc of each

Key Terms

Bilateral transfer:	The transfer of a skill from one side of the body t
Drive reduction theory:	An athlete's motivation to perform a task reduce performing the skill, due to boredom
Extrinsic:	Coming from outside a performer
Feedback:	Information that is provided in relation to task pe
Guidance:	The method of assistance that the coach provide movement patterns
Knowledge of Knowledge of results:	Receiving information regarding the quality of th Provided extrinsically, enabling the performer to performance
Learning plateau:	When the level of performance no longer accele of training being completed
Learning:	An ongoing process that can permanently change
Negative feedback:	Feedback following an unsuccessful performance poor performance behaviours
Negative transfer:	When a previously learnt skill has a detrimental e
performance:	
Positive feedback:	Feedback following a successful performance wit
Positive transfer:	When a previously learnt skill has a beneficial eff new skill
Proactive transfer:	When a previously learnt skill has an impact on th
Reinforcement:	The process of strengthening something
Skill continuum:	A scale used to categorise a skill based on the skil

Characteristics of a Skill and Skill Continua

Skill can be defined as a predetermined action completed by an individual to p
innate capability or potential of a person to do something. When performing s
perform a gross skill (large muscle movements). However, sometimes they wil
psychomotor skill. Psychomotor skills are the ability of an individual to consci
movements successful. For example, kicking a football in just the right way to

Not every skill that you perform can be classified as the same type of skill. The
what type of skill is being performed, such as the types of muscles producing t
impact that the surrounding environment has on the control over a skill, and th
main characteristics of a skill are given below:

- Fluent
- Efficient
- Effective
- Consistent
- Well timed
- Accurate
- Correct technique
- Controlled

Apply

Think of the
you played and
different skills
using the conti

To ensure that different types of skills can be universally classified, a number o
consider the distinguishing factors between skill types.

Use of skill continua

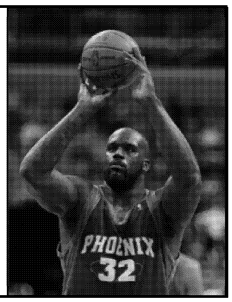
Difficulty (simple–complex)

This classification refers to the complexity of the skill, taking into account such
needed to complete it, and the cognitive processes needed throughout the ski

Simple:

- Reduced importance of decision-making and other cognitive processes
- Transferable

Example: Basketball free throw



Complex:

- Decision-mak
- High levels of
needed
- A high numbe
complicated s

Example: A tenni

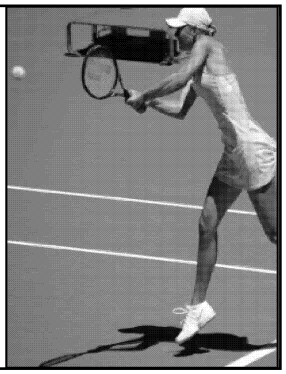
Environmental influence (open–closed)

These skills are classified by the magnitude of the impact that the environment

Open:

- Take place in an unpredictable environment
- Movements must be adapted to align with the changing conditions
- Largely perceptual skills

Example: A tennis return affected by the opponent's positioning



Closed:

- Take place
predictabl
environme
- No need t
technique
- Largely se

Example: A lo

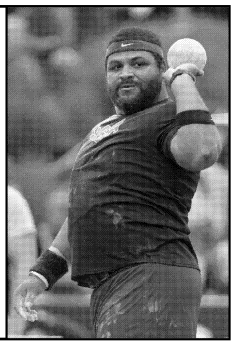
Pacing (internal–external)

This classification refers to how the performer times their execution of the skil
performer has on when the skill starts and ends.

Internal:

- The timing and pace of the skill is under the performer's control
- Generally closed skills

Example: A shotput



External:

- The timing and pace the skill is out of the performer's control
- Generally open skills

Example: Batting in cri

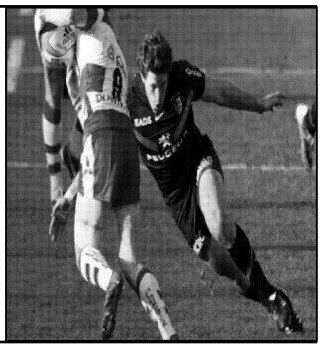
Muscular involvement (gross–fine)

This classificaton classifies skills depending on the level of precision that the m

Gross:

- Skills use large muscular groups
- Skills which require power, and accuracy is less important

Example: Rugby tackle



Fine:

- Skills which use muscular group
- Skills which ne control and acc

Example: Throwing

Continuity (discrete–serial–continuous)

Skills are classified on this continuum by how definitive the stages of the skill a

Discrete:

- Have an obvious beginning or end
- End quickly

Example: A football pass

Serial:

- Follow a specific sequence
- Consist of numerous discrete skills

Example: Triple jump

Organisation (low–high)

This classification concerns how easily the subroutines combine to produce a s

Low:

- Simple skills
- Easy to divide into separate subroutines
- Require little attention

Example: Swimming

High:

- Complicated
- Difficult to di separate subr
- Need to be cl attended to

Example: Pole va

Even though the content above highlights a different skill on each continuum, on all of the continua.

For example, a rugby tackle can be classified as:

- **Simple** – limited cognition needed
- **Open** – dictated by opponent's movements
- **Externally paced** – controlled by the ball carrier
- **Gross** – large muscle movements
- **Discrete** – obvious beginning and end
- **Simply organised** – can be divided into subroutines and requires little attention

Apply

Try and apply each of the sporting skills below on each skill continuum:

- Tennis forehand
- Goal kick
- 100 m sprint
- Basketball free throw
- Dart throw

When classify
justify the pla
continuum.

Correctly classifying a skill allows athletes and coaches to identify the best met improve a skill. For example, an open skill would benefit from varied practice, skill in changing and different environments. Types of practice will be covered

Principles and Theories of Learning and Performa

Learning can be described as an ongoing process that can permanently change effects of learning can be demonstrated through **performance**. Performance is specific situation. Understanding the theories behind how an individual learns optimise their learning methods, with the aim of improving their retention of t improve their sporting performance. Below are three key theories of learning.

Stages of learning (Fitts and Posner, 1967)

As a performer progresses from learning a new skill to possessing the ability to consistently, they are said to have moved from the cognitive to the autonomou three stages of learning: cognitive, associative and autonomous. Each of these characteristics, which are outlined below.

Cognitive	Associative	A
(Think)	(Apply)	

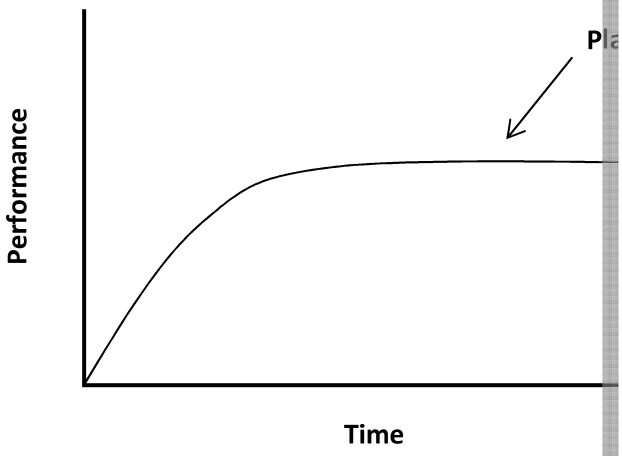
Cognitive	Associative	
Characteristics	**Characteristics**	
Mental practice occurs, with the learner using this to form a basic understanding of the skill.	A shift towards physical practice takes place.	
The skill is performed inconsistently, with only a slight improvement being made.	Skill performance becomes more consistent, with the largest improvement being made during this stage.	
The learner relies on guidance to perform the skill due to a lack of understanding themselves.	The learner gains a personal understanding of the key components of the skill.	
Making basic errors is common, due to the trial and error nature of this stage.	Fewer basic errors are made, but errors during the more complex movements still occur.	
The learner does not understand how to adapt their performance when faced with a variety of situations.	The learner begins to understand how to adapt their performance to be successful in various situations.	
The learner has to direct a large proportion of their attention to completing the skill.	There is a balance between conscious and autonomous control over the skill.	
External, positive and terminal feedback is most effective.	There is less external feedback, with a slight shift towards intrinsic. Positive feedback is still effective.	

Apply

List a number of different skills from different spo activities. Now identify whether you would be in the associative or autonomous stage for learning that ski

The learning plateau

Occassionally performers hit a plateau in their performance level. This is to say train, their performance level does not improve – it stays the same. This conce



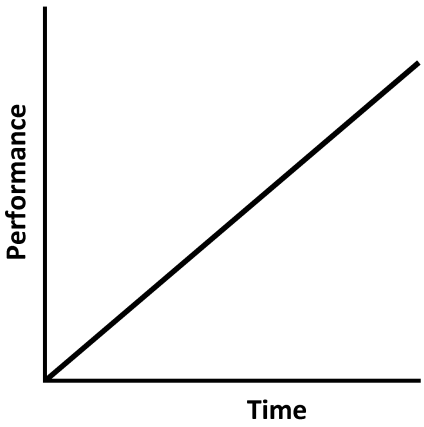
There are a number of potential causes of a learning plateau, a number of whi

- The performer is not skilled enough to progress.
- The coaching is not at a high enough level to enable progression.
- The performer is not motivated to improve.
- The performer is too tired to improve.
- The performer finds the practice tedious.

It is important that the performer solves the problem of a learning plateau, oth develop their level of performance any further. The solutions outlined below a basis – what works for one performer may not work for another!

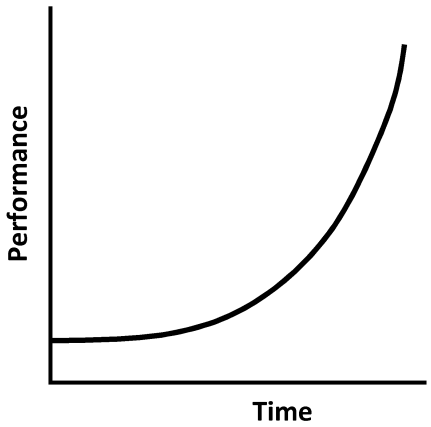
- Improve the skill level of the performer by attending to the separate subr
- Improve motivation levels by promoting intrinsic and extrinsic rewards.
- Use a more experienced coach which can use the necessary feedback effe
- Allow sufficient recovery periods to prevent fatigue.
- Make the practice more enjoyable to avoid tedium.

Other performance curves that show the relationship between training and pe



Linear:

The level of performance is directly correlated with the level of learning / amount of training undertaken

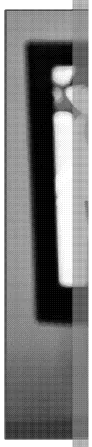


Positive:

As time progresses, the rate of increase in performance gets faster (accelerates)

Social learning theory – observational learning (Bandura)

Bandura suggested that learning could occur through observing others. Accor
learning consists of four stages:



1. **Attention**: involves paying close attention to a demonstration of a skill, ideally by an individual who has a lot in common with the observer, has a high status and has a high level of ability. The performance should also be accurate and have distinctive components.
2. **Retention**: the observer should be able to store the skill performance in their memory, and have the ability to recall the relevant information. Retention is enhanced if the performance is relevant to the observer.
3. **Motor reproduction:** involves the observer possessing the ability to physically replicate the skill. This will often require physical practice to develop the motor skills needed to successfully perform. The performance should therefore be relevant to the observer's physical ability.
4. **Motivation:** the observer must be sufficiently motivated to learn the skill the observer has respect for the performer, they are more likely to be mo level that matches the original demonstration.

Case Study

David Beckham, known for his impeccable free-kick-taking ability, has inspi technique on his. For example, James Ward-Prowse, a professional Premie stated that throughout his own career he has modelled his free-kick techni observing and replicating.

Transfer of Learning

Understanding how the basis behind skill transfer can aid the performer to lea
helps to provide an explanation for any potential difficulty they might have du
because there are different forms of skill transfer, which each impact on how e
skill may be.

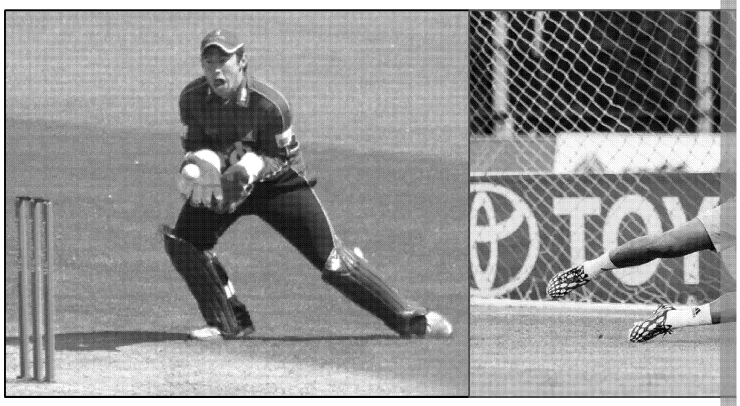
Positive transfer

This occurs when a previously learned skill has a beneficial effect on the learni
Generally, positive transfer is more likely to take place when the two skills bea
This is because the performer will only have to slightly adapt the similar compo
skill to be able to perform the new skill. An example of a positive transfer coul
and taking a goal kick in football.

As you can see, the two skills above are very similar and positive transf

Negative transfer

Negative transfer occurs when a previously learned skill has a detrimental effe
The reason behind this may be that a slight difference in technique between th
avoid using when performing the new skill, and this technique could be the rea
An example of a negative transfer could be a football goalkeeper diving for a lo
for a low catch in cricket.



A slight difference in technique in the above skills could mean that the
have a negative impact on the learning of the nev

Bilateral transfer

Bilateral transfer concerns the transfer of a skill from one side of the body to th
example of this might be a right-footed football player practising long passes w
individual is ambidextrous, this type of transfer will take a long time to success

After considering the above, it is apparent that to benefit the learning of a new
maximised, while negative transfer should be restricted.

Proactive and retroactive transfer

Proactive transfer is when a previously learnt skills influences the learning of a new skill. For example, a tennis player learning to play squash. The skill of hitting a forehand shot in tennis influences how they learn a forehand shot in squash.

Retroactive transfer is when a newly learnt skill influences a previously learnt skill. For example, learning how to hit a backhand in squash may affect how a tennis player performs a backhand in tennis.

Coaches' corner: How to improve positive transfer and limit negative tra
It is important for the coach to emphasise positive transfer to their athletes,
occurrence of negative transfer. The main method of doing this is for the coa
similarities and differences between the previously learned and current skill
can understand how to correctly adapt their technique to fit the new skill, ra
the incorrect technique, which leads to the breakdown of the new skill. It is a
begin with the basics of the new skill, to ensure a full understanding of the s
complexity of the skill. It is also beneficial for the athlete to **refine their main**
correct technique for these provides a securer platform for the learning of th

Skill Continua, Theories of Learning and Tr
Checking your understandi

1. What is a gross skill? Give an example of one in a sport of your choi

2. True or false: an externally paced skill is one that is generally a close

3. If a skill is affected by the environment it is classified on which skill co

4. Classify a gymnastics routine against each of the skill continua and jus

5. What is a bilateral transfer of a skill? Provide an example. *(2 marks)*

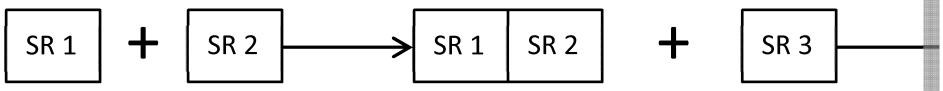
6. Explain how a coach could optimise the effect of positive transfer w transfer. *(6 marks)*

Methods of Presenting Practice

Different skills are best learned, and practised, using different methods to mak
learning of the skill more effective. The effectiveness of the differing methods
depends on numerous factors; for example, the experience and size of the gro
The different types and methods of practice are outlined below, along with the
types of practice environment that they are best suited to.

Progressive-part practice

This method involves learning the individual subroutines in chronological orde
before linking them together, again in order. The skill is then practised as a wh
once all of the subroutines have been linked together and practised in sequenc



*SR= Subroutine. SR1 is learned, then SR2. These are then learned in sequence.
SR1, SR2, SR3 are then learned in sequence, and so on.*

Advantages: This is useful for beginners as it does not overload them with info
different parts of the skill in their own time. It also allows dangerous skills to b
building the confidence of the performer. Progressive-part practice also enabl
parts of the skill that they find most difficult to perform, allowing them to impr
improving on the performance of the skill.

Disadvantages: The kinaesthetic awareness of the skill is lost, as the skill is bro
practice method also does not suit highly organised skills, as they are difficult t
subroutines. This method of practice is also time consuming.

Whole practice

The skill is learned to be performed as a complete action, i.e. from a clear start
Therefore, the skills learned using this method tend to be simple skills, consisti
into the next.

Advantages: The main advantage of this method is that, unlike the part practic
kinaesthetic feel for the skill. Practising the skill as a whole action helps to pre
situation, as this is how the skill will be performed in competition. Additionally
within the long-term memory, resulting in effective recall for the performer wh
performance.

Disadvantages: However, this method cannot be used during complicated skill
of time to be dedicated to the learning stages. It can also overload beginners v
performance and demotivation.

Whole-part-whole practice

As the name suggests, this type of practice is a mixture of the part and whole r
performer first learns the skill using the whole practice method, before breaki
and practising these using the part practice. Once these have been learned an
the skill is practised as a whole again.

Advantages: This type of practice is best used when the skill being learned is to
practice method, but can still be easily broken down into separate subroutines
of the movement to be attended to, as long as most of the time is not dedicate
It also allows the performer to specifically target areas of weakness which may
the whole skill.

Disadvantages: This method takes longer to learn the skill when compared to v
focusing on subroutines. The whole-part-whole method of practice also cannc
organised skills. Dedicating too much time to the part section of the practice c
feeling disjointed.

Types of Practice

Consideration must also be given to the type of practice in which a coach will u
Each skill needs careful consideration to what type of practice is used. For exa
rugby would be best suited to variable practice in which the environment can b
real live game situation.

There are five types of practice to be concerned with:

Massed practice

Massed practice is a continuous form of practice, where practice is not interrupted by breaks or discussion. These practices generally last a long time, with simple skills being learned.

Advantages:

- This practice is effective when the group is highly motivated and fit.
- It improves fitness levels as there are no recovery breaks.
- Motor programmes can be effectively stored.

Disadvantages:

- Even motivated groups can find the practices too lengthy and may struggle to keep their focus.
- Boredom can occur.
- Should not be used with dangerous tasks.

Distributed pra

This practice meth
practice, as it allow
session.

Advantages:

- This practice is
of fitness.
- It allows menta
- It is also an effe
complicated ski
can be discusse

Disadvantages:

- It is time consu
- More experien
unnecessary.

Variable practice

This method is more suited for open skills, as it allows the environment to be manipulated by the coach to allow the performer to experience performing the skill in potentially competitive situations.

Advantages:

- This helps to improve the performer's decision-making and selective attention skills, as they learn the optimal responses to a number of situations.
- It is more realistic for a competitive environment.
- Helps to break the monotony of training.

Disadvantages:

- Cannot be used effectively for closed skills.
- Can overwhelm beginners who do not have the decision-making skills to focus on the correct stimulus.

Fixed practice

This involves the re
honing the skills ne
action or strategy.

Advantages:

- Effective in ens
develop

Disadvantages:

- Does not replic

Mental rehearsal/practice

This practice method involves the performer creating a mental image of themselves
run-through of the skill that is being learned, with the performer being able to imagi
perfect scenario.

Advantages:

- Can improve confidence as it allows the performer to imagine how they perform
difficult conditions.
- Can be used as a stress management technique.
- Useful for beginners to create a mental image.

Disadvantages:

- Not as effective as physical practice when used alone.
- Not as effective for simple skills.

Apply Think back to the last practice session that you completed. What t
Do you think that the type of practice was suited to the session?

Methods and Types of Practice: Checking

1. Describe the process of how a coach would use whole-part-whole

2. What are the characteristics of massed practice? *(3 marks)*

3. What type of skill is varied practice most suited to? Provide an exp
explain why it's useful. *(3 marks)*

4. In what situation would it be best to use distributed practice? *(3 m*

5. What does 'kinaesthetic' mean? *(1 mark)*

6. Identify which practice would be best suited to the following scena
   a) Teaching a complex skill

   b) When you want the performer to develop their kinaesthetic f

   c) When you are looking to develop your team's decision-makin

   d) When your team's/individuals' fitness levels are low

Methods of Guidance

The method of assistance that the coach provides to aid the learning of differe to as **guidance**, and comes in four main forms; verbal, visual, manual and mec guidance is suited to their athletes, it is important for the coach to consider fa experience levels, ability, stage of learning and the complexity of the skill.

Verbal guidance

This involves the coach verbally explaining how to complete a movement, an guidance. It is important that the information given is clear, relevant and eas

Advantages: it can be used to target specific areas of weakness. It can be used to provide additional detail for experienced learners.

Disadvantages: it can overload the learner with information, as it is sometim hard to describe technical aspects of a movement concisely.

Examples:

- The coach discussing the main teaching points with the learner.
- Using different types of verbal reinforcement.

Visual guidance

This involves the coach providing visual cues to stimulate learning. Any demon be replicated successfully. Using mental rehearsal after this form of guidance is learner retain the key information.

Advantages: an effective guidance style when the learner is inexperienced a the learner focus on the key individual parts of the movement.

Disadvantages: it is often difficult for a beginner to be able to quickly replica a visual cue for a complex skill. The learner might not understand the reasoni behind certain movement techniques.

Examples:

- A presentation.
- Use of a video of the correct performance.
- Watching a role model perform.

Manual guidance

This involves the coach physically moving the learner to aid their understandi should feel. This is often used during a potentially dangerous sporting action.

Advantages: it can improve confidence levels, and provide a separation of a longer complicated skill, into more manageable sections.

Disadvantages: it can lead to an over-reliance on physical support to comple the movement. It does not allow for a natural feel of a successful movement.

Example:

- A coach physically moving a gymnast's limbs during a gymnastic routine.

Mechanical guidance

This involves the coach using equipment to guide a performer through a move used during the same type of training as manual guidance, i.e. during dangerou early stage of learning.

Advantages: can limit the potential danger. Provides a general feel of how to perform a movement.

Disadvantages: can result in the performer's internal feedback being incorre It can lead to an over-reliance on physical support to complete the movemen

Example:

- A swimmer holding a float in their hands so they can concentrate on the correct kicking technique.
- A trampolinist using a harness to experience travelling through the air.

Reinforcement

When an athlete exhibits a certain behaviour, a coach should use reinforceme
discourage that particular behaviour. This is so that the athlete learns from thi
particular way in the future. There are numerous theories of reinforcement th

Behaviourism – operant conditioning

Operant conditioning involves the consequences of actions forming behaviour. This is done via the use of either rewards or punishment, and the effect that these will have on future actions. Operant conditioning suggests that there are three responses to behaviour which have an effect on the likelihood of repeat behaviour:

- **Positive reinforcement** – if the performance is successful, the individual is rewarded. Positive reinforcement hopes to reinforce the behaviour and encourages the individual to exhibit this behaviour when faced with a similar skill performance in the future. For example, a basketball coach praising their player when they successfully make a free throw.
- **Negative performance –** if the performance is unsuccessful, negative reinforcement is used. Negative reinforcement involves the removal of an unpleasant stimulus. This acts as a type of reward, as it allows the individual to not experience this again. For example, a basketball coach removing opposition players when coaching their player to dribble.
- **Punishment** – involves either the addition of a negative stimulus or withh
example, a basketball coach giving their player extra fitness sessions if the
free throws.

These three responses have an impact on the stimulus response bond. This bo
(when faced with a specific stimulus the individual is likely to respond correctly
specific stimulus the individual is likely to respond incorrectly). The effect that
have on the stimulus response bond is summarised in the table below.

Response	Effect on th
Positive reinforcement	
Negative reinforcement	
Punishment	

The different forms of reinforcement should be used correctly with athletes in
example, punishment should be avoided with cognitive stage learners because
perservering in the sport as they fear further punishment. However, punishme
elite athletes as they can cope with punishment and could use it as a form of m
receive punishment again). Negative reinforcement should be used with cogni
negative stimuli, allowing them to practise a skill without having to further face

Drive reduction theory

Drive reduction theory states that an individual's motivation to complete a tas
For example, they will be highly motivated to complete a task if they will receiv
natural drive) or if they will receive a financial reward for completing a task (th

In sport, when an athlete is learning a skill, they will likely have a high drive (m
they are very good at it. For example, practising a tennis serve. However, onc
the athlete may suffer from drive reduction as they lack the motivation to perf
becomes boring). This means that the athlete's performance in that particular
coaches need to use methods of reinforcement to maintain motivation in the a
the skill.

Types of Feedback

Every coach should pay attention to the type, and timing, of the feedback they sporting performance. This is because, if used incorrectly, a performer may be performance task. There are different types of feedback, each of which will be

Intrinsic

Intrinsic feedback comes from within a performer. This type of feedback is concerned with how a sporting action feels to the performer themselves. This is a form of kinaesthetic feedback, which involves detecting changes in body position and movement. An example would be an elite rugby player kicking a conversion. During their kick, this player would be aware if they are performing it correctly due to detecting how well their foot connected with the ball and how smooth their follow-through was, among other factors.

Advantages: improves the 'feel' of a movement. Elite performers can use it wi external feedback.

Disadvantages: inexperienced athletes may be unaware of how the movemen know if they have performed successfully. This is also the case for less skilled a

Extrinsic

Extrinsic feedback comes from an external source via a performer's senses. Examples of this source in a sporting setting can include the coach, teammates or judges. Extrinsic feedback therefore concerns the result of the performance or the standard of performance. While intrinsic feedback is more beneficial for those at an autonomous stage of learning, extrinsic feedback is the preferred style to use with those at the cognitive and associative stages. This is because they often need external guidance to counteract their lack of kinaesthetic awareness.

Advantages: it can be used during the earlier stages of learning. Positive extri motivation and focus.

Disadvantages: it does not help create a kinaesthetic awareness of a movemer too reliant on external feedback. Negative extrinsic feedback can result in a lo

Positive

Positive feedback follows a successful performance. This aims to increase the performer's self-efficacy and motivation, while also reinforcing successful behaviour. This helps to increase the likelihood of the performer repeating this behaviour in the future. An example of this may be a hockey coach praising one of their players for passing the ball well.

Advantages: increases confidence and motivation, particularly for those at the cognitive stage of learning. Increases reinforcement of successful behaviour.

Disadvantages: if used excessively, performers may suffer from over-confidence.

Negative

Negative feedback foll This is used as a prever the recurrence of poor type of feedback is use are at the autonomous comes from an extrinsi cognitive and associati be a basketball coach c when they miss a free

Advantages: it can imp complete goals for per of learning.

Disadvantages: it can h motivation and confide of learning.

Concurrent feedback

This form of feedback is delivered throughout a performance; a common exam
coach shouting feedback at a player during a match. Concurrent feedback can

Advantages: It allows for technique to be adapted during the game, which can
performance. It can give beginners a continuous stream of feedback which ca

Disadvantages: It can sometimes overload the performer, meaning that they n
performance. It can sometimes mean that the performance feels less natural.

Terminal feedback

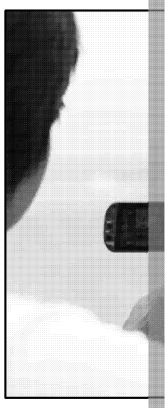
This feedback is provided at the end of a performance, e.g. a team talk given a

Advantages: It does not distract the performer when they are performing. It allows f

Disadvantages: The performer may believe that the feedback is given too late, so
performance. It also does not promote intrinsic feedback, and, therefore, does no
performer.

As discussed for guidance, technology is also used as an aid for feedback by ma
again, video analysis is a popular method of providing feedback, and is an exa
terminal feedback and extrinsic feedback.

Knowledge of performance



This form of feedback refers to receiving information regarding the quality of the movement during a sporting action. This is generally a form of extrinsic feedback, with the main sources including verbal or visual sources. A sporting example may be the coach using a video recording to show a skier where they could improve the angle of their elbow joint to improve their skiing speed.

Advantages: 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.

Disadvantages: it can overload the performer with information, particularly if
learning. It can break up the overall feel of the whole movement. Success can

Knowledge of results

This form of feedback is provide
performer to judge how success
example, a judge's score followi
to know how successful their div

Advantages: success can be eva
improve task persistence.

Disadvantages: does not provid
performance was successful or u
a lack of motivation.

Apply

Did you base the success of your last sporting performance on the resu
How did this inform you for your next game/practice?

Use of Guidance, Reinforcement and
Checking your understandi

1. Provide a definition for guidance. *(1 mark)*

.....

2. Describe verbal guidance and provide an advantage and disadvantage

.....

.....

.....

.....

3. Describe mechanical guidance and provide an example of this metho

.....

.....

.....

4. Explain the difference between mechanical and manual guidance. *(1 m*

.....

5. Identify the best method of guidance for the following people and ex
   a) A beginner *(2 marks)*

   .....

   .....

   b) An experienced athlete *(2 marks)*

   .....

   .....

6. Describe the types of reinforcement that should be used according t theory. *(3 marks)*

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Chapter 5: Sport and So

Overview

This chapter discusses the role sport plays in society and the influences it can have on culture. You will look at the relationship between sport and the government and how sport is used as a tool.

Also discussed is the emergence of modern sport from pre-industrial Britain to the modern day, including the influence public schools had on the development and growth of sport and sport ethics. Furthermore, you will study the origins of the modern Olympic Games and how sport has been used as a political tool throughout the years.

This chapter also looks at the development of sport from amateurism to professionalism. You will learn how different groups are underrepresented in sport and any solutions and campaigns used to increase participation rates of disadvantaged groups in sport. Finally, you will

Learning outcom

After studying this chapter, you the following:

- ❑ Define 'culture', 'society' a
- ❑ Understand how sport is
- ❑ Understand how a govern
- ❑ Describe the characteristi
- ❑ Explain how public school
- ❑ Describe the aims and cha influence of 'shamateuris
- ❑ Describe events in which s
- ❑ Understand the effect co and professionalism
- ❑ Discuss the barriers to un potential solutions to the
- ❑ Understand the influence participation

Key Terms

Amateur:	Someone who takes part in a sport for enjoyment, a get paid for playing
Athleticism:	The notion of putting in maximal physical effort whi and playing sportingly
Centrality:	The idea that the most intelligent people are the ce key decision makers
Commercialisation:	Running and controlling something for financial gai
Culture:	The beliefs, ideas or actions of a group of people wi
Ethics:	Behavioural rules which ensure that moral behaviou
Exploitation:	Using a situation to unfairly benefit someone who v
Globalisation:	The process of using increasing influence to be reco
Government:	A group of people with the responsibility of running
Industrialisation:	A shift from society relying on rural-based occupati holding manufacturing-based occupations
Lombardian ethic:	A 'win at all cost' ethic
Muscular Christianity:	The idea that a Christian with good moral beliefs sh
National Identity:	The image associated with a nation based on cultur
Popular recreation:	Recreational activities prior to the Industrial Revolu lifestyle of the population
Professional:	Someone who takes part in a sport for financial rew source of income
Racial stacking:	The view that people of certain ethnicities are natu
Social class:	The classification of people based on their economi
Social differentiation:	The opportunity given to groups of people to achie
Social institution:	The ongoing behaviour of people in a society
Social mobility:	The idea of rags to riches. A person can change the in sport.
Society:	The organised combination of individuals who live t

The Role of Sport in Society and Culture

Physical activity can have a large effect on both the individual and the society. while looking similar, have different meanings so it is important to understand

Culture: The beliefs, ideas and actions of people within a society

Culture can influence sport participation as people's beliefs may limit the however, can be a tool for bringing people from different cultures togeth

Society: The organised combination of individuals who live together

Sport helps to benefit a society as when a nation competes successfully c society experiences feelings of pride and is encouraged to participate in t

Social institution: The ongoing behaviours of people in a society

Sport has the ability to integrate itself into culture and society. If sport be its influences will spread further as it becomes part of a society's behavio

National identity: The image associated with a nation based on culture

When sport becomes an integral part of a nation (e.g. rugby in New Zeal have huge influences on a range of issues. As the country is associated w can be used to promote ideas; for example, anti-racism campaigns.

Sport as a tool for promotion of societal and cultural values

When sport has become an integral part of a nation, culture or society, it has t deemed to be important. For example, the use of sport to promote:

- **Following rules and regulation** – sports have many rules that participants idea of respect towards authoritative figures and following the laws in da
- **Discouraging violence** – in many poorer areas, sports clubs have been promoted to keep young adults and children out of trouble. Sport gives them an avenue to expend unspent aggression or energy. For example, in the UK, many boxing clubs are based in deprived areas of the country.
- **Importance of competition** – competition is a part of everyday life. Sport can promote the idea of fair competition with respect for your opponents.

Apply

Th
sport
rules
impor
disco

Social action theory

The social action theory suggests that the formation and maintenance of a soc interaction (interactionist approach). The creation of sports results from the si within a social circle. It is these relationships which can lead to the adaptable r to have a positive impact on sport, by creating a positive meaning for the spor behavioural characteristics within set sports. This also means that sport can he social interaction that participating in a team sport can generate.

The Link between the Government and Sport

Governments often use sport as a tool for promoting their ideas e.g. the Olym
is behind sporting events that are successful, it can aid their future campaigns.
unsuccessful, this tarnishes the name of political parties. Below are some of th
and sport.

Impact	Positive	
Sporting	• Successful performances inspire a nation to become active and participate in sport. – This helps the government meet its health guidelines • Minority sports are given more coverage, with an increased interest in sports such as javelin and long jump. – Increased funding from government	• Sports witho athlete durin – This can funding • Poor perform they are neg nation and in – The gov associat • An increased success can l body to the l
Social	• Increases the physical activity levels of the nation, promoting a healthy, active lifestyle. – This helps the government meet its health guidelines • The mood of the nation is improved when a sporting event is being hosted due to its celebratory nature. This can help bring the population of a country together. – Increased happiness in the public is good for government ratings • Pride is felt when the nation performs successfully. – Increased happiness in the public is good for government ratings	• If a home na mood can tu – This can approva • Protests at th to negative p – Pressure where it • The human r be neglected can host the leave homes facilities. – Can lead governm • A belief that and educatio – Pressure where it
Economic	• Provides large amounts of revenue from tourism, trade and investment. – Increases income for government through taxes • There is development of new sporting facilities which continue to be used following the games. – Positive legacy of government • There is regeneration of public services that also continue to be used. – Saves the government money	• There are hu event, which debt. – Negative • Unpopular sp the cost of m participation – Negative
Political	• The current political party in power is looked upon favourably by the nation, increasing its chances of staying in power.	• There is an in • Protests at th • Negative pre party's reput

Sport, Society and Culture and Governme
Checking your understandi

1. Provide a definition for 'culture'. *(1 mark)*

2. Define 'society'. *(1 mark)*

3. Define 'social institution'. *(1 mark)*

4. Describe the ideas that sport can be used to promote. *(3 marks)*

5. Discuss the ways in which the government can use sport as a politica

Emergence and Evolution of Modern Sport: Pre-in

Life in pre-industrial Britain was very different from life today, with tough livin
percentage of rural living and a much lower life expectancy . The sport that wa
referred to as 'popular recreation' and had the following characteristics:

- violent
- unwritten/simple rules
- wagering
- local
- irregular
- participated in by the lower classes

This leads us to the question:
Why did sport take on these characteristics and why is it so different from toda

Well, let's take a look at the social and cultural factors that shaped sport durin

Social class

Pre-industrial Britain saw a clear distinction between two social classes, the up
The upper class had disposable income which they could spend on participatio
the lower class had longer working hours with much less pay, meaning that the
This meant that sport in pre-industrial Britain was irregular, due to the limited
participate in it. It also meant that the sport was violent due to the lower class
whereas the upper classes did not.

Gender

Women had a smaller role to play in sports than men, but still had opportuniti
ball games and smock races (races where the winner would win a dress). This
exclusively played by men, with the violent nature demonstrating a sense of pe

Law and order

Pre-industrial life in Britain had many cruel and violent aspects, owing mainly t
conditions were reflected in popular recreation, with violence being a key facto
was mainly participated in by the lower class, as the upper class saw such activ

Did you know?

Those believed to be witches were publicly executed in pre-industrial Britain, which demonstrates the cruel and harsh living conditions.

Education/literacy

The education of the masses also shaped the characteristics of the sport. Due to the high levels of illiteracy, the rules of sport needed to be simple and understandable to allow people to participate. This led to the high levels of violence as rules were not enforced to prevent it, as well as the irregularity of the sport due to the lack of written regulations or fixtures.

Mob footbal

Case Study

Football in pre-industrial Britain:
Due to the violent nature of this time in history and the illiteracy of the population, the sport lacked set rules and positions, had no boundaries and certainly no officials. It was collectively known as 'mob football'. It was frowned upon by many due to the damage and injuries it inflicted.

Availability of time

Sport was only occasionally played, as there was a lack of time that could be de hours spent working. This meant that sport was played on holidays or holy da nature. The limited time also had a small contribution to sport being local, du to other areas to participate.

Availability of money

Those who had more money available had the opportunity to wager (place a b Wagering gave the upper classes an opportunity to show how much income th lower classes a chance to make their own money, thus meaning that wagering industrial sport in Britain. It also contributed to the division between the class spectating while the lower class participated.

Type and availability of transport

The lack of modernised transport resulted in many of the population not being watch or participate in sport. Therefore sport was localised, with local sportin of followers.

Apply

For a sport of your choice from the ones given below research how these differed from the same sport we kn

- tennis
- cricket
- athletics

Things to think about

How did the living conditions of pre-industrial Britain influence h back then?

Influence of Public Schools (Nineteenth Century)

Post-1800 industrial Britain and the emergence of public schools meant public schoolboys took the sports from their local towns and villages back to their schools. It was these in public schools that sport began to develop. Dr Thomas Arnold is seen as a key founder of the use of schooling to promote good Christian ethics in schoolboys through the use of sport. He promoted the idea of muscular Christianity – the idea that a fit and healthy body should replicate a fit and healthy soul / fit and healthy morals. He did so by increasing the relationship between teachers and sixth-form pupils.

The promotion and organisation of sports and games

Schoolmasters believed that sports would help to develop the character of the schoolboys, while giving them a distraction to exert their energy towards, therefore also enabling a form of social control. Inter-house competitions also took place during school, which helped to promote the competitive nature while helping to enco

The promotion of ethics through sports and games

Public schoolboys kept to a code of behaviour when participating in sport, crea sporting behaviour. This code of behaviour included respecting the opposition

The 'cult' of athleticism – its nature and impact

At the forefront of this promotion of **ethics** was the notion of athleticism. **Ath** in maximal physical effort while adhering to the ethics of the game and playing concept of sportsmanship, meaning that sports were played more fairly, oppor were adhered to.

The spread and export of games and the games ethic

An important focus of the sports and games was the establishment of leadersh used to promote social values such as loyalty and responsibility. The spread of schoolboys left for universities, which led to the different games and rules brou students being adapted to form more structured games. The coming together different sporting ideas is called the **Oxbridge melting pot**. This melting pot ac codification of rugby and football. Those who went on to work as masters at s played within the establishments at which they were working. Ex-public schoo sporting national governing bodies (NGBs), which gave the sports more structu ethic was also spread through the careers of ex-public schoolboys, including ar such as fitness and endeavour.

Apply

Think about the sports in your school. How do the with the characteristics of the sports played by the pub schoolboys post Industrial Revolution?

Things to think about

How is the spread and evolution of games and codes still relevan

Emergence of Sport and the Influence of P
Checking your understandi

1. Using mob football as an example, name the characteristics of popular

2. Explain how social class impacted sport in pre-industrial Britain. *(2 ma*

3. What is meant by 'muscular Christianity'? *(1 mark)*

4. How did public schools promote ethics in sport? *(3 marks)*

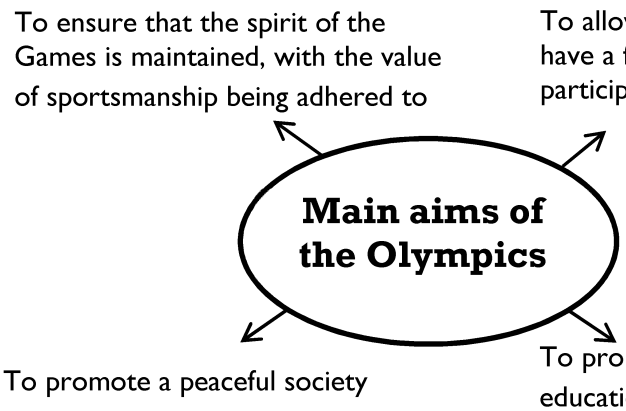
5. Explain how public schoolboys helped the spread of games and sport

The Modern Olympic Games: Amateurism and Oly

The Olympic Games is the most obvious of global sporting events, with many c together in one host country to compete for the pivotal prize of a gold medal a their nation. Now held every four years, it is the largest celebration of sport, w tuning into the events across the globe. Before we look at the characteristics c consider its history.

Background and Aims

Pierre de Coubertin was behind the revival of the Olympics in the modern era. De Coubertin's interest in reviving the Games stemmed from his willingness to reform France's education system. In Paris, 1894, Pierre de Coubertin established the International Olympic Committee (IOC). Alongside Dimitris Vikelas (chairman of the IOC), de Coubertin convinced Athens to hold the first modern Olympic Games, which took place in 1896. The Olympic Charter is the agreed guidelines of the Olympics, and the main aims of this charter are outlined below. The characteristics of the modern Olympic Games, which are still in place today, are also highlighted below.



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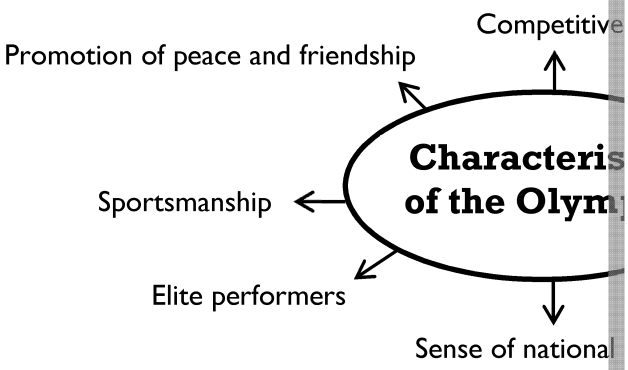


Things to think about

How has the legacy of the Olympic Games been maintained from w

'Shamateurism'

Until the 1970s, the Olympic Games was seen as a competition for amateur co fair opportunity to compete. However, by the 1970s the Olympic Games had g influence. This meant that there was an increase in demand from viewers to s competing. As a result, 'shamateurism' developed. This was the introduction preparation for the Olympics. In the USA, the best athletes were offered schol train full-time without financial fear (i.e. they were paid to train). To be able t other countries also began to also pay athletes to train. This is seen as the tim started to become an event for professional athletes. The movement of amat modern sport is covered later.

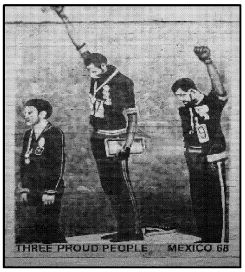
Sport as a Political Tool

Political exploitation of the Olympic Games

With the Olympic Games being a global entity it has often been used to exploit as propaganda to influence its wide-ranging viewers. Let's take a look back at Olympics' history where political **exploitation** has been witnessed.

Berlin 1936 Third Reich ideology

The Olympic Games were held in Berlin, Germany, in 1936. This event occurr while the Nazis were in power, and Hitler took the chance to use the Games endorse the Nazi ideology. Although a number of nations were debating if th should **boycott** the Games, any boycotting plans were unsuccessful, and the Games began with 49 nations competing, with Hitler opening the Games himself. However, Jesse Owens, a black US sprinter and long jumper, won fo gold medals, which embarrassed Hitler, as a black athlete being successful ov the white athletes went against the Aryan supremacy ideology that he was trying to promote.



Graffiti showing black power salute

Mexico City 1968 'Black Power' demonstrat

The 1968 Olympics took place in Mexico City, Mexi discrimination in the USA were ongoing. To protest athletes, Tommie Smith (gold) and John Carlos (bro when they collected their medals. They did this by national anthem, performing a black power salute a

Munich 1972 Palestinian terrorism

The 1972 Olympics were held in Munich, Germany. This Olympics was devast 'Munich massacre'. This is because a group of Palestinian terrorists forced th taking 11 Israeli sporting personnel. During a failed rescue mission, the eleve ultimately led to the suspension of the Games, for the first time ever. It also i of security measures that are seen today at the Games, with counter-terroris within the host nations.

Moscow 1980 boycott led by USA

The 1980 Olympics were held in Moscow, USSR. The USA, led by President Jimmy Carter, led a **boycott** as a protest at the invasion of Afghanistan by the Soviet Union which occurred in 1979. The USA was worried that its athletes would have their passports taken off them if they competed. The number of sporting events were reduced as a result of the boycott.

Los Angeles 1984 boycott by Soviet Union

In response to the boycott of the Moscow Olympics by the USA, as mentioned above, the Soviet Union boycotted the 1984 Olympics held in Los Angeles, USA. The Soviet Union referred to the USA as anti-communists. The reason provided by the Soviet Union was that it boycotted due to fears over security and the commercialisation of the Games. This Olympic Games was boycotted by fewer countries than in the 1980 Olympic Games, with 14 countries not participating.

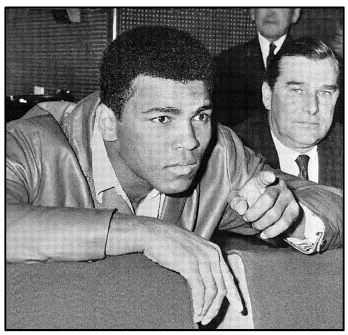
Political exploitation of sport

There are other examples of sport being used as a political tool outside of the (are outlined below. You should be aware of the influence these has on sport a

Apartheid (South Africa)

There was enormous tension in South Africa due to apartheid (segregating people based on their race). Many high-level athletes did not want to compe for or in South Africa because of the segregation of the people.

In 1995, following the end of apartheid, South Africa hosted and won the Rugby World Cup. At the presentation ceremony, Nelson Mandela (the president of South Africa) appeared wearing a South African rugby team shir The South African rugby team was a primarily white team. This show of support from Nelson Mandela helped to bring the country back together.



Muhammad Ali (Vietnam War)

In 1967, Muhammad Ali refused to be drafted i America in the Vietnam War. Ali was fined $10, heavyweight title, faced a five-year prison sent boxing for three years.

Ali stated that the reason he refused to particip religion – he had converted to Islam some year

Ali was a massive sporting star. His refusal to co demands helped to remove links between spor showed that people should not be forced to pa religious beliefs. The size of Ali's fame and popu to follow in his footsteps.

The spread of games throughout the world

The movement of people across the world aided the growth and spread of gam
missionaries and clergymen travelled to faraway countries to promote the mes
they spread the idea of 'muscular Christianity' using sport.

The size of the British Empire also helped spread sport across the world. As British soldiers were based in other countries, they took their sporting knowledge and traditions with them. For example, the British Empire once ruled India. Therefore, the growth in poularity of cricket in India dramatically increased. To this day, cricket is the number one sport in India.

The British Empire was made up

In countries where the British Empire ruled, the civil service (made up of local/
sport, as the civil servants spread the games taught to them by the British into
looking after.

The emergence of amateurs and professionals

In post-1850s Britain there was a divide in the social classes between amateur
say that the lower class were professionals, while the upper class were of amat
participation in sport was restricted for the lower classes due to membership rules being enforced by the upper class to prevent the lower class from being able to participate in their clubs. The fees for this membership meant that the lower classes could not afford to join. Professionals were also prohibited from competing in certain competitions. There was also a distinction between the roles in sport that meant the lower class were performers, the middle class were managers or agents, and the upper class were benefactors and supporters.

Amateur: S
sport for enj
for playing

Professiona
sport for fina
their main so

Sport has gone global in the twenty-first century and is celebrated frequently.
have improved discipline among players, barriers to participation have been re
every child's education. Whoever you are and wherever you go, you can't esca
globalisation has been assessed from pre-industrial Britain all the way to the tw
we took a look at the contemporary factors that shape the sport we know and

Class – amateurism and professionalism

Professionals and amateurs are no longer as clearly defined in regard to the so
still some types of sports which are closely associated with the upper classes, s
are still associated with the working class, e.g. spectators of football matches.
globalisation of sport, professional sports performers are among the highest ea

Did you know?

The highest paid athlete in 2015 was Floyd Mayweather, earning $300 million in just one year![6]

Case Study

Amateur and professional boxing:
One of the best sports to demonstrate the gap between the professionals and amateurs is boxing. Professional boxers, thanks largely to the commercialisation of the sport, can earn vast amounts per fight. The biggest of these fights are generally shown on pay-per-view, bringing in millions of pounds in revenue. Only amateur boxers are allowed to compete at the Olympics, however, with many of these boxers opting to fight for the chance of Olympic glory, rather than turn professional.

Apply

For a sport of your choice, can you describe the differences between a professional athlete and an amateur athlete?

Gate money, the 'broken time' debate and gentlemen vs players in

Without some form of income, sport would be destined to remain an amateur money – charging people to watch sport – created an income for sporting club and pay the very best players, buy equipment and improve the club facilities. professional era.

Alongside gate money, a move to make sport more professional was happenin late 1800s, northern rugby clubs pushed for 'broken time' payments for their p were wages given to workers who had to miss work for some reason – in this e their club. However, the southern-based RFU refused this prospect, meaning t wages. This debate led to the eventual split of the northern rugby clubs from t rugby league. This created a dramatic drop in the number of rugby union club north to play sport and receive a wage for playing.

In cricket, from 1806 to 1962, biannual cricket matches were played between g and players (professionals – working class). The players received wages from t gentlemen claimed expenses for the matches they played. This caused disagre some of the gentlemen were claiming expenses greater than the players' wage Cricket Club (MCC) deemed that any first-class cricketers (elite players) should earning a wage – regardless of their social class.

Professionalism and ethics – the 'Lombardian ethic'

In a world where more and more people are striving to become professional a many athletes has changed. Contrary to Dr Arnold's view of using sport to pro times, athletes have to be more ruthless to get to where they want to be. In th coach named Vince Lombardi became a leader in the idea of 'winning at all cos In modern sport, more money, facilities and physiological and psychological he before. These are all examples of the Lombardian ethic at work. Negative aspects of the Lombardian ethic do exist, though; for example, an athlete using performance-enhancing drugs to maximise their performance.

Did you k

Perhaps the most famous crick Grace, an amateur Gentleman, dismissed 129 batsmen in 1876

[6] http://www.theguardian.com/sport/2015/jun/11/floyd-mayweather-forbes-list-highest-p

The Modern Olympics and Sport as a
Checking your understand

1. Name the aims of the Olympic Games, as proposed by Pierre de C

2. Explain how 'shamateurism' has led to a change from amateurism to

3. Describe the events of the 1936 Olympic Games whereby sport wa

4. Describe how the Rugby World Cup of 1995 influenced the promo

5. Explain the difference between a professional and an amateur in mo

Social Differentiation within Sport

Within any community or group of people, the opportunities to participate in s
numerous factors such as location and wealth. This influences the growth of s
not have the opportunities available to them to participate in sport. **Social str**
group of people within a particular society. **Social differentiation** is the oppor
achieve something.

Underrepresented groups in sport

While many believe that sport is accessible for all, they often overlook the acce
underrepresented groups in sport, which fall under the categories of disability
or mental condition which limits their functioning), ethnic group (a population
compared to the larger population in terms of their cultural background), geno
underrepresented than males) and disadvantaged (those with a poor socio-ecc
ability to participate in a variety of events). The table below summarises the b
and suggests solutions for overcoming these barriers.

Underrepresented group	Barrier	
Disability	Not all local sports facilities are accessible for disabled people, with an absence of the correct equipment or adapted sports. This means that disabled people often find themselves left out of doing sports.	Providing to enable adapted sp
	Negative attitudes towards disability sport contribute further to this feeling, with some of those leading sport lacking the understanding needed to include disabled athletes in sporting events.	Educating sports wou much mor increase le
	A lack of media coverage for disabled sports has also led to a lack of positive sporting role models, meaning that the popularity and participation levels remain relatively low.	Increasing sports, suc increase th
Ethnic groups	Negative attitudes and stereotypical and racist views can mean that those from a minority feel less welcome in terms of doing sport.	Campaign increase th
	These negative attitudes can also mean that individuals are placed into positions to which coaches stereotypically believe they are best suited, leading to potentially less enjoyment of the sport.	The educa to dispel a can lead to positions a
	A lack of positive role models in underrepresented sports.	Increasing ethnic min percentag
Gender	Negative attitudes and sexist views towards females' roles in sport still exist. For example, some people still believe that a woman's role should only be domestic, with sport being considered to be too masculine.	Increased help to inc role mode girls to tak
		The enforc sexist beh
	Females can be pushed towards sports typically seen as more suitable for females. This can reduce enjoyment.	Increasing sports.
Disadvantaged / socially deprived	They are said to be at a disadvantage in a sport due to not being able to afford the associated costs, such as equipment, membership fees, use of facilities, etc. This means that they do not have the opportunity to participate in a number of sports.	Communit increase p cost involv
		Reducing higher cha disadvanta

The groups mentioned often suffer from issue such as discrimination, stereotyping and prejudice, so it is, therefore, important to learn the definitions of these terms.

- **Discrimination**: the use of a negative perception to make a distinction between individuals or a group
- **Stereotyping**: a preconceived, oversimplified perception of an individual or a group
- **Prejudice**: a previously formed biased opinion which has no evidence to back it up

In disadvantaged groups, sport is seen as a method of **social mobility** – the idea of rags to riches. Therefore, sport provides an end goal for many underprivileged people. If someone from a disadvantaged background succeeds in sport, they can use their **role model** status to break through barriers that exist within sport.

Economic and Sociocultural Factors and Their Imp Participation

The social and economic standing of people plays a significant role in sports pa factors that influence these roles are outlined below:

Privately educated sporting success

In the London 2012 Olympics, Team GB achieved great sporting success in mar a very large proportion of Team GB medallists were privately educated. The hi Team GB members who won medals highlights the fact that people who atten achieve sporting success. This puts people from a poor background at a disadv schools often have state-of-the art facilities and high-level coaches, aiding thei

Black, Asian and minority ethnic (BAME) mar

Black, Asian and minority ethnic managers and coach sport. Many sporting bodies have set targets for mar ethnic groups to be well represented in sport. For ex League and Football Association are attempting to in coaches in football. However, between 2015 and 20 in senior football positions actually decreased from 4

Centrality and racial stacking

Centrality is the idea that the most intelligent people play the key roles in a group. In sport, it would be the decision maker in a team, or a playmaker, as they have the intelligence to read a game and make the right decisions. For example, in football this would often be a central midfielder.

Throughout history, ethnic minorities have been at a disadvantage due to stereotyping and racism. As a result, some people still believe that certain ethnicities are predisposed to be good at certain tasks. For example, black people are often stereotyped as being undereducated but possessing great athletic ability such as sprinting. Therefore, in sports such as American footbal they may play roles where thinking is less important than physical prowess (e.g defending). On the other hand, quarterbacks in the same team may likely be white, as they are stereotyped as being more intelligent and so are the playma

Racial stacking is the idea that people of certain ethnicities are only good at ce examples of this are that black people are only good at running and basketball

Self-fulfilling prophecy

A self-fulfilling prophecy is the subconscious act of someone who helps their o true. In sport, coaches and managers are subject to self-fulfilling prophecies as would happen to come true. For example, a football manager buys a player fr is a prolific goalscorer in that league. In terms of his skills and ability, the playe his new club as a striker. However, subconsciously, the coach or manager may improve his performance to the required standard. This is a self-fulfilling prop standard required by the manager, as the manager originally predicted when h

Things to think about

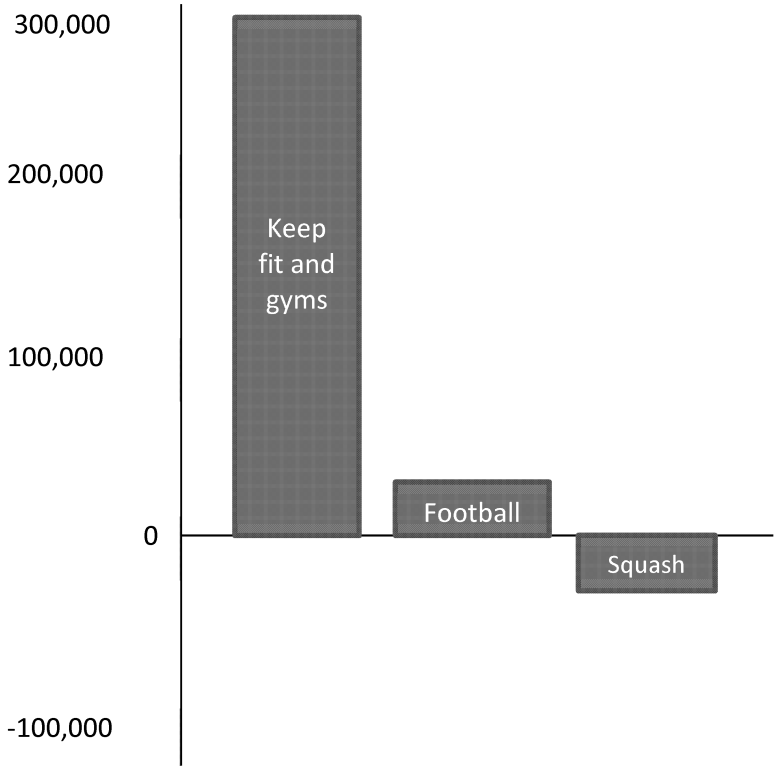
Think of sporting examples that prove that the ideas behind cer true.

[7] *https://www.theguardian.com/football/2016/nov/15/bame-coach-numbers-stall-english-foo*

Participation trends in the UK in the twenty-first century

You have previously learnt some of the strategies put in place to improve parti
society, but have any of the strategies succeeded in increasing participation ra
century? Make up your own mind by examining the graph and reading a sumn

This graph shows the changes in once-a-week participation rates in sports fro
October 2015–September 2016.[8]



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[8] https://www.sportengland.org/media/11325/1x30_sport_16plus-factsheet_aps10.pdf

Strategies for increasing participation in sport among disadvantage
Many strategies have emerged in recent years to increase participation rates i

- **Kick It Out** – organisation that campains for the removal of all forms of di it is well known for being an anti-racism campaign.
- **Rainbow Laces** – this campaign encourages elite sport stars to wear rainb LGBT community, removing homophobia from sport.
- **Adapted sports for diabilities** – many sports have now been adapted to a in sport, notably the Paralympics. Individual sports such as rugby have be Community clubs are also increasing in number for people with mental di
- **This Girl Can –** a campaign that aims to encourage women to participate i

The effect of these campaigns is an increase in participation rates in sport. By within sport, people are becoming more exposed to discrimination in sport. Th has highlighted the sporting prowess of athletes with disabilities.

Apply

Using the Internet, research the trend in participation rates for a sport of your choice. reasons behind the trend.

Case Study – Additional Learning

Gender / changing role and status of women

While unfortunately gender stereotypes do still exist in the world of spor there has been a positive shift in terms of the role and status of women within sport in the twenty-first century. Women are now seen as equal to men, with the same working hours and pay. For example, while still a minority, women's football has received an increase in television coverage and popularity, and at Wimbledon the prize money is equal for the female and male tennis players. This has encouraged more females to participate sport can become a viable career path. There are also a higher number of women involved in sporting roles, such as team doctors, physiotherapists, coaches and managers. This is because the sporting talent of women has been recognised, with positive role models such as Jessica Ennis-Hill and Nicola Adams.

Influence of the Media in Sport

Media and globalisation of sport

Sport has gone global in the twenty-first century and is celebrated frequently. have improved discipline among players, barriers to participation have been re every child's education. Whoever you are and wherever you go, you can't esc globalisation has been assessed from pre-industrial Britain all the way to the t we took a look at the contemporary factors that shape the sport we know and

Globalisation of sport

The *globalisation of sport* is another important factor which has shaped the characteristics of, and participation in, sport. In the twenty-first century, sport is now a global event, with tournaments such as the Olympics and the FIFA World Cup involving nations from across the world. There are three underpinning factors which have led to this globalisation:

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internatio

In the 20
than 25
Japan vs S
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demonstr
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Apply

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developed

1. *Media coverage:* An increase in media coverage has increased the interest in sport, and has provided the finances for sport to improve its range of coverage. The wide range of available media platforms (radio, TV, satellite, social media and the Internet) has made sport very accessible for the majority of the population. The success of 24-hour sports news channels shows the popularity of sport, and it is this popularity that the media aims to cash in on. Dedicated sports channels show a wide range of sport, helping to increase its global appeal.

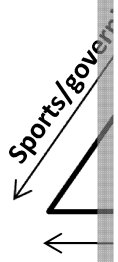
2. *Freedom of movement for performers:* This has allowed performers to par tournaments which take place in another country to their country of birth

3. *Greater exposure of people to sport:* This has increased the popularity of s the number of elite performers. This is because it creates a larger founda athletes who could reach the elite level of different sports, and with the h talented athletes are more likely to be able to reach this elite level.

The 'golden triangle'

The golden triangle is a method used to describe the interlinking relationship between sport, media and sponsorship. This shows how money is generated and used within sport.

The diagram to the right clearly shows that all three (sport, media and sponsorship) have a beneficial relationship, with each receiving and providing for each other. For example, sport helps to generate money for the sponsors by promoting their brand in a positive light via advertising hoardings or kit sponsorship. This in turn is beneficial for the sport and their national governing bodies, as the money from sponsorship can be used to improve facilities and improve the grass-roots of the sport, for example.



Media and role models

The growth of sport through the media has meant that disadvantaged groups a modern day. For example, many elite boxers do not come from a privileged ba successful, they become **role models**. Furthermore, the ability of athletes to t stars can move to new clubs. In recent years this has been most obvious in foo foreign players to British football clubs creates optimism for disadvantaged gro one day they could also grow up to become as successful as these footballers.

Commercialisation, Social Differentiation
in Sport: Checking your understa

1. Describe the 'Lombardian ethic' in modern-day sport. *(2 marks)*

.....

2. Define 'social stratification'. *(1 mark)*

.....

.....

3. Explain how disadvantaged (low socio-economic status) people are
sport, and describe any solutions in place to solve this problem. *(4 ma*

.....

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.....

4. Describe two strategies in place that aim to increase sporting participa
of people. *(4 marks)*

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Chapter 1.1: Contribution of Physical Activity to

Contribution of Physical Activity to Health and Fitness: Checking your understandin

1. • Smoking is a leading cause of cancer. (1 mark)
   • Carbon monoxide binds to haemoglobin, reducing oxygen delivery around
   • Presence of tar in cigarettes destroys cilia, meaning the lungs are not filteri
   • Can cause emphysema. (1 mark)

2. Hypertension is high blood pressure – 140/90 mm Hg or above. (1 mark)

3. • Exercise releases endorphins, which cause feelings of happiness. (1 mark)
   • Exercise helps / endorphins help to reduce stress of a person. (1 mark)
   • Exercise contributes to positive body image, which reduces feelings of anxi

Chapter 1.2: Cardiorespiratory and cardiovascula

Cardiorespiratory System: Checking your understanding

1. Cardiac output = stroke volume × heart rate / Stroke volume = cardiac output ÷
   Stroke volume = 4,800/80 = 60 (1 mark)
   Stroke volume = 60 ml (Note: ml needed for mark.) (1 mark)

2. **Sinoatrial node:** regulates the heart rate in line with the body's demand / sends
   atria, causing them to contract. (1 mark)
   Atrioventricular node: delays contraction to allow the ventricles to fully fill with
   bundle of His and Purkinje fibres. (1 mark)

3. 4 marks from the following:
   • The vascular system 'shunts' oxygenated blood to where it is needed the m
   muscles.
   • The vasomotor centre regulates the blood flow by causing the sympathetic
   constrict or dilate.
   • This can result in blood being directed away from the lower-priority organs
   • The arterioles also have an important role, as they can widen or narrow to
   towards the higher-priority tissues.
   • The precapillary sphincters allow / do not allow the blood to flow into the

4. • They have a large surface area, increasing diffusion rate. (1 mark)
   • There is a large number of capillaries, increasing blood flow and increasing
   • The membrane between the alveoli and capillaries is very thin, reducing th

5. • Gas exchange occurs as a result of a gradient formed between the differen
   between the alveoli and blood. (1 mark)
   • Partial pressure refers to the pressure that a particular gas exerts within a
   • Oxygen will diffuse from an area of high concentration (the alveoli) to an area
   Likewise, carbon dioxide diffuses from an area of high concentration (blood) to
   (1 mark)
   • This pressure gradient is increased as we exercise, due to oxygen levels of

Chapter 1.1 – Performance Analysis and Moveme

Performance Analysis in Sport: Checking your understanding

1. Quantitative/objective (1 mark)

2. 1 mark for each stage and description:
   • Observation – a coach observes a performance and draws their own conclu
   • Performance analysis technology – the opinions given by the coach are tes
   equipment. (1 mark)
   • Evaluation of data – testing equipment either confirms or denies the coach
   • Feedback – feedback is given to the athlete. It should be relevant and posi
   • Planning – using the information gained from testing, the coach and athlet
   (1 mark)

3. It is a term used to describe the accuracy and consistency of the data throughou

4. Any of the following points (maximum 2 marks from advantages and 2 marks fro
Advantages:
- Coaches and athletes can see aspects of performance, instead of having to i
- Cheaper video cameras are becoming available.
- Can be adapted to film different aspects of performance (e.g. tactics of a wh technical skills of an individual.

Disadvantages:
- The highest-quality cameras are still very expensive.
- Can be time consuming.
- Doesn't provide numerical data.
- Sometimes qualitative and subjective data.
- High level of experience and knowledge is needed to maximise data and qua

5. **Reliability** – refers to the repeatability of a test. It is whether a test can measure similar, results each time. (1 mark)
Validity – the degree to which a test measures what it is supposed to be measuri

6.
- Analysis of movement – e.g. positioning and movement of football players t
- Tactical analysis – e.g. analysing the set-piece moves an opponent performs
- Technical analysis – e.g. a sprinter analysing their running technique. (1 ma
- Statistics – e.g. commentators looking at possession in a football match. (1

Biomechanical Movement: Checking your understanding

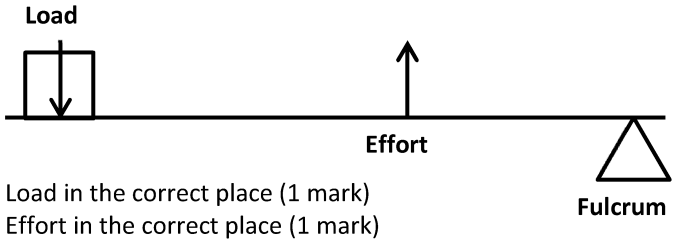
1. **Law 1:** an object stays at rest or in a constant state of motion unless acted upon b
Law 2: an object will accelerate in the same direction as the force applied upon it directly proportional to this force. (1 mark)
Law 3: for every action there is an equal and opposite reaction. (1 mark)

2. **Reaction:** the equal and opposite force acting in the opposite direction to the for
Net force: the overall force that is exerted on an object. (1 mark)
Unbalanced force: occurs when the magnitude of the forces acting upon the obje therefore, moved in the direction of the larger force. (1 mark)

3. Speed = distance/time (1 mark)
Speed = 100 m / 11 seconds (1 mark)
Speed = 9.09 m/s (1 mark)

Movement Analysis: Checking your understanding

1.



Load in the correct place (1 mark)
Effort in the correct place (1 mark)
Fulcrum in the correct place (1 mark)

2. A second-class lever has a greater length of the resistance arm relative to the effo This allows the second-class lever to produce a large force to overcome a heavy l

3. Frontal (1 mark); e.g. cartwheel (1 mark)
Transverse (1 mark); e.g. golf drive (1 mark)
Sagittal (1 mark); e.g. somersault (1 mark)

4. 1 mark for naming a type of synovial joint **and** giving a correct example of the joi
- Pivot joint – e.g. neck/cranium (1 mark)
- Hinge joint – e.g. elbow/knee/elbow (1 mark)
- Gliding joint – e.g. between the carpals and metacarpals of the hand / tarsal
- Condyloid joint – e.g. wrists (1 mark)
- Ball-and-socket joint – e.g. shoulder/hip (1 mark)

5.

Type of movement	Muscles causing movement	Plane movement place in
Plantarflexion (1 mark)	Gastrocnemius and soleus (1 mark)	Sagittal plane (1

Chapter 1.2: The Musculoskeletal System

The Musculoskeletal System: Checking your understanding

1. **Agonist:** pectoralis major / triceps (1 mark)
   Antagonist: trapezius / posterior deltoid / rhomboids (1 mark)
   Contraction: concentric (1 mark)

2. This is the muscle that is the primary instigator of a joint movement. The contrac movement of a joint's related limb (accept any other correct definition). (1 mark

3. - What type of joint is being used? (1 mark)
   - What is the movement being produced? (1 mark)
   - Which agonist and antagonist muscles are involved? (1 mark)
   - What type of muscle contraction is used? (1 mark)

4. 4 marks from the following
   - Protection (axial) – bones protect your vital organs. (1 mark)
   - Shape and points for attachment (axial) – bones give our body size and shap attach to. (1 mark)
   - Blood cell production (axial) – red blood cells (carry oxygen) and white blood in the bone marrow. (1 mark)
   - Movement (appendicular) – the bones act as levers that muscles attach to,
   - Mineral storage – the skeleton stores calcium and phosphorus. (1 mark)

5. a. Eccentric (1 mark)
   b. Eccentric (1 mark)
   c. Isometric (1 mark)
   d. Concentric (1 mark)

Chapter 1.3 Preparation and Training Methods

Components of Fitness and Training Methods: Checking your understanding

1. **Continuous:** any correct example of a sport requiring good aerobic capacity, e.g. swimming. (1 mark)
   PNF: any correct example of a sport requiring a good range of motion, e.g. gymna
   Weight: any correct example of a sport requiring powerful movements, e.g. rugby
   Must supply two examples of each fitness component to get one mark.

2. Maximum 4 marks. Definition and suitable sporting example must be provided fo
   - Flexibility – the ability to stretch the muscles to the full range of their mover performing a floor routine / any other suitable example
   - Agility – the ability to change direction at speed while maintaining balance, other suitable example
   - Power – the amount of work completed over a period of time. In sport, it is produce in a short period of time, e.g. a rugby player / any other suitable ex
   - Aerobic capacity – the maximum amount of oxygen that can be consumed a intensity aerobic exercise, e.g. marathon runner / any other suitable exampl

3. - Weight – 90% 1 RM (1 mark)
   - Sets – 1–3 (1 mark)
   - Reps – 1–3 (1 mark)
   - Rest – 3–4 minutes (1 mark)

4. Maximum 2 marks from the following:
   - Plyometrics is training that targets speed and power. (1 mark)
   - Plyometrics consists of jumping, hopping and bouncing exercises. (1 mark)
   - Focus is placed on producing a high amount of force/power over short perio

Environmental Training: Checking your understanding

1. • Lack of oxygen results in the body producing a higher number of red blood c
   • This increases the efficiency of oxygen transport. (1 mark)
   • The body acclimatises. (1 mark)
   • The effect can last up to 14 days / provides an advantage at sea level. (1 ma

2. **Definition:** the increased heart rate during a period of sustained exercise to coun
   stroke volume

3. 3 marks from the following:
   • There is a greater volume of blood transported to the skin to lose heat from
   • This is achieved by vasodilation of vessels supplying the skin.
   • Cardiovascular drift / increased heart rate during a period of sustained exer
   stroke volume.
   • There is a reduction in stroke volume due to loss of fluids.

4. Acclimatisation: positive adaptation to a change in the environment (1 mark)
   The athlete has to give enough time to acclimatise to the conditions before they

5. 37 °C (1 mark)

Periodisation and Goal-setting: Checking your understanding

1. 3 marks from the following:
   • Reduce the amount of training in the one to three weeks prior to competitic
   • Training intensity should be maintained. (1 mark)
   • Endurance events have longer tapering period. (1 mark)
   • Tapering should follow the longest session of training. (1 mark)

2. Microcycle – lasts up to a week, and is the shortest stage of training. Focuses on
   component. (1 mark)
   Mesocycle – made up of numerous microcycles, normally lasting one month. (1 r
   Macrocycle – made up of numerous mesocycles, normally lasting a year. Provide

3. 5 marks for descriptions of principle. 1 mark awarded for the use of a sporting ex
   • Specific: having a set aim to improve a specific component of a performance
   (1 mark), e.g. a swimmer focusing on one aspect of technique instead of on
   • Measurable: if a goal is measurable, it will help the performer identify any p
   their performance (1 mark), e.g. the swimmer records a sprint time before t
   see if any improvements have been made based on technique training.
   • Agreed: goals should be agreed between the performer and the coach, so th
   working towards and can work together as efficiently as possible (1 mark) e.
   the swimmer's leg kick is something that needs to be improved.
   • Realistic: the performer must believe they have the ability to be able to com
   can have a negative impact on motivation (1 mark), e.g. the swimmer knows
   to their kicking technique and so is motivated to make the change.
   • Time-phased: having a set time by which the goal needs to be completed he
   urgency to complete the goal (1 mark), e.g. it is agreed the swimmer must b
   half a second in one month.

Chapter 1.4 Energy for Exercise

Energy Systems: Checking your understanding

1. Energy system: ATP-PC (1 mark)
   Duration: up to 10 seconds (1 mark)

2. The aerobic system (1 mark)

3. A sporting example needs to be given for each principle to achieve the mark.
   - Specific: the training should be specific to the sporting event that is being tr
     benefit a sprinter). (1 mark)
   - Progressive overload: the training should progress in difficulty, whether this
     ensures that a plateau of progress does not occur, and the performer can cc
     adaptations (e.g. a marathon runner running a longer distance in each sessi
   - Reversibility: the performer should ensure that they train regularly, otherwi
     performance or lose any benefits from training (e.g. a long jumper's perfor
     two weeks). (1 mark)
   - Variance: activities and training should be varied in their nature. This helps
     them to transfer their skills (e.g. a sprinter completing sprints, plyometrics a

4. 70–80% of maximum heart rate (1 mark)

Chapter 1.5 Fatigue and Recovery

Fatigue and Recovery: Checking your understanding

1.
   - The temperature of the muscles and tendons increases, enabling them to be
   - The speed and strength of muscular contraction is improved, due to the incr
     and also the improved nerve transmission speed which send signals to the e
   - Blood vessels dilate (widen) to increase blood flow around the body. (1 mar
   - Raised heart rate helps to increase the speed of blood flow to the exercising
     exercising levels. (1 mark)
   - Raised breathing rate helps to increase the transport of oxygen to the exerc
     exercising levels. (1 mark)

2. 3 marks from the following:
   - OBLA occurs at high-intensity exercise when the ATP stores have been used
   - Lactic acid builds up in the muscles during anaerobic exercise. (1 mark)
   - OBLA is an increase in blood lactate concentration above 4 mmol/l. (1 mark
   - OBLA leads to increased blood acidity, muscular pain and an accompanying
     performance. (1 mark)

3.
   - When an athlete has stopped exercising, their body still demands oxygen to
     exercise. (1 mark)
   - Excess post-exercise oxygen consumption (EPOC) helps to replenish an oxyg
     breathing rate/depth after exercise. (1 mark)
   - Alactic recovery replenishes blood supply and muscle oxygen stores. (1 mar
   - Lactacid recovery maintains elevated circulation and ventilation and helps to
     muscles. (1 mark)

Recovery and Rehabilitation: Checking your understanding

1.
   - Carbon dioxide is carried in either the blood plasma (as carbonic acid) (1 ma
   - or by binding with the haemoglobin in the red blood cells. (1 mark)
   - These substances are then removed from the body through exhalation of th
   - The body controls breathing rate using chemoreceptors by detecting change
     blood. (1 mark)

2.
   - Ice baths are a type of cold therapy. (1 mark)
   - Cold temperatures cause the constriction of blood vessels. (1 mark)
   - This reduces swelling and prevents further breakdown of tissue. (1 mark)
   - Once the body returns to the normal temperature, blood flow is increased,
     exchange at the muscles. (1 mark)

3. **Protection** – prevent additional injury by protecting the injured area against extri
   Rest – the injured part of the body should be allowed to recover fully. (1 mark)
   Ice – applying ice on the injured area helps to reduce swelling. (1 mark)
   Compression – applying pressure to the injured area helps to limit swelling. (1 m
   Elevation – raising the injured body part above the heart level reduces blood flow
   injury. (1 mark)

4. 3 marks from the following:
   - Hypoxic tents (1 mark)
   - Oxygen tents (1 mark)
   - Kinesiology tape (1 mark)
   - Electrotherapy (1 mark)

Chapter 1.6: Diet and Nutrition

Diet and Nutrition: Checking your understanding

1.
   - Carbohydrates
     - Main source of energy for body as carbohydrates are broken down to
     - 50–65% of diet (1 mark)
   - Proteins
     - Aid tissue repair/recovery (1 mark)
     - 10–20% of diet (1 mark)
   - Fats
     - Provide energy during low-intensity exercise / when glycogen stores ar
     - 20–30% of diet (1 mark)

2. A boxer would lose weight by:
   - reducing energy intake (1 mark)
   - increasing energy expenditure (1 mark)

3. 4 marks from the following:
   - During exercise (1 mark)
   - (during exercise) Used to maintain energy stores in the body as high GI food
   - After exercise (1 mark)
   - (after exercise) High-GI foods can give immediate stores of energy back to th
   - High-GI foods should not be consumed immediately before exercise (1 mark

4. 2 marks from the following:
   - Increased heart rate (1 mark)
   - Increased breathing rate (1 mark)
   - Increased lactic acid production, causing fatigue (1 mark)
   - Increased viscosity (thickness) of blood, reducing the flow of blood around t

Chapter 2.1: Sports Psychology: Personality

Aspects of Personality: Checking your understanding

1. 4 marks from the following:
   - Behaviour is innate, with individuals being predisposed to act in a certain wa
   - Takes the 'nature' side of argument in 'nature vs nurture'. (1 mark)
   - Dominant traits have a larger effect than the less intense traits. (1 mark)
   - The environment does not have any effect on their personality or behaviour
   - Behaviour = Function of Personality (1 mark)

2. Behaviour = Function of Environment (1 mark)

3. i. Personality profiling is used to assess what type of personality a person has. Personalities are assessed using tests. (1 mark)

   ii. Maximum 2 marks from advantages and 2 marks from disadvantages

   Advantages:
   - Cheap and easy to complete.
   - Easy to interpret results.
   - Can be self-assessed.
   - Identifies the sporting environments someone performs best in.
   - Helps to guide training/goals (communication between trainer and ath

   Disadvantages:
   - Personalities of people are complex and may not be accurately represe
   - Personality is not the only factor that can influence performance.
   - Cannot predict behaviour in every environment/situation.
   - Individuals can lie / influence results of a test if it is self-assessed.

Attitudes: Checking your understanding

1. An attitude is an enduring emotional feeling that alters the response given towar

2. Beneficial impact on goal motivation. (1 mark)
   Beneficial impact on task persistence / any other suitable example. (1 mark)

3. **Personality type** (1 mark)
   There are many different types of personality / relevant example, such as extrove attitude towards sport. (1 mark)

   Social influences (1 mark)
   An individual is more likely to form an attitude that is similar to those in their pee learning / relevant example, such as if a young girl's friendship group held the att the young girl is likely to adopt this same behaviour. (1 mark)

   Personal experiences (1 mark)
   If an individual has had a high amount of positive personal experience of a certai a positive attitude towards this situation. / The more emotional the experience, t be formed. (1 mark)

   Conditioning (1 mark)
   Reinforcement can promote the formation of a particular attitude. If an attitude being positive, an individual is more likely to keep and strengthen this attitude. (

4. • The affective component concerns the emotional reaction held towards an
   • The behavioural component concerns how an individual acts when faced wi
   • The cognitive component concerns the individual's thoughts towards an atti

5. 3 marks from the following:
   • The basis of this method is to create an imbalance in one's beliefs.
   • If an individual experiences this dissonance, they will be more prepared to c
   • It is created by causing a conflict between two attitude components.
   • This causes a feeling of stress and a will to create a balance between the cor

Group Dynamics in Sport: Checking your understanding

1. **Forming** (1 mark)
   The initial stage of the meeting of group members, with interactions forming inte sharing opinions. / An individual's focus is on what they can contribute to the tea

   Storming (1 mark)
   Leadership styles might clash at this stage. / Certain team members are drawn to opinions. / Problems begin to be identified at this stage. / Focus is on teammates member's own performance. / Progressing is difficult, but needs to be done to er (1 mark)

   Norming (1 mark)
   This stage involves problem-solving, by working together to find answers to any prob stage. / Helps the members identify their own roles within the team, while team cohe

   Performing (1 mark)
   This stage involves the team performing successfully to achieve their team goals / performing in their own roles to bring success to their team. (1 mark)

2. Actual productivity = best potential productivity – losses due to faulty processes (

3. • **The Ringelmann effect:** losses of motivation can be a result of the negative team members has on motivation / when there are more members in a tear effort. (1 mark)
   • **Social loafing:** individuals tend to feel as though their own role is not recogr perceive their importance to the group as being diminished. (1 mark)

4. 6 marks from the following
   • Improving the communication between the individual team members.
   • Using shared goals within the team.
   • Making sure that each of the members knows how their role can impact on
   • Including each of the team members.
   • Using the correct leadership style.
   • Promoting the importance of team performance over individual performanc
   • Allowing the team members to be involved in the decision-making processe

Chapter 2.2: Sports Psychology: Stress, Arousal an Aggression

Stress, Arousal and Anxiety: Checking your understanding

1. Social facilitation is the positive effects an athlete receives by performing in front

2. Anxiety is a feeling of apprehension when faced with a stimulus that is perceived

3. State anxiety refers to how an individual reacts to a specific stressful situation (1
   Trait anxiety refers to an individual's tendency to react to stress in a specific way

4. Maximum 3 marks for cognitive symptoms and maximum 3 marks for somatic sy
   Cognitive:
   - Loss of concentration or focus (1 mark)
   - Confusion (1 mark)
   - Feelings of uneasiness (1 mark)
   - Negative thoughts (1 mark)
   - Feelings of weakness (1 mark)
   - Indecision (1 mark)
   - Feelings of being unsatisfied (1 mark)

   Somatic:
   - Headache (1 mark)
   - Muscular tension (1 mark)
   - Raised heart rate (1 mark)
   - Raised ventilation rate (1 mark)
   - Increased sweating (1 mark)
   - Feelings of nausea (1 mark)
   - Irritability (1 mark)
   - Increased need to urinate (1 mark)
   - Feelings of 'butterflies' in the stomach (1 mark)
   - Loss of appetite (1 mark)

5. 4 marks from the following:
   - An individual will respond to increases in arousal in different ways. (1 mark)
   - Different people have different optimal zones of arousal to produce their be
   - Some athletes perform well at low levels of arousal. (1 mark)
   - Some athletes perform best at high levels of arousal. (1 mark)
   - The theory does not explain why some individuals perform better in certain

6. 4 marks from the following:
   - The catastrophe theory suggests that as cognitive anxiety increases so does
   - This relationship lasts as long as somatic anxiety remains low. (1 mark)
   - If both cognitive and somatic anxiety are high, there will be a significant dec
   - Performance levels can be salvaged through a reduction in anxiety. (1 mark
   - If anxiety is not reduced, performance will totally deteriorate. (1 mark)

Measuring and Controlling Stress, Anxiety and Arousal: Checking your understanding

1.
   - Positive statements help improve self-efficacy. (1 mark)
   - Interpreting actions or stressors as positive reduces the negative impact tha
   - Positive self-talk improves task persistence. (1 mark)

2.
   - Lowers heart rate (1 mark)
   - Lowers ventilation rate (1 mark)

3. 1 mark for identification of technique and 1 mark for description.
   - **Progressive muscular relaxation** (1 mark)
   - The performer tenses a particular muscle or muscle group. After this tensio
     seconds, that muscle is relaxed, allowing the tension to disappear. (1 mark)
   - **Biofeedback** (1 mark)
   - This enables the performer to control their arousal levels by understanding
     and how to control these. (1 mark)
   - **Breathing control** (1 mark)
   - Increasing the depth of breathing to lower breathing rate – focus is placed o
     stressors. (1 mark)

Aggression: Checking your understanding

1. Any suitable example where the performer aims to harm others e.g. a two-foote

2. Aggression is behaviour which has the goal of harming others.(1 mark)
   Assertion is forceful behaviour in order to achieve a goal, and does not include in

3. • Aggression is solely the direct result of feeling frustrated. / Frustration inevitabl
   (1 mark)
   • A primary source of frustration is the obstruction of goal achievement. (1 m
   • Criticism: this hypothesis does not consider the other emotions associated v
   aggressive behaviours can take place regardless of whether the athlete feel

4. A rugby player may learn aggressive behaviour by seeing a close teammate actin
   example. (1 mark)

5. 4 marks from the following:
   • Punishing a sporting club which regularly displays aggressive actions by assig
   • Removing individuals from an individual situation where they may face (and
   • Lowering the arousal levels of individuals to ensure that they are calmer wh
   • Educating players and teams about assertive behaviour and how this would
   performance.
   • Rewarding non-aggressive actions can help to promote the avoidance of the

Chapter 2.3: Sports Psychology: Motivation

Motivation: Checking your understanding

1. Motivation is a willingness to exhibit a particular behaviour. (1 mark)

2. Intrinsic motivation comes from within the performer. (1 mark)
   Extrinsic motivation comes from sources external to the performer. (1 mark)

3. Tangible rewards are materialistic (e.g. money and trophies). (1 mark)
   Intangible rewards are non-physical rewards (e.g. praise from others / self-satisfa

4. Intrinsic motivation is the better type of motivation to use. (1 mark)
   Intrinsic motivation has a longer-lasting effect on performers than extrinsic motiv

5. Maximum 3 marks for characteristics of NAch and maximum 3 marks for characte
   NAch (need to achieve)
   - Set clear goals (1 mark)
   - Willing to take risks (1 mark)
   - Use intrinsic rather than extrinsic motivation (1 mark)
   - Do not mind negative feedback (1 mark)
   - Optimistic (1 mark)
   - Confident (1 mark)

   Naf (need to avoid failure)
   - Do not have clear goals (1 mark)
   - Unwilling to take risks (1 mark)
   - Prefer extrinsic motivation to using intrinsic motivation (1 mark)
   - Dislike negative feedback (1 mark)
   - Pessimistic (1 mark)
   - Low levels of self-confidence (1 mark)

Chapter 3: Skill Acquisition

Skill Continua, Theories of Learning and Transfer of Skills: Checking your understandi

1. A gross skill is a skill that uses large muscular groups / requires power / accuracy
   Example: a rugby tackle / any other suitable example (1 mark)

2. **False** – externally paced skills are generally open skills. (1 mark)

3. Environmental influence (open–closed) (1 mark)

4. **Difficult:** Complex (1 mark)
Complex as it requires a high level of coordination / a high number of complicate

Environmental influence: Closed (1 mark)
Closed as it takes place in a predictable environment / largely internally paced. (1

Pacing: Internal (1 mark)
Internally paced as the timing and pace of the skill are under the performer's con

Muscular involvement: Gross (1 mark)
Gross as it uses large muscular groups. (1 mark)

Continuity: Serial (1 mark)
Serial as the movements follow a specific sequence / consist of numerous discret

Organisation: High (1 mark)
High as complicated skills / need to be closely attended to. (1 mark)

5. Bilateral transfer concerns the transfer of skill from one side of the body to the o
Example: a right-footed football player practising long passes with their left foot /

6.
- By highlighting the key similarities and differences between the previously learn
- Understand how to correctly adapt technique to fit the new skill. (1 mark)
- It is important for the coach to begin with the basics of the new skill to allow
- Ensure a full understanding of the skill. (1 mark)
- Get the athlete to refine their main motor skills. (1 mark)
- Ensuring the correct technique of main motor skills is used will allow a secur learning new skills. (1 mark)

Methods and Types of Practice: Checking your understanding

1. 3 marks from the following:
- Combines part and whole methods. (1 mark)
- The performer first learns the skill using the whole practice method… (1 ma
- … before breaking down the subroutines of the skill and practising these usi
- Once these have been learned and the performer feels comfortable, the skil

2. Continuous / no breaks or discussion (1 mark)
Long duration (1 mark)
Simple skills are learned (1 mark)

3. 3 marks from the following:
- Type: open skills (1 mark)
- It allows the environment to be manipulated by the coach to allow the perfo skill in potentially competitive situations. (1 mark)
- It helps to improve the performer's decision-making skills. (1 mark)
- The performer can learn the optimal responses to a number of situations. (

4.
- When rest periods are needed / when the participants have low fitness leve
- When there are clear opportunities for mental rehearsal to be implemented
- For more complicated skills / when discussion about the different subroutin example. (1 mark)

5. A type of internal feedback that involves detecting changes in body position and

6. a) Whole-part-whole / progressive-part (1 mark)
b) Whole practice (1 mark)
c) Varied practice (1 mark)
d) Distributed practice (1 mark)

Use of Guidance, Reinforcement and Feedback: Checking your understanding

1. The method of assistance that the coach provides to aid the learning of different

2. Involves the coach verbally explaining how to complete a movement. (1 mark)
Can be used alongside visual guidance / It is important that the information that i understand. (1 mark)

Advantages (1 mark from the following):
- An effective guidance style when the learner is inexperienced and the skill is
- It can help the learner focus on the key individual parts of the movement.

Disadvantages (1 mark from the following):
- It can overload the learner with information.
- It is sometimes hard to describe technical aspects of a movement concisely.

3. • This involves the coach using equipment to guide a performer through a mo
   • This is typically used during the same type of training as manual guidance / (performers at an early stage of learning. (1 mark)
   • A swimmer holding a float in their hands so they can concentrate on the cor suitable example. (1 mark)

4. Manual guidance involves the coach physically moving the athlete, whereas mech equipment to guide the athlete. (1 mark)

5. a) • Manual (1 mark): can improve confidence / more manageable. (1 mar
   OR
   • Mechanical (1 mark): provides a feel for movement / limits potential d
   b) • Verbal (1 mark): good for targeting known weaknesses / providing add
   OR
   • Visual (1 mark): experienced learners will understand the visual mover individual aspects of movement. (1 mark)

6. • Positive reinforcement – if the performance is successful, the individual is re to reinforce the behaviour and encourages the individual to exhibit this beh performance in the future. (1 mark)
   • Negative performance – if the performance is unsuccessful, negative reinfor reinforcement involves the removal of an unpleasant stimulus. (1 mark)
   • Punishment – involves either the addition of a negative stimulus or withhol

Chapter 4: Sport and Society

Sport, Society and Culture and Government Use of Sport: Checking your understandi

1. The beliefs, ideas or actions of a group of people within a society. (1 mark)

2. Society is the organised combination of individuals who live together. (1 mark)

3. A social institution is the ongoing behaviour of people in a society. (1 mark)

4. • Following rules and regulation – sport promotes the idea of respect to autho
   • Discouraging violence – in many poorer areas sports clubs have been promo out of trouble. (1 mark)
   • Importance of competition – sport can promote the idea of fair competition opponents. (1 mark)

5. Students should identify the positive relationships between sport and the govern political tool; 4 marks for suitable examples.
   - Meeting health guidelines (1 mark)
     - e.g. Successful performances inspire a nation to become active and pa
   - Increased funding for sport from government (1 mark)
     - e.g. Minority sports are given more coverage as a result of increased fu relationship between sports and the government. (1 mark)
   - Increased government approval ratings (1 mark)
     - The mood of the nation is improved when a sporting event is being hos nature. (1 mark)
   - Increased income for government / saving money (1 mark)
     - Sport provides large amounts of revenue from tourism, trade and inve

Emergence of Sport and the Influence of Public School: Checking your understanding

1. • Violent (1 mark)
   • Unwritten/simple rules (1 mark)
   • Wagering (1 mark)
   • Local (1 mark)
   • Irregular (1 mark)
   • Participated in by the lower classes (1 mark)

2. There was a clear distinction between the upper class and the lower class. (1 ma
The upper class had disposable income which they could spend on participation i
The lower class had longer working hours with poor pay, meaning that they coul

3. The idea that a Christian with good moral beliefs should have a strong, healthy bo

4. Public schoolboys kept to a code of good sporting behaviour when participating i
Respecting the opposition and competing with honour. (1 mark)

5. 5 marks from the following:
   - When schoolboys moved to university, they took games and sports with the
   - University acted as a central point for a collection of ideas and games. (1 m
   - More structured games were made at university. (1 mark)
   - Students who later became masters at schools encouraged games to be pla
   - Ex-public schoolboys also moved on to form sporting national governing bo

The Modern Olympics and Sport as a Political Tool: Checking your understanding

1. To allow everyone to have a fair opportunity to participate in sport (1 mark)
To promote the value of education via sport (1 mark)
To promote a peaceful society (1 mark)
To ensure that the spirit of the Games is maintained, with the value of sportsman

2. The Olympic Games were originally seen as a competition for amateurs. (1 mark)
By the 1970s there was an increase in demand from viewers to see only the very
'Shamateurism' was the introduction of the athletes training full-time in preparat
This idea spread to other countries as they attempted to compete with those pay

3. The Olympic Games were held in Berlin, Germany, in 1936. (1 mark)
Hitler used the Games to promote the Nazi ideology. (1 mark)
Jesse Owens, a black US sprinter and long jumper, won four gold medals. (1 mark
Owens success embarrassed Hitler, as a black athlete being successful over the w
supremacy ideology. (1 mark)

4. Apartheid had just been abolished in South Africa. (1 mark)
Apartheid had created huge tension throughout the country. (1 mark)
South Africa hosted and won the Rugby World Cup. (1 mark)
Nelson Mandela appeared wearing a South African rugby team shirt. (1 mark)
The South African rugby team was a primarily white team. This show of support
the country back together. (1 mark)

5. An amateur is someone who takes part in a sport for enjoyment, and does not ge
A professional is someone who takes part in a sport for financial reward, with this
income. (1 mark)

Commercialisation, Social Differentiation and the Media in Sport: Checking your und

1. American football coach (Vince Lombardi) promoted the idea of 'winning at all co
Modern sport has more technology and finances to enable people to 'win at all c

2. Social stratification is the separation of a group of people within a particular socie

3. They cannot afford the associated costs, such as equipment, membership fees an
This means that they do not have the opportunity to participate in sports. (1 mar

4. Accept other suitable answers.
   - Kick It Out (1 mark)
   - Organisation that campaigns for the removal of all forms of discrimination fr
   - Rainbow Laces (1 mark)
   - Encourages elite sport stars to wear rainbow-coloured laces in support of th
     homophobia from sport (1 mark)
   - Adapted sports for disabilities (1 mark)
   - Many sports have been adapted to allow disabled people to participate in sp