

Y12 A Level Physical Education Summer Independent Learning Activity

- 1(a). A football player will use their knee joint and the quadriceps group of muscles to perform a powerful clearance kick.

Identify **one** of the quadriceps muscles and the type of synovial joint at the knee.

Outline the functional role and type of contraction in the quadriceps muscle during the preparation and execution of the kick.

[6]

- (b). **Table 1** shows the distribution of blood in the body at rest and during exercise.

Tissue / organ	At rest (ml / min)	Blood flow (%)	During exercise (ml / min)	Blood flow (%)
Skeletal muscle	1000	B	16 000	80

Y12 A Level Physical Education Summer Independent Learning Activity

Heart	250	5	750	3.75
Brain	750	15	750	3.75
Skin	A	10	1250	6.25
Kidneys	1000	20	750	3.75
Other	1500	30	500	2.50
Total	5000	100	20 000	100

Table 1

- i. Calculate the missing values for **A** and **B**.

A =

B =

- ii. Explain how the changes in the distribution of blood to the skeletal muscles and other organs is achieved during exercise.

Skeletal muscles

Y12 A Level Physical Education Summer Independent Learning Activity

- (d). Compare the process of gas exchange at the muscles during exercise to resting conditions.

[4]

- 2(a). Outline the timing and composition of pre-event meals an endurance athlete may use in the hours leading up to their event.

[5]



Y12 A Level Physical Education Summer Independent Learning Activity

(b). Aerobic capacity is an important fitness component for team game players.

Evaluate the benefit of different physiological adaptations made by the muscular and metabolic systems after a period of aerobic training.

[4]

(c). Describe, using a practical example for each, the following types of strength.

Static strength

Dynamic strength

Y12 A Level Physical Education Summer Independent Learning Activity

Maximum strength

[6]

- (d). i. Identify **one** recognised method of evaluating flexibility. Describe **two** advantages and **one** disadvantage of this method.

Method:

Advantages:

Disadvantage:

[4]

- ii. Explain why a javelin thrower would benefit from good shoulder flexibility.

[1]

- 3(a). Hockey players hit the ball at high speeds to prevent interceptions.

Y12 A Level Physical Education Summer Independent Learning Activity

- i. Apply Newton's second law of motion to show how a hockey player may maximise the ball's acceleration.

[3]

- ii. Calculate the force applied to a hockey ball with a mass of 0.16 kg to cause it to accelerate at a rate of 30 ms^{-2} . Show your workings.

[2]

- (b). Identify all the component parts of a lever system. Use a practical example from sport to show the component order of a first class lever.

Y12 A Level Physical Education Summer Independent Learning Activity

[4]

- (c). Explain, using practical examples, how force plates are used to enhance sporting performance.

[5]

- (d). A high jumper uses the Fosbury Flop technique.

Define centre of mass. Describe the changes in its position at take off and during flight that maximise performance.

Y12 A Level Physical Education Summer Independent Learning Activity

[6]

4. * Explain the physiological adaptations as a result of a flexibility training programme, applying them to a sporting activity of your choice.

Evaluate, using practical examples, the structural and functional characteristics of fast oxidative glycolytic muscle fibres.



Y12 A Level Physical Education Summer Independent Learning Activity

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Y12 A Level Physical Education Summer Independent Learning Activity

Preview - 20 Mark Questions

Complete the 3 x 20 Mark Exam questions below. These will link in to the start of your Year 13 course where we will look at the structure and organisation of extended answer responses.

You should aim to write at least 1 side of A4 Paper on each Question

1. Define the term flexibility.

Using examples, explain factors that can affect the flexibility of a performer in sport.

Critically evaluate different types of training used to develop flexibility. (20 Marks)

2. Explain factors that affect explosive strength.

Devise a six week training programme to improve explosive strength.

Explain how the programme would improve health and fitness. (20 Marks)

3. An elite marathon runner will have a very high aerobic capacity.

Explain how the aerobic system provides energy during a marathon and how cardiovascular adaptations as a result of an aerobic training programme can enhance aerobic capacity. (20 Marks)

Y12 A Level Physical Education Summer Independent Learning Activity

Expanding Your Subject Knowledge Activity

OCR A LEVEL PHYSICAL EDUCATION DEVELOP YOUR KNOWLEDGE OF SPORTING CONTEXT IN PREPARATION FOR YOUR 2 YEAR COURSE



Books to Read

<i>The English Game</i> (Sport and Society)		<input type="checkbox"/>
<i>Unstoppable</i> (Sport Psychology)		<input type="checkbox"/>
<i>Icarus</i> (Drugs/Performance)		<input type="checkbox"/>
<i>Stop at Nothing</i> (Doping in Sport)		<input type="checkbox"/>
<i>Coach Carter</i> (Sport Psychology)		<input type="checkbox"/>
<i>The Game Changers</i> (Diet and Nutrition)		<input type="checkbox"/>
<i>Supersize Me</i> (Diet and Nutrition)		<input type="checkbox"/>
<i>Blindside</i> (American Football)		<input type="checkbox"/>
<i>Last Chance U</i> (American Football)		<input type="checkbox"/>
<i>The Last Dance</i> (Michael Jordan)		<input type="checkbox"/>
<i>Losers</i> (Adversity in Sport)		<input type="checkbox"/>
<i>Moneyball</i>		<input type="checkbox"/>
<i>Formula 1 Drive to Survive</i>		<input type="checkbox"/>

<i>All or Nothing</i> Manchester City		<input type="checkbox"/>
<i>All or Nothing</i> New Zealand All Blacks		<input type="checkbox"/>
<i>This is Football</i>		<input type="checkbox"/>
<i>4 Minute Mile</i>		<input type="checkbox"/>
<i>The Program</i> (Lance Armstrong)		<input type="checkbox"/>
<i>Andy Murray - Resurfacing</i> (Injury Rehabilitation)		<input type="checkbox"/>
<i>Dan Carter - Perfect</i>		<input type="checkbox"/>
<i>The Unknown Runner</i>		<input type="checkbox"/>
<i>The Race to Dope</i> (Doping System in Sport)		<input type="checkbox"/>
<i>Muscle and Medals</i>		<input type="checkbox"/>

<i>Subscribe to the Body Coach</i> (Joe Wicks) (Types of Training/Nutrition)		<input type="checkbox"/>
<i>Kobe Bryant</i> <i>Black Mamba Doc</i>		<input type="checkbox"/>
<i>Being Serena</i> Series		<input type="checkbox"/>
<i>"Is Professionalism Killing Sport"</i> BBC Documentary		<input type="checkbox"/>
<i>The Psychology of a Winner 2020</i> Documentary		<input type="checkbox"/>
<i>Trent Alexander Arnold</i> <i>Living the Dream</i>		<input type="checkbox"/>
<i>Tyson Fury</i> <i>Road to Redemption</i>		<input type="checkbox"/>
<i>Crossing The Line</i> Australian Cricket		<input type="checkbox"/>
<i>Jurgen Klopp</i> <i>Journey to Top</i>		<input type="checkbox"/>
<i>Strive for Greatness</i> Lebron James		<input type="checkbox"/>

Shoe Dog - Phil Knight
History/Story of Nike

Bounce - Matthew Syed
Neuroscience/Psychology

Black box thinking
Matthew Syed
Psychology

Unbeatable - Jessica
Ennis

No Limits - Michael Phelps

My Time - Bradley Wiggins

Between the lines -
Victoria Pendleton

Legacy - James Kerr
All Blacks (New Zealand Rugby)

The Secret Race - Tyler
Hamilton and Daniel Coyle
Drugs/Energy Systems/Deviance

Keep up to date with all the latest news in the world of sport, there is always something happening that links to the course.....

Choose 2 from the lists above and write a report (minimum 1 xA4 for each) which;
(A01) Describes an overview of the Video/Book
(A02) Explains the relationship between the video/book and your OCR A level PE Specification
(A03) Analyses the video/book and discuss your opinion and conclusion
Tick the boxes of the ones you are completing. Feel free to watch as many as you want if you have time