



PE.PT9 Reducing the Risk of Injury: Environmental Factors, Clothing and Technique

AQA 8582 · Calculators not allowed · about 40 minutes

Total Marks

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Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Sports hall netball match: Which of the following is the best immediate action to reduce slip risk from a small wet patch on the playing surface?
- ☐ A) Continue play while players avoid the area
 - ☐ B) Stop play and have the patch dried or the surface cleaned
 - ☐ C) Move the players to the opposite end of the hall and restart
 - ☐ D) Put cones around the patch but keep playing

(Total for Question 1 is 1 mark)

- 2** In an outdoor football training session on a very hot day, identify one environmental factor that raises the risk of injury to players.

(Total for Question 2 is 1 mark)

- 3** In a school athletics field event, state one piece of clothing that athletes should avoid wearing because it could increase the risk of injury.

(Total for Question 3 is 1 mark)

- 4** Describe two ways unsuitable footwear can increase the risk of injury during an outdoor rugby training session on grass.

(Total for Question 4 is 2 marks)

- 5** Explain how a wet playing surface at a hockey match could lead to an increased risk of collision injuries between players.

(Total for Question 5 is 3 marks)

- 6** A PE teacher asks pupils to wear appropriate base layers for cross country running in cold weather. Name one reason why thermal base layers reduce injury risk in this context.

(Total for Question 6 is 1 mark)

- 7** Describe two features of good football boots for a muddy outdoor pitch and how each feature reduces injury risk.

(Total for Question 7 is 2 marks)

- 8** A boxer repeatedly bounces heavy equipment when unloading a bag using poor lifting posture. Explain how repeated poor lifting technique can lead to overuse injury for the PE technician.

(Total for Question 8 is 3 marks)

- 9** Identify one weather condition that increases the risk of hypothermia during a long outdoor orienteering event in low temperatures.

(Total for Question 9 is 1 mark)

- 10** In a gymnastics class using floor mats, describe two safety checks a teacher should make to the venue before the session starts.

(Total for Question 10 is 2 marks)

- 11** Explain how exercising in an extremely hot environment without adequate fluid replacement can increase the risk of musculoskeletal injury during a long distance running session.

(Total for Question 11 is 3 marks)

- 12** Name two pieces of protective equipment recommended for a school rugby match and state briefly how each reduces injury risk.

(Total for Question 12 is 2 marks)

- 13** Describe the main steps of correct technique for lifting a heavy box of equipment in a school sports store to reduce back injury risk.

(Total for Question 13 is 2 marks)

- 14** A novice coach observes students repeatedly performing a gym exercise with poor alignment. Explain two ways poor technique during repeated practice can increase the chance of an overuse injury.

(Total for Question 14 is 3 marks)

- 15** For an outdoor school football pitch that floods easily, suggest two preventative measures that would reduce the risk of injury to players during the autumn season.

(Total for Question 15 is 2 marks)

- 16** A PE teacher is responsible for safety during a series of after school outdoor athletics sessions on a school track that is exposed to variable weather. Discuss how the teacher could reduce the risk of injury to participants before and during the sessions. Use examples of environmental checks, appropriate clothing or footwear guidance, and technique or supervision strategies. Make a judgement about which three measures you would prioritise and explain why.

(Total for Question 16 is 6 marks)

Mark scheme · PE.PT9 Reducing the Risk of Injury: Environmental Factors, Clothing and Technique

Question 1

- **B1 B**
- **Answer: B (stop play and have the patch dried or the surface cleaned)**

Question 2

- **B1 high temperature / heat / extreme heat**
- **Answer: High temperature**

Question 3

- **B1 loose jewellery / necklaces / large earrings**
- **Answer: Loose jewellery**

Question 4

- **B1 reduces grip leading to slips and falls, increasing risk of sprains or impact injuries, oe**
- **B1 poor ankle support or inappropriate studs increase twisting of the foot/ankle, causing strains or ligament damage, oe**
- **Answer: Unsuitable footwear can reduce grip on grass, causing slips and falls, and can lack ankle support or have incorrect studs, increasing the chance of twisting injuries to the foot or ankle.**

Question 5

- **B1 wet surface reduces traction so players are more likely to slip, oe**
- **B1 slipping or losing balance reduces a player's control and awareness, increasing the chance of running into others, oe**
- **B1 reduced control can lead to sudden falls or uncontrolled movement, increasing impact forces during collisions, oe**
- **Answer: A wet surface reduces traction so players are more likely to slip; slipping reduces a player's control and awareness, increasing the chance of running into other players; reduced control can cause sudden falls or uncontrolled movement, increasing impact forces during collisions.**

Question 6

- **B1 helps maintain body temperature / prevents muscles getting cold**
- **Answer: They help maintain body temperature, preventing muscles getting cold.**

Question 7

- **B1 stud pattern that provides grip, reducing slipping, oe**
- **B1 firm heel support to stabilise the ankle, reducing twisting injuries, oe**
- **Answer: A stud pattern that provides grip reduces slipping on mud, and firm heel support stabilises the ankle, reducing the risk of twisting injuries.**

Question 8

- **B1 poor technique, such as bending the back rather than using the hips and knees, places repeated strain on the lumbar spine, oe**
- **B1 repeated loading of the same tissues causes microtrauma and cumulative damage over time, oe**
- **B1 cumulative damage can lead to chronic pain or degenerative changes, reducing ability to work and increasing injury risk, oe**
- **Answer: Bending the back rather than using the hips and knees places repeated strain on the lumbar spine; repeated loading causes microtrauma and cumulative tissue damage over time; this cumulative damage can lead to chronic pain or degenerative changes, increasing long term injury risk for the technician.**

Question 9

- **B1 wind / strong wind / wind chill**
- **Answer: Wind**

Question 10

- **B1** check mats are positioned and secured correctly with no gaps, oe
- **B1** check the floor and surrounding area are clear of debris and hazards, oe
- **Answer: Check mats are positioned and secured correctly with no gaps between them, and check the floor and surrounding area are clear of debris or other hazards.**

Question 11

- **B1** dehydration reduces blood volume and impairs muscle blood flow and oxygen delivery, oe
- **B1** reduced muscle function and earlier fatigue change running mechanics, increasing strain on muscles and tendons, oe
- **B1** fatigued or poorly perfused tissues are more susceptible to strains and overuse injury, oe
- **Answer: Dehydration reduces blood volume and impairs muscle blood flow and oxygen delivery; reduced muscle function and earlier fatigue alter running mechanics, increasing strain on muscles and tendons; fatigued or poorly perfused tissues are more susceptible to strains and overuse injury.**

Question 12

- **B1** gumshield, protects teeth and reduces dental and jaw injuries, oe
- **B1** shoulder pads or scrum cap, absorbs impact and reduces head/shoulder impact risk, oe
- **Answer: Gumshield, which protects teeth and helps reduce dental and jaw injuries; and shoulder pads or a scrum cap, which absorb impact and reduce the risk of head or shoulder impact injury.**

Question 13

- **B1** bend at the hips and knees, keeping the back straight, to use leg muscles, oe
- **B1** keep the load close to the body and avoid twisting while lifting or carrying, oe
- **Answer: Bend at the hips and knees while keeping the back straight so the leg muscles do most of the work, and keep the load close to the body while avoiding twisting during lifting or carrying.**

Question 14

- **B1** repeatedly loading structures in an inefficient way causes uneven stress on muscles or tendons, leading to microtears, oe
- **B1** compensatory movement patterns develop, increasing load on other joints and tissues not designed for it, oe
- **B1** over time this cumulative damage reduces tissue resilience and increases the risk of a clinical overuse injury, oe
- **Answer: Repeated poor alignment loads tissues inefficiently, causing uneven stress and microtears; compensatory patterns load other joints and tissues more; over time the cumulative damage reduces tissue resilience and increases the chance of a clinical overuse injury.**

Question 15

- **B1** ensure drainage is improved or postpone/move sessions after heavy rain, reducing waterlogged playing surfaces, oe
- **B1** inspect pitch before use and remove puddles or mark out safe areas, or use alternative venue when necessary, oe
- **Answer: Improve drainage or postpone and relocate sessions after heavy rain to avoid waterlogged surfaces, and inspect the pitch before use to remove puddles, mark safe areas or move to an alternative venue when necessary.**

Question 16

- **Level 3** (5-6): A well organised discussion that evaluates multiple practical measures, including environmental checks, clothing or footwear guidance, and supervision or technique coaching, links each measure clearly to reduced injury risk with specific examples, and gives a justified and coherent judgement of three priority measures.
- **Level 2** (3-4): A clear discussion that describes several measures and makes links to injury risk reduction, but the judgement of priorities is limited or less well justified.
- **Level 1** (1-2): A basic list or description of a few relevant measures with simple links to injury risk reduction and little or no judgement about priorities.
- **Indicative content:**
 - Environmental checks: inspect track for standing water, icy patches, debris and uneven areas; check weather forecast and cancel or modify session if severe conditions are expected.
 - Venue controls: ensure drainage or temporary closure of specific lanes, use cones to mark unsafe areas, and provide an alternative indoor venue if available.
 - Clothing and footwear guidance: advise breathable layers for heat and waterproof layers in rain, recommend appropriate running spikes or trainers for the track surface, and discourage loose jewellery and unsuitable footwear.
 - Hydration and heat/cold policies: provide water breaks, monitor for signs of heat illness or hypothermia, and alter session intensity in extreme temperatures.
 - Technique and supervision: coach correct running technique to avoid overstriding, warm up and cool down routines, demonstrate safe starting and turning techniques, and use progressive load increases to avoid overuse.
 - Supervision and emergency planning: maintain appropriate coach to participant ratios, brief participants on hazards before starting, and have a clear communication and first aid plan.
 - Justification of priorities, for example: prioritise environmental inspection, footwear guidance and proper warm up because removing immediate hazards, ensuring correct traction, and preparing muscles directly reduce the most common causes of acute and overuse injury during track sessions.