GCSE
PHYSICAL EDUCATION
8582/1

Paper 1 The human body and movement in physical activity and sport

Mark scheme

June 2020

Version: 1.0 Final Mark Scheme

206G8582/1/MS

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from aqa.org.uk

Level of response marking instructions

Level of response mark schemes are broken down into levels, each of which has a descriptor. The descriptor for the level shows the average performance for the level. There are marks in each level.

Before you apply the mark scheme to a student's answer read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme.

Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptor for that level. The descriptor for the level indicates the different qualities that might be seen in the student's answer for that level. If it meets the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptor and the answer. With practice and familiarity you will find that for better answers you will be able to quickly skip through the lower levels of the mark scheme.

When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the response to help decide the mark within the level, ie if the response is predominantly level 3 with a small amount of level 4 material it would be placed in level 3 but be awarded a mark near the top of the level because of the level 4 content.

Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this. The exemplar materials used during standardisation will help. There will be an answer in the standardising materials which will correspond with each level of the mark scheme. This answer will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the example to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do not have to cover all of the points mentioned in the Indicative content to reach the highest level of the mark scheme.

An answer which contains nothing of relevance to the question must be awarded no marks.

0 1 Which **one** of these bones is found at the elbow joint?

[1 mark]

Marks for this question: AO1 = 1

D – Ulna (1)

0 2 Which **one** of these statements describes 'adduction' at a ball and socket joint?

[1 mark]

Marks for this question: AO1 = 1

C – The movement of a limb towards the midline of the body (1)

0 3 Which **one** of these is the role of a ligament?

[1 mark]

Marks for this question: AO1 = 1

A – To attach bone to bone (1)

0 4 Which **one** of these lung volumes is 'the maximum amount of air that can be taken into the lungs above that taken in during a normal breath'?

[1 mark]

Marks for this question: AO1 = 1

B – Inspiratory reserve volume (1)

0 5 For which **one** of these events would a performer be **most** likely to use high altitude training?

[1 mark]

Marks for this question: AO2 = 1

C – 5000 m (1)

0 6 Helen is a gymnast.

Figure 1 shows Helen performing a front somersault.

0 6 . 1 Identify the plane and axis of movement used when Helen performs a front somersault.

[2 marks]

Marks for this question: AO2 = 2

Award **one** mark for each of the following up to a maximum of **two** marks.

AO2
- Plane – Sagittal (1)
- Axis – Transverse (1)

Maximum 2 marks

0 6 . 2 Define flexibility. Evaluate the importance of flexibility for Helen as she performs in gymnastics.

[4 marks]

Marks for this question: AO1 = 1, AO3 = 3

Award **one** mark for defining flexibility and up to a further **three** marks for evaluating its importance to Helen as she performs gymnastics.

AO1
- The range of movement possible at a joint (1)

AO3
- To enable her to perform a wide range of complex skills, such as the splits so that she can perform higher tariff routines (1)
- There are some ways to learn a skill that can only be achieved if Helen is flexible eg backward walkovers (1)
- So that she can look aesthetically pleasing, such as pointed fingers and toes which will enable her to score higher marks (1)
- To increase the range of movement at a joint or elasticity of the muscles so she has less chance of straining or tearing a muscle (1)
- Flexible joints require less energy to move through a greater range of motion. This is necessary in her floor routine which is over a certain length of time (1)
- Gaining height to perform somersaults (power) could be deemed important so she can execute the skill safely or correctly or equivalent component of fitness (1)

Accept any other suitable justification of why flexibility is an important component of fitness. Answers must refer to a gymnast.

Maximum 4 marks

0 6 . 3 Helen uses different types of strength when she performs in gymnastics.

Define static strength. Explain how Helen can use static strength in her gymnastic performance.

[3 marks]

Marks for this question: AO1 = 1, AO2 = 2

Award **one** mark for defining static strength and up to **two** further marks for explaining how Helen uses static strength in her gymnastic performance.

AO1
- Static strength – the ability to hold a body part (limb) in a static position. Muscle length stays the same/maximum force that can be applied to an immovable object (1)

AO2
- Could hold a handstand for a longer period of time (1) and would be in a more stable balanced position which would lead to an increase in style mark (1)

Accept any other suitable explanation of how Helen can use static strength in her gymnastic performance.

Maximum 3 marks

0 6 . 4 How would Helen use weight training to develop her static strength?

[2 marks]

Marks for this question: AO1 = 2

Award **one** mark for each of the following points up to a maximum of **two** marks.

Static strength
- training would include the use of heavy weights (1) carried out using a low number of repetitions (in a smooth, slow action) or holding the heavy weights still (1)

Maximum 2 marks

0 7 **Figure 2** shows an individual performing a push-up.

0 7 . 1 Using **Figure 2**, identify what type of muscle contraction is taking place in the arms during the downward phase (**A** to **B**) of the push-up.

[1 mark]

Marks for this question: AO2 = 1

Award **one** mark for identifying the type of muscle contraction taking place in the arms during the **downwards** phase of the push-up.

- Eccentric (1)

Maximum 1 mark

0 7 . 2 Using **Figure 2**, identify the main agonist in the arm during the downward phase (**A** to **B**) of the push-up.

[1 mark]

Marks for this question: AO2 = 1

Award **one** mark for identifying the main agonist in the arm during the downward phase of the push-up.

- Triceps (1)

Maximum 1 mark

0 7 . 3 Using **Figure 2**, identify the lever system working at the elbow during the upward phase (**B** to **A**) of the push-up.

[1 mark]

Marks for this question: AO2 = 1

Award **one** mark for identifying the lever system working during the upward phase of the push-up.

- First class lever (1)

Maximum 1 mark

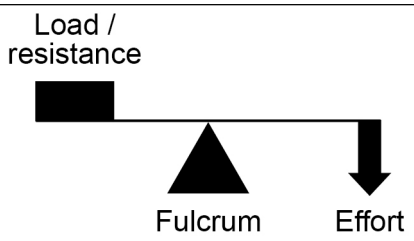
0 7 . 4 Draw a fully labelled diagram in the box below to show the type of lever identified in your answer to Question **07.3**.

[2 marks]

Marks for this question: AO2 = 2

Award **two** marks for drawing and fully labelling a first class lever up to a maximum of **two** marks.

- Correct order of lever system, ie Load (resistance)/Fulcrum/Effort (1)
- Correct labelling of lever system (1)



Accept the lever system being drawn the other way round.

NB Do not award marks for drawing a first-class lever if they do not identify it in **Question 7.3.**

Maximum 2 marks

0 8 Ibrahim participates in a range of athletics events which use different energy systems and muscle groups.

0 8 . 1 Define anaerobic exercise. Use an example from athletics in your answer.

[2 marks]

Marks for this question: AO1 = 1, AO2 =1

Award **one** mark for defining anaerobic exercise and **one** mark for an example from athletics.

AO1 (sub max 1 mark)
- Exercise in the absence of enough or without oxygen (1)

AO2 (sub max 1 mark)
- Sprinting/shot putting/high jumping (1)

Maximum 2 marks

0 8 . 2 Define aerobic exercise. Use an example from athletics in your answer.

[2 marks]

Marks for this question: AO1 = 1, AO2 =1

Award **one** mark for defining aerobic exercise and **one** mark for an example from athletics.

AO1 (sub max 1 mark)
- Exercise in the presence of or using oxygen (1)

AO2 (sub max 1 mark)
- Long-distance running (1)

NB Accept any distance from 800 m and above.

Maximum 2 marks

0 8 . 3 Identify the **two** waste products released from the body when Ibrahim is working aerobically.

[2 marks]

Marks for this question: AO1 = 2

Award **one** mark for each of the following points up to a maximum of **two** marks.

- Water or sweat (1)
- Carbon dioxide (1)

Accept H_2O and CO_2

Maximum 2 marks

0 8 . 4 Explain how Ibrahim's skeletal and muscular system work together to bring about movement.

[3 marks]

Marks for this question: AO1 = 3

Award **one** mark for each of the following points up to a maximum of **three** marks.

- Muscles are attached to bones by tendons (1)
- When muscles contract they pull on the bones to create movement (1)
- Muscles work in (antagonistic) pairs (1)
- When one muscle in the pair is contracting (agonist) the other is relaxing (antagonist) (1)

Maximum 3 marks

0 9 Matthew is a Year 7 student who is a very good all-round sportsman. He has recently undertaken a series of fitness tests to measure his fitness levels.

The multi stage fitness test was used to measure Matthew's cardiovascular endurance.

0 9 . 1 Describe the multi stage fitness test.

[4 marks]

Marks for this question: AO1 = 4

Award **one** mark for each of the following points up to a maximum of **four** marks.

- A recording of a series of timed bleeps (1)
- Shuttle runs 20 m apart (1)
- Performers have to touch lines (or cones) (1)
- Bleeps get progressively closer together (time between bleeps gets shorter) (1)
- Required to run faster when performer gets to a higher level (1)
- Miss three bleeps, performer has to drop out (1 warning, then if not caught up by 2 more 'bleeps' they must stop) (1)
- It is progressive and maximal (1)

Maximum 4 marks

0 9 . 2 Discuss whether fitness testing is an appropriate way of assessing Matthew's sporting ability.

[5 marks]

Marks for this question: AO3 = 5

Award **one** mark for each of the following points up to a maximum of **five** marks.

For (sub max 3 marks)
- Fitness testing is a good way of identifying Matthew's strengths and weaknesses and therefore may be a good indicator of his sporting ability (1)
- Fitness testing can be used to monitor improvement and therefore allow for modifications to be tailored to a specified sport (1)
- Fitness testing can compare against the norms of a group and be compared to national averages so that future forecasting/predictions can be made (1)

Against (sub max 3 marks)
- Matthew is only in Year 7 so the tests would not be a good predictor of his rate of growth and muscular structure which may determine his sporting ability (1)
- Tests are often not sports specific and are too general therefore they are a poor indicator for a specified sport (1)
- They often do not replicate the actual movements that are needed in a specified activity, only the components of fitness (1)
- They do not replicate the competitive or environmental conditions that are required in many sports which are imperative as Matthew will need to perform in many different situations (1)
- Many tests do not use direct measuring and are submaximal, therefore there may be predictive and therefore inaccurate results (1)
- Many tests require Matthew to be motivated to gain accurate results, therefore the information may be misleading (1)
- Some tests have questionable reliability therefore they may provide inaccurate data (1)
- Some tests have questionable validity with reference to the component of fitness they are measuring (1)
- Some testing is not carried out with the correct procedures which will affect data (1)

Accept any discursive points around the appropriateness of fitness training being used to assess Matthew's sporting ability.

Maximum 5 marks

1 0 **Figure 3** shows the structure of the heart.

1 0 . 1 Identify the chambers of the heart labelled **X** and **Y** in **Figure 3**.

[2 marks]

Marks for this question: AO1 = 2

Award **one** mark for each of the following points up to a maximum of **two** marks.

- **X** left ventricle (1)
- **Y** right atrium (1)

Maximum 2 marks

1 0 . 2 What is the role of **Z** in **Figure 3**?

[1 mark]

Marks for this question: AO2 = 1

Award **one** mark for stating one of the following.

- To carry (oxygenated) blood away from the heart (1)
- To transport blood to the rest of the body (1)

Maximum 1 mark

1 0 . 3 Complete the formula for cardiac output.

Cardiac output (Q) =

[1 mark]

Marks for this question: AO1 = 1

Award **one** mark for completing the formula for cardiac output.

- Stroke volume × heart rate (1)

NB Do not accept SV × HR

Maximum 1 mark

1 0 **Figure 4** shows the heart rate of an individual before, during and in recovery from exercise.

1 0 . 4 Explain what is happening to the heart rate before exercise in **Figure 4**.

[3 marks]

Marks for this question: AO2 = 3

Award up to **three** marks for explaining what is happening to the heart rate before exercise in **Figure 4**.

- Heart rate will increase (1)
- This is the anticipatory rise (1)
- Caused by the release of the hormone adrenaline (1)

Maximum 3 marks

1 0 . 5 What is the intensity of exercise at point **A** in **Figure 4**?

[1 mark]

Marks for this question: AO2 = 1

Award **one** mark for identifying the intensity of exercise at point **A**.

- Steady state/submaximal (1)

Maximum 1 mark

1 0 . 6 Explain how vasodilation helps to direct blood flow when we exercise.

[2 marks]

Marks for this question: AO2 = 2

Award up to **two** marks for explaining how vasodilation helps to direct blood flow when we exercise.

- Blood vessels or arteries become wider (1)
- Increasing blood flow to the working muscles (1)

Maximum 2 marks

1 1 . 1 Complete **Figure 5** to show the pathway of air.

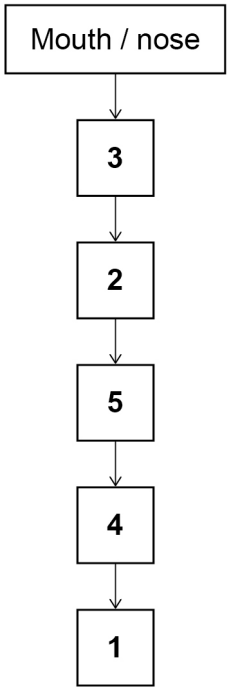
Write the numbers from the following list in the boxes shown in **Figure 5** to show the correct order of the pathway of air.

The first position in **Figure 5** has been completed for you. Use each number only once.

[5 marks]

1. Alveoli
2. Bronchi
3. Trachea
4. Lungs
5. Bronchioles

Marks for this question: AO1 = 5



Award **one** mark for each correct answer

3 Trachea (1)
2 Bronchi (1)
5 Bronchioles(1)
4 Lungs (1)
1 Alveoli (1)

Maximum 5 marks

1 1 . 2 During exercise the lungs expand more to allow a greater volume of air to be breathed in.

Name the **two** muscles that help the diaphragm and intercostal muscles in this process.

[2 marks]

Marks for this question: AO1 = 2

Award up to **two** marks for naming the two skeletal muscles that help in the process.

- Pectoral (muscles) (1)
- Sternocleidomastoid (1)

Maximum 2 marks

1 2 . 1 Define speed.

[1 mark]

Marks for this question: AO1 = 1

Award **one** mark for the definition of speed.

- The maximum rate at which an individual is able to perform a movement (1)
- To cover a distance in a period of time quickly (1)
- Speed = distance ÷ time (1)
- v = d ÷ t (1)

Accept any suitable definition of speed.

Maximum 1 mark

1 2 . 2 Explain how a 1500m runner could use speed to their advantage in a 1500m race.

[3 marks]

Marks for this question: AO3 = 3

Award **one** mark for each of the following points up to a maximum of **three** marks.

- At the start to get ahead of the field or to get away from the line quickly (1)
- When making an attack or break to get into a better position or to take the lead (1)
- When defending or reacting to an attack or break to keep in contact with leaders in the race (1)
- Towards the end of the race or off the final bend or in the last 200m to win the race or to get a better position (1)
- Sustained speed throughout the race to tactically take the sprint out of the faster finishers (1)

Accept any other suitable explanations as to how a 1500m runner could use speed to their advantage in a 1500m race.

Maximum 3 marks

1 2 . 3 Give an example of a sporting action for each of the following components of fitness. **[3 marks]**

Agility
Flexibility
Reaction time

Marks for this question: AO2 = 3

Award **one** mark for each sporting action.

- Agility – dodging a defender, sidestep in rugby (1)
- Flexibility – splits in a gymnastic routine, arch of back in high jump (1)
- Reaction time – saving a deflected shot, quick off the blocks in a sprint (1)

NB Accept any other appropriate sporting actions.

Maximum 3 marks

1 2 . 4 Evaluate the importance of plyometric training **and** interval training to a games player. **[6 marks]**

Marks for this question: AO1 = 1, AO2 = 2, AO3 = 3

Level	Marks	Description
3	5–6	Knowledge of plyometric training and interval training is accurate and generally well detailed. Application to games players is mostly appropriate, clear and effective. Evaluation is thorough, reaching valid and well-reasoned conclusions for both types of training. The answer is generally clear, coherent and focused, with appropriate use of terminology throughout.
2	3–4	Knowledge of plyometric training and interval training is evident but is more detailed for one than the other. There is some appropriate and effective application to games players, although not always presented with clarity. Any evaluation is clear but reaches valid and well-reasoned conclusions for one type of training more than the other. The answer lacks coherence in places, although terminology is used appropriately on occasions.
1	1–2	Knowledge of plyometric training and interval training is limited. Application to games players is either absent or inappropriate. Evaluation is poorly focused or absent, with few or no reasoned conclusions for either type of training. The answer as a whole lacks clarity and has inaccuracies. Terminology is either absent or inappropriately used.
0	0	No relevant content.

Possible content may include:

AO1 – Knowledge of plyometric training and interval training

- Plyometric training involves hopping, bounding or jumping etc.
- Its aim is to develop power, speed and explosive strength.
- Interval training is a method that incorporates periods of high intensity exercise followed by periods of rest or low intensity exercise.
- The intensity can be altered to meet specific fitness aims.

AO2 – Application to a games player, eg netball

- Application to an appropriate named sport, eg football, hockey, netball.
- Plyometric training can be helpful for netball players because they require power in both the legs and arms.
- Power required in legs to jump for rebounds, attacking rebounds and defensive rebounds. Power may be required in legs to jump for the ball in any of the three thirds.
- Leg power may be used to dodge quickly away from an opponent.
- Power required in arms to throw longer passes, eg shoulder passes.
- Interval training will replicate many of the demands of netball, ie not continuous.
- Short intensity work is important for netballers as it will help them handle sprints to move to the ball or closing down an opposition player.

AO3 – Evaluation of the appropriateness of plyometric training and interval training to a games player, eg netball

- Plyometrics involves jumping which is a vital component of netball – to reach or intercept the ball eg the ball is often in the air, therefore the use of plyometrics to develop leg power may enable players to intercept or catch the ball more consistently.
- In a full game, other components of fitness could be seen as more important than power, ie agility, cardiovascular endurance etc – therefore plyometrics may not be as important for a games player.
- Using leg power to dodge may be particularly important when marked closely, eg at a centre pass, and plyometrics could make the difference between gaining the space to receive the ball or having a pass intercepted.
- Interval training might be more appropriate as it benefits both the anaerobic and aerobic energy systems. Periods of high intensity exercise can help players compete with the game when it is fast paced, eg many sprints during the game to close down opponents, make fast breaks, etc.
- No specific equipment is required for either training method so can easily be incorporated into netball training sessions and can be completed quickly so not time intensive.
- They can be specifically designed or altered for a netball training session – jumping to reach a ball, sprint dodge, quick catch and pass etc.

Credit other relevant evaluative points about the appropriateness of plyometric training and interval training to a games player eg plyometric or interval training may not be the most important training type and can be reduced in preference to other types of training which are deemed more important. Answers must be in relation to a games player.

Maximum 6 marks

1 3 Nell is a 16-year-old who represents her county at both football and netball. She is undertaking an intensive training programme so that she can perform to her maximum potential.

Analyse the different methods that Nell could use to prevent injury and recover from vigorous exercise to optimise her performance.

[9 marks]

Marks for this question: AO1 = 2, AO2 = 2, AO3 = 5

Level	Marks	Description
3	7–9	Knowledge of prevention of injury and the recovery from vigorous exercise is accurate and generally well detailed. Application of the different methods that Nell could use is mostly appropriate, clear and effective. Analysis is thorough, reaching valid and well-reasoned conclusions for both injury prevention and recovery from vigorous exercise. The answer is generally clear, coherent and focused, with appropriate use of terminology throughout.
2	4–6	Knowledge of prevention of injury and the recovery from vigorous exercise is evident but is more detailed for one than the other. There is some appropriate and effective application of the different methods that Nell could use, although not always presented with clarity. Any analysis is clear but reaches valid and well-reasoned conclusions for either injury prevention or recovery from vigorous exercise. The answer lacks coherence in places, although terminology is used appropriately on occasions.
1	1–3	Knowledge of prevention of injury and recovery from vigorous exercise is limited. Application of the different methods that Nell could use is either absent or inappropriate. Analysis is poorly focused or absent, with few or no reasoned conclusions for either injury prevention or recovery from vigorous exercise. The answer as a whole lacks clarity and has inaccuracies. Terminology is either absent or inappropriately used.
0	0	No relevant content.

Possible content may include:

AO1 – Knowledge of the prevention of injury and the effectiveness to recover from vigorous exercise.

Injury prevention

- Warm up
- Not over training
- Wearing appropriate clothing and footwear
- Taping or bracing where appropriate
- Hydration
- Correct technique

- Rest

Methods of recovery

- Cool down
- Manipulation of diet
- Ice baths
- Massage

AO2 – Application of the different methods of injury prevention and recovery from vigorous exercise

Injury prevention

- Warm up – Nell should stretch but not over stretch or bounce otherwise she could pull a muscle or injure herself warming up.
- Not over training – Nell can match the type of training intensity of work to her individual needs so she is used to the strain on her body in a competition situation.
- Wearing appropriate clothing and footwear – Nell should wear appropriate protective clothing such as shin pads and wear supportive/shock absorbing/protective footwear. This will protect, support and allow safe movement.
- Taping or bracing – to stabilise muscles and joints.
- Hydration – drinking water (or other fluids) is essential to help Nell to replace the fluids lost whilst playing or training.
- Correct technique – Nell should always use the correct technique, especially when attempting to tackle or make contact with opponents.
- Rest – Nell should ensure she has sufficient rest between training sessions and games so that her body has time to fully recover from the stresses of intensive exercise.

Methods of recovery

- Cool down – this involves a gradual reduction in workload taking in light exercise (pulse lowering such as jogging) and some stretching (static or light dynamic) after exercise. Nell should maintain an elevated breathing/heart rate (EPOC) and ensure good blood flow to her muscles to replenish them with oxygen. It will also prevent blood pooling.
- Manipulation of diet – carbohydrates are important before, during and after the game or training as they are stored in the muscles as glycogen which is an energy source. Protein is required for muscular growth and repair.
- Ice baths – Nell can sit in a bath of ice for approximately 10 minutes. This will make the veins vasoconstrict and squeeze out the lactic acid. Once out of the bath, vessels will vasodilate and bring fresh, oxygenated blood to the muscles. This will assist in preventing DOMS and reduce swelling.
- Massage – will increase blood flow, help flush out lactic acid and reduce DOMS.

AO3 – Analysis of the different methods of injury prevention and recovery from vigorous exercise.

Injury prevention

- Warm up – will increase elasticity of the muscles and increase range of movement and therefore Nell will be more effective in a game eg stretching for a tackle or reaching for an interception.
- Not over training – Nell should not over train as she will become fatigued or suffer from stress/repetitive injuries. Therefore she will not be able to complete her training programme and participate in matches. Over training could also lead to Nell becoming bored of training (tedium) and may drop out of sport.

- Wearing appropriate clothing and footwear – without correct protective equipment Nell may not go into a tackle with so much force and is therefore less likely to win the ball. If trainers are not supportive enough, Nell might get an ankle injury when changing direction. In any training on grass, Nell will need to wear studs to prevent slipping and injuring herself.
- Taping or bracing where appropriate – this can however mask an injury and cause more damage through a false sense of security long term. Positive deviancy – by using taping or bracing, Nell risks greater injury with a false sense of confidence with tape stabilising her joints. However, taping may help Nell participate more safely as joints are stabilised.
- Hydration – should be maintained so that she is able to fully concentrate and reduce the chance of making a mistake like a mistimed tackle in football.
- Correct technique – will help prevent repetitive strain as correct technique should help reduce unnecessary wear and tear on muscles and joints. Safe technique when tackling will help prevent dangerous contact injuries eg two-footed tackles that may put Nell out of the game. Following rules regarding correct technique is also important in netball as incorrect technique could see persistent penalties and Nell may be substituted or dropped from the team.
- Rest – rest is important to ensure that Nell can play and train effectively and to ensure Nell is 'fresh' and 'energised' to perform and train on a regular basis.

Methods of recovery

- Cool down – as this helps to reduce lactic acid and prevent the delayed onset of muscular soreness (DOMS) to enable a quicker and more effective recovery.
- Manipulation of diet – the more glycogen that is stored will reduce the length and severity of the recovery period. This will enable Nell to train and compete in both sports throughout the week and be ready for the next game or training session. Protein will also encourage muscle hypertrophy whereby the muscles will get stronger and more powerful which will make Nell more effective in a game eg she can kick the ball harder and her passes are less likely to be intercepted and she is less like to be knocked off the ball.
- Ice baths – the fresh oxygenated blood will help the muscles to recover more quickly, allowing Nell to take part in training more frequently.
- Massage – massage will increase the blood flow to a sore area, speeding up the recovery/healing process and reducing pain. This can also prevent or reduce swelling, DOMS and prevent muscle fatigue. This will mean that Nell will be able to play the following day.

Maximum 9 marks