



A-Level Physical Education Transition Pack

Course Information and Summer Activities

Note: To be completed summer 2017.

Read through the enclosed resources and complete the tasks / questions where necessary.

At the beginning of the year 12 course you will be assessed on your knowledge and understanding of these areas via past exam questions.

The mark that you achieve within this assessment will act as an indicator as to your suitability to the A Level Physical Education course.

Overview of the Qualification A-Level Physical Education

Subject content:

1. Applied anatomy and physiology
2. Skill acquisition
3. Sport and society
4. Exercise physiology
5. Biomechanical movement
6. Sport psychology
7. Sport and society and the role of technology in physical activity and sport

Assessments:

Paper 1: Factors affecting participation in physical activity and sport	+	Paper 2: Factors affecting optimal performance in physical activity and sport	+	Non-exam assessment: Practical performance in physical activity and sport
<p>What's assessed</p> <p>Section A: Applied anatomy and physiology</p> <p>Section B: Skill acquisition</p> <p>Section C: Sport and society</p>		<p>What's assessed</p> <p>Section A: Exercise physiology and biomechanics</p> <p>Section B: Sport psychology</p> <p>Section C: Sport and society and technology in sport</p>		<p>What's assessed</p> <p>Students assessed as a performer or coach in the full sided version of one activity.</p> <p>Plus: written/verbal analysis of performance.</p>
<p>How it's assessed</p> <ul style="list-style-type: none"> • Written exam: 2 hours • 105 marks • 35 % of A-level 		<p>How it's assessed</p> <ul style="list-style-type: none"> • Written exam: 2 hours • 105 marks • 35 % of A-level 		<p>How it's assessed</p> <ul style="list-style-type: none"> • Internal assessment, external moderation • 90 marks • 30 % of A-level
<p>Questions</p> <ul style="list-style-type: none"> • Section A: multiple choice, short answer and extended writing (35 marks) • Section B: multiple choice, short answer and extended writing (35 marks) • Section C: multiple choice, short answer and extended writing (35 marks) 		<p>Questions</p> <ul style="list-style-type: none"> • Section A: multiple choice, short answer and extended writing (35 marks) • Section B: multiple choice, short answer and extended writing (35 marks) • Section C: multiple choice, short answer and extended writing (35 marks) 		

Transition

Tasks

The Heart

TASK 1:

Independent work:

1. Find and label a diagram of the heart.
2. Explain the role of the various structures within the heart.
3. Describe the passageway of blood through the heart.
4. Define the terms:
 - Stroke Volume.
 - Cardiac Output.
 - Heart rate.
 - Bradycardia.
 - Cardiac Hypertrophy.
 - Starling's law of the heart.
 - Cardiovascular drift.

TASK 2:

Read the following notes and complete the questions beneath.

The regulation/control of the heart rate

Heart rate is regulated by:

1. Hormonal control
2. Neural control

1.

When you are about to exercise you may experience 'butterflies' and your heart may start to beat faster. This '**anticipatory**' rise in heart rate is due to the release of adrenaline. **Adrenaline** prepares the body for **impending exercise** by increasing HR.

2.

Central to the regulation of the heart is the **cardiac control centre** (CCC) (located in the **medulla oblongata** in the brain). This is under **involuntary** control and is made up of two components.

1. **The Sympathetic nervous system**
2. **The Parasympathetic nervous system**

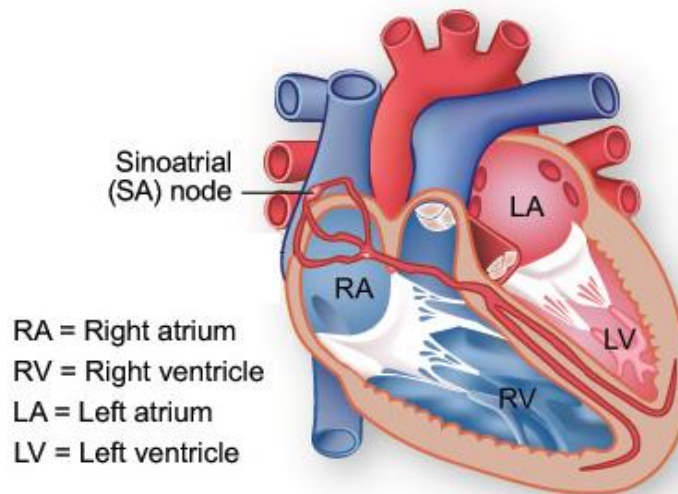
What is meant by the term involuntary?

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.....
.....

Insert a picture of the cardiac control centre / medulla oblongata here:

The Sympathetic nervous system is responsible for increasing the heart beat rate. **The Parasympathetic** nervous system is responsible for slowing down the heart rate / returning it to resting levels.

Both of these systems act on the **Sino-Atrial node** (Pacemaker) within the heart, causing either an increase or decrease in HR.



Sensory receptors situated around the body, send information to the cardiac control centre (CCC). As a consequence, the CCC then sends impulses via the Accelerator nerve or the Vagus nerve in order to either increase or decrease the heart rate.

Which nerve is responsible for increasing the heart rate and which is responsible for decreasing the heart rate?

.....
.....

Receptors within the body include:

Mechanoreceptors and Proprioceptors

- These receptors are situated in muscles and tendons.
- When motion is detected, sensory information is sent to the CCC and as a result a nervous impulse is sent via the nerve to the Sino-atrial node. This results in an increased heart rate.

Chemoreceptors

- These detect changes in the pH of blood. They are located in the aorta and carotid arteries of the neck.
- Increased blood acidity is caused by the build-up of CO₂ and lactic acid.
- Once increased blood acidity is detected, sensory information is sent to the CCC. As a result, a nervous impulse is sent via the nerve to the Sino-atrial node. This results in an increased heart rate.

Baroreceptors

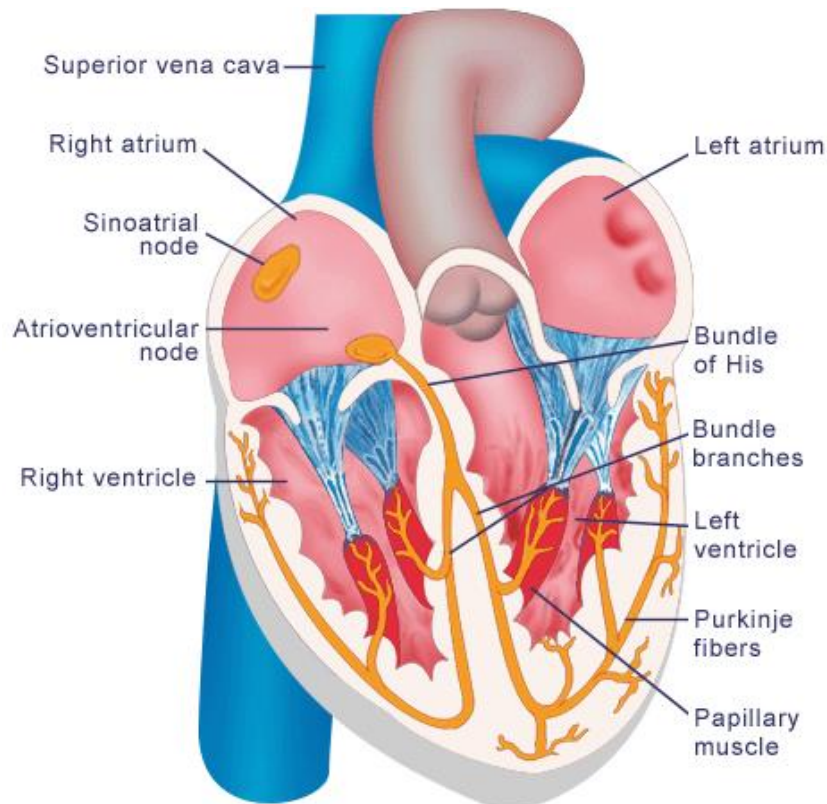
- These are stretch receptors
- They exist in the walls of the aorta, vena cava and carotid arteries. They detect increases in blood flow and blood pressure.
- If these stretch receptors are stimulated, information is sent to the CCC which in turn causes an increase in HR.

Why is blood pressure likely to increase during exercise?

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The Cardiac Conduction System

The heart works by producing impulses which spread and innervate the specialised muscle fibres. Unlike skeletal muscle, the heart produces its own impulses (it is myogenic), and it is the conduction system of the heart which spreads the impulses and enables the heart to contract.



1. The Sino Atrial Node (SAN) initiates the hearts beat.
2. It is the rate at which the SAN emits impulses, that determines heart rate.
3. The SAN is also known as the pacemaker;
4. The electrical impulse released from the SAN spreads through the Atria.
5. The Atria contract (Atrial systole).
6. Importantly, the valves within the heart are non-conducting material and do not respond to the impulse.
7. The impulse reaches the Atrioventricular Node (AVN).
8. From here the impulse travels down the interventricular septum via the Bundle of His.
9. The impulse spreads through the Purkinje fibres.
10. This causes the ventricles to contract (Ventricular systole).
11. After the contraction, there is a period of diastole/relaxation for filling.

Exam Questions

1. Briefly explain the terms cardiac output **and** stroke volume **and** the relationship between them. (3 marks)

2. Through training for and participation in game type activities, players experience changes to their cardiovascular systems. Some games players may experience bradycardia and a condition known as 'athlete's heart'. Explain the terms bradycardia and 'athlete's heart'. (2 marks)

3. During physical performance, the nervous system controls the body's responses. A 17-year-old runs 400 metres with maximum effort in 60 seconds. Describe the variations in heart rate and how these changes are achieved during the:
 - (i) Rest period immediately prior to the start of the 400 metres; (2 marks)
 - (ii) 400 metre race (exercise period); (4 marks)
 - (iii) Five-minute recovery period after the 400 metres. (3 marks)

4. Heart rate increases during exercise. Explain how the increasing levels of carbon dioxide in the blood raises the heart rate. (4 marks)

5. During exercise, the flow of blood to different parts of the body will alter as shown in

Figure 1.

Part of the body	Rate of blood flow (cm ³ min ⁻¹)	
	At rest	During exercise
Muscle	1000	16000
Heart muscle	300	1200
Gut and liver	3000	1400
Brain	750	750
All other organs (except lungs)	1550	1550

- (i) Use the figures in **Figure 2** to calculate the *cardiac output* at rest. (2 marks)
- (ii) State **two** reasons for increased cardiac output during a period of exercise. (2 marks)
- (iii) Describe how the *sinoatrial node* (SAN) and the *atrioventricular node* (AVN) control the increase in heart rate during exercise. (6 marks)

Section B - Skill Acquisition and sports psychology

A skill is 'a learned ability to bring about pre-determined results with the minimum outlay of time, energy or both'.

Skills are learned, consistent, fluent and controlled

TASK 1: Can you name 10 skills linked with a sport?

1. *A pass in Netball*

2.

3.

4.

5.

6.

7.

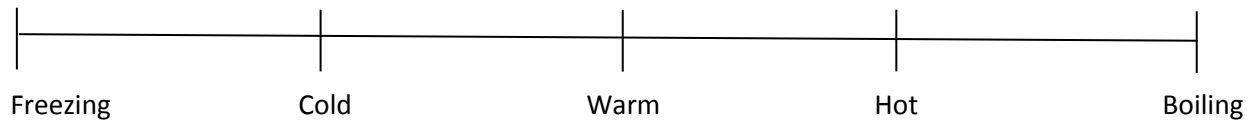
8.

9.

10.

Analysis of movement skills enables us to understand their requirements and decide on the best ways to teach, practise and improve them. Skills can be classified through the use of continua. A continuum is an imaginary scale between two extremes and is usually represented in linear form.

eg.

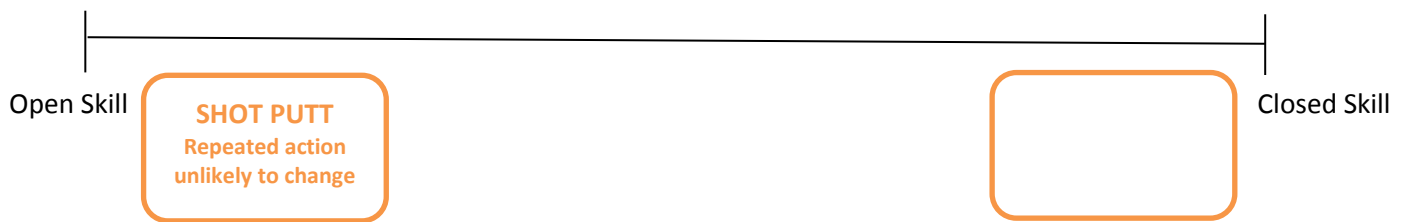


TASK 2: Give a sporting example at each extreme.

Open and closed skills: environmental influence

Open = a skill performed in an unpredictable environment

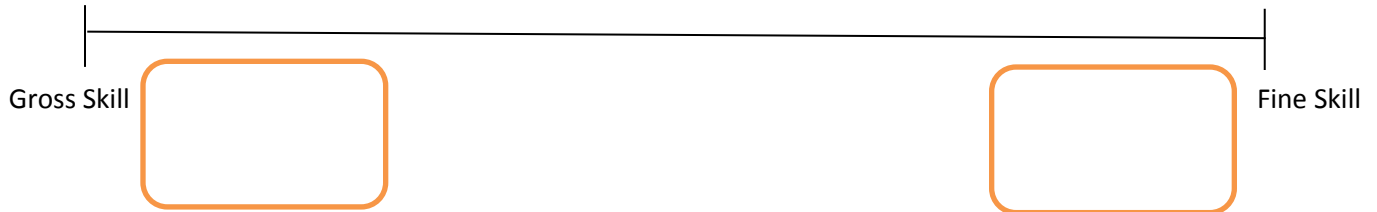
Closed = a skill performed in a predictable environment



Gross and Fine skills: extent of muscle used

Gross = A skill that uses large muscle groups

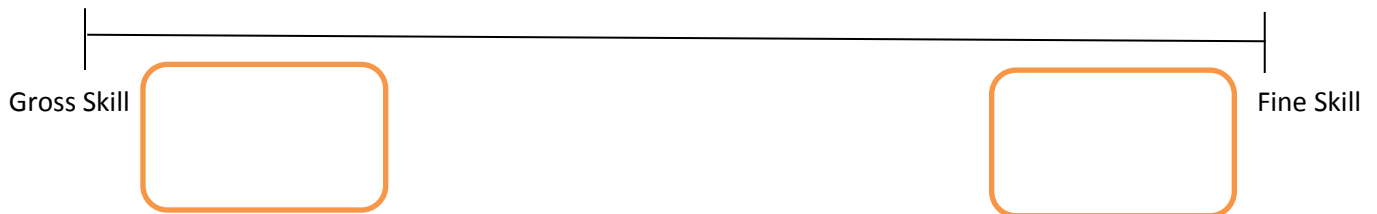
Fine = A skill that uses smaller muscle groups



Self-paced and externally paced skills: control and rate of execution

Self-paced = When the performer controls the start and the speed of the skill.

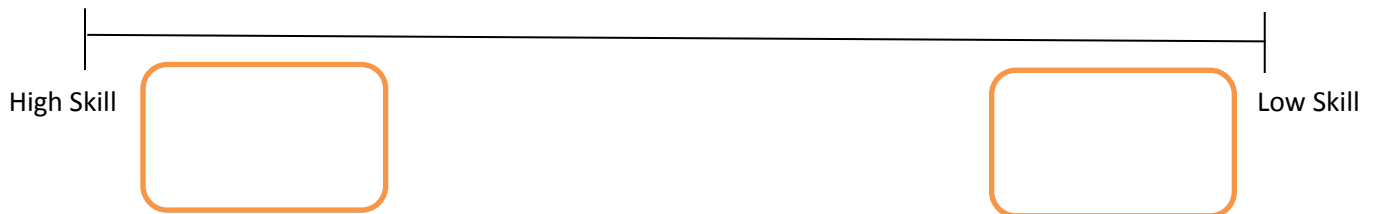
Externally paced = When the performer has no control over the start and the speed of the skill.



High and low skills: organisation

High organised = A skill that is not easily broken into parts

Low organised = A skill that is easily broken down into parts



Skill classification (like above) should be used to determine the best form of practice a coach could use to improve a performer's skill level. There are a number of methods of presenting practice such as:

- **Whole Practice**
- **Whole- part –whole**
- **Progressive part practice**

TASK 3: Research the 3 methods of practice above and complete the table below:

Methods of Practice	Explanation of what it is	Advantages	Disadvantages
Whole Practice			
Whole-part-whole			
Progressive Part			

Section C Sport and Society

TASK 1

Sport England is an organisation and has a mission to “create a sporting habit for life”. Sport England works with local partners to make sure sport is accessible across every region. County Sports Partnerships are invested in to help the promotion of Sport in different counties around the UK. For example, Lincolnshire Sports Partnership works with local authorities, NGBs, sports clubs, schools, health organisations in Lincolnshire, with the main aim being **INCREASE PARTICIPATION!**

Sport England works directly with a number of nationally funded partners. These partners/campaigns are aiming to increase participation in certain groups of people who have a barrier to participating in sport.

Examples of funded partners/Campaigns:

- THIS GIRL CAN
- ENGLISH FEDERATION OF DISABILITY SPORTS (EFDS)
- SPORTING EQUALS
- WOMEN IN SPORT
- STREET GAMES

TASK 1:

Research the following two funded partners (campaigns) and decide upon the key points:

Include the following

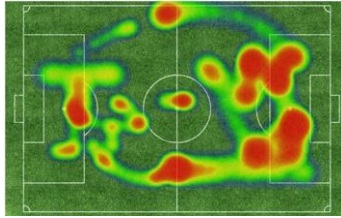
- An outline of the campaign
- The aims of the campaign
- Who the campaign is for
- Funding for the campaign
- Any other information

Campaign/ Partner	Description of campaign/Partner (the outline, The aims, who for?)
This Girl Can	

<p>“Sporting Equals”</p>	
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TASK 2- Technology in sport

GPS (Global Positioning System) is used in various sports, particularly in team games. It the speed, distance and direction of individuals.



Q: Explain how GPS could be used to help performance in football:

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Qualitative and Quantitative data are both used in Sport Science Research.

1. What is Qualitative data?

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.....
Give a sporting example:
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.....

2. What is Quantitative data?

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.....
Give a sporting example:
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TASK 3: Globalisation of Sport

In pre-industrial Britain (Pre-1780), mob football was played by the lower class and real tennis was played by the upper class. Only males played sport. Popular recreation is how sport was perceived.

In Post- industrial (178-1900) Britain, the industrial revolution occurred and the middle class emerged. They formed factory football teams consisting of the lower class workers. The churches also formed football teams consisting of the lower class citizens. Real tennis became lawn tennis and the middle class developed this sport. Females started to play lawn tennis. In this time what we now know as Athletics was called Track and field. Sport became rationalised.

In post-world war 11 to modern day society (1950-current) track and field became athletics. Women now participate in many more sporting activities. Media plays a large role in sport.

Q: Using the key dates and information from the text above, annotate the time line the timeline below:

