

GCSE Revision
Component 1
Fitness & Body Systems
Extended Answer Questions
Structure Scripts



Component 1

Topic 1

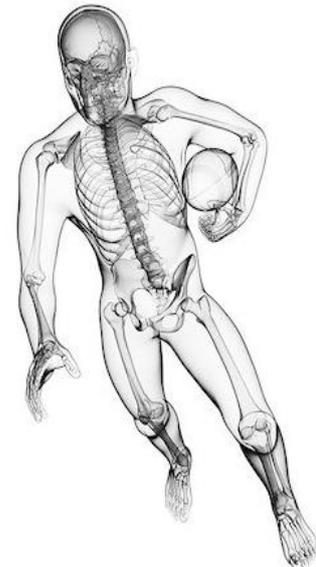
1.1: The structure and functions of the musculoskeletal system

Question

The skeleton is made up of many different types of bones. Analyse how the different types of bones have different functions and explain how they are used during a rugby match?

Key Words

- | | |
|--|--|
| <ul style="list-style-type: none">• Long• Short• Flat• Irregular• Levers• Movement• Support• Weight bearing | <ul style="list-style-type: none">• Production of blood cells• Storage of minerals• Protection of vital organs• Muscle Attachment• Formation of joints |
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Mark scheme (award up to 9 marks)

Level	Mark	Descriptor
Level 0	0	<ul style="list-style-type: none">• No rewardable material
Level 1	1-3	<ul style="list-style-type: none">• Demonstrates isolated elements of knowledge and understanding, with limited technical language used (AO1)• Limited attempt to apply knowledge to question context (AO2)• Generic assertions may be presented (AO3 - evaluation)
Level 2	4-6	<ul style="list-style-type: none">• Demonstrates mostly accurate knowledge and understanding, including appropriate use of technical language in places (AO1)• Applied knowledge to question context (AO2). Attempts at drawing conclusion, with some support from relevant evidence (AO3 - evaluation)
Level 3	7-9	<ul style="list-style-type: none">• Demonstrates accurate knowledge and understanding throughout, including appropriate use of technical language (AO1)• Applied detailed knowledge to question context throughout (AO2)• Reaches a valid and well-reasoned conclusion supported by relevant evidence (AO3 - evaluation)

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Topic 1

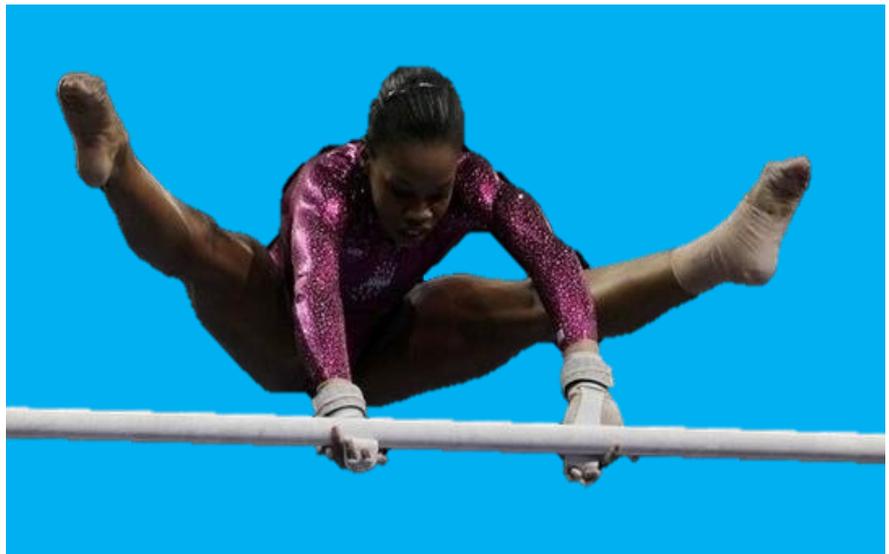
1.1: The structure and functions of the musculoskeletal system

Question

The gymnast below uses her joints to get into position. Analyse how the different joints of the lower body allow the gymnast to hold the position in the picture?

Key Words

- Hip
- Knee
- Ankle
- Ball and socket
- Hinge
- Extension
- Flexion/abduction
- Plantar flexion



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Component 1

Topic 1

1.1: The structure and functions of the musculoskeletal system

Question

Analyse how the muscles are working antagonistically to allow the performer to pedal the bike at speed?

Key Words

- Hip, Knee, Ankle
- Hinge
- Ball and socket
- Agonist/antagonist
- Flexion & Extension
- Flexion/abduction
- Plantar flexion/dorsi flexion
- Hip flexors/gluteus maximus
- Gastrocnemius/tibialis anterior
- Biceps/triceps
- Quadriceps/hamstring



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Introduction

Explain how muscles work in pairs antagonistically

Explain how power is needed in the muscles to generate speed for the cyclist (AO1)

State which muscles are the most important for a cyclist (AO2)

Point 1

Give an example of an antagonistic muscle pair used when cycling (AO1)

Explain how this pair of muscles work together when cycling (AO2)

Give a specific movement involved stating the agonist and antagonist (AO3)

Point 2

Give another example of an antagonistic muscle pair used when cycling (AO1)

Explain how this pair of muscles work together when cycling (AO2)

Give a specific movement involved stating the agonist and antagonist (AO3)

Point 3

Give an example of an antagonistic muscle pair used when cycling (AO1)

Explain how this pair of muscles work together when cycling (AO2)

Give a specific movement involved stating the agonist and antagonist (AO3)

Conclusion

Summarise the importance of antagonistic muscles when cycling. Link how performance is also reliant on types of muscle fibre and training (AO3)

Component 1

Topic 1

1.1: The structure and functions of the musculoskeletal system

Question

Analyse the importance of the different types of muscle fibre in a game of football?

Key Words

- Fast twitch
- Slow twitch
- Type I - Type IIa - Type IIx
- Force of contraction
- Speed of contraction
- Resistance to fatigue
- Myoglobin
- Mitochondria
- Capillary network
- Intensity



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Component 1

Topic 1

1.2: The structure and functions of the cardiorespiratory system

Question

Analyse how the functions of the cardiovascular system aid performance of a marathon runner?

Key Words

- Blood, blood vessels, the heart
- Transport of nutrients
- Regulation of body temperature
- Transport of oxygen
- Transport of carbon dioxide
- Clotting of open wounds



Mark scheme (award up to 9 marks)

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Component 1

Topic 1

1.2: The structure and functions of the cardiorespiratory system

Question

Analyse how the structure and function of the blood vessels are important in the response to physical exercise?

Key Words	
<ul style="list-style-type: none">• Arteries• Capillaries• Veins• Muscular walls• Elastic walls• Lumen• One cell thick• Oxygenated	<ul style="list-style-type: none">• Deoxygenated• Gas exchange• Blood pressure• Towards the heart• Away from the heart



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Introduction

State the three main types of blood vessels. Explain how they are important when we exercise (due to the demand for oxygen and the removal of carbon dioxide) **(AO1)**

Point 1

Explain the role and main structures of an artery **(AO1/2)**

Explain how the function and structure of arteries help deliver oxygen to the working muscles when we start to exercise **(AO2/3)**

Explain how this can improve performance when we start to exercise **(AO3)**

Point 2

Explain the role and main structure of a capillary **(AO1/2)**

Explain how the function and structure of capillaries help diffuse gases when we start to exercise **(AO2/3)**

Explain how this can improve performance in response to exercise **(AO3)**

Point 3

Explain the role and main structure of a vein **(AO1/2)**

Explain how the function and structure of veins help with the removal of carbon dioxide **(AO2/3)**

Explain how this can improve performance when we start to exercise **(AO3)**

Conclusion

Summarise the importance of blood vessels in response to exercise and how they improve performance **(AO3)**

Component 1

Topic 1

1.2: The structure and functions of the cardiorespiratory system

Question

Evaluate the importance of the redistribution of blood during a netball match?

Key Words

- Vascular Shunting
- Working muscles
- Demand for oxygen
- Heart rate
- Stroke volume
- Digestion/stomach
- Vasodilation
- Vasoconstriction
- Chemical changes
- Nervous system



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Introduction

Explain vascular shunting and it's important to performance of a netball player (A01)

Point 1

Explain that when you play netball there is a need for more oxygen to the working muscles (include increase in heart rate and stroke volume) (A01/2)

Explain how the chemical changes trigger blood vessels to vasodilate. (A02)

Give an example of the importance of vasodilation to performance in a netball match (A03)

Point 2

Explain the importance of blood reaching the working muscles and not to inactive areas of the body (A01/2)

Explain how the chemical changes trigger blood vessels to vasodilate. (A02)

Explain the importance of vasodilation and not eating two hours before a match to performance in netball (A03)

Conclusion

Summarise the importance of vascular shunting to the performance in a netball match (A03)

Explain and give an example of how eating a large meal before a game can have a negative affect on performance in a netball match (A03)

Component 1

Topic 1

1.2: The structure and functions of the cardiorespiratory system

Question

Analyse the importance of the composition of blood during a boxing match?

Key Words

- Plasma
- Platelets
- Red blood cells
- White blood cells
- Transport
- Oxygen
- Carbon dioxide
- Fight infection
- Clotting
- Blood loss



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Introduction

State the four components of blood and how each component is important to the performance in a boxing match (AO1)

Point 1

Describe a component of blood (AO1)

Explain giving an example how this component of blood is important during a boxing match? (AO1/2)

Point 2

Describe another component of blood (AO1)

Explain giving an example how this component of blood is important during a boxing match? (AO1/2)

Point 3

Describe another component of blood (AO1)

Explain giving an example how this component of blood is important during a boxing match? (AO1/2)

Point 4

Describe another component of blood (AO1)

Explain giving an example how this component of blood is important during a boxing match? (AO1/2)

Conclusion

Summarise the importance of the composition of blood when taking part in a boxing match and how it has an effect on performance (AO3)
