MY REVISION NOTES

HODDER EDUCATION

AQA

GCSE (9–1)

PE

THIRD EDITION

- Plan and organise your revision
- Reinforce skills and understanding
- Practise exam-style questions

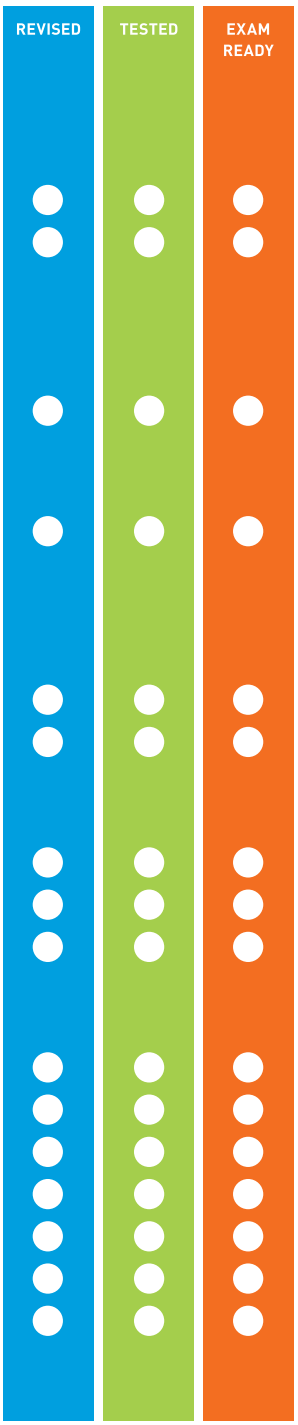
Kirk Bizley

MY REVISION NOTES

AQA GCSE (9–1)

PE

My Revision Planner



Countdown to my exams

6–8 weeks to go

- Start by looking at the specification – make sure you know exactly what material you need to revise and the style of the examination. Use the Revision Planner on pages 4–5 to familiarise yourself with the topics.
- Organise your notes (hopefully, you will have already been keeping two separate folders for Paper 1 and Paper 2 topics), making sure you have covered everything on the specification. The Revision Planner will help you to group your notes into topics for the two separate exam papers.
- Work out a realistic revision plan that will allow you time for relaxation. Set aside days and times for all the subjects that you need to study, and stick to your timetable.
- Set yourself sensible targets. Break your revision down into focused sessions of around 40 minutes, divided by breaks. These Revision Notes organise the basic facts into short, memorable sections to make revising easier.

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2–6 weeks to go

- Read through the relevant sections of this book and refer to the exam tips, summaries, remember tips and key terms. Ensure that you know the exact meaning of every command word – you need to revise these too. Tick off the sections of each topic as you feel confident about them. Highlight those topics you find difficult and look at them again in detail.
- Test your understanding of each topic by working through the 'Now test yourself – exam-style questions' in the book. Look up the answers at the back of the book and double check that you interpreted the command words properly.
- Make a note of any problem areas as you revise, and ask your teacher to go over these in class.
- Look at past papers. They are one of the best ways to revise and practise your exam skills. Write or prepare planned answers to the exam practice questions provided in this book. Try out the extra quick quizzes at **www.hoddereducation.co.uk/myrevisionnotes**.
- Track your progress using the Revision Planner and give yourself a reward when you have achieved your target.

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One week to go

- Try to fit in at least one more timed practice of an entire past paper and seek feedback from your teacher, comparing your work closely with the mark scheme.
- Check the revision planner to make sure you have not missed out any topics. Brush up on any areas of difficulty by talking them over with a friend or getting help from your teacher.
- Attend any revision classes put on by your teacher. Remember, your teacher is an expert at preparing students for examinations.

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The day before the examination

- Flick through these Revision Notes for useful reminders, for example the exam tips, summaries, remember tips and key terms.
- Check the time and place of your examination.
- Make sure you have everything you need – extra pens and pencils, a calculator, tissues, a watch, bottled water, sweets.
- Allow some time to relax and have an early night to ensure you are fresh and alert for the examinations.
- Make sure you have highlighter pens to take into the exam with you to highlight the command words for each question. Also make a note of how many marks are available for each question so that you can check through your answers to see if you have enough separate points/responses to justify all of those marks being awarded by the markers.

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My exams

GCSE PE Paper 1

Date: .....

Time: .....

Location: .....

GCSE PE Paper 2

Date: .....

Time: .....

Location: .....

Command words

These are the words and phrases used in exams and other assessment tasks that tell you exactly how you should go about answering a question to gain full marks. A list of these command words follows and you will see they have been highlighted in bold every time they appear in the Now test yourself – exam-style questions features. The command words also link closely with the assessment objectives (AOs), which are also explained below.

The command words, with their clear definitions are:

Analyse – separate information into components and identify their characteristics

Apply – put into effect in a recognised way

Calculate – work out the value of something

Compare – identify similarities and or differences

Complete – finish a task by adding to given information

Consider – review and respond to given information

Define – specify meaning

Describe – set out characteristics

Discuss – present key points about different strengths and weaknesses of an idea

Evaluate – judge from available evidence

Explain – set out purposes or reasons

Identify – name or otherwise characterise

Illustrate – present clarifying examples

Interpret – translate information into a recognisable form

Justify – support a case with evidence

Outline – set out the main characteristics

State – express clearly and briefly

Suggest – present a possible case/solution

In your exam, use a highlighter pen to identify the command word used in the question and make sure that you then answer precisely as the above definitions tell you to.

Please also note that in multiple-choice questions the word '**one**' is in bold to emphasise that you must choose either the one correct or incorrect option out of the four available.

Assessment objectives

Assessment objectives (AOs) are the ways in which the exam board measures and awards grades. You should note that AO3 can be the most demanding of the four AOs, and is used to measure and gauge the highest grades.

- AO1: demonstrate knowledge and understanding of the factors that underpin performance and involvement in physical activity and sport.
- AO2: apply knowledge and understanding of the factors that underpin performance and involvement in physical activity and sport.
- AO3: analyse and evaluate the factors that underpin performance and involvement in physical activity and sport (this specifically applies to the extended questions on the exam papers).
- AO4: demonstrate and apply relevant skills and techniques in physical activity and sport. Analyse and evaluate performance. This applies to the non-examined assessment (practical performance) component of the exam, including the written course work you have to complete and submit.

It is worth noting that for AO3 there are two key command words identified (analyse and evaluate). These are the command words most commonly used in the extended-type questions. They are worth the most marks and must have all three AOs covered within the response you give, with the most marks awarded for matching the AO3 criteria. For a 6-mark question, 1 mark can be awarded for matching AO1, 2 marks for AO2 and up to 3 marks for AO3.

Marks for the three levels are awarded as follows, against the described criteria:

Level	Criteria
3	+ Knowledge is accurate and generally well detailed. + Application is mostly appropriate, clear and effective. + Analysis is thorough, reaching valid and well-reasoned conclusions. + The answer is generally clear, coherent and focused, with appropriate use of terminology throughout.
2	+ Knowledge is evident but is more detailed in some instances than others. + There is some appropriate and effective application, although not always presented with clarity. + Any analysis is clear but reaches valid and well-reasoned conclusions. + The answer lacks coherence in places, although terminology is used appropriately on occasions.
1	+ Knowledge is limited. + Application is either absent or inappropriate. + Analysis is poorly focused or absent, with few or no reasoned conclusions. + The answer as a whole lacks clarity and has inaccuracies. Terminology is either absent or inappropriately used.

Exam tip

Whenever you see the command words 'analyse' and/or 'evaluate' in a question then you know that you are answering a question matching AO3 criteria, so be sure to answer accordingly.

You can also see that there are three possible levels of mark awarded for these types of extended question and that your levels of 'knowledge, application, analysis, coherence, clarity and use of terminology' are specifically being tested here.

There are two levelled questions on each of your exam papers. This is where the instructions on the front of the question papers tell you the following:

Questions should be answered in continuous prose. You will be assessed on your ability to:

+ use good English
+ organise information clearly
+ use specialist vocabulary where appropriate.

Paper number identification

Each topic and chapter in this book is clearly identified as being examined in either Paper 1 or Paper 2. This can help with your revision planning when you prepare for the two separate papers. You will note that Chapters 1–3 are Paper 1 topics and Chapters 4–6 are Paper 2.

Keep all of your notes and revision materials for this exam in two separate folders – one for Paper 1 topics and the other for Paper 2 topics. This will greatly help your revision organisation just prior to your exams.

3.1.1.1 The structure and functions of the musculoskeletal system Paper 1

1.1 Bones and the skeleton

Functions of the skeleton

REVISED

The skeleton (Figure 1.1) primarily provides a framework for movement (in conjunction with the muscular system – see Section 1.2, page 11), but it also has the following functions:

- **Support**: the muscles and vital organs (such as the heart and lungs) are all kept in place and supported by various parts of the skeleton.
- **Protection**: this is mainly provided by the flat bones, such as those in the cranium (skull) that protect the brain.
- **Movement**: the different types of joint allow different types of movement, as do the different types of bone.
- **Shape**: your overall shape and structure are provided by the skeleton. The types of bone also affect the amount of movement possible: short bones enable finer controlled movements (such as those in the fingers); longer bones enable gross (large) movements, such as those involving larger muscle groups, as in the legs when jumping.
- **Mineral storage**: such as calcium, which helps with bone formation.
- **Blood cell production**: this takes place in the bone marrow, where red blood cells are formed.

Joint A connection point between two bones where movement occurs.

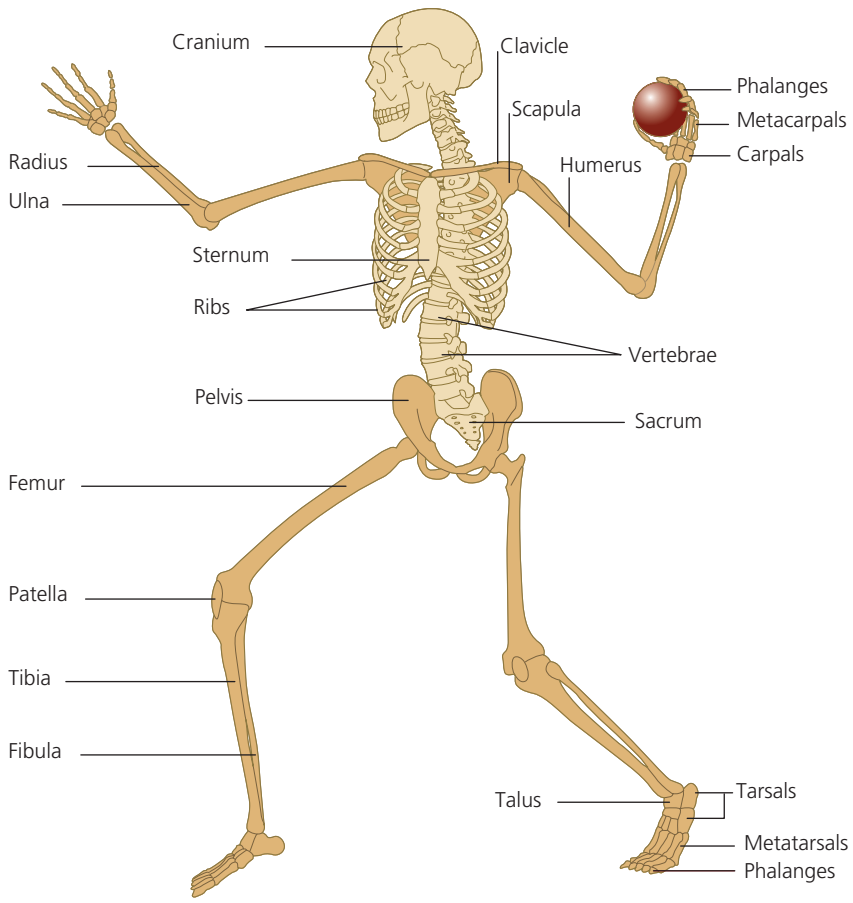


Figure 1.1 The skeletal system

Revision activity

You can attempt this alone or with a partner. On your own body, or your partner's body, identify (or point to) as many specific named bones as you can. Print out a list of the bones you need to know to help you.

Exam tip

The examiner is not likely to ask questions relating to specific names of bones and their locations. However, they are likely to ask questions about how movement occurs and what types of movements these might be – including actual sporting examples.

Specific bones and their location

REVISED

The skeleton has **articulating bones**, which is where two or more bones meet at a joint. It is important that you know both the location and identification of the following bones (Figure 1.1):

- **Head/neck**: where the cranium and vertebrae are located.
- **Shoulder**: where the scapula and humerus are located.
- **Chest**: where the ribs and sternum are located.
- **Elbow**: where the humerus, radius and ulna are located.
- **Hip**: where the pelvis and femur are located.
- **Knee**: where the femur, tibia and patella are located.
- **Ankle**: where the tibia, fibula and talus are located.

Movement can only occur at the joints. Different movements can occur in each different freely movable joint:

- **Ball and socket**: these are the joints at the shoulder (scapula, clavicle and humerus) (Figure 1.2) and the hips (femur and pelvis). The movements of **abduction**, **adduction**, **circumduction** and **rotation** can take place here (Figure 1.3).
- **Hinge**: these are the joints at the knee (femur, patella and tibia) (Figure 1.4), elbow (humerus, radius and ulna) (Figure 1.5) and ankle (tibia, fibula and talus). The movements of **flexion** and **extension** occur here.

These joints are known as freely movable joints, and they are the ones which allow the movements in sports actions to occur.

Articulating bones Where two or more bones meet to allow movement at a joint.

Abduction Movement away from the midline of the body, such as at the shoulder.

Adduction Movement towards the midline of the body, such as at the shoulder.

Circumduction Turning or circular motion around a joint (which occurs in more than one plane).

Rotation Movement around an axis, such as at the shoulder.

Flexion Decreasing the angle of the bones at a joint.

Extension Increasing the angle of the bones at a joint.

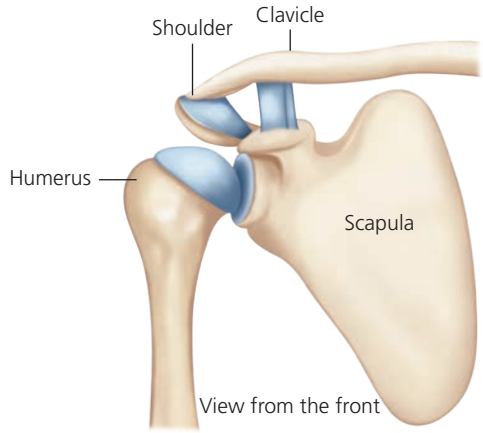


Figure 1.2 The shoulder joint allows us to swing our arms and to move them outwards and inwards

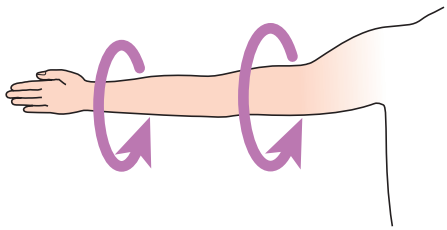


Figure 1.3 Circumduction at the shoulder

Remember

Do not confuse abduction and adduction. Remember, if someone is taken away they are ABDucted and if you put something back in it is ADDed.

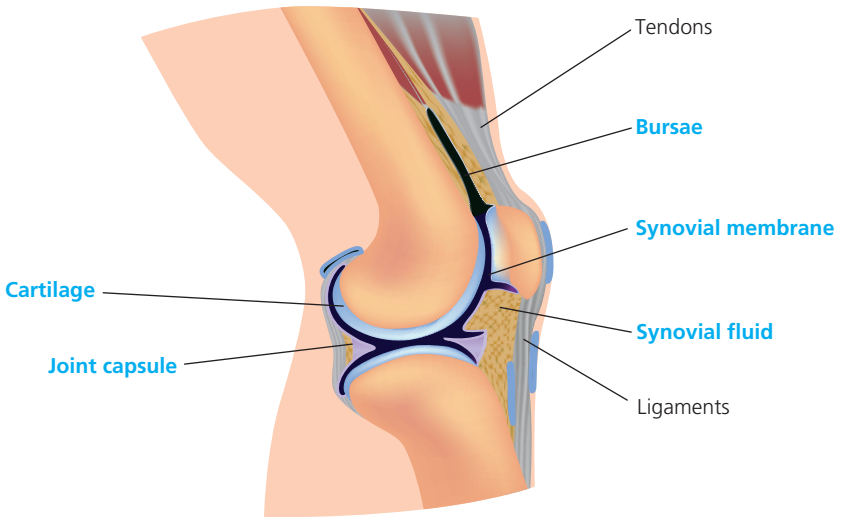


Figure 1.4 The structure of a **synovial joint**, in this case the knee

Bursae Sacs of fluid that reduce friction.

Cartilage Tough but flexible, smooth, elastic tissue that prevents friction and stops bones from rubbing together.

Joint capsule Encloses/supports the joint.

Synovial fluid Provides lubrication for the joint.

Synovial joint An area of the body where two or more bones meet (articulate) to allow a range of movements.

Synovial membrane Secretes synovial fluid.

Check your understanding and progress at **www.hoddereducation.co.uk/myrevisionnotes**

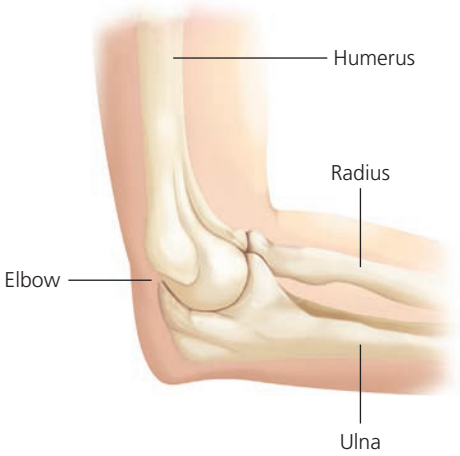


Figure 1.5 The elbow joint enables the arm to bend and straighten

Exam tip

Remember that the skeletal system on its own cannot enable movement to occur. You would need to explain and describe how it works in conjunction with the muscular system for this to happen. The skeletal system and muscular system working together is known as the musculoskeletal system. This would be a topic used to examine AO2 in particular, possibly through an extended answer-type question.

Now test yourself – exam-style questions TESTED

1 Which **one** of the these is *not* a function of the skeleton?
A size **B** support **C** movement **D** protection [1]

2 Which **one** of these describes the movement of bending your arm at the elbow?
A adduction **B** flexion **C** extension **D** abduction [1]

3 Which **one** of these is an example of a hinge joint?
A shoulder **B** hip **C** knee **D** wrist [1]

4 **State** which **three** joints would be primarily involved in throwing a ball. [3]

1.2 Muscles of the body

The muscular system and skeletal system REVISED

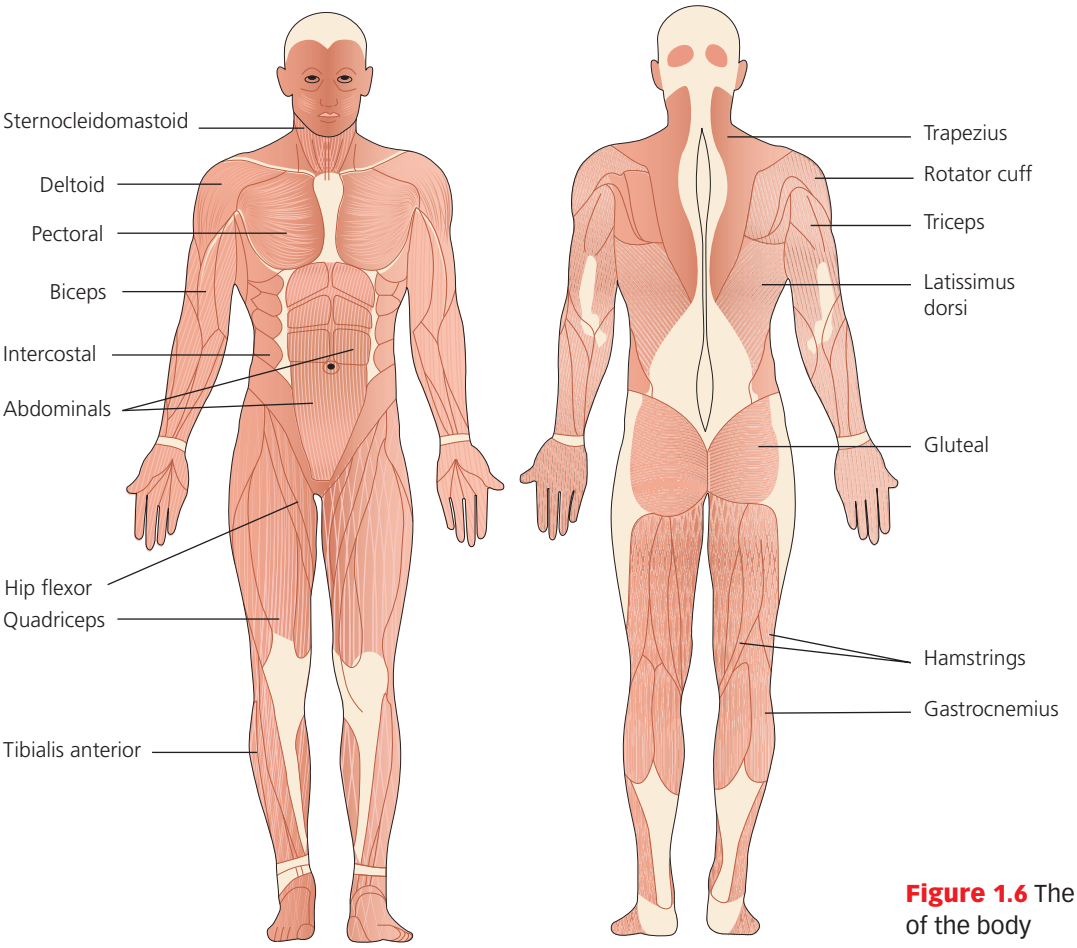


Figure 1.6 The main muscles of the body

The muscular system (Figure 1.6) and skeletal system combine to allow movement to occur. To do this they make use of connective tissues known as ligaments and tendons.

Muscles have to be arranged in pairs as they cannot push – they only pull:

- The prime mover (or agonist) is the muscle that initially contracts to start a movement.
- The antagonist is the muscle that relaxes to allow a movement to take place.

One example is the bending movement at the elbow (Figure 1.7):

- The antagonist is the triceps, which relaxes under tension and slightly lengthens (eccentric contraction).
- The biceps is the prime mover, as it contracts and appears to get smaller (concentric contraction) as it bulges.
- In the bicep curl, the eccentric phase of that exercise is in the action of lowering the dumbbell back down. You can feel these movements in your own arm if you grip loosely around the muscles.

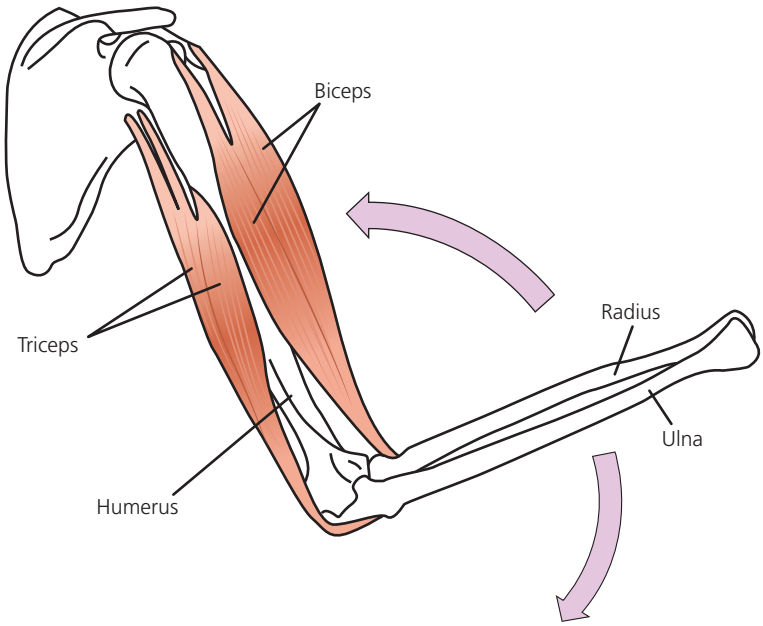


Figure 1.7 Muscles acting at the elbow during a biceps curl

Performing a biceps curl

Revision activity

You can attempt this alone or with a partner. On your own body, or on a partner's body, identify (or point to) as many specific named muscles as you can. Print out a list of the muscles you need to know to help you.

Ligaments Bands of fibres that are attached to the bones and link the joints together.

Tendons Very strong cords that join the muscle to the bone.

Agonist Muscle or group of muscles responsible for movement.

Antagonist A muscles that acts to produce the opposite movement from the agonist. The two muscles work in an antagonistic pair.

Eccentric contraction Lengthening of the muscle under tension (isotonic).

Concentric contraction Shortening of the muscle under tension (isometric).

Remember

It is very common to confuse ligaments and tendons. Remember, **li**gaments **li**nk the joints together and tendons join the muscle to the bone.

You only need to know about certain muscles and the main movements which occur at them:

- **Biceps and triceps**: any arm movements, such as throwing.
- **Hamstrings and quadriceps**: movements of the legs, such as running and kicking. Also **hip flexors**, **gluteals**, **gastrocnemius** and **tibialis anterior**.
- **Deltoids**: allow shoulder movement; used a lot in swimming.
- **Trapezius**: helps to keep the shoulder in position; used in a soccer throw-in. Also **rotator cuffs**.
- **Latissimus dorsi**: allows shoulder movement backwards, forwards, up and down.
- **Pectorals**: at the front of the upper chest; often used in throwing actions, such as the javelin.
- **Abdominals**: used to allow bending and turning of the trunk section; very important 'stabilising' muscles relating to 'core strength'.

Remember

Because we often carry out a pushing movement when we take part in physical activity, there is often confusion regarding whether muscles can push or not. They cannot – they only pull.

Exam tip

For the hamstrings and quadriceps you only need to learn about the muscle groups and not the individual muscle names that make up the groups.

Exam tip

It is vital that you know about muscles and the main movements that occur at them. However, exam questions focus on how the muscular system is involved in movement and how the muscular and skeletal systems combine together to allow movement. This is a topic often examined in the short answer-type questions, when you might also be asked to provide a specific sporting example.

Revision activity

Push against an object which you are able to move. Consider which muscles in your arms or legs (or both) were pulling (contracting), as the agonist(s), to allow that movement to occur.

Now test yourself – exam-style questions TESTED

1 Which **one** of these best describes the role of tendons?
   - **A** They attach muscles to bones.
   - **B** They attach muscles to muscles.
   - **C** They attach bones to bones.
   - **D** They attach ligaments to bones. [1]

2 Which **one** of these is the muscle which relaxes to allow a movement to take place?
   - **A** prime mover
   - **B** agonist
   - **C** flexor
   - **D** antagonist [1]

3 **Identify two** major muscle groups of the upper body used when performing a standing throw-in of a ball. [2]

4 **Explain** why muscles are arranged in pairs. [2]

3.1.1.2 The structure and functions of the cardio-respiratory system Paper 1

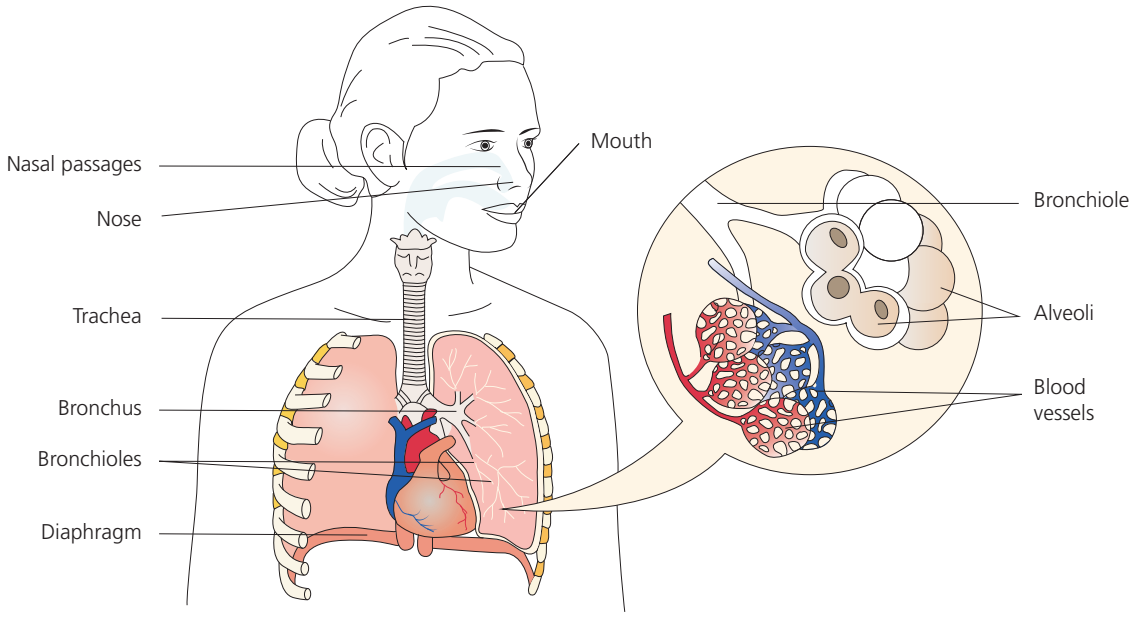
1.3 The cardio-respiratory system

The pathway of air

REVISED

Gaseous exchange (Figure 1.8) occurs in the alveoli. It is important to be aware of the key features of this process:

- The large surface area of the alveoli greatly assists this process.
- The alveoli consist of moist, thin walls that are only one cell thick.
- There is only a very short distance for the gases to travel for diffusion – this is known as the short diffusion pathway.
- There are a great number of capillaries.
- The large blood supply enables the process to be more efficient.
- The actual movement of the gas is from high concentrations to low concentrations.



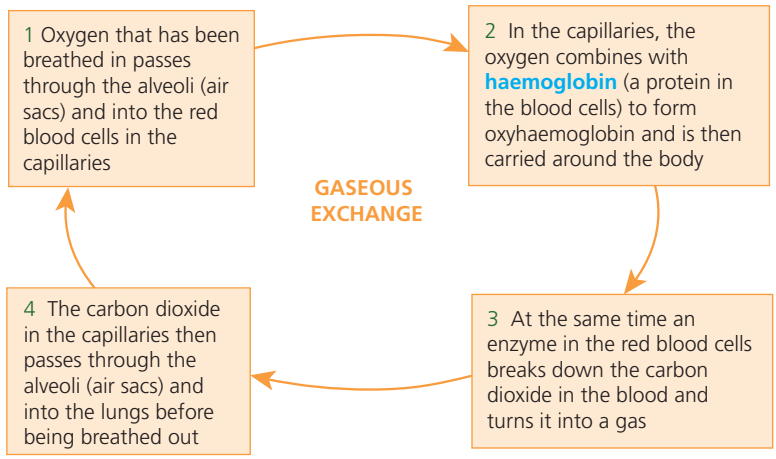


Figure 1.8 The respiratory system and gaseous exchange

Haemoglobin The substance in red blood cells which transports oxygen (as oxyhaemoglobin) and carbon dioxide.

Exam tip

It is important to remember that oxygen combines with haemoglobin in the red blood cells, and that haemoglobin can also carry carbon dioxide.

Check your understanding and progress at **www.hoddereducation.co.uk/myrevisionnotes**

Mechanics of breathing

REVISED

In order for breathing to happen the following occurs:

- There is an interaction of the intercostal muscles, the rib cage and the diaphragm, which results in air being breathed into and out of the lungs.
- When you are at rest and inhaling (**inspiring**) the diaphragm flattens and moves downwards and the intercostal muscles contract, which raises the ribs up, making the chest cavity larger. This has the effect of reducing the air pressure inside the chest cavity, which in turn causes air to be sucked into the lungs.
- The reverse process happens when you are exhaling (**expiring**). You can see in Figure 1.9 that the diaphragm becomes dome shaped, which effectively makes the chest cavity smaller.
- When you are exercising, the lungs can expand more when you are inspiring than they do when you are at rest. This is due to the paired muscle action of the pectorals and sternocleidomastoid at the side of the neck. When you then expire, the rib cage is pulled down much more quickly to force the air out faster due to the movement of the abdominal muscles.

Inspiring Breathing in.

Expiring Breathing out.

Exam tip

Remember that inhalation (breathing in) and exhalation (breathing out) occur due to changes in air pressure, which enable these processes to take place.

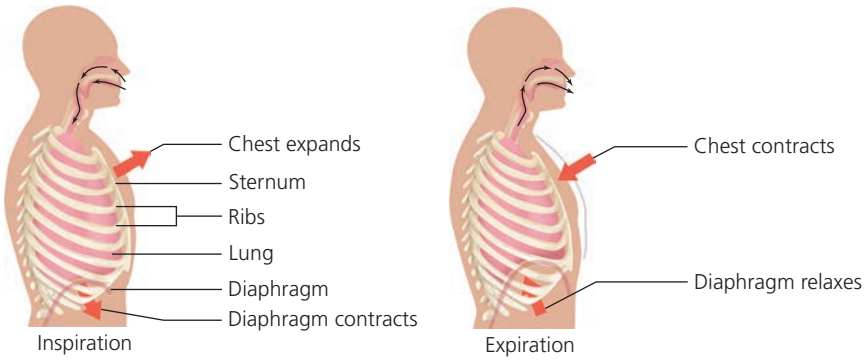


Figure 1.9 Inspiration and expiration – breathing in and out

Air pressure and a spirometer trace

REVISED

A spirometer trace is a measure of lung volumes, which includes:

- **tidal volume**: the volume of air inspired or expired/exchanged in each breath
- **inspiratory reserve volume**: the amount of air that could be breathed in after tidal volume
- **expiratory reserve volume**: the amount of air that could be breathed out after tidal volume
- **residual volume**: the amount of air left in the lungs after maximal expiration.

Exam tip

You are likely to be shown a spirometer trace and asked to interpret and explain it, so ensure that you know all of the following. The amount of air you inspire and expire changes between rest and the onset of exercise. Tidal volume increases with exercise, expiratory reserve volume decreases during exercise (as does inspiratory reserve volume), and residual volume stays the same with no change during exercise.

Revision activity

Carry out an internet search for an actual example of a spirometer trace and look for the four different identified volumes explained in this section.

The structure of the heart

REVISED

The heart (Figure 1.10) is essentially a muscular pump that acts in the way shown in Figure 1.11 to complete the **cardiac cycle** and for the pathway of the blood to occur.

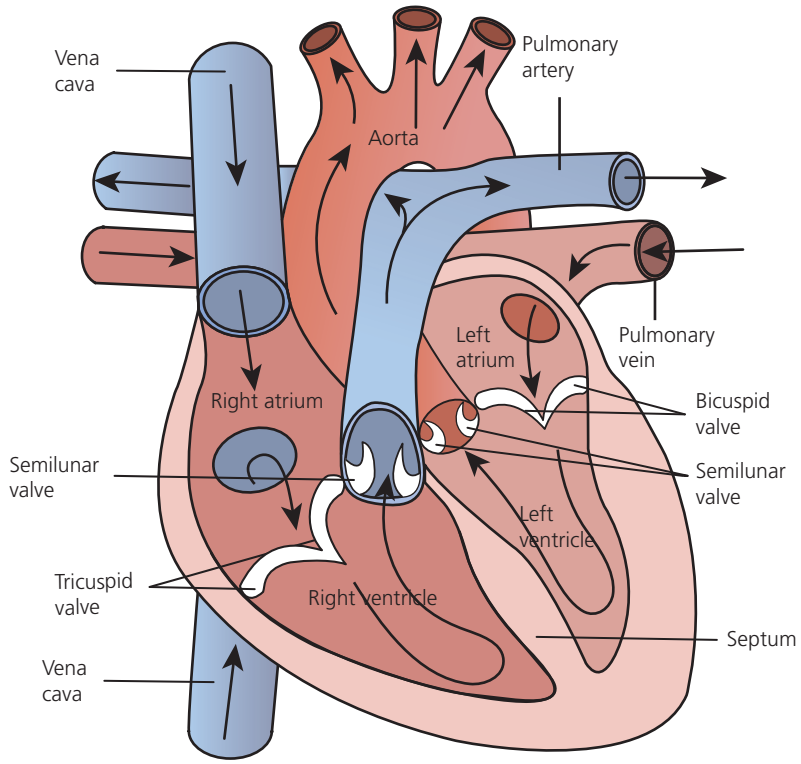


Figure 1.10 The heart

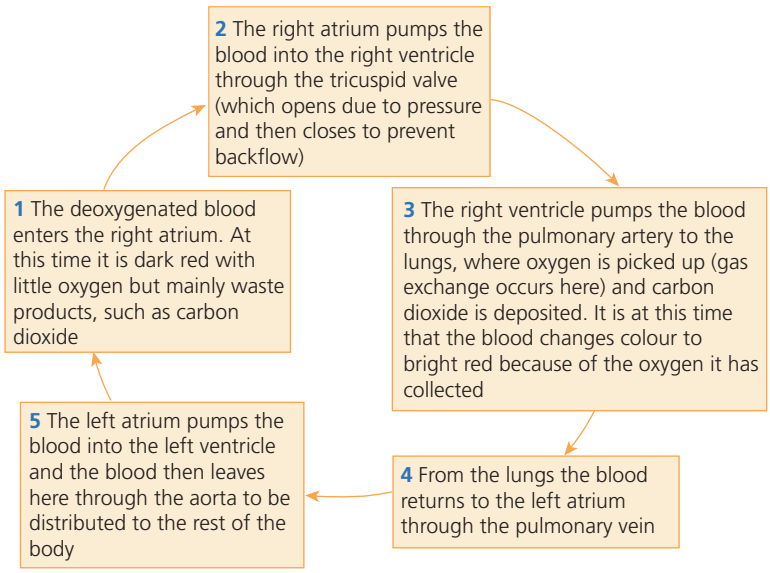


Figure 1.11 The cardiac cycle

Cardiac cycle The process of the heart going through the stages of **systole** and **diastole** in the atria and ventricles.

Systole When the heart is contracting.

Diastole When the heart is relaxing.

Vasoconstriction Narrowing of the internal diameter of a blood vessel to decrease blood flow, such as the arteries constricting during exercise so that less blood is delivered to inactive areas.

Vasodilation Widening of the internal diameter of a blood vessel to increase blood flow, such as the arteries dilating during exercise so that more blood is delivered to active areas, effectively increasing their oxygen supply.

Exam tip

The examiner will not ask specific questions about the heart and its chambers. However, knowing how the blood is transported throughout the body via the blood vessels will help you to answer questions relating to effective training methods, the effect of exercise on the body and the redistribution of blood during exercise (**vasoconstriction** and **vasodilation**).

Blood vessels

REVISED

There are three types of blood vessel in our bodies:

- **Arteries**: these have thick walls and carry oxygenated blood at high pressure away from the heart (note that the pulmonary artery carries deoxygenated blood to the lungs). They have no valves and have more elastic walls than veins. They subdivide into smaller vessels known as arterioles.

Remember

Students often think that the process of breathing only occurs in the lungs. It is far more complex than that, and what happens in the lungs is only part of the process.

- **Veins**: these carry deoxygenated blood back to the heart and have thinner, less elastic walls than arteries. Veins have valves to make sure that the blood is not able to flow backwards. Note that the pulmonary vein carries oxygenated blood from the lungs to the heart.
- **Capillaries**: these are microscopic vessels that allow carbon dioxide, oxygen and waste products to pass through their very thin walls.

Cardiac output, stroke volume and heart rate

REVISED

It is important that you know and understand the relationship between cardiac output, stroke volume and heart rate. The formula for this is as follows:

$$\text{cardiac output } (Q) = \text{stroke volume} \times \text{heart rate}$$

- Cardiac output (Q) is the amount of blood that is ejected from the heart in one minute – also shown as stroke volume × heart rate.
- Stroke volume is the amount of blood pumped out of the heart by each ventricle during one contraction.
- Heart rate is the number of times the heart beats in a given time, and is usually measured in beats per minute.

Exam tip

You may be asked to interpret a heart rate graph such as the one shown in Figure 1.12. If so, you need to be aware that an anticipatory rise is where the heart rate starts to rise slightly before any exercise starts and changes in intensity occur according to the levels of demand associated with various levels or types of exercise.

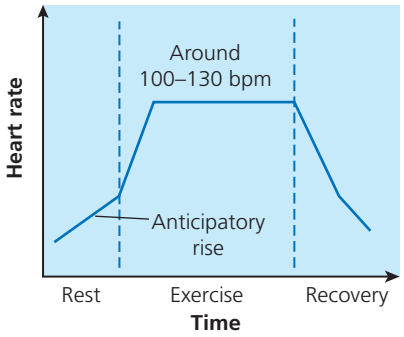


Figure 1.12 Heart rate response for submaximal exercise

Now test yourself – exam-style questions TESTED

1 Which **one** of these is *not* a blood vessel?
   - **A** plasma
   - **B** capillary
   - **C** vein
   - **D** artery [1]

2 **Explain** the differences between an artery and a vein. [4]

3 Which **one** of these is the volume of air inspired/exchanged per breath?
   - **A** residual volume
   - **B** tidal volume
   - **C** expiratory reserve volume
   - **D** inspiratory reserve volume [1]

4 **Explain** the interaction of the intercostal muscles, ribs and diaphragm when at rest and inhaling. [4]

MY **REVISION** NOTES

AQA GCSE (9–1)

PE

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Practise and apply your skills and knowledge with **exam-style questions** and answer guidance

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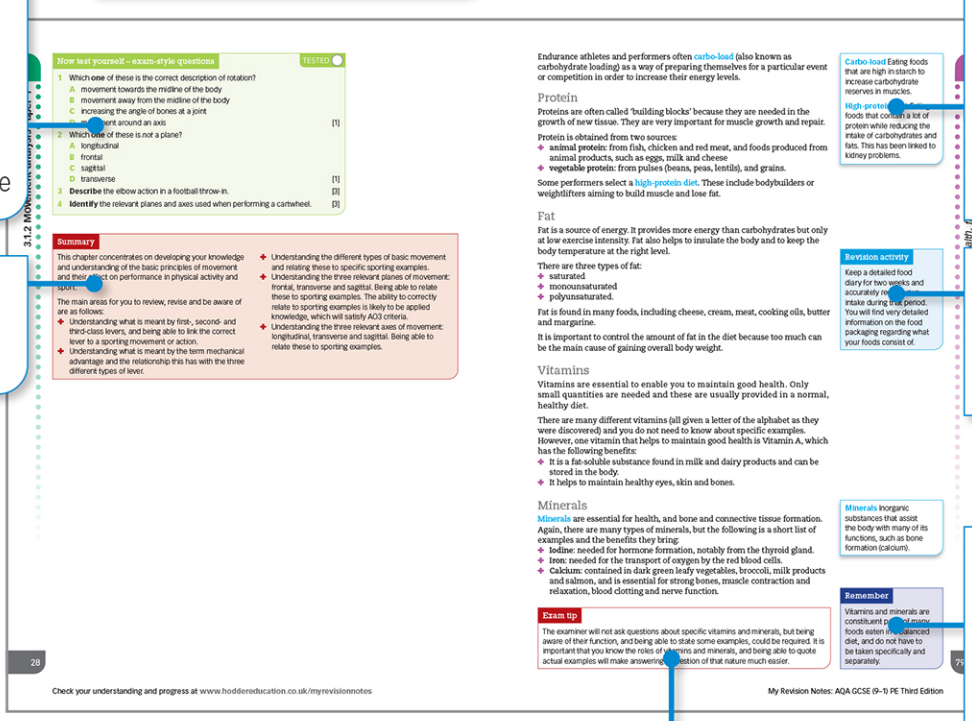
Understand **key terms** you will need for the exam with user-friendly definitions and a glossary

Approach each topic in an interactive way with **revision activities**

Avoid making errors when answering questions, with key points to **remember**

Enhance your exam answers with **exam tips**



Now test yourself – exam-style questions TESTED

1 Which **one** of these is the correct description of rotation?
A movement towards the midline of the body
B movement away from the midline of the body
C increasing the angle of bones at a joint
D movement around an axis [1]

2 Which one of these is *not* a plane?
A longitudinal
B frontal
C sagittal
D transverse [1]

3 **Describe** the elbow action in a football throw-in. [3]

4 **Identify** the relevant planes and axes used when performing a cartwheel. [3]

Summary

This chapter concentrates on developing your knowledge and understanding of the basic principles of movement and their effect on performance in physical activity and sport.

The main areas for you to review, revise and be aware of are as follows:

- Understanding what is meant by first-, second- and third-class levers, and being able to link the correct lever to a sporting movement or action.
- Understanding what is meant by the term mechanical advantage and the relationship this has with the three different types of lever.
- Understanding the different types of basic movement and relating these to specific sporting examples.
- Understanding the three relevant planes of movement: frontal, transverse and sagittal. Being able to relate these to sporting examples. The ability to correctly relate to sporting examples is likely to be applied knowledge, which will satisfy AO3 criteria.
- Understanding the three relevant axes of movement: longitudinal, transverse and sagittal. Being able to relate these to sporting examples.

Endurance athletes and performers often carbo-load (also known as carbohydrate loading) as a way of preparing themselves for a particular event or competition in order to increase their energy levels.

Protein

Proteins are often called 'building blocks' because they are needed in the growth of new tissue. They are very important for muscle growth and repair.

Protein is obtained from two sources:

- **animal protein:** from fish, chicken and red meat, and foods produced from animal products, such as eggs, milk and cheese
- **vegetable protein:** from pulses (beans, peas, lentils), and grains.

Some performers select a high-protein diet. These include bodybuilders or weightlifters aiming to build muscle and lose fat.

Fat

Fat is a source of energy. It provides more energy than carbohydrates but only at low exercise intensity. Fat also helps to insulate the body and to keep the body temperature at the right level.

There are three types of fat:

- saturated
- monounsaturated
- polyunsaturated.

Fat is found in many foods, including cheese, cream, meat, cooking oils, butter and margarine.

It is important to control the amount of fat in the diet because too much can be the main cause of gaining overall body weight.

Vitamins

Vitamins are essential to enable you to maintain good health. Only small quantities are needed and these are usually provided in a normal, healthy diet.

There are many different vitamins (all given a letter of the alphabet as they were discovered) and you do not need to know about specific examples. However, one vitamin that helps to maintain good health is Vitamin A, which has the following benefits:

- It is a fat-soluble substance found in milk and dairy products and can be stored in the body.
- It helps to maintain healthy eyes, skin and bones.

Minerals

Minerals are essential for health, and bone and connective tissue formation. Again, there are many types of minerals, but the following is a short list of examples and the benefits they bring:

- **Iodine:** needed for hormone formation, notably from the thyroid gland.
- **Iron:** needed for the transport of oxygen by the red blood cells.
- **Calcium:** contained in dark green leafy vegetables, broccoli, milk products and salmon, and is essential for strong bones, muscle contraction and relaxation, blood clotting and nerve function.

Exam tip

The examiner will not ask questions about specific vitamins and minerals, but being aware of their function, and being able to state some examples, could be required. It is important that you know the roles of vitamins and minerals, and being able to quote actual examples will make answering a question of that nature much easier.

Carbo-load Eating foods that are high in starch to increase carbohydrate reserves in muscles.

High-protein diet Eating foods that contain a lot of protein while reducing the intake of carbohydrates and fats. This has been linked to kidney problems.

Revision activity

Keep a detailed food diary for two weeks and accurately record your intake during that period. You will find very detailed information on the food packaging regarding what your foods consist of.

Minerals Inorganic substances that assist the body with many of its functions, such as bone formation (calcium).

Remember

Vitamins and minerals are constituent parts of many foods eaten in a balanced diet, and do not have to be taken specifically and separately.

Check your understanding and progress at www.hoddereducation.co.uk/myrevisionnotes

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HODDER EDUCATION

t: 01235 827827

e: education@hachette.co.uk

w: hoddereducation.co.uk

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